

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-0136328

Owner: City of Cape Girardeau
Address: 2007 Southern Expressway, Cape Girardeau, MO 63703

Continuing Authority: Same as above
Address: Same as above

Facility Name: Cape Girardeau Municipal Wastewater Treatment Facility
Facility Address: 2061 Corporate Circle, Cape Girardeau, MO 63703

Legal Description: Survey 2199, T30N, R14E, Cape Girardeau County
UTM Coordinates: X = 807939, Y = 4131348

Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (3701) 303(d) List
USGS Basin & Sub-watershed No.: (07140105-0503)

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

FACILITY DESCRIPTION

Outfall #001 – POTW – SIC #4952 – Certified **“B” Operator Required**

Basket Screen / influent pumping / one manual bar screen / two mechanical bar screen / two grit chambers / four basin Sequencing Batch Reactor / UV disinfection / cascade aeration / sludge is pelletized, land applied, or hauled to landfill.

Design population equivalent is 110,000.

Design flow is 11 MGD.

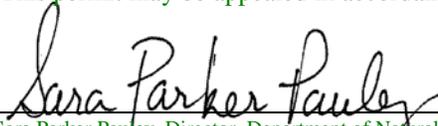
Actual flow is 6.4 MGD.

Design sludge production is 2,235 dry tons/year.

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

March 1, 2015
Effective Date

September 21, 2016
Modification Date


Sara Parker Pauley, Director, Department of Natural Resources

June 30, 2019
Expiration Date


John Madras, Director, Water Protection Program

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 2 of 5	
					PERMIT NUMBER MO-0136328	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	MGD	*		*	once/day	24 hr. Total
Biochemical Oxygen Demand ₅	mg/L		45	30	once/weekday***	24 hr. composite
Total Suspended Solids	mg/L		45	30	once/weekday***	24 hr. composite
pH – Units	SU	**		**	once/weekday***	grab
Temperature	°C	*		*	once/month	grab
Oil & Grease	mg/L	15		10	once/month	grab
<i>E. coli</i> (Note 1, Page 3)	#/100 mL		1030	206	once/week	grab
Ammonia as N	mg/L	*		*	once/month	grab
Cyanide, Amenable to Chlorination	µg/L	*		*	once/month	grab
Cadmium, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Chromium (III), Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Chromium (VI), Total Dissolved	µg/L	*		*	once/month	grab
Copper, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Lead, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Nickel, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Silver, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
Zinc, Total Recoverable	µg/L	*		*	once/month	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>April 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	TU	See Special Conditions #10			once/year	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2015</u> .						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II, & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

- * Monitoring requirement only.
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
- *** Once per weekday means, sample once on Monday, Tuesday, Wednesday, Thursday, and Friday except the nine Federal legal holidays (New Years, President Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas).

Note 1 - 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. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

C. INFLUENT MONITORING REQUIREMENTS			
The facility is required to meet a removal efficiency of 85% or more. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:			
SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Influent</u>			
Biochemical Oxygen Demand ₅	mg/L	once/month	24 hr. composite
Total Suspended Solids	mg/L	once/month	24 hr. composite

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE April 28, 2015.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
 The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

 The permittee shall notify the Director as soon as it knows or has reason to believe:
 - (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
 - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.

D. SPECIAL CONDITIONS (continued)

6. Water Quality Standards

- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

- 7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.
- 8. The permittee shall implement its program for maintenance and repair of the collection system. The permittee shall submit a report annually in November to the Southeast Regional Office with the Discharge and Monitoring Report which address measures taken to maintain and repair the collection system.
- 9. The permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.

The permittee shall submit to the Department on or before March 31st of each year a report briefly describing its pretreatment activities during the previous calendar year. At a minimum, the report shall include the following:

- (a) An updated list of the Permittee's Industrial Users, including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Permittee shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The Permittee shall also list the Industrial Users that are subject only to local Requirements;
- (b) A summary of the status of Industrial User compliance over the reporting period;
- (c) A summary of compliance and enforcement activities (including inspections) conducted by the Permittee during the reporting period; and
- (d) Any other relevant information requested by the Department.

10. Acute Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT					
OUTFALL	AEC	Acute Toxic Unit (TU _a)	FREQUENCY	SAMPLE TYPE	MONTH
001	9%	*	once/year	24 hr. composite	Any, report in August

* Monitoring requirement only.

D. SPECIAL CONDITIONS (continued)

DILUTION SERIES						
100%	50%	25%	9%	4.5%	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(a) Freshwater Species and Test Methods

(1) Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the fifth edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002; Table IA, 40 CFR Part 136). The permittee shall concurrently conduct 48-hour static non-renewal toxicity tests with the following vertebrate species:

- The fathead minnow, *Pimephales promelas* (Acute Toxicity Test Method 2000.0).

And the following invertebrate species:

- The daphnid, *Ceriodaphnia dubia* (Acute Toxicity Test Method 2002.0).

(2) Chemical and physical analysis of an upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping. Where upstream receiving water is not available, synthetic laboratory control water may be used.

(3) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.

(4) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analysis performed upon any other effluent concentration.

(5) All chemical analyses shall be performed and results shall be recorded in the appropriate field of the report form. The parameters for chemical analysis include Temperature (°C), pH (SU), Conductivity (µmohs/cm), Un-ionized Ammonia (mg/L), Total Alkalinity (mg/L), Cyanide, Amenable to Chlorination, Cadmium, Total Recoverable (µg/L), Chromium (III), Total Recoverable (µg/L), Chromium (VI), Total Dissolved (µg/L), Copper, Total Recoverable (µg/L), Lead, Total Recoverable (µg/L), Nickel, Total Recoverable (µg/L), Silver, Total Recoverable (µg/L), Zinc, Total Recoverable (µg/L) and Total Hardness (mg/L).

(b) Reporting of Acute Toxicity Monitoring Results

(1) WET test results shall be submitted to the Southeast Regional Office, or by eDMR, with the permittee's Discharge Monitoring Reports annually by August 28, 2015. The submittal shall include:

- A full laboratory report for all toxicity testing.
- Copies of chain-of-custody forms.
- The WET form provided by the Department upon permit issuance.

(2) The report must include a quantification of acute toxic units ($TU_a = 100/LC_{50}$) reported according to the test methods manual chapter on report preparation and test review. The Lethal Concentration, 50 Percent (LC_{50}) is the toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time.

(c) Permit Reopener for Acute Toxicity

In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address acute toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to acute toxicity.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATEMENT OF BASIS
MO-0136328
CAPE GIRARDEAU MUNICIPAL WASTEWATER TREATMENT FACILITY

This Statement of Basis (Statement) gives pertinent information regarding minor modification(s) to the above listed operating permit.

A Statement is not an enforceable part of a Missouri State Operating Permit.

Part I – Facility Information

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

Facility Description:

Basket Screen / influent pumping / one manual bar screen / two mechanical bar screen / two grit chambers / four basin Sequencing Batch Reactor / UV disinfection / cascade aeration / sludge is pelletized, land applied, or hauled to landfill.

Part II – Modification Rationale

This operating permit is hereby modified to reflect a change of the pH effluent limit to 6.0-9.0 SU from 6.5-9.0 SU per 10 CSR 20-7.015(2)(A)2. which states discharges to the Missouri and Mississippi rivers “shall be maintained in the range from six to nine (6-9) Standard units”. Sample type for flow has been changed to “24 hr. Total” from “24 hr. Estimate”.

No other changes were made at this time.

Part III – Anti-Backsliding

Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

- The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).

Part IV – 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 public notice period for the modification to this permit was from August 5th 2016 to September 6th 2016. No comments were received during this time period.

DATE OF STATEMENT OF BASIS: 07/15/2016

COMPLETED BY:

SHAWN MASSEY, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF NEW FACILITY
OF
MO-0136328
CAPE GIRARDEAU MUNICIPAL WASTEWATER TREATMENT FACILITY

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

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

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

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

Part I – Facility Information

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

Facility Description:

The City of Cape Girardeau has determined to construct a new 11 MGD treatment facility at a new location to replace the existing 7 MGD. Effluent entering the new facility is first subjected to a Basket Screen and Influent Pumping Station at head works. Wastewater is then subjected to one manual bar screen and two mechanical bar screens. Flow is then subjected to one of two (2) Grit Chambers. Flow from the grit chamber is then pumped to a splitter box into a four (4) basin Sequencing Batch Reactor (SBR). Flow from the SBR is then combined and is subjected to UV disinfection and Cascade Aeration prior to being discharged.

The facility utilizes a direct drying and pelletization process for sludge. The process contains seven phases: dewatering, mixing, drying, air and solids separation, pellet sorting, pellet cooling and storage, and air treatment and recirculation. The final product is a Class A dry biosolids pellet that will be marketed as a registered organic fertilizer in both agricultural and/or horticultural markets – commercial or private. The City of Cape Girardeau may retain the option of utilizing land application or hauling cake biosolids to a landfill.

The treated effluent from this new facility will be piped to an existing permitted outfall – Outfall #002 – from the previous Cape Girardeau Municipal WWTF, Missouri State Operating Permit number MO-0050580. The previous MO-0050580's Outfall #002 was an emergency overflow outfall. This outfall currently discharges to the Mississippi River and will continue to discharge to the Mississippi River, in accordance with this new permit, as Outfall #002. Please see **APPENDIX B – NEW FACILITY LOCATION**.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
Not applicable, new facility

Application Date: 04/06/2010
Expiration Date: N/A
Last Inspection: N/A

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
#002	17.1	Secondary	Domestic	0.0

Outfall #001 – does not exist for the purpose of this new operating permit.

Outfall #002

Legal Description: SE ¼, SE ¼, Survey 2199, T30N, R14E, Cape Girardeau County

UTM X = 807939, Y = 4131348

Receiving Stream: Mississippi River (P)

First Classified Stream and ID: Mississippi River (P) (03701)

USGS Basin & Sub-watershed No.: (07140105 – 150003)

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

New facility, no performance history.

Comments:

This facility is being constructed due to the fact that the previous facility needed to be upgraded as to remove the peak flow outfall, which was outfall #002. However, due to the karst topography near the old facility, the City of Cape Girardeau determined that constructing a new facility would serve better than upgrading the existing plant, which may have fallen subject to the karst topography. With the construction of this new plant, the City is essentially removing the peak flow outfall, but is keeping the physical outfall structure to discharge fully treated domestic wastewater.

Part II – Operator Certification Requirements

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

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
 - Municipalities

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

Operator’s Name: Jim Taylor

Certification Number: 2015

Certification Level: WW-A

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

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

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

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

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Mississippi River	P	3701	IRR,LWW, AQL, WBC(B), SCR, DWS, IND	07140105	Ozark, Apple, Joachim

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

** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Mississippi River (P)	57,700	61,100	67,300

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(III)(a)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)4.B.(III)(b)]	
7Q10	30Q10	1Q10*	7Q10*
15,275	16,825	170	170

* - The 1Q10 was 1,443 cfs and the 7Q10 was 1,528 for ZID calculations; however, in accordance with 10 CSR 20-7.031(4)(A)4.B.(III)(b), the ZID can not exceed 10 x the Design Flow. The 10 x the design flow is 170 cfs which is less than the ZID for both the 1Q10 and 7Q10. Therefore, 170 cfs is the maximum allowable ZID flow.

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

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

Not Applicable ;

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

ANTI-BACKSLIDING:

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

- New facility, backsliding does not apply.

ANTIDegradation:

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

- New and/or expanded discharge, please see **APPENDIX D – ANTIDegradation ANALYSIS.**

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

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

BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE:

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

Applicable (renewal and modifications to existing operating permits) ;

This facility has been approved to land apply as per Permit Standard Conditions III and a Department approved bio-solids management plan. The facility utilizes a direct drying and pelletization process for sludge. The process contains seven phases: dewatering, mixing, drying, air and solids separation, pellet sorting, pellet cooling and storage, and air treatment and recirculation. The final product is a Class A dry biosolids pellet that will be marketed as a registered organic fertilizer in both agricultural and/or horticultural markets – commercial or private. The City of Cape Girardeau may retain the option of utilizing land application or hauling cake biosolids to a landfill.

COMPLIANCE AND ENFORCEMENT:

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

Not Applicable ;

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

PRETREATMENT PROGRAM:

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

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

Pretreatment Program continued:

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

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

Applicable ;

This permittee has an approved pretreatment program in accordance with the requirements of [40 CSR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program.

REASONABLE POTENTIAL ANALYSIS (RPA):

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

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

Applicable ;

A RPA was conducted on appropriate parameters. There was a RPA conducted by an outside source for this facility. Department staff drafting this operating permit had concerns regarding the RPA and therefore conducted an additional RPA. Regardless, the Department RPA and outside source RPA both determined that the pollutants of concern do not have reasonable potential to violate or cause exceedances to Missouri's Water Quality Standard; however, there were significant differences between the two RPA's. Department RPA results located in **APPENDIX C – ANTIDegradation Analysis**.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm.

Applicable ;

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

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

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

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

Applicable ;

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

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

SCHEDULE OF COMPLIANCE (SOC):

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

Not Applicable ;

This permit does not contain a SOC.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when:

(1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

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

Not Applicable ;

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

VARIANCE:

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

Not Applicable ;

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

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

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

Applicable ;

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

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

Where C = downstream concentration
Cs = upstream concentration
Qs = upstream flow
Ce = effluent concentration
Qe = effluent flow

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

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

WLA MODELING:

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

Not Applicable ;

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

WATER QUALITY STANDARDS:

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

WHOLE EFFLUENT TOXICITY (WET) TEST:

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

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.

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

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility that exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.
- Facility (whether primarily domestic or industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH₃)
- Facility is a municipality with a Design Flow ≥ 22,500 gpd.

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 ;

The Mississippi River is listed on the 2008 Missouri 303(d) List for Lead and Zinc impairment, and is also still listed on the 2002 Missouri 303(d) List for PCB and Chlordane. The Mississippi River TMDL for Lead and Zinc list the impairment as localized immediately downstream of the Herculaneum smelter and does not extend as far south as Cape Girardeau. This facility is not considered to be a source or contributor to either 303(d) impairment.

