



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

[www.dnr.mo.gov](http://www.dnr.mo.gov)

December 13, 2013

The Honorable Justin Murry  
Mayor of Odessa  
P.O. Box 128  
Odessa, MO 64076

RE: C295675-01 City of Odessa, MO – Northwest Wastewater Treatment Plant Upgrade,  
MO-0026379, Construction Permit No. CP0001260

Dear Mayor Murry:

The Missouri Department of Natural Resources' Water Protection Program has reviewed and approved the plans and specifications submitted by Larkin Lamp Rynearson for the city of Odessa, MO. Please find enclosed Construction Permit No. CP0001260 and one (1) set of approved specifications. One (1) set of approved plans has been sent under separate cover by Ms. Cynthia Smith, P.E., of my staff. You must maintain these with your official project file for a minimum of four (4) years following completion of the project.

This permit will terminate 30 months from the date of issuance. In accordance with 10 CSR 20-6.010(4)(G), the Department may grant an extension only one (1) time. If you believe that an extension is necessary, you must submit a request and a justification in writing for the extension at least 30 days prior to the permit expiration date.

Nothing in this permit removes any obligations to comply with county or other local ordinances or restrictions.

If you were adversely affected by this decision, you may appeal to have the matter heard by the Administrative Hearing Commission. To appeal, you must file a petition with the Administrative Hearing Commission within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the Administrative Hearing Commission.

The Honorable Justin Murry  
December 13, 2013  
Page 2

If you have any questions concerning this matter, please contact Ms. Cynthia Smith, P.E., of the Water Protection Program, at 573-522-9723 or Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM



Byron F. Shaw, Jr., P.E.  
SRF Engineering Unit Chief

BFS:csc

Enclosures

c: Mr. Clark Thompson, P.E., Larkin Lamp Rynearson  
Mr. Scott Honig, P.E., Kansas City Regional Office  
Ms. Cynthia M. Smith, P.E., Water Protection Program, Financial Assistance Center  
Mr. Ted Koenig, Water Protection Program, Financial Assistance Center

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 Odessa P.O. Box 128 Odessa, MO 64076
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for the construction of (described facilities):

See attached.
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Permit Conditions:

See attached.
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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.

December 13, 2013  
Effective Date

June 12, 2016  
Expiration Date

Sara Parker Pauley, Director, Department of Natural Resources

Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **Wastewater Treatment Facility Upgrade:**

Due to the need to meet new effluent discharge requirements the following changes will be made at the Odessa NW Wastewater Treatment Facility.

This construction project consists of constructing/installing or improving facilities at the Odessa NW Wastewater Treatment Facility site to enable the facility to meet new effluent discharge requirements.

The improvements in this phase of the project include, but are not limited to:

- Convert existing Lagoons to Flow Equalization Basins
- Influent and Effluent Flow Measurement
- Fine Screening
- Grit Removal