

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

City of Dudley
12177 Center Street
Dudley, MO 63936

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

May 20, 2015
Effective Date

Sara Parker Pauley
Sara Parker Pauley, Director, Department of Natural Resources

May 19, 2017
Expiration Date

John Madros
John Madros, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The Dudley wastewater treatment facility is a 44,000 GPD plant. Construction will include the influent pump station, the bioreactor, the partial mix zone, the quiescent zone, the ultraviolet disinfection unit and the parshall flume.

The project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. FINDING OF AFFORDABILITY

Pursuant to Section 644.145, RSMo, the department is required to determine whether a permit or decision is affordable and make a finding of affordability for each permit or decision.

The Finding of Affordability is not applicable. This construction permit does not include new environmental requirements beyond what are already required by the existing Missouri State Operating Permit, MO-0102181.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.
2. All construction shall be in accordance with the plans and specifications submitted by Smith & Co. Engineers on December 30, 2014 and January 21, 2015.
3. The department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).
4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's Southeast Regional Office per 10 CSR 20-7.015(9)(E)2.
5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"

6. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). “There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.”
7. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
 - A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
 - B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.
 - C. Manholes shall be located with the top access at or above grade level.
 - D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
 - a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
 - b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.
8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department’s ePermitting system available online at

www.dnr.mo.gov/env/wpp/epermit/help.htm. See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

9. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the department's Water Protection Program at 573-751-1300 for more information. See www.dnr.mo.gov/env/wpp/401/ for more information.
10. Upon completion of construction;
 - A. The city of Dudley will become the continuing authority for operation, maintenance, and modernization of these facilities;
 - B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D);
 - C. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
 - D. The draft operating permit will be issued to the facility after the department receives the form Statement of Work Completed.

IV. REVIEW SUMMARY

1. AMMONIA

The Water Protection Program is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri criteria. The department has initiated stakeholder discussions on this topic and at this time, there is no firm target date for starting the rulemaking to adopt new standards. More information can be found at <http://dnr.mo.gov/pubs/pub2481.pdf>.

The city has put a new EPA's ammonia criteria into its new updated facility's design consideration. With the proposed upgrades, the anticipated results of ammonia are less than 0.6 mg/mL during summer months and less than 2.1 mg/mL during winter months.

2. CONSTRUCTION PURPOSE

The City of Dudley Wastewater Treatment Plant's effluent has been out of compliance on several occasions over the last several years. The parameters that the plant has failed to meet on a consistent basis are those related to the levels of BOD, TSS, and Ammonia in the plant's effluent. This indicates that the current treatment system is near overload for its ability to meet the required standards. Also, the City of Dudley WWTP is required to comply with E. Coli requirements due to a reclassification of its receiving stream, Lick Creek Ditch. The city proposes to upgrade its treatment system to resolve the above issues and bring the facility back to compliance.

3. FACILITY DESCRIPTION

The proposed upgrades include the addition of new lift station equipment at the existing wastewater treatment plant to ensure that pumps can overcome new total dynamic head. The existing facultative lagoon will remain in place. The third cell of the existing facultative lagoon shall be split into three parts, the bioreactor, the partial mix zone, and the quiescent zone. The remaining two cells will become overflow storm water storage (cell #1) and sludge storage (cell #2). The bioreactor will require an earthen berm to be constructed with a geo-membrane liner to ensure the required mixing depth. Aeration for the bioreactor will be provided by two 10 horsepower blowers, one duty and one standby, as well as two 5 horsepower blowers provide aeration for the partial mix zone. The wastewater will exit out of the existing outfall structure. From this point the flow will then travel through an ultraviolet disinfection unit prior to the parshall flume to record actual flow measurements.