Part V – Effluent Limits Determination

Outfall #001 – Main Facility Outfall

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	GPD	1	*		*	NO	
BOD ₅	MG/L	1/12		45	30	YES	SEASONAL 60/40 SUMMER & 65/45 WINTER
TSS	MG/L	1		45	30	YES	60 / 40
pH	SU	1	6.5 – 9.0		6.5 – 9.0	YES	6.0 – 9.0
TEMPERATURE	°C	9	*		*	YES	***
AMMONIA AS N (MAY 1 – OCT 31)	MG/L	1/12	*		*	NO	
AMMONIA AS N (NOV 1 – APR 30)	MG/L	1/12	*		*	NO	
ESCHERICHIA COLI **	#/100ML	1/3	1030		206	YES	***
OIL & GREASE (MG/L)	MG/L	2	15		10	NO	
CYANIDE, AMENABLE TO CHLORINATION	µg/L	2/12	*		*	NO	
CADMIUM, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
CHROMIUM (III), TOTAL RECOVERABLE	µg/L	2	*		*	YES	****
CHROMIUM (VI), TOTAL DISSOLVED	µg/L	2/12	*		*	YES	****
COPPER, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
LEAD, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
NICKEL, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
SILVER, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
ZINC, TOTAL RECOVERABLE	µg/L	2/12	*		*	NO	
WHOLE EFFLUENT TOXICITY (WET) TEST	TU	11	*	Please see WET Test in the Derivation and Discussion Section below.		YES	%SURVIVAL
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.

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

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

**** - The previous permit had Total Chromium as a monitoring only condition.

Basis for Limitations Codes:

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

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅).** Antidegradation Review provided that 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average is protective of the receiving stream’s Water Quality. Effluent limitations based on the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Total Suspended Solids (TSS).** Antidegradation Review provided that 45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average is protective of the receiving stream’s Water Quality. Effluent limitations based on the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **pH.** Antidegradation Review provided that the pH limitation range was to be 6.0 – 9.0; however, Missouri’s Effluent Limitation Regulations for domestic discharges is set to be revised June 30, 2010. This new revision will contain 6.5 – 9.0 pH SU effluent range.
- **Temperature.** Monitoring requirement due to the toxicity of Ammonia varies by temperature.
- **Total Ammonia Nitrogen.** Department staff drafting this operating permit has concerns regarding the RPA that was submitted to the Department by the outside source for the Antidegradation Review. However, unlike metals that are not treated by the existing or proposed WWTF, Ammonia is treated. Rather than conducting an RPA on Ammonia for this new treatment, staff determined that water quality based effluent limitations should be calculated (with mixing considerations). Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU Background total ammonia nitrogen for Summer months is 0.042 mg/L and Winter is 0.11 mg/L. CV for Summer months is 0.497, and the CV for Winter months is 0.549.

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

Summer: May 1 – October 31

Chronic WLA: $C_e = ((16825 + 17.1)1.5 - (16825 * 0.042))/17.1$
 $C_e = 1436 \text{ mg/L}$

Acute WLA: $C_e = ((170 + 17.1)12.1 - (170 * 0.042))/17.1$
 $C_e = 132 \text{ mg/L}$

$LTA_c = 1436 \text{ mg/L} (0.813) = 1167 \text{ mg/L}$
 $LTA_a = 132 \text{ mg/L} (0.374) = \mathbf{49 \text{ mg/L}}$

[CV = 0.497, 99th Percentile, 30 day avg.]
 [CV = 0.497, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

$MDL = 49 \text{ mg/L} (2.67) = 131 \text{ mg/L}$
 $AML = 49 \text{ mg/L} (1.16) = 57 \text{ mg/L}$

[CV = 0.487, 99th Percentile]
 [CV = 0.487, 95th Percentile, n =30]

Winter: November 1 – April 30

Chronic WLA: $C_e = ((16825 + 17.1)3.1 - (16825 * 0.042))/17.1$
 $C_e = 2945 \text{ mg/L}$

Acute WLA: $C_e = ((170 + 17.1)12.1 - (170 * 0.11))/17.1$
 $C_e = 131 \text{ mg/L}$

$LTA_c = 2945 \text{ mg/L} (0.796) = 2344 \text{ mg/L}$
 $LTA_a = 131 \text{ mg/L} (0.346) = \mathbf{49 \text{ mg/L}}$

[CV = 0.549, 99th Percentile, 30 day avg.]
 [CV = 0.549, 99th Percentile]

Total Ammonia as N (continued):

Use most protective number of LTA_c or LTA_a .

MDL = 49 mg/L (2.67) = 131 mg/L
 AML = 49 mg/L (1.16) = 57 mg/L

[CV = 0.487, 99th Percentile]
 [CV = 0.487, 95th Percentile, n =30]

The above MDL and AML for both seasons is well above medium to high-strength Ammonia concentrations for raw untreated domestic wastewater. Therefore, a monitoring only requirement will be established, which is the same as the Antidegradation Review.

- **Escherichia coli (E. coli).** Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five E. coli samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5th root of (1)(4)(6)(10)(5) = 5th root of 1,200 = 4.1 #/100mL.
- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Cyanide, Amenable to Chlorination; Cadmium, Total Recoverable; Copper, Total Recoverable; Lead, Total Recoverable; Nickel, Total Recoverable; Silver, Total Recoverable; and Zinc, Total Recoverable.** A RPA conducted by the Department and by an outside source both documented that these pollutants do not have potential to cause an exceedances of Missouri's Water Quality Standards; however, this facility receives industrial pretreated wastewater that has Federal Effluent Limit Guidelines containing these pollutants; therefore, the operating permit will contain a monitoring only requirement for these pollutants of concern.
- **Chromium (III), Total Recoverable & Chromium (VI), Total Dissolved.** The previous state operating permit contain a Total Chromium monitoring only condition; however, Missouri's Water Quality Standards, in 2005, were revised. As part of this revision, Chromium was speciated to Chromium (III) and Chromium (VI). RPA's conducted by both the Department and by an outside source document that both Chromium (III), Total Recoverable and Chromium (VI), Total Dissolved do not have reasonable potential to cause an exceedances of Missouri's Water Quality Standards; however, because this facility receives industrial pretreated wastewater that has Federal Effluent Limit Guidelines for Total Chromium, this operating permit will contain a monitoring only requirement for these pollutants.
- **WET Test.** WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.
Acute Whole Effluent Toxicity. Monitoring requirement only. Monitoring is required to determine if reasonable potential exists for this facility's discharge to exceed water quality standards.

No less than ONCE/YEAR:

- Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.
- Facility continuously or routinely exceeds their design flow.
- Facility exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.
- Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

Acute AEC% = $((\text{design flow}_{\text{cfs}} + \text{ZID}_{7Q10}) / \text{design flow}_{\text{cfs}})^{-1}] \times 100 = \text{##\%}$
 Acute AEC% = $((17.1\text{cfs} + 170\text{cfs}) / 17.1)^{-1}] \times 100 = 9\%$

- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit. This is because the pollutants of concern were found to not have a reasonable potential. For the bacteria pollutants, the sampling regiment will be four per month.

Part VI – Administrative Requirements

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

PUBLIC NOTICE:

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

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

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

- The Public Notice period for this operating permit was from June 4, 2010 to July 4, 2010. No responses received.

DATE OF FACT SHEET: MAY 11, 2010

COMPLETED BY:

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Part VII – Appendices

APPENDIX A - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	10
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	10
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	0
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	--
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	--
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	--
PRELIMINARY TREATMENT – Headworks		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	--
Combined sedimentation/digestion	5	--
Chemical addition (except chlorine, enzymes)	4	--
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Lab work conducted outside of plant	0	--
Push – button or visual methods for simple test such as pH, Settleable solids	3	--
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	5
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	--
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	--
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	--
Land Disposal – low rate	3	--
High rate	5	--
Overland flow	4	--
Total from page ONE (1)	----	34

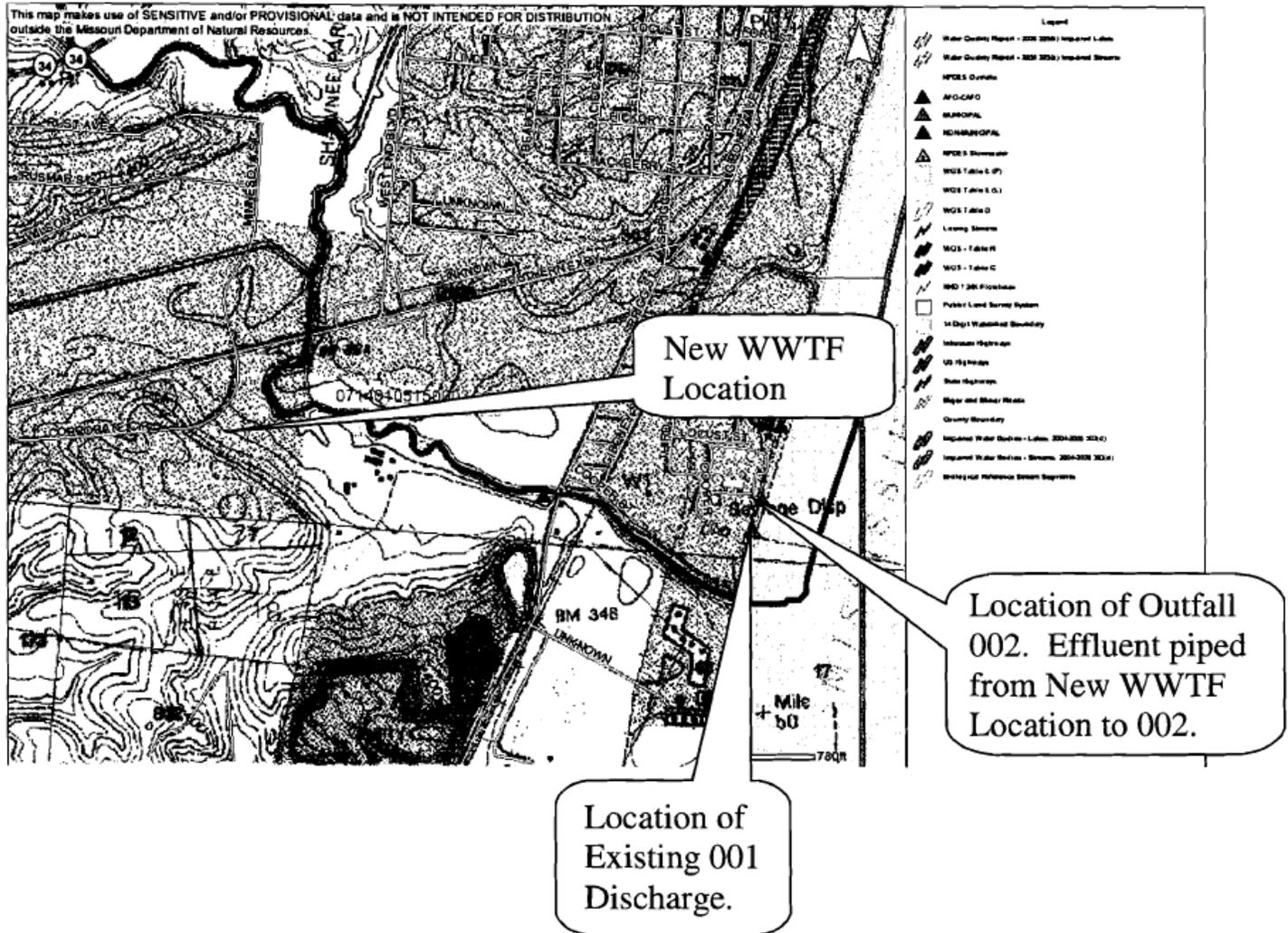
APPENDIX A - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	0
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	--
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	--
Raw wastes subject to toxic waste discharge	6	--
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	--
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	--
Aerated lagoon	8	--
Advanced Waste Treatment Polishing Pond	2	--
Chemical/physical – without secondary	15	--
Chemical/physical – following secondary	10	--
Biological or chemical/biological	12	--
Carbon regeneration	4	--
DISINFECTION		
Chlorination or comparable	5	--
Dechlorination	2	--
On-site generation of disinfectant (except UV light)	5	--
UV light	4	4
SOLIDS HANDLING - SLUDGE		
Solids Handling Thickening	5	--
Anaerobic digestion	10	--
Aerobic digestion	6	--
Evaporative sludge drying	2	2
Mechanical dewatering	8	--
Solids reduction (incineration, wet oxidation)	12	--
Land application	6	6
Total from page TWO (2)	----	27
Total from page ONE (1)	---	34
Grand Total	---	61

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

APPENDIX B – NEW FACILITY LOCATION:

Cape Girardeau



APPENDIX C – RPA RESULTS (DEPARTMENT VERSION):

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Cadmium, Total Recoverable	8.23	2.6	0.39	0.03	42	11/0.5	1.12	2.5	No
Chromium III, Total Recoverable	2677	0.58	128	0.01	42	3.4/0.5	0.665	1.882	No
Chromium VI, Total Dissolved	15	0.58	10	0.01	42	3.4/0.5	0.665	1.882	No
Copper, Total Recoverable	22	4.03	14.1	0.05	42	30/0.5	0.388	1.479	No
Cyanide, Amenable to Chlorination	22	0.84	5	0.01	42	7.0/2.5	0.266	1.314	No
Lead, Total Recoverable	151	0.65	5.88	0.01	42	5.0/2.5	0.356	1.434	No
Nickel, Total Recoverable	706	5.03	707	0.06	42	23.0/0.5	1.01	2.407	No
Silver, Total Recoverable	8.7	0.36	N/A	N/A	42	2.7/0.75	0.389	1.48	No
Zinc, Total Recoverable	181	9.54	179	0.12	42	65/1.5	0.484	1.615	No

N/A – Not Applicable

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

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

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

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

n – Is the number of samples.

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

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

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

APPENDIX D – ANTIDegradation ANALYSIS:



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

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

MAR 19 2010

Jacobs Engineering Group, Inc.
ATTN: David Haverdink
501 North Broadway
St. Louis, MO 63102

**RE: Water Quality and Antidegradation Review Preliminary Determination for
Cape Girardeau Municipal WWTF in Cape Girardeau County, MO-0050580.**

Dear Mr. Haverdink:

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 the *Antidegradation Review for the City of Cape Girardeau Municipal Wastewater Treatment Facility* by Jacobs Engineering Group dated February 2010, which proposed construction of a new 11 million gallon per day activated sludge wastewater treatment facility.

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.

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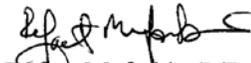
You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a complete application for a construction permit to Southeast Regional Office or to the financial assistance center if you are seeking funding assistance. These 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 a 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 Keith Forck by telephone at (573) 526-4232, by e-mail at keith.forck@dnr.mo.gov, or by mail at P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Rafat Mefrakis, P.E. Chief
NPDES Permits and Engineering Section Chief

Enclosures

RM:kfn

c: City of Cape Girardeau
Southeast Regional Office

**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 the Mississippi River*



March 2010

Cape Girardeau Municipal WWTF
2061 Corporate Circle
Cape Girardeau, MO 63703

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1. FACILITY INFORMATION

FACILITY NAME: Cape Girardeau Municipal WWTF NPDES #: MO-0050580

FACILITY TYPE/DESCRIPTION:

New 11.0 MGD facility at a new location that satisfies the needs for growth, reduces karst influence, and eliminated the emergency overflow. Facility will include an influent pump station, mechanical screens, grit removal units, activated sludge secondary treatment units, ultraviolet disinfection, effluent cascade aeration and other necessary appurtenances. Discharge from the new location will be piped to the existing Outfall #002 (currently serves as the Emergency Overflow), which discharges into the Mississippi River (Location – See Appendix A). Current design flow is 7.0 MGD from the existing trickling filter, which will cease operation (Outfall #001).

EDU*: Ozark/Apple/Joachim 8-DIGIT HUC: 07140105 COUNTY: Cape Girardeau
 * - Ecological Drainage Unit

LEGAL DESCRIPTION: Projected SW1/4, Section 8, T30N, R14E LATITUDE/LONGITUDE: 37.16401 / - 89.31371

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:

During the current permit cycle, exceedences were as follows: 1) January 2007- Biochemical Oxygen Demand₅ (BOD₅) and Total Suspended Solids (TSS) for Outfall 001; 2) Outfall 002 is unable to meet the effluent limits for BOD₅ and TSS, which became effective on October 1, 2009.

3. OUTFALL CHARACTERISTICS

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
002	17	Secondary	Mississippi River	0.0

4. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Mississippi River	P	1707	57,700	61,100	67,300	IRR, LWW, AQL, WBC(B), SCR, DWS, IND

** 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: Mississippi River
 Upper end segment* UTM or Lat/Long coordinates: 37.16401/ - 89.31371 (Outfall)
 Lower end segment* UTM or Lat/Long coordinates: 37.15211/ - 89.30588 (Confluence with Dutchtown Ditch)

*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.

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5. GENERAL COMMENTS

Jacobs Engineering Group prepared, on behalf of the City of Cape Girardeau, the *Antidegradation Review for the Cape Girardeau Municipal Wastewater Treatment Plant* (Appendix A: Map) dated February 2010. The Geohydrological Evaluation states that the receiving waterbody is gaining. A Tier Analysis was submitted by the applicant (Appendix B). Dissolved oxygen modeling analysis (Streeter-Phelps) was submitted for review and the department reviewed the model and proposed effluent concentration for BOD.

Information found in the submitted report and in the summary forms provided by the applicant in Appendix B was used to develop this review document. The facility is tributary to the Mississippi River. The Mississippi River is on the 2008 303(d) List for Lead and Zinc based on the sediment data collected in a tiny area upstream near the Herculaneum smelter. This discharge will not contribute to this tiny area impairment and the data suggests that only the tiny area near Herculaneum is impaired. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and notes a Level 3 and Level 2 response. Applicant should verify that no aquatic species of concern will be impacted by the discharge.

6. ANTIDegradation REVIEW INFORMATION

The following is a review of the *Antidegradation Review for the Cape Girardeau Municipal Wastewater Treatment Plant* dated February 2010.

6.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix B: Tier Determination and Effluent Limit Summary). Additionally, Table 2 shows the existing water quality and water quality standard for several pollutants of concern. 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).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER	DEGRADATION	COMMENT
BOD ₅ /DO	2	Minimal (modeled)	
Total Suspended Solids (TSS)	*	Not determined	No criteria
Ammonia	2	Minimal	
pH	**	Not determined	Permit limits apply only
Oil and Grease		Not determined	Permit limits apply only
Cadmium, Total and Dissolved	2	Minimal	
Chromium VI, Total and Dissolved	2	Minimal	
Copper, Total and Dissolved	2	Minimal	
Lead, Total and Dissolved	2	Minimal	
Nickel, Total and Dissolved	2	Minimal	
Silver, Total and Dissolved	2	Minimal	
Zinc, Total and Dissolved	2	Minimal	
Bacteria (E. Coli & Fecal Coliform)	2	Minimal	
Cyanide	2	Minimal	

Tier determination not possible: * No in-stream standards for these parameters. ** Standards for these parameters are ranges
 Hardness was not added because it is only used to adjust criteria for metals.

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

- Tier Determination and Effluent Summary
- For pollutants of concern, the attachments are:
 - Attachment A, Tier 2 with significant degradation.
 - Attachment B, Tier 2 with minimal degradation.
 - Attachment D, Tier 1 Review. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment

6.2. EXISTING WATER QUALITY

Water quality data was obtained for the Mississippi River from the USGS water quality sampling station 07022000 – Thebes, IL (80 sample dates with a flow < 125,000 cfs between October 28, 1977 and August 13, 2008). All metals are total recoverable except for Chromium VI.

6.3. ASSIMILATIVE CAPACITY CALCULATIONS

Depending on the POC, calculated assimilative capacities were much less than 10%. *Missouri's Antidegradation Rule and Implementation Procedure* considers the use of less than 10% of the facility's available assimilative capacity as insignificant degradation. The procedures indicate that cumulative degradation is measured from the time existing water quality is first determined. Because this antidegradation review serves to establish the existing water quality, the proposed expansion of the Cape Girardeau Municipal WWTF amounts to the sum total of the degradation. The expansion of the Cape Girardeau Municipal WWTF will result in minimal degradation for each POC in the Mississippi River as each POC uses less than 10% of the facility's available assimilative capacity.

Table 2. Assimilative Capacity Calculations for the Mississippi River Segment

$$FAC = C_c * (Q_s + Q_{d2}) - C_s (Q_s + Q_{d1}) * CF$$

Cd1 = current effluent concentration
 Cd2 = proposed effluent concentration
 Cs = combined stream concentrations (see Footnote 1 below)
 Cf = correction factor-see below
 FAC_{Chronic} = facility assimilative capacity ratio
 FAC_{Acute} = facility assimilative capacity ratio
 All metals are total recoverable, except Chromium VI.

Outfall #002
 Classified P streams only
 Facility Name Cape Girardeau
 Perm it Number MO-0050680
 Stream name Mississippi River
 Qd1= 10.8
 Qd2= 17.0
 Qs 1Q10 = 57,700
 Qs 30Q10 = 67,300
 Qs 7Q10 = 61,100

Metals=ug/L; Ammonia = mg/L	Aquatic Life Acute (Cc)	Aquatic Life Chronic (Cc)	Chronic Drinking Water Standard or WBC	Current Effluent Concentration (Cd1)	Proposed Effluent Concentration (Cd2)	Stream Concentration (Cs) ¹	FAC (Chronic)	FAC (Acute)	FAC (lbs/day)*	Net Increase (lbs/day)	FAC ratio or provided ratio
Ammonia (May-Oct)	6.9	1.1		5.9	5.9	0.042	71221.65	395823.45	384596.89	197.53	0.0005
Ammonia (Nov-Apr)	6.9	2.1		9.1	9.1	0.11	133961.51	391899.11	723392.16	304.67	0.0004
Cadmium	11.20	0.46	5	5.3	5.3	0.14	19558.31	675954.89	105.61	0.18	0.0017
Copper	29.40	18.30	1300	52	52	3.70	892331.14	1570729.84	4818.59	1.74	0.0004
Lead	223.30	8.70	15	14	14	0.37	509106.90	13624815.10	2749.18	0.47	0.0002
Nickel	915.00	101.70	100	27	27	3.00	5928367.60	55738722.60	32013.19	0.90	0.0003
Silver	14.70		50	7.1	7.1	1.50	2964183.80	806753.70	4356.5	0.2	0.0005
Zinc	234.00	232.00	5000	93	93	31.00	12284709.20	12406943.20	66337.4	3.1	0.0005
Cyanide	22.00	5.00		6	6	4.00	61141.80	1100130.80	330.2	0.2	0.0006
Chromium VI	15.30	10.40		3.5	3.5	2.10	507284.12	806757.42	2739.3	0.1	0.0004

Footnote 1: Receiving stream concentration was obtained from the USGS water quality sampling station - Mississippi River at Thebes, IL. (Years 1977-2008).

Flows of less than 125,000 cubic feet per second were used to be more representative of low-flow conditions.

*Conversion factor to change FAC to pound per day were as follows: ug/L units -- 0.0054; mg/L units -- 5.4.

WQ Criteria:

Aquatic life chronic and acute standards were converted to total recoverable.

Hardness of 220 mg/L was used to calculate criteria for metals that are hardness dependent. Represents the 25th percentile of hardness data.

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6.4 DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a review of reasonable alternatives and social and economic considerations is not required.

7. 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.

8. MIXING CONSIDERATIONS

Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(III)(a)].

Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

The following are mixing consideration flows for the Mississippi River (see explanation below):

	Flow (cfs)	MZ (cfs)	ZID (cfs)
7Q10	61,100	15,275	170
1Q10	57,700	14,425	170
30Q10	67,300	16,825	170

$$AEC\% = \left(\frac{100}{DilutionRatio + 1} \right)$$

Mixing considerations were only used for water quality-based effluent limit; otherwise, total flow of the Mississippi River was assumed for facility assimilative capacity and minimal-degradation limit determination.

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9. 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

OUTFALL #002

WET TEST (Y OR N): Y FREQUENCY: ONCE/YEAR AEC: 10% METHOD: MULTIPLE

TABLE 3. EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 1)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	ONCE/DAY
BOD ₅ ****	MG/L		45	30	FSR	ONCE/WEEK
TSS ****	MG/L		45	30	FSR	ONCE/WEEK
pH	SU	6.0 - 9.0		6.0 - 9.0	FSR	ONCE/WEEK
OIL AND GREASE (MG/L)	MG/L	15		10	FSR	ONCE/WEEK
ESCHERICHIA COLIFORM (E. COLI)	**			206***	FSR	ONCE/WEEK
FECAL COLI FORM	**	1000		400***	FSR	ONCE/WEEK
AMMONIA AS N (MAY 1 – OCT 31)	MG/L	*		*	MDEL	ONCE/QUARTER
AMMONIA AS N (NOV 1 – APR 30)	MG/L	*		*	MDEL	ONCE/QUARTER
CYANIDE	µG/L	*		*	MDEL	ONCE/QUARTER
CADMIUM, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
CHROMIUM VI, DISSOLVED	µG/L	*		*	MDEL	ONCE/QUARTER
COPPER, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
LEAD, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
NICKEL, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
SILVER, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER
ZINC, TOTAL RECOVERABLE	µG/L	*		*	MDEL	ONCE/QUARTER

Note 1 – 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 N/A--Not Applicable. Also, please see the **General Assumptions of the WQAR #4 & #5**.

* - Monitoring requirements only.

** - colonies/100 mL

*** - The Monthly Average for Fecal Coliform shall be reported as a Geometric Mean.

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

10. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

11. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

1) Water quality based – Using water quality criteria or water quality model results and the dilution equation below:

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

Where C = downstream concentration
 C_s = upstream concentration

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

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

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

2) Assimilative capacity based – Using existing water quality (EWQ), water quality criteria, and the facility assimilative capacity ratio within the following equation:

Expanding Facility:

$$Cd2 = [(Cc*(Qs+Qd2)+Cs*(Qs+Qd1)]FACratio+Qd1*Cd1)/Qd2$$

Where: Cc = downstream concentration, the Water Quality Standard (WQS)

Qs = Stream 7Q10 flow (ft³/s)

Qd1 = Current effluent design flow (ft³/s)

Qd2 = Proposed effluent design flow (ft³/s)

Cs = combined stream concentrations (calculated using EWQ, permitted discharges)

Cd1 = effluent concentration of the current facility

Cd2 = effluent concentration of the proposed facility

FACratio = facility assimilative capacity ratio (calculated or assumed)

Chronic wasteload allocations (WLA_c) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations are only determined in the absence of applicable chronic criteria.

The minimally-degrading effluent average monthly and daily maximum limits are determined by applying the WLA_c as the daily maximum (MDL) and dividing the MDL by 1.5 to derive the average monthly 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: Minimally-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP.

11.1. OUTFALL #001 – MAIN FACILITY OUTFALL

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

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- **Biochemical Oxygen Demand (BOD₅).** BOD₅ limits of 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(2)(B)1].

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **Total Suspended Solids (TSS).** TSS limits of 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(2)(B)1].

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

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

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Table 2 shows the calculations that the proposed effluent limitations for ammonia are minimally degrading as approximately 0.05 percent of the facility assimilative capacity is used.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	8.1	1.0	6.9
Winter	6	8.1	2.1	6.9

Summer: May 1 – October 31, Winter: November 1 – April 30.

See Table 6 for limit determination. Because the facility performance is uncertain with the new expansion, monitoring only for ammonia will still apply. Upon renewal, a reasonable potential analysis (RPA) will be conducted to determine the need for the ammonia limits. The RPA should be conducted such that the maximum daily limit will not be exceeded.

- **Escherichia Coliform (E. Coli).** Discharge shall not contain more than a monthly geometric mean of 206 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 and was adopted by the Missouri Clean Water Commission on March 3, 2010. In the rule, weekly monitoring is required during the recreational season with compliance to be determined by calculating the geometric mean of all samples collected each calendar month. Also, please see **GENERAL ASSUMPTIONS OF THE WQRS #7.**
- **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(2)(B)4.]. 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. Removal of these limits will depend on new E. coli rule and finalizing the operating 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.
- **Cyanide.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.

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- **Metals**

Hardness Dependent Metals:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and “The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion” (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 220 mg/L.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the department, partitioning evaluations may be considered and site-specific translators developed.