4. COMPLIANCE PARAMETERS

Facility improvements are being done to help the treatment plant meet effluent limitations consistently. Final effluent limits of BOD are 45 mg/L weekly average and 30 mg/L monthly average; Final effluent limits of TSS are 45 mg/L weekly average and 30 mg/L monthly average; Final effluent limits of E. Coli are 1030 #/100 mL daily maximum and 206 #/100 mL monthly average; Final effluent limits of Oil & Grease are 15 mg/L weekly average and 10 mg/L monthly average; Final effluent limits of Ammonia as N are 3.9 mg/L daily maximum and 1.4 mg/L monthly average during April 1 to September 30; Final effluent limits of Ammonia as N are 8.8 mg/L daily maximum and 2.8 mg/L monthly average during October 1 to March 31.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction will cover the following items:

- Influent Pump Station: Duplex influent pump station with four inch foreman. The pump station will have two submersible non-clog sewage pumps and each pump with capable of operating at 160 gallons per minute (gpm) at 20.1 feet of total dynamic head.
- Bioreactor: The bioreactor (143,418 gallon) will be constructed by an earthen berm with a geo-membrane liner. Aeration for the bioreactor will be provided through 14 flexair suspended dual airline diffuser units located near the bottom of the reactor by two 10-horsepower blowers (one duty, one standby). The working depth of the reactor between 5.1 feet to 6.0 feet. The average diffuser depth is 4.1 feet.
- Partial mix zone: The zone (384,076 gallon) will be defined by the bioreactor divider berm and quiescent zone baffle. Aeration for the partial mix zone will be provided through a series of HDPE air laterals with nine fine bubble diffusers which two feet below the surface by two 5-horsepower blowers (one duty, one standby).
- Quiescent zone: The zone has a volume of 43,720 gallon. An insulated cover will be installed for the quiescent zone in order to achieve the desired BOD and ammonia reduction.

- Ultraviolet (UV) Disinfection Unit: Furnish and install a complete and operational open channel, gravity flow, UV disinfection system. The system will have one bank placed within a single channel, the bank with three modules, each module to have two UV lamps. The design is based on a peak flow of 100,000 GPD.
- Flow meter: a parshall flume will be installed after UV disinfection system to record actual flow measurements.

6. OPERATING PERMIT MODIFICATION

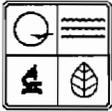
The draft Operating Permit MO-0102181 will be issued to the facility to reflect the construction activities after the construction is completed and a Statement of Work Complete form is submitted to the department

Lei Hou, PE
Engineering Section
lei.hou@dnr.mo.gov

RECEIVED

CP0001713

AP 20297



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

DEC 30 2014

APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER TREATMENT FACILITY

WATER PROTECTION PROGRAM

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
DATE RECEIVED	CHECK NO.
12/30/14	802

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility form has been developed in a modular format and consists of Part A and B. All applicants must complete Part A. Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.

PART A - BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note - If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project? YES N/A Funding Agency: _____ Project #: _____
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: _____
 Attached is the No Degradation Evaluation Conclusion of Antidegradation Review form
- 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: _____ NO N/A (If Not Applicable, complete No. 1.4.)
- 1.4 [Complete only if answered Not Applicable on No. 1.3.] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
 YES NO
- 1.5 Is a copy of the appropriate plans* and specifications* included with this application?
 YES Denote which form is submitted: Hard copy Electronic copy (See instructions.) NO
- 1.6 Is a summary of design* included with this application? YES NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
 YES Date of submittal: _____
 Enclosed is the appropriate operating permit application submittal. Denote which form: A B B2
 N/A Please explain: _____
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? YES NO
- 1.9 Is the appropriate fee included with this application? YES NO (See instructions for appropriate fee.)