Metal	Conversion Factors	
	Acute	Chronic
Cadmium	0.911	0.876
Chromium VI	0.982	0.962
Copper	0.960	0.960
Lead	0.676	0.676
Nickel	0.998	0.997
Silver	0.850	N/A
Zinc	0.978	0.986

Conversion factors for Cd and Pb are hardness dependent. Values calculated using equation found in Section 1.3 of EPA 823-B-96-007 and hardness = 220 mg/L.

- **Cadmium, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Chromium VI, Dissolved.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Copper, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Lead, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Nickel, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Silver, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.
- **Zinc, Total Recoverable.** Monitoring only. Protection of Aquatic Life Chronic and Acute Criteria (µg/L) are listed in Table 2 and Table 4.

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11.2 LIMIT DERIVATION

The Table 4 below contains the minimally-degrading effluent average monthly and maximum daily limits for most of the pollutants of concern. Discussion of the assumption and basis for the limits can be found below the table. The area in yellow in the table is a confirmation that the maximum daily limit (MDL) is less than 10 % degradation.

Table 4. Calculations of the Minimally Degrading Effluent Limits

Outfall #002
Classified P streams only
Facility Name Cape Girardeau
Permit Number MO-0050580
Stream name Mississippi River
Qd1= 10.8
Qd2= 17.0

Allowable discharge is equal to $Qd2 \cdot (C_c / (Q_c + Qd2)) + C_c \cdot (Q_c / (Q_c + Qd2)) \cdot (FACratio + 0.01) \cdot Qd2$
Cd1 = current effluent concentration
Cc = downstream concentration, the Water Quality Standard (WQS)
Qc = Stream flow (ft³/s)
Qd1 = Current effluent design flow (ft³/s)
Qd2 = Proposed effluent design flow (ft³/s)
Cc = combined stream concentrations (see Footnote 1 below)
Cd2 = Proposed effluent concentration

WLA= Cd2 using the acute WQS
WLA= Cd2 using the chronic WQS
MDL up1 = WLA.c
AML up1 = WLA.c + 11.5
FACratio = facility assimilative capacity ratio

All values are total recoverable, except Cs for Chromium VI

Metals-ug/L	Aquatic Life Chronic (Ca)	Drinking Water Standard or WQS	Effluent Concentration (Cd1)	Proposed Effluent Concentration (Cd2)	Receiving Stream Concentration (Cc)	FAC (Chronic)	FAC (Acute)	FAC (Basis)	Net Increase (lbs/day)	FACratio	WLA.c	WLAa	MDL	AML	Net Increase (lbs/day)	Check of (MDL)
Ammonia (M)	6.9	1.1	6.9	5.9	0.042	7721.66	395823.45	384596.8	197.8	9.9%	418.51	2008.84	418.5	209.3	30075.1	9.9%
Ammonia (W)	6.9	2.1	6.9	9.1	0.11	133661.51	291899.13	723922.2	304.7	9.9%	785.91	2288.02	785.9	323.0	71815.8	9.9%
Cyanide	22.00	5.00	6	6	4	67341.80	1039930.80	365.8	0.2	9.9%	395.98	6054.06	395.98	198.0	36.0	9.9%
Cadmium	11.20	0.45	5	5.30	5.3	19558.91	679554.89	105.6	0.2	9.9%	717.27	3639.81	117.3	78.2	10.5	9.9%
Chromium VI	15.30	10.40	3.50	3.5	2.10	507284.12	806757.42	2739.3	0.1	9.9%	2656.41	4700.40	2956.4	1970.9	271.2	9.9%
Copper	29.40	18.30	1300	52.00	3.70	892331.14	1510729.84	4818.8	1.7	9.9%	5229.66	9180.23	5229.6	3486.4	477.0	9.9%
Lead	223.30	8.70	15	14.00	14	509706.60	1362816.10	2749.2	0.5	9.9%	2973.69	73583.47	2973.7	1382.5	272.2	9.9%
Nickel	915.00	101.70	100	27.00	3.00	862367.60	6639222.60	32013.2	0.9	9.9%	34541.18	324913.24	34541.2	23927.5	3169.3	9.9%
Silver	14.70	N/A	60	7.10	1.50	2864183.80	800753.70	4366.5	0.2	9.9%	17266.52	4702.66	4782.7	3135.1	431.3	9.9%
Zinc	234.00	232.00	5000	93.00	93	12284709.20	12406243.20	66337.4	3.1	9.9%	71999.45	72371.28	71999.4	47723.6	6567.4	9.9%

Footnote 1: Receiving stream concentration was obtained from the USGS water quality sampling station - Mississippi River at Thebes, IL (Years 1977-2005). Flows of less than 125,000 cubic feet per second were used to be more representative of low flow conditions.

98th percentile of the discharge monitoring data.

Assumptions and Basis:
MDL = WLA
AML = WLA + 11.5
FACratio is a value that cannot be exceeded to retain minimal degradation.
Conversion factors for assimilative capacity calculations are: 0.0054 for ug/L, 5.4 for mg/L.
Net increase = (MDL * proposed design flow) - (Cd1 * current design flow)

Stream Flow and Mixing Zone Determination (does not apply for Minimally Degrading):
Stream flow values were obtained from the USGS water quality sampling station - Mississippi River at Thebes, IL (Years 1995-2005).
Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow, length one-quarter (1/4) mile. [10 CSR 20.7.031(4)(A)4 B.(b)(9)]
Zone of Total Dilution (ZTD): One-tenth (1/10) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20.7.031(4)(A)4 B.(b)(9)]

Explanation of Limits:
Because the Mississippi River has drinking water designated uses, the lesser of the chronic drinking water or aquatic life criteria may be used to determine WLA.c. The use of the LTAA or LTAC to determine MDL and AML may create a percent of FAC greater than 10%, therefore the above assumption were used. The presence of zeros in the WLA columns indicates that no water quality criteria are available.

To determine the need for permit limits of the various pollutants of concern, a reasonable potential analysis was conducted. Jacobs Engineering performed the reasonable potential to exceed (RPTE calculation) in Table 5 below. No POC exceeded the most stringent maximum daily limit of Table 4 and Table 6. For all POCs except Cadmium and Lead, Table 6 is the most stringent.

Table 5. Reasonable Potential Analysis (Page 19 of Cape Girardeau Antidegradation Report)

Table 4-1 Reasonable Potential Analysis Results

Parameter	Units	Projected River Concentrations*		Water Quality Criteria*		Reasonable Potential to Exceed WQC
		Acute	Chronic	Acute	Chronic	
Cadmium	ug/L	1.5	0.15	11	0.5	No
Chromium**	ug/L	2.4	2.0	15	10	No
Copper	ug/L	10	3.8	29	19	No
Lead	ug/L	8.9	0.48	223	9	No
Nickel	ug/L	9.1	3.0	915	100	No
Silver	ug/L	1.5	---	15	---	No
Zinc	ug/L	47	31	234	232	No
Cyanide	ug/L	4.4	4	22	5	No
Ammonia (summer)	mg/L	1.1	0.05	6.9	1.2	No
Ammonia (winter)	mg/L	1.8	0.13	6.9	2.0	No

Notes:
* - Values shown for metals have been calculated on a total recoverable basis.
** - Sample results for total chromium were conservatively compared to limits for chromium VI in this analysis.

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Upon renewal, a reasonable potential analysis will be conducted to determine the need for the limits. The RPA should be conducted such that the most stringent maximum daily limit of Table 4 and Table 6 will not be exceeded.

The final step in the limit determination process is the comparison of the water quality-based effluent limit (WQBEL) and the minimally degrading effluent limit. Table 6 shows the WQBEL for the POCs. As a result of the comparison, the most stringent effluent limits apply.

Table 6. Water Quality-based Effluent Limits for POCs.

Outfall #002 Classified	P streams only	Allowable discharge is equal to $Q_e \cdot [(Q_e + Q_s) C_c - (Q_s C_s)] / Q_e$ Cwq = downstream concentration, the Water Quality Standard (WQS)		WLAa = Ce using the chronic WQS WLAc = Ce using the acute WQS
Facility Name Permit Number Stream name Qs 1Q10 ZID = 170.0 Qe = 17.000	Cape Girardeau Municipal WWTF MO-0060580 Mississippi Riv	Qs - 30Q5 = 30 Qs - 1Q10 = 57,700 Qs - 30Q10 = 67,300 Qs 7Q10 ZID = 170.0 Qs 7Q10 = 61,100	Qs = Stream 7Q10 flow (ft ³ /s), or 1Q10, or 30Q10 Qe = proposed effluent design flow (ft ³ /s) Cs = combined stream concentrations (see Footnote 1) Ce = effluent concentration Ce decreased by 1/4 for mixing considerations	LTAa = WLA acute * LTAa multiplier LTAc = WLA chronic * LTAc multiplier MDL ug/L = the more protective LTA (LTAa or LTAc) * AML multiplier AML ug/L = the more protective LTA (LTAa or LTAc) * MDL multiplier

O&G = mg/L; E. coli=cfu/100ml	Aquatic Life		Chronic Drinking Water Standard	Stream Concentration (EWC)	WLAa	WLAc	LTAa	LTAc	MDL	AML
	Acute (Cc)	Chronic (Cc)								
Ammonia (May-Oct)	6.9	1.1	0.042	75.48	1047.38	24.2	817.0	75.4	28.8	
Ammonia (Nov-Apr)	6.9	2.1	0.11	74.80	1970.04	24.0	1536.6	74.7	28.6	
Cyanide	22.00	5.00	4	202.00	990.96	64.8	772.9	201.9	100.7	
Cadmium	11.20	0.46	5	0.14	121.80	287.99	39.1	151.9	121.8	60.7
Chromium VI	15.30	10.4	2.10	147.30	7468.19	47.3	3939.0	147.3	73.4	
Copper	29.40	18.3	1300	3.70	286.40	13136.83	92.0	6928.8	286.4	142.8
Lead	223.30	8.7	15	0.37	2452.60	7493.45	787.5	3952.3	2452.6	1222.5
Nickel	915.00	101.7	100	3.00	10035.00	87257.35	3222.1	46022.4	10035.0	5002.0
Zinc	234.00	232	5000	31.00	2264.00	180836.41	726.9	95379.2	2264.0	1126.5
Silver	14.7		50	1.50	146.70	43628.68	47.1	23011.2	146.7	73.1

Footnote 1: Receiving stream concentration was obtained from the USGS water quality sampling station - Mississippi River at Thebes, IL (Years 1977-2008). Flows of less than 125,000 cubic feet per second were used to be more representative of low-flow conditions. It is a calculated value.

Assumptions and Basis:

CV = 0.6
For LTA, MDL the 99th Percentile was used.
For AML, the 95th Percentile was used.

WQ Criteria:

Aquatic life chronic and acute standards were converted to total recoverable.
Hardness of 220 mg/L was used to calculate criteria for metals that are hardness dependent.

Metals Multiplier:

LTAa = 0.321
LTAc = 0.527
MDL = 3.11
AML = 1.55 n=4

Ammonia Multipliers:

MDL = 3.11
AML = 1.19
LTAa = 0.321
LTAc = 0.780
N=30
30 day average

Mixing Zone Determination:

Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow; length one quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(III)(a)].
Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow, not to exceed 10 times the effluent design flow. [10 CSR 20-7.031(4)(A)4.B.(III)(b)].

Explanation of Limits:

Because the Mississippi River has drinking water designated uses, the lesser of the chronic drinking water or aquatic life criteria may be used to determine WLAc. The lesser of the LTAa or LTAc was used to determine MDL and AML (shown in bold letters above on table). The presence of zeros in the WLA and LTA columns indicates that no water quality criteria available.

12. ANTIDegradation REVIEW PRELIMINARY DETERMINATION

The proposed expansion of the Cape Girardeau Municipal Wastewater Treatment Facility to 11.0 MGD will result in minimal degradation of the identified segment of the Mississippi River. The water quality based effluent limits for the pollutants of concern being discharge are shown to be using less than 10 percent of the assimilative capacity of the Mississippi River segment. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. 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: Keith Forck *KBF*
Date:
Unit Chief: John Rustige
Section Chief: Refaat Mefrakis

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.

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Appendix B: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, City of Cape Girardeau. 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: Water body Segment #1 Lower End coordinates.

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

NAME CAPE GIRARDEAU MUNICIPAL WWTF		TELEPHONE NUMBER 573-339-6351	
ADDRESS (PHYSICAL) 429 COOPER STREET		CITY CAPE GIRARDEAU	STATE MO
		ZIP CODE 63703	PROGRAM
NAME MISSISSIPPI RIVER - CAPE GIRARDEAU WWTP TO USGS GAGE AT THEBES, IL			
2.1	UPPER END OF SEGMENT (Location of discharge) UTM _____ OR Lat 37.277806, Long -89.526972		
2.2	LOWER END OF SEGMENT UTM _____ OR Lat 37.216472, Long -89.467583		
Per the Missouri Antidegradation Rules 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."			
NAME			
3.1	UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____		
3.2	LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____		
NAME			
4.1	UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____		
4.2	LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____		
Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3., "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.			
Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete No Degradation Evaluation - Conclusion of Antidegradation Review form. Submit with the appropriate Construction Permit Application as no antidegradation review is required. If yes to one of the above questions, skip to Section 8 - Wet Weather.			

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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:

USED EXISTING USGS AND IL EPA DATA COLLECTED AT THE THEBES, IL USGS GAGE.

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II B. The tier protection levels are specified and defined in rule at 10 CSR 20-7.051 (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 / DO / TSS		
TOTAL AMMONIA-N		
METALS		
CYANIDE-AMENABLE		
OIL AND GREASE		

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

Water Body Segment Two		
Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

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

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? 4.55 (50.11)

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Wet Weather Design Summary:
 FUTURE PEAK HOURLY FLOW CAPACITY OF 50 MGD CORRESPONDS TO AN APPROXIMATE 10-YR. 24-HR WET WEATHER EVENT

9. SUMMARY OF POLUTANTS 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	--	30	45 (WEEKLY AVERAGE)
TSS	MG/L	--	30	45 (WEEKLY AVERAGE)
Dissolved Oxygen	MG/L	--	--	--
Ammonia	MG/L	--	MONITORING ONLY	MONITORING ONLY
Bacteria (E Coli)	COLONIES/100 ML	--	206 (GEOMETRIC MEAN)	--
FECAL COLIFORM	COLONIES/100 ML	--	400 (GEOMETRIC MEAN)	1000
OIL AND GREASE	MG/L	--	10	15
PH	STANDARD UNITS	--	--	6-9 (RANGE)

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.

DESIGNER:

SIGNATURE: *David E. Haverdink* DATE: 2/16/10
 NAME AND OFFICIAL TITLE: DAVID E. HAVERDINK, P.E.
 COMPANY NAME: JACOBS
 ADDRESS: 501 NORTH BROADWAY CITY: SAINT LOUIS STATE: MO ZIP CODE: 63102
 TELEPHONE NUMBER WITH AREA CODE: 314-335-4127 E-MAIL ADDRESS: david.haverdink@jacobs.com

OWNER: I have read and reviewed the proposed documents and agree with the information.

SIGNATURE: *Tim Gramling* DATE: 2/16/10
 NAME AND OFFICIAL TITLE: TIM GRAMLING, P.E., PUBLIC WORKS DIRECTOR
 ADDRESS: 2007 SOUTHERN EXPRESSWAY CITY: CAPE GIRARDEAU STATE: MO ZIP CODE: 63703
 TELEPHONE NUMBER WITH AREA CODE: 573-339-6351 E-MAIL ADDRESS: tgramling@cityofcapegirardeau.org

OWNER:
 I have read and reviewed the proposed documents and agree with the information.
 SIGNATURE: SAME AS OWNER DATE:

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
ANTIDEGRADATION REVIEW SUMMARY
ATTACHMENT B: TIER 2 - MINIMAL DEGRADATION

NAME CAPE GIRARDEAU MUNICIPAL WWTF		TELEPHONE WITH AREA CODE 573-339-6351	
ADDRESS (PHYSICAL) 429 COOPER STREET	CITY CAPE GIRARDEAU	STATE MO	ZIP CODE 63703

NAME
 MISSISSIPPI RIVER - CAPE GIRARDEAU WWTP TO USGS GAGE AT THEBES, IL

NAME

Determining the facility assimilative capacity, or FAC, and the segment assimilative capacity, or SAC for each pollutant of concern is explained in detail in the Antidegradation Implementation Procedure Section II.A.3. and Appendix 3. POCs to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. Provide all calculations in the Antidegradation Review report.

Pollutant of Concern	Facility Assimilative Capacity	New Load	Percent of Facility Assimilative Capacity
	(lbs/day)	(lbs/day)	(%)
AMMONIA, SUMMER	420,774	541	0.05
AMMONIA, WINTER	687,511	832	0.04
BODU	18,764,529	8,771	0.02
7 METALS (RANGE)	105-66,484	0.32-8.56	0.003-0.17
CYANIDE	330	0.56	0.06
OIL AND GREASE	659,923	1,377	0.08

Pollutant of Concern	Water Body Segment #1 SAC	Cumulative Net Increase In Load	Cumulative % of Water Body Segment #1 SAC	Water Body Segment #2 SAC	Cumulative Net Increase In Load	Cumulative % of Water Body Segment #2 SAC

Assimilative Capacity Summary
 NET INCREASE IN LOADING IS LESS THAN 0.2% OF FAC FOR ALL POCs; NET DECREASE FOR BACTERIA.

Is degradation considered minimal for all Pollutants of Concern? Yes No

Degradation is considered minimal if the new or proposed loading is less than 10 percent of the FAC and the cumulative degradation is less than 20 percent of the SAC according to the Antidegradation Implementation Procedure Section II.A.3. If yes, an alternatives analysis and a social and economic importance analysis are not required.

Comments/Discussion
 SEE REPORT SECTION 3.2
 MINIMAL DEGRADATION CALCULATIONS
 SEE REPORT SECTION 3.2

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5. OIL AND GREASE
 Is this a publicly owned treatment works, or POTW, restaurant, school or other domestic wastewater treatment facility with oil and grease as a Pollutant of Concern? Yes No
 In accordance with 10 CSR 20-7.031(3)(B), waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. In accordance with 10 CSR 20-7.031 Table A, oil and grease has a chronic toxicity of 10 mg/L for protection of aquatic life. This facility will meet the effluent limits (MDL and AML of 15 mg/L and 10 mg/L, respectively).

6. DECHLORINATION
 If Chlorination and Dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A of 10 CSR 20-7.031?
 Yes No
 Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.

7. PROPOSED LOCATION
 NEW 11-MGD WWTP AT NEW LOCATION WHICH WILL REPLACE EXISTING 7-MGD WWTP AND DISCHARGE THROUGH EXISTING OUTFALL 002. SEE REPORT FOR FURTHER DETAILS.

Attach the Antidegradation Review report and all supporting documentation.

CONSULTANT: I have prepared or reviewed this from and all attached reports and documentation. The conclusion proposed is consistent with the AIP and current state and federal regulations.

SIGNATURE <i>David E. Haverdink</i>	DATE 2/16/10
--	-----------------

PRINT NAME
David E. Haverdink

TELEPHONE NUMBER WITH AREA CODE 314-335-4127	E-MAIL ADDRESS DAVID.HAVERDINK@JACOBS.COM
---	--

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

SIGNATURE <i>Jim D. ...</i>	DATE 2/14/10
--------------------------------	-----------------

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

SIGNATURE SAME AS OWNER	DATE
----------------------------	------

**STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION**

**Revised
October 1, 1980**

**PART I - GENERAL CONDITIONS
SECTION A - MONITORING AND REPORTING**

1. **Representative Sampling**
 - a. Samples and measurements taken as required herein shall be representative of the nature and volume, respectively, of the monitored discharge. All samples shall be taken at the outfall(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
 - b. Monitoring results shall be recorded and reported on forms provided by the Department, postmarked no later than the 28th day of the month following the completed reporting period. Signed copies of these, and all other reports required herein, shall be submitted to the respective Department Regional Office, the Regional Office address is indicated in the cover letter transmitting the permit.
2. **Schedule of Compliance**

No later than fourteen (14) calendar days following each date identified in the "Schedule of Compliance", the permittee shall submit to the respective Department Regional Office as required therein, either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements, or if there are no more scheduled requirements, when such noncompliance will be corrected. The Regional Office address is indicated in the cover letter transmitting the permit.
3. **Definitions**

Definitions as set forth in the Missouri Clean Water Law and Missouri Clean Water Commission Definition Regulation 10 CSR 20-2.010 shall apply to terms used herein.
4. **Test Procedures**

Test procedures for the analysis of pollutant shall be in accordance with the Missouri Clean Water Commission Effluent Regulation 10 CSR 20-7015.
5. **Recording of Results**
 - a. For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:
 - (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. 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 this permit 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 both.
 - c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
6. **Additional Monitoring by Permittee**

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Monitoring Report Form. Such increased frequency shall also be indicated.

7. **Records Retention**

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recording for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this 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.

SECTION B - MANAGEMENT REQUIREMENTS

1. **Change in Discharge**
 - a. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant not authorized by this permit or any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.
 - b. Any facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants shall be reported by submission of a new NPDES application at least sixty (60) days before each such change, or, if they will not violate the effluent limitations specified in the permit, by notice to the Department at least thirty (30) days before such changes.
2. **Noncompliance Notification**
 - a. If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Department with the following information, in writing within five (5) days of becoming aware of such conditions:
 - (i) a description of the discharge and cause of noncompliance, and
 - (ii) the period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.
 - b. Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally with 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided with five (5) days of the time the permittee becomes aware of the circumstances. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.
3. **Facilities Operation**

Permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions. Operators or supervisors of operations at publicly owned or publicly regulated wastewater treatment facilities shall be certified in accordance with 10 CSR 209.020(2) and any other applicable law or regulation. Operators of other wastewater treatment facilities, water contaminant source or point sources, shall, upon request by the Department, demonstrate that wastewater treatment equipment and facilities are effectively operated and maintained by competent personnel.
4. **Adverse Impact**

The permittee shall take all necessary steps to minimize any adverse impact to waters of the state resulting from noncompliance with any effluent limitations specified in this permit or set forth in the Missouri Clean Water Law and Regulations (hereinafter the Law and Regulations), including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

- a. Any bypass or shut down of a wastewater treatment facility and tributary sewer system or any part of such a facility and sewer system that results in a violation of permit limits or conditions is prohibited except:
 - (i) where unavoidable to prevent loss of life, personal injury, or severe property damages; and
 - (ii) where unavoidable excessive storm drainage or runoff would catastrophically damage any facilities or processes necessary for compliance with the effluent limitations and conditions of this permit;
 - (iii) where maintenance is necessary to ensure efficient operation and alternative measures have been taken to maintain effluent quality during the period of maintenance.
 - b. The permittee shall notify the Department in writing of all bypasses or shut down that result in a violation of permit limits or conditions. This section does not excuse any person from liability, unless such relief is otherwise provided by the statute.
6. **Removed Substances**
Solids, sludges, filter backwash, or any other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutants from entering waters of the state unless permitted by the Law, and a permanent record of the date and time, volume and methods of removal and disposal of such substances shall be maintained by the permittee.
 7. **Power Failures**
In order to maintain compliance with the effluent limitations and other provisions of this permit, the permittee shall either:
 - a. in accordance with the "Schedule of Compliance", provide an alternative power source sufficient to operate the wastewater control facilities; or,
 - b. if such alternative power source is not in existence, and no date for its implementation appears in the Compliance Schedule, halt or otherwise control production and all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
 8. **Right of Entry**
For the purpose of inspecting, monitoring, or sampling the point source, water contaminant source, or wastewater treatment facility for compliance with the Clean Water Law and these regulations, authorized representatives of the Department, shall be allowed by the permittee, upon presentation of credentials and at reasonable times;
 - a. to enter upon permittee's premises in which a point source, water contaminant source, or wastewater treatment facility is located or in which any records are required to be kept under terms and conditions of the permit;
 - b. to have access to, or copy, any records required to be kept under terms and conditions of the permit;
 - c. to inspect any monitoring equipment or method required in the permit;
 - d. to inspect any collection, treatment, or discharge facility covered under the permit; and
 - e. to sample any wastewater at any point in the collection system or treatment process.
 9. **Permits Transferable**
 - a. Subject to Section (3) of 10 CSR 20-6.010 an operating permit may be transferred upon submission to the Department of an application to transfer signed by a new owner. Until such time as the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
 - b. The Department, within thirty (30) days of receipt of the application shall notify the new permittee of its intent to revoke and reissue or transfer the permit.
 10. **Availability of Reports**
Except for data determined to be confidential under Section 308 of the Act, and the Law and Missouri Clean Water Commission Regulation for Public Participation, Hearings and Notice to Governmental Agencies 10 CSR 20-6.020, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by statute, effluent data shall not be considered confidential. Knowingly making any false statement on any such report shall be subject to the imposition of criminal penalties as provided in Section 204.076 of the Law.
 - 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) violation 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 and 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.
12. **Permit Modification - Less Stringent Requirements**
If any permit provisions are based on legal requirements which are lessened or removed, and should no other basis exist for such permit provisions, the permit shall be modified after notice and opportunity for a hearing.
 13. **Civil and Criminal Liability**
Except as authorized by statute and provided in permit conditions on "Bypassing" (Standard Condition B-5) and "Power Failures" (Standard Condition B-7) nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.
 14. **Oil and Hazardous Substance Liability**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act, and the Law and Regulations. Oil and hazardous materials discharges must be reported in compliance with the requirements of the Federal Clean Water Act.
 15. **State Laws**
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state statute or regulations.
 16. **Property Rights**
The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of or violation of federal, state or local laws or regulations.
 17. **Duty to Reapply**
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit 180 days prior to expiration of this permit.
 18. **Toxic Pollutants**
If a toxic effluent standard, prohibition, or schedule of compliance is established, under Section 307(a) of the Federal Clean Water Act for a toxic pollutant in the discharge of permittee's facility and such standard is more stringent than the limitations in the permit, then the more stringent standard, prohibition, or schedule shall be incorporated into the permit as one of its conditions, upon notice to the permittee.
 19. **Signatory Requirement**
All reports, or information submitted to the Director shall be signed (see 40 CFR-122.6).
 20. **Rights Not Affected**
Nothing in this permit shall affect the permittee's right to appeal or seek a variance from applicable laws or regulations as allowed by law.
 21. **Severability**
The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

**STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
Revised
October 1, 1980**

**PART II - SPECIAL CONDITIONS - PUBLICLY OWNED
TREATMENT WORKS
SECTION A - MAJOR CONTRIBUTING INDUSTRY**

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and Missouri Clean Water Commission Definition Regulation 10 CSR 20-2.010 shall apply to terms used herein, in addition to the following:

- a. A "major contributing industry" to a publicly owned treatment facility is a wastewater source that meets any one of the following criteria:
- (1) has a flow of 50,000 gallons or more per average workday;
 - (2) has an average daily flow greater than five percent (5%) of the flow carried by the system receiving the waste;
 - (3) has in its waste a toxic pollutant in toxic amounts as defined in standards issued under Section 307(a) of the Federal Water Pollution Control Act (hereinafter the Act), or
 - (4) has significant impact, either singly or in combination with other contributing industries, on the treatment works or in the quality of its effluent.
- b. "Compatible pollutants" are biochemical oxygen demand, suspended solids, pH, and fecal coliform bacteria, plus additional pollutants, e.g., nitrogen or phosphorus, identified in the NPDES permit, if the publicly owned treatment facility was designed to treat such pollutants, approved by the Department and in fact does remove such pollutants to design specifications.
- c. An "incompatible pollutant" is any pollutant which is not a compatible pollutant as defined above.

2. Industrial Effluent Monitoring

The permittee shall establish and implement a procedure to periodically or regularly obtain monitoring data on the quality and quantity of all effluents introduced by each major contributing industry. Frequency of monitoring shall be subject to approval by the Department.