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Dudley Wastewater Improvements

2.2 PROJECT DESCRIPTION

The proposed project consists of a retrofit of the existing facultative lagoon facility to meet new limits for ammonia. The proposed project includes the installation of an aeration treatment system, the installation of an ultraviolet disinfection unit, and a new lift station pumps for the lagoon.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

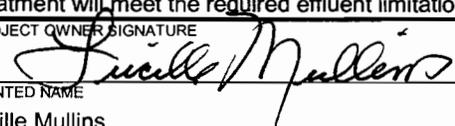
Sludge is retained within the lagoon

2.4 DESIGN INFORMATION

- A. Current population: 232 ; Design population: 400
- B. Actual Flow: 32,000 gpd; Design Average Flow: 40,000 gpd;
Actual Peak Daily Flow: 58,400 gpd; Design Maximum Daily Flow: 330,000 gpd

2.5 ADDITIONAL INFORMATION

- A. Is a topographic map attached? YES NO
- B. Is a process flow diagram attached? YES NO

3.0 WASTEWATER TREATMENT FACILITY				
NAME Dudley Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE 573-624-3821		E-MAIL ADDRESS
ADDRESS (PHYSICAL) 12177 Center Street		CITY Dudley	STATE MO	ZIP CODE 63936
COUNTY Stoddard				
Wastewater Treatment Facility: Mo- 0102181 (Outfall 1 Of 1)				
3.1 Legal Description: _____ ¼, NE _____ ¼, NE _____ ¼, Sec. 28, T 25N, R 9E (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 3647235 Northing (Y): -09004494 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Lick Creek</u>				
4.0 PROJECT OWNER				
NAME City of Dudley		TELEPHONE NUMBER WITH AREA CODE (573) 624-3821		E-MAIL ADDRESS
ADDRESS 12177 Center Street		CITY Dudley	STATE MO	ZIP CODE 63936
5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.				
NAME Same		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS		CITY	STATE	ZIP CODE
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Dominic Thompson/ S.H. Smith and Company		TELEPHONE NUMBER WITH AREA CODE (573) 785-9621		E-MAIL ADDRESS domt@shsmithco.com
ADDRESS 901 Vine Street		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Lucille Mullins			DATE 12-2-2014	
TITLE OR CORPORATE POSITION Mayor		TELEPHONE NUMBER WITH AREA CODE (573) 624-3821		E-MAIL ADDRESS
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A.				
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				

PART B – LAND APPLICATION ONLY

(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: Domestic State/National Park Seasonal business
 Municipal Municipal with a pretreatment program or significant industrial users
 Other (explain) _____

8.2 Months when the business or enterprise will operate or generate wastewater:
 12 months per year Part of the year (list months): _____

8.3 This system is designed for:
 No-discharge.
 Partial irrigation when feasible and discharge rest of time.
 Irrigation during recreational season, April – October, and discharge during November – March.
 Other (explain) _____.

9.0 STORAGE BASINS

9.1 Number of storage basins: _____ (Use additional pages if greater than three basins.)

9.2 Type of basins: Steel Concrete Fiberglass Earthen Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.

Basin #1:	Length _____	Width _____	Depth _____	Freeboard _____	Berm Width _____	% Slope _____
Basin #2:	Length _____	Width _____	Depth _____	Freeboard _____	Berm Width _____	% Slope _____
Basin #3:	Length _____	Width _____	Depth _____	Freeboard _____	Berm Width _____	% Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).

Basin #1:	Maximum operating water level _____ ft	Minimum operating water level _____ ft
Basin #2:	Maximum operating water level _____ ft	Minimum operating water level _____ ft
Basin #3:	Maximum operating water level _____ ft	Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.

Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.

Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.2 Type of vegetation: Grass hay Pasture Timber Row crops
 Other (describe) _____

10.3 Wastewater flow (dry weather) gallons per day: Average annual _____ Seasonal _____ Off-season _____

10.4 Land application rate (design flow including 1-in-10 year storm water flows):

Design:	_____ inches/year	_____ inches/hour	_____ inches/day	_____ inches/week
Actual:	_____ inches/year	_____ inches/hour	_____ inches/day	_____ inches/week

10.5 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.6 Actual months used for irrigation (check all that apply):

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10.7 Land application rate is based on:

Hydraulic Loading Other (describe) _____
 Nutrient Management Plan (N&P) If N&P is selected, is the plan included? YES NO