3. Industrial Users Report

Each permittee which has a major contributing industry shall also submit to the permit-issuing authority semi-annual reports summarizing all major contributing industries subject to the pretreatment requirements of the Missouri Clean Water Law and Regulations (hereinafter the Law and Regulations), or Section 307 of the Act. These reports must be filed with the Department of Natural Resources, PO Box 176, 205 Jefferson Street, Jefferson City,

Missouri 65102 by January 1 and July 1 of each year. Such a report shall include at least the following information:

- a. name and number of major contributing industries using the treatment works and the waste type, raw materials usage (lbs/day or kg/day), and average daily flow for each industry;
- b. summary of monitoring data obtained in accordance with Standard Conditions Part II, Section A.2 above, detailing the quality and quantity of all effluents introduced by each major contributing industry, and the frequency of monitoring performed;
- c. number of major contributing industries in full compliance with the requirements of the Law and Regulations and Section 307 of the Act or not subject to these requirements (e.g., discharge only compatible pollutants), and
- d. a list identifying by name those major contributing industries presently in violation of the requirements of the Law and Regulations and Section 307 of the Act (e.g., discharges pollutant which interferes with, passes through or is incompatible with the municipal treatment works).

4. Report on Pollutant Introduction

The permittee shall give notice to the department of any new introduction of pollutants or any substantial change in the character or volume of pollutants already being introduced. Such notice shall include:

- a. the origin, quality, and quantity of pollutants to be introduced into the publicly owned treatment works; and
- b. any anticipated impact on the quality and quantity of the effluent to be discharged by such treatment works;
- c. any anticipated impact on the quality of sludge produced by such treatment works causing the sludge to be hazardous under Federal and State Law.

5. Industrial Users Compliance Schedules

The permittee shall identify any introduction of pollutants into the facility subject to pretreatment standards under Section 307(b) of the Federal Clean Water Act. In addition, the permittee shall require any industrial user of such treatment works to comply with the requirements of Section 204(b), 307, and 308 of the Federal Clean Water Act. As a means of compliance from each industrial user, subject to the requirements of Section 307 of the Federal Clean Water Act and shall forward to the Department a copy of periodic notice, over intervals not to exceed nine (9) months, of progress towards full compliance with Section 307 requirements.

**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. Permittees 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 granted 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 un aerated 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 hereby 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. See 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 plant 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 represent 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.

CITY of CAPE GIRARDEAU

PUBLIC WORKS DEPARTMENT

May 6, 2016

Timothy W. Bull
Chief, Domestic Wastewater Unit
Water Protection Program - Operating Permits Section
PO Box 176
Jefferson City, MO 65102

RECEIVED

MAY 26 2016

Water Protection Program

Re: MO-0136328 Request for Permit Modification

Dear Mr. Bull,

Enclosed is form B2 requesting a permit modification on pH limits for our NPDES Permit #MO-0136328.

We have had difficulties in meeting our permitted pH limits (6.5 - 9.0) due to changes in our drinking water treatment that were not in effect during design. The pH is dropping due to complete nitrification occurring in our treatment process. At the time of the permit's public notice, the pH limit was 6.5 - 9.0. Currently, the pH limit for discharges to the Mississippi River state 6.0 - 9.0 per 10 CSR 20-7.015(2)(A)2.

This change should allow for an overall reduction potential for nitrogen into our receiving stream.

If there are any questions, please feel free to give Mr. Todd Fulton a call at 573-339-6641 or e-mail him at tfulton@cityofcapegirardeau.org.

Sincerely,


Steve Cook
Public Works Director

Encl.: Form B2 and attachments

MAY 26 2016



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

Water Protection Program

**FORM B2 – APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE
PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS
PER DAY**

FACILITY NAME

Cape Girardeau Municipal Wastewater Treatment Facility

PERMIT NO.

MO-0136328

COUNTY

Cape Girardeau

APPLICATION OVERVIEW

Form B2 has been developed in a modular format and consists of Parts A, B and C and a Supplemental Application Information (Parts D, E, F and G) packet. All applicants must complete Parts A, B and C. Some applicants must also complete parts of the Supplemental Application Information packet. The following items explain which parts of Form B2 you must complete. Submittal of an incomplete application may result in the application being returned.

BASIC APPLICATION INFORMATION

- A. Basic Application Information for all Applicants. All applicants must complete Part A.
- B. Additional Application Information for all Applicants. All applicants must complete Part B.
- C. Certification. All applicants must complete Part C.

SUPPLEMENTAL APPLICATION INFORMATION

- D. Expanded Effluent Testing Data. A treatment works that discharges effluent to surface water of the United States and meets one or more of the following criteria must complete *Part D - Expanded Effluent Testing Data*:
 1. Has a design flow rate greater than or equal to 1 million gallons per day.
 2. Is required to have or currently has a pretreatment program.
 3. Is otherwise required by the permitting authority to provide the information.
- E. Toxicity Testing Data. A treatment works that meets one or more of the following criteria must complete *Part E - Toxicity Testing Data*:
 1. Has a design flow rate greater than or equal to 1 million gallons per day.
 2. Is required to have or currently has a pretreatment program.
 3. Is otherwise required by the permitting authority to provide the information.
- F. Industrial User Discharges and Resource Conservation and Recovery Act / Comprehensive Environmental Response, Compensation and Liability Act Wastes. A treatment works that accepts process wastewater from any significant industrial users, also known as SIUs, or receives a Resource Conservation and Recovery Act or CERCLA wastes must complete *Part F - Industrial User Discharges and Resource Conservation and Recovery Act / CERCLA Wastes*.
SIUs are defined as:
 1. All Categorical Industrial Users, or CIUs, subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations 403.6 and 40 Code of Federal Regulations 403.6 and 40 CFR Chapter 1, Subchapter N.
 2. Any other industrial user that meets one or more of the following:
 - i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
 - ii. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
 - iii. Is designated as an SIU by the control authority.
 - iv. Is otherwise required by the permitting authority to provide the information.
- G. Combined Sewer Systems. A treatment works that has a combined sewer system must complete *Part G - Combined Sewer Systems*.

ALL APPLICANTS MUST COMPLETE PARTS A, B and C

RECEIVED

MAY 26 2016

	MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH FORM B2 – APPLICATION FOR AN OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY	FOR AGENCY USE ONLY CHECK NUMBER 910016732	
		DATE RECEIVED 5-26-16	FEE SUBMITTED \$2000

SS.

PART A – BASIC APPLICATION INFORMATION

1. THIS APPLICATION IS FOR:

An operating permit for a new or unpermitted facility. Construction Permit # _____
 (Include completed Antidegradation Review or request to conduct an Antidegradation Review, see instructions)
 An operating permit renewal: Permit #MO- _____ Expiration Date _____
 An operating permit modification: Permit #MO-0136328 Reason: pH limit move to 6.0-9.0 for Mississippi River

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

2. FACILITY

NAME Cape Girardeau Municipal Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE 573-339-6640	
ADDRESS (PHYSICAL) 2061 Corporate Circle	CITY Cape Girardeau	STATE Missouri	ZIP CODE 63703
2.1 LEGAL DESCRIPTION (Facility Site): ¼, ¼, SW ¼, Sec. 7, T 30, R 14E			COUNTY Cape Girardeau
2.2 UTM Coordinates Easting (X): 807939 Northing (Y): 4131348 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			
2.3 Name of receiving stream: Mississippi River			
2.4 Number of Outfalls: 1 wastewater outfalls, stormwater outfalls, instream monitoring sites			

3. OWNER

NAME City of Cape Girardeau		EMAIL ADDRESS scook@cityofcape.org	TELEPHONE NUMBER WITH AREA CODE 573-339-6351
ADDRESS 2007 Southern Expressway	CITY Cape Girardeau	STATE Missouri	ZIP CODE 63703
3.1 Request review of draft permit prior to Public Notice? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
3.2 Are you a Publically Owned Treatment Works (POTW)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, is the Financial Questionnaire attached? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
3.3 Are you a Privately Owned Treatment Facility? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
3.4 Are you a Privately Owned Treatment Facility regulated by the Public Service Commission (PSC)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			

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

NAME Cape Girardeau		EMAIL ADDRESS scook@cityofcape.org	TELEPHONE NUMBER WITH AREA CODE 573-339-6351
ADDRESS 2007 Southern Expressway	CITY Cape Girardeau	STATE Missouri	ZIP CODE 63703

If the Continuing Authority is different than the Owner, 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 Todd Fulton	TITLE Plant Manager	CERTIFICATE NUMBER (IF APPLICABLE) 5626
EMAIL ADDRESS tfulton@cityofcape.org	TELEPHONE NUMBER WITH AREA CODE 573-339-6641	

6. FACILITY CONTACT

NAME Steve Cook		TITLE Public Works Director	
EMAIL ADDRESS scook@cityofcape.org		TELEPHONE NUMBER WITH AREA CODE 573-339-6351	
ADDRESS 2007 Southern Expressway	CITY Cape Girardeau	STATE Missouri	ZIP CODE 63703

FACILITY NAME Cape Gir. WWTF	PERMIT NO. MO- 0136328	OUTFALL NO. 001
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PART A – BASIC APPLICATION INFORMATION

7. FACILITY INFORMATION

7.1 Process Flow 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. Specify where samples are taken. 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.

- Attachments:
1. Process Flow Diagram
 2. Site Location
 3. Discharge Location

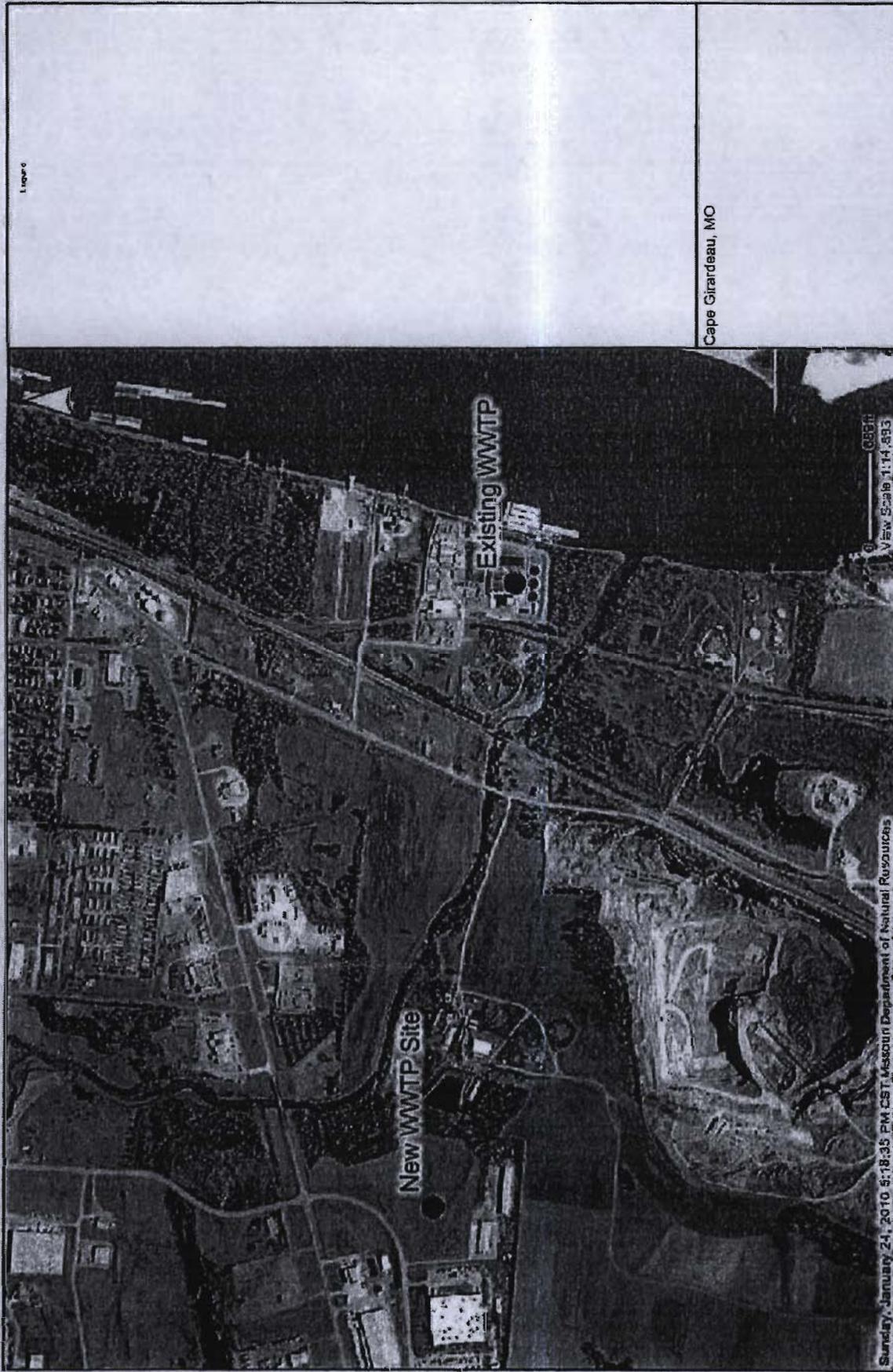
RECEIVED
MAY 26 2016

Water Protection Program

Narrative Description:
The WWTF is designed to treat an average flow of 11 MGD and a peak hourly flow of 50 MGD. The WWTF includes the following major components:

- Influent pumping station with 6 submersible pumps with a firm capacity of 50 MGD.
- Headworks building to house fine screens and grit removal system.
- Sequencing batch reactor activated sludge system with four identical basins.
- A splitter box to split and discharge the flow equally to the four basins.
- Parshall Flume flow meter to measure plant effluent flow.
- Two parallel channels with ultra violet light disinfection system.
- Cascade aeration and outfall sewer.
- Two waste activated sludge storage tanks.
- Two centrifuges for sludge dewatering.
- Belt drying equipment for drying and pelletizing.
- Dried pellet storage silo and truck loading system.

Site Locations



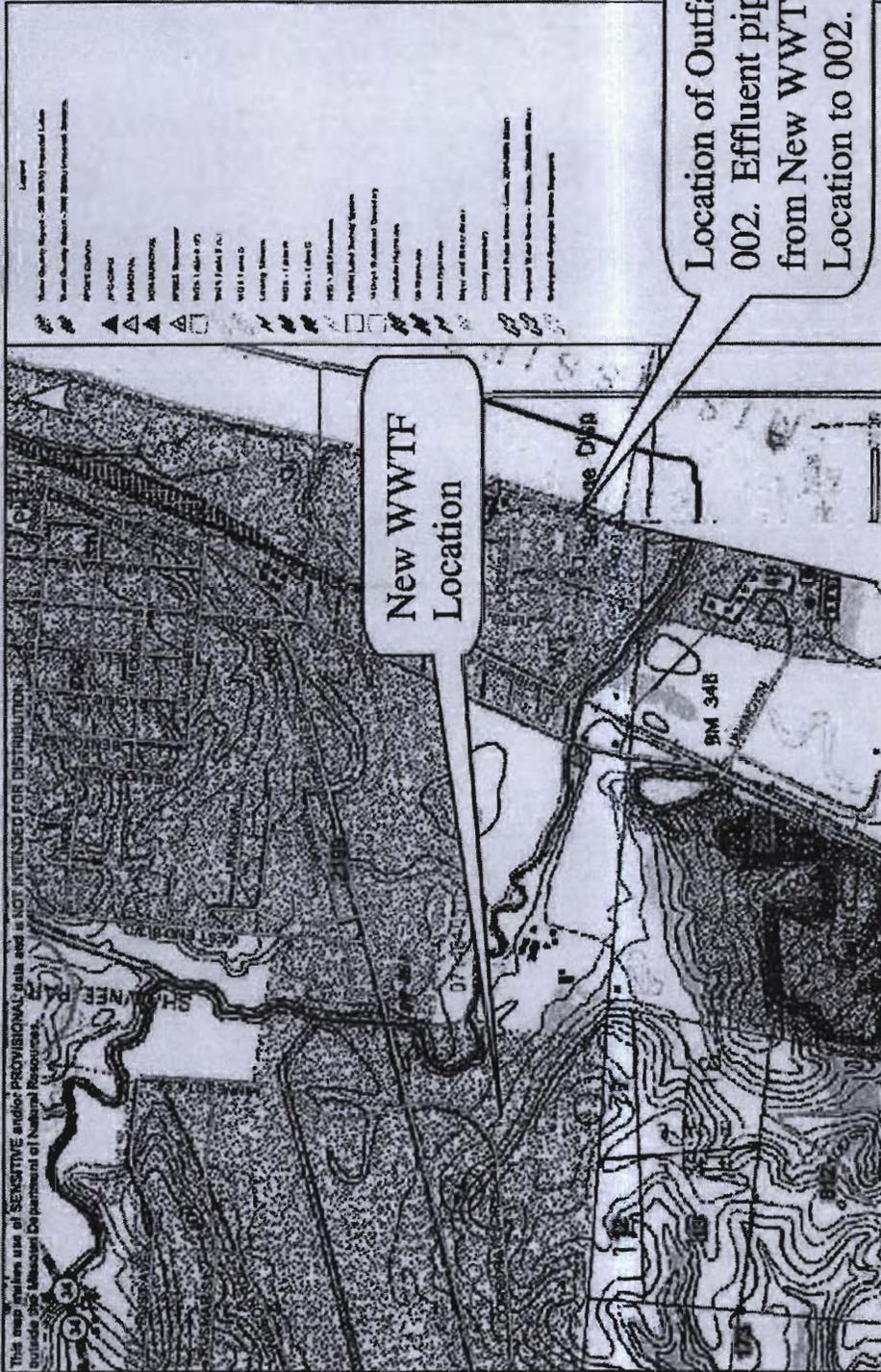
Sunday, January 24, 2010 3:18:35 PM CST, Missouri Department of Natural Resources



Disclaimer: Although this map has been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

Cape Girardeau

This map reviews use of SENSITIVE and/or PROVISIONAL data and is NOT INTENDED FOR DISTRIBUTION outside the Missouri Department of Natural Resources.



New WWTF Location

Location of Outfall 002. Effluent piped from New WWTF Location to 002.

Outfall has since changed to Outfall 001

FACILITY NAME Cape Girardeau Municipal WWTF		PERMIT NO. MO- 0136328	OUTFALL NO. 001
PART A – BASIC APPLICATION INFORMATION			
7. FACILITY INFORMATION (continued)			
7.2 Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. <ol style="list-style-type: none"> The area surrounding the treatment plant, including all unit processes. The location of the downstream landowner(s). (See Item 10.) The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable. The actual point of discharge. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, or disposed. 			
7.3 Facility SIC Code: <u>4952</u>		Discharge SIC Code: <u>4952</u>	
7.4 Number of people presently connected or population equivalent (P.E.): <u>64,000</u> Design P.E. <u>110,000</u>			
7.5 Connections to the facility: Number of units presently connected: Homes <u>13,416</u> * Trailers _____ Apartments _____ Other (including industrial) <u>2021</u> Number of Commercial Establishments: <u>4</u> * Homes includes trailers and apartments			
7.6 Design Flow 11 MGD		Actual Flow 5.5 MGD	
7.7 Will discharge be continuous through the year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Discharge will occur during the following months: How many days of the week will discharge occur? This is a batch discharge but on an hourly basis. Discharge will occur 7 days a week all 12 months.			
7.8 Is industrial wastewater discharged to the facility? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, describe the number and types of industries that discharge to your facility. Attach sheets as necessary 2 hospitals, 1 commercial laundry, 1 metal finisher Refer to the APPLICATION OVERVIEW to determine whether additional information is needed for Part F.			
7.9 Does the facility accept or process leachate from landfills?: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
7.10 Is wastewater land applied? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, is Form I attached? Yes <input type="checkbox"/> No <input type="checkbox"/>			
7.11 Does the facility discharge to a losing stream or sinkhole? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
7.12 Has a wasteload allocation study been completed for this facility? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
8. LABORATORY CONTROL INFORMATION			
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL			
Lab work conducted outside of plant.		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Push-button or visual methods for simple test such as pH, settleable solids.		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Additional procedures such as Dissolved Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand, titrations, solids, volatile content.		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

FACILITY NAME Cape Girardeau Municipal WWTF	PERMIT NO. MO- 0136328	OUTFALL NO. 001
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PART A – BASIC APPLICATION INFORMATION

9. SLUDGE HANDLING, USE AND DISPOSAL

9.1 Is the sludge a hazardous waste as defined by 10 CSR 25? Yes No

9.2 Sludge production (Including sludge received from others): Design Dry Tons/Year 2308 Actual Dry Tons/Year 447

9.3 Sludge storage provided: 4.8K Cubic feet; 10 Days of storage; 92 Average percent solids of sludge;
 No sludge storage is provided. Sludge is stored in lagoon.

9.4 Type of storage: Holding Tank Building Basin Lagoon Concrete Pad Other (Describe) _____ Silo

9.5 Sludge Treatment:
 Anaerobic Digester Storage Tank Lime Stabilization Lagoon
 Aerobic Digester Air or Heat Drying Composting Other (Attach Description)

9.6 Sludge use or disposal:
 Land Application Contract Hauler Hauled to Another Treatment Facility Solid Waste Landfill
 Surface Disposal (Sludge Disposal Lagoon, Sludge Held For More Than Two Years) Incineration
 Other (Attach Explanation Sheet) Commercial Fertilizer

9.7 Person responsible for hauling sludge to disposal facility:
 By Applicant By Others (complete below)

NAME Contract Hauler to be selected.	EMAIL ADDRESS
---	---------------

ADDRESS	CITY	STATE	ZIP CODE
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CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
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9.8 Sludge use or disposal facility:
 By Applicant By Others (Complete below)

NAME Not known yet.	EMAIL ADDRESS
------------------------	---------------

ADDRESS	CITY	STATE	ZIP CODE
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CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
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9.9 Does the sludge or biosolids disposal comply with Federal Sludge Regulation 40 CFR 503?
 Yes No (Explain)

END OF PART A

FACILITY NAME Cape Girardeau Municipal WWTF	PERMIT NO. MO- 0136328	OUTFALL NO. 001
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PART B – ADDITIONAL APPLICATION INFORMATION

10. COLLECTION SYSTEM

10.1 Length of sanitary sewer collection system in miles
225

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:
We have a significant program to address and eliminate points of I&I.

11. BYPASSING

Does any bypassing occur anywhere in the collection system or at the treatment facility? Yes No
If yes, explain:
Lift Stations or collection system manholes due to equipment problems or collection system blockages.

12. OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of the contractor?
Yes No
If Yes, list the name, address, telephone number and status of each contractor and describe the contractor's responsibilities.
(Attach additional pages if necessary.)

NAME

MAILING ADDRESS

TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
---------------------------------	---------------

RESPONSIBILITIES OF CONTRACTOR

13. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION

Provide information about any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses for each.

NA

FACILITY NAME Cape Girardeau Municipal WWTF	PERMIT NO. MO- 0136328	OUTFALL NO. 001
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PART B – ADDITIONAL APPLICATION INFORMATION

14. EFFLUENT TESTING DATA

Applicants must provide effluent testing data for the following parameters. Provide the indicated effluent data for each outfall through which effluent is discharged. Do not include information of combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least **three samples** and must be no more than four and one-half years apart.

Outfall Number

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.4	S.U.		S.U.	
pH (Maximum)	8.6	S.U.		S.U.	
Flow Rate	25	MGD	5.65	MGD	365

*For pH report a minimum and a maximum daily value

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Conc.	Units	Number of Samples		

Conventional and Nonconventional Compounds

BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD ₅	94	mg/L	5.7	mg/L	251		
	CBOD ₅		mg/L		mg/L			
E. COLI			#/100 mL		#/100 mL			
TOTAL SUSPENDED SOLIDS (TSS)	225		mg/L	6.8	mg/L	251		
AMMONIA (as N)			mg/L		mg/L			
CHLORINE* (TOTAL RESIDUAL, TRC)			mg/L		mg/L			
DISSOLVED OXYGEN	10.6		mg/L	8.1	mg/L	251		
OIL and GREASE			mg/L		mg/L			
OTHER			mg/L		mg/L			

*Report only if facility chlorinates

END OF PART B

FACILITY NAME Cape Girardeau Municipal WWTF	PERMIT NO. MO- 0136328	OUTFALL NO. 001
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PART C - CERTIFICATION
15. CERTIFICATION

All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they have reviewed the entire form and have completed all sections that apply to the facility for which this application is submitted.

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PRINTED NAME Steve Cook	OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL) Public Works Director
----------------------------	--

SIGNATURE 
--

TELEPHONE NUMBER WITH AREA CODE 573-339-6351

DATE SIGNED 5-6-16

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

Send Completed Form to:

Department of Natural Resources
Water Protection Program
ATTN: NPDES Permits and Engineering Section
P.O. Box 176
Jefferson City, MO 65102

END OF PART C
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH PARTS OF FORM B2 YOU MUST COMPLETE.

- Do not complete the remainder of this application, unless at least one of the following statements applies to your facility:
1. Your facility design flow is equal to or greater than 1,000,000 gallons per day.
 2. Your facility is a pretreatment treatment works.
 3. Your facility is a combined sewer system.

Submittal of an incomplete application may result in the application being returned. Permit fees for returned applications shall be forfeited. Permit fees for applications being processed by the department that are withdrawn by the applicant shall be forfeited.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.
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PART D – EXPANDED EFFLUENT TESTING DATA

16. EXPANDED EFFLUENT TESTING DATA

Refer to the APPLICATION OVERVIEW to determine whether Part D applies to the treatment works.

If the treatment works has a design flow greater than or equal to 1 million gallons per day or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information **for each outfall through which effluent is discharged**. Do not include information of combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least **three pollutant scans** and must be no more than four and one-half years apart.

Outfall Number (Complete Once for Each Outfall Discharging Effluent to Waters of the State.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		

METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS AND HARDNESS

ALUMINUM											
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM III											
CHROMIUM VI											
COPPER											
IRON											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (as CaCO ₃)											

VOLATILE ORGANIC COMPOUNDS

ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											

FACILITY NAME		PERMIT NO. MO-				OUTFALL NO.					
PART D – EXPANDED EFFLUENT TESTING DATA											
16. EXPANDED EFFLUENT TESTING DATA											
Complete Once for Each Outfall Discharging Effluent to Waters of the State											
POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
CHLOROBENZENE											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYL VINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLORO-ETHANE											
1,2-DICHLORO-ETHANE											
TRANS-1,2-DICHLOROETHYLENE											
1,1-DICHLORO-ETHYLENE											
1,2-DICHLORO-PROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,1,2,2-TETRA-CHLOROETHANE											
TETRACHLORO-ETHANE											
TOLUENE											
1,1,1-TRICHLORO-ETHANE											
1,1,2-TRICHLORO-ETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.
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PART D – EXPANDED EFFLUENT TESTING DATA

16. EXPANDED EFFLUENT TESTING DATA

Complete Once for Each Outfall Discharging Effluent to Waters of the State.

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	No. of Samples		
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											
BASE-NEUTRAL COMPOUNDS											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
3,4-BENZO-FLUORANTHENE											
BENZO(GH) PHERYLENE											
BENZO(K) FLUORANTHENE											
BIS (2-CHLOROTHOXY) METHANE											
BIS (2-CHLOROETHYL) – ETHER											
BIS (2-CHLOROISO-PROPYL) ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPHTHALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIBENZO (A,H) ANTHRACENE											
1,2-DICHLORO-BENZENE											
1,3-DICHLORO-BENZENE											
1,4-DICHLORO-BENZENE											
3,3-DICHLORO-BENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.
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PART E – TOXICITY TESTING DATA

17. TOXICITY TESTING DATA

Refer to the APPLICATION OVERVIEW to determine whether Part E applies to the treatment works.

Publicly owned treatment works, or POTWs, meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points.

- A. POTWs with a design flow rate greater than or equal to 1 million gallons per day
- B. POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403)
- C. POTWs required by the permitting authority to submit data for these parameters
 - At a minimum, these results must include quarterly testing for a 12-month period within the past one year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute or chronic toxicity, depending on the range of receiving water dilution. Do not include information about combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
 - If EPA methods were not used, report the reason for using alternative methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E. If no biomonitoring data is required, do not complete Part E. Refer to the application overview for directions on which other sections of the form to complete.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years: _____ chronic _____ acute

Complete the following chart for the last three whole effluent toxicity tests. Allow one column per test. Copy this page if more than three tests are being reported.

	Most Recent	2 ND Most Recent	3 RD Most Recent
A. Test Information			
Test Method Number			
Final Report Number			
Outfall Number			
Dates Sample Collected			
Date Test Started			
Duration			
B. Toxicity Test Methods Followed			
Manual Title			
Edition Number and Year of Publication			
Page Number(s)			
C. Sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used			
24-Hour Composite			
Grab			
D. Indicate where the sample was taken in relation to disinfection (Check all that apply for each)			
Before Disinfection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After Disinfection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After Dechlorination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Describe the point in the treatment process at which the sample was collected			
Sample Was Collected:			
F. Indicate whether the test was intended to assess chronic toxicity, acute toxicity, or both			
Chronic Toxicity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acute Toxicity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Provide the type of test performed			
Static	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Static-renewal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flow-through	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Source of dilution water. If laboratory water, specify type; if receiving water, specify source			
Laboratory Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.
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PART E – TOXICITY TESTING DATA

17. TOXICITY TESTING DATA (continued)

	Most Recent	Second Most Recent	Third Most Recent
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I. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.

Fresh Water			
Salt Water			

J. Percentage of effluent used for all concentrations in the test series

K. Parameters measured during the test (State whether parameter meets test method specifications)

pH			
Salinity			
Temperature			
Ammonia			
Dissolved Oxygen			

L. Test Results

Acute:

Percent Survival in 100% Effluent			
LC ₅₀			
95% C.I.			
Control Percent Survival			
Other (Describe)			

Chronic:

NOEC			
IC ₂₅			
Control Percent Survival			
Other (Describe)			

M. Quality Control/ Quality Assurance

Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (Describe)			

Is the treatment works involved in a toxicity reduction evaluation? Yes No
If yes, describe:

If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date Submitted (MM/DD/YYYY)

Summary of Results (See Instructions)

END OF PART E
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL			
FACILITY NAME	PERMIT NO. MO-	OUTFALL NO.	
PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES			
Refer to the APPLICATION OVERVIEW to determine whether Part F applies to the treatment works.			
18. GENERAL INFORMATION			
18.1 Does the treatment works have, or is it subject to, an approved pretreatment program? <input type="checkbox"/> Yes <input type="checkbox"/> No			
18.2 Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works: Number of non-categorical SIUs _____ Number of CIUs _____			
19. INDUSTRIES CONTRIBUTING MORE THAN 5 PERCENT OF THE ACTUAL FLOW TO THE FACILITY OR OTHER SIGNIFICANT INDUSTRIAL USERS INFORMATION			
Supply the following information for each SIU. If more than one SIU discharges to the treatment works, provide the information requested for each. Submit additional pages as necessary.			
NAME			
MAILING ADDRESS	CITY	STATE	ZIP CODE
19.1 Describe all of the industrial processes that affect or contribute to the SIU's discharge			
19.2 Describe all of the principle processes and raw materials that affect or contribute to the SIU's discharge. Principal Product(s): Raw Material(s):			
19.3 Flow Rate			
a. PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent. gpd <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent			
b. NON-PROCESS WASTEWATER FLOW RATE. Indicate the average daily volume of non-process wastewater discharged into the collection system in gallons per day, or gpd, and whether the discharge is continuous or intermittent. gpd <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent			
19.4 Pretreatment Standards. Indicate whether the SIU is subject to the following:			
a. Local Limits <input type="checkbox"/> Yes <input type="checkbox"/> No			
b. Categorical Pretreatment Standards <input type="checkbox"/> Yes <input type="checkbox"/> No			
If subject to categorical pretreatment standards, which category and subcategory?			
19.5 Problems at the treatment works attributed to waste discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If Yes, describe each episode			

MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL

FACILITY NAME

PERMIT NO.

OUTFALL NO.

MO-

PART F - INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES**20. RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE**

20.1 Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail or dedicated pipe? Yes No

20.2 Method by which RCRA waste is received. (Check all that apply)
 Truck Rail Dedicated Pipe

20.3 Waste Description

EPA Hazardous Waste Number	Amount (volume or mass)	Units

21. CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER

21.1 Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities? Yes No

Provide a list of sites and the requested information for each current and future site.

21.2 Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

21.3 List the hazardous constituents that are received (or are expected to be received). Included data on volume and concentration, if known. (Attach additional sheets if necessary)

21.4 Waste Treatment

a. Is this waste treated (or will it be treated) prior to entering the treatment works? Yes No

If Yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent? Continuous Intermittent

If intermittent, describe the discharge schedule:

END OF PART F**REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

INSTRUCTIONS FOR COMPLETING FORM B2
APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND
HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY, Form 780-1805
(Facilities less than or equal to 100,000 gallons per day of domestic waste must use Form B, 780-1512.)

PART A – BASIC APPLICATION INFORMATION

1. Check the appropriate box. **Do not check more than one item.** Operating permits refer to permits issued by the Department of Natural Resources, Water Protection Program. If an Antidegradation Review has not been conducted, submit the application located at the following link, to the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102: dnr.mo.gov/forms/780-1893-f.pdf.

1.1 **Fees Information:**

DOMESTIC OPERATING PERMIT FEES – PRIVATE

Annual operating permit fees are based on flow.

Annual fee/Design flow	Annual fee/Design flow	Annual fee/Design flow
\$150.....<5,000 gpd	\$1,000.....15,000-24,999 gpd	\$4,000.....100,000-249,999 gpd
\$300.....5,000-9,999 gpd	\$1,500.....25,000-29,999 gpd	\$5,000.....≥250,000 gpd
\$600.....10,000-14,999 gpd	\$3,000.....30,000-99,999 gpd	

New domestic wastewater treatment facilities must submit the annual fee with the original application.

If the application is for a site-specific permit re-issuance, send no fees. You will be invoiced separately by the department on the anniversary date of the original permit. Permit fees must be current for the department to reissue the operating permit. Late fees of two percent per month are charged and added to outstanding annual fees.

PUBLIC SEWER SYSTEM OPERATING PERMIT FEES (City, public sewer district, public water district, or other publicly owned treatment works) Annual fee is based on number of service connections. The table of fees is in 10 CSR 20-6.011 and is available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6.pdf. New public sewer system facilities should not submit any fee as the department will invoice the permittee.

OPERATING PERMIT MODIFICATIONS, including transfers, are subject to the following fees:

- a. Publicly Owned Treatment Works (POTWs) - \$200 each.
- b. Non-POTWs – \$100 each for a minor modification (name changes, address changes, other non-substantive changes) or a fee equal to 25 percent of the facility's annual operating fee for a major modification.

2. Name of Facility – Include the name by which this facility is locally known. Example: Southwest Sewage Treatment Plant, Country Club Mobile Home Park, etc. Provide the street address or location of the facility. If the facility lacks a street name or route number, provide the names of the closest intersection, highway, country road, etc.

2.1 Self-explanatory.

2.2 Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates; the department's mapping system is available at www.dnr.mo.gov/internetmapviewer/.

2.3-2.4 Self-explanatory.

3. Owner – Provide the legal name, mailing address, phone number, and email address of the owner.

3.1 Prior to submitting a permit to public notice, the Department of Natural Resources shall provide the permit applicant 15 days to review the draft permit for nonsubstantive drafting errors. In the interest of expediting permit issuance, permit applicants may waive the opportunity to review draft permits prior to public notice.

3.2-3.4 Self-explanatory.

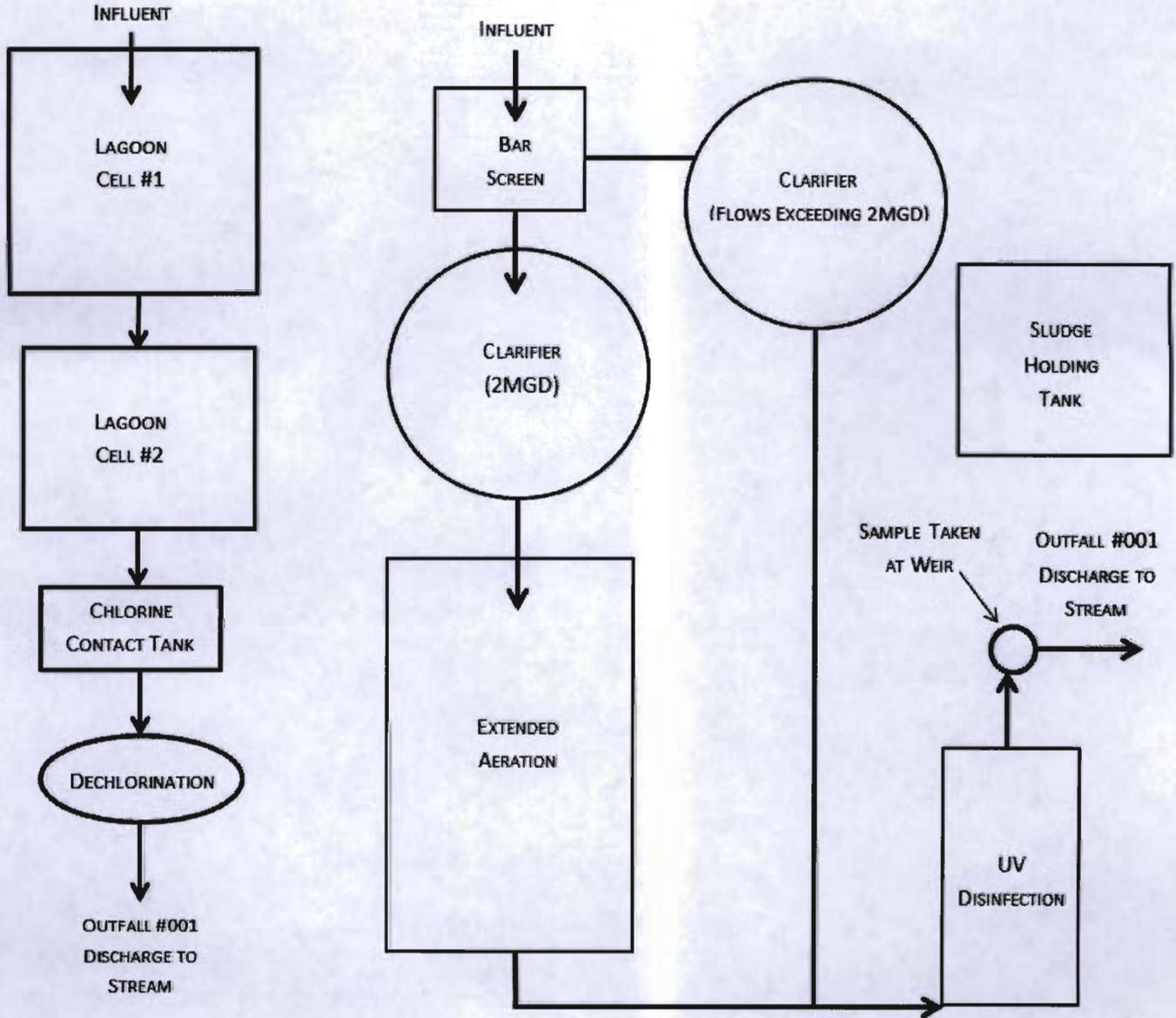
4. Continuing Authority – Provide information for the permanent organization which will serve as the continuing authority for the operation, maintenance, and modernization of the facility. The regulatory requirement regarding continuing authority is available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6.pdf or contact the Department of Natural Resources Water Protection Program (see contact information below).

5. Operator – Provide the name, certificate number, title, mailing address, phone number, and email address of the operator of the facility.

6. Provide the name, title, mailing address, work phone number, and email address of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by the department.

7.1 Process Flow Diagram Examples

WASTEWATER TREATMENT LAGOON WASTEWATER TREATMENT FACILITY



- 7.2 A topographic map is available on the web at www.dnr.mo.gov/internetmapviewer/ or from the Department of Natural Resources' Geological Survey in Rolla at 573-368-2125.
- 7.3 For Standard Industrial Codes visit www.osha.gov/pls/imis/sicsearch.html and for the North American Industry Classification System, visit www.census.gov/naics or contact the Department of Natural Resources' Water Protection Program.
- 7.4-7.8 Self – explanatory.
- 7.9 If wastewater is land-applied submit form I: www.dnr.mo.gov/forms/780-1686-f.pdf.
- 7.10-8. Self-explanatory
- 9.1 A copy of 10 CSR 25 is available at www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp#10-25.
- 9.2-9.9 Self – explanatory.

**INSTRUCTIONS FOR COMPLETING FORM B2
APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND
HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY
(continued)**

PART B – ADDITIONAL APPLICATION INFORMATION

10.-14. Self-explanatory

PART C – CERTIFICATION

15. Signature – All applications must be signed as follows and the signatures must be original:
- a. For a corporation, by an officer having responsibility for the overall operation of the regulated facility or activity or for environmental matters.
 - b. For a partnership or sole proprietorship, by a general partner or the proprietor.
 - c. For a municipal, state, federal or other public facility, by either a principal executive officer or by an individual having overall responsibility for environmental matters at the facility.

PART D – EXPANDED EFFLUENT TESTING DATA

16. Self-explanatory. ML/MDL means minimum limit or minimum detection limit.

PART E – TOXICITY TESTING DATA

17. Self-explanatory.

PART F – INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

18. Federal regulations are available through the U.S. Government Printing Office at www.gpoaccess.gov/cfr/index.html.

18.1 Self-explanatory

- 18.2 A noncategorical significant industrial user is an industrial user that is not a CIU and meets one or more of the following:
- i. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions).
 - ii. Contributes a process waste stream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.
 - iii. Is designated as an SIU by the control authority.

19.-21.4 Self-explanatory.

PART G – COMBINED SEWER SYSTEMS

22.-23.4 Self-explanatory.

Submittal of an incomplete application may result in the application being returned.

This completed form and any attachments along with the applicable permit fees, should be submitted to:

Department of Natural Resources
Water Protection Program
ATTN: NPDES Permits and Engineering Section
P.O. Box 176
Jefferson City, MO 65102

If there are any questions concerning this form, contact the appropriate Department of Natural Resources regional office or the Water Protection Program at 573-751-6825. A map of the department's regional offices with addresses and telephone numbers is available at www.dnr.mo.gov/regions/ro-map.pdf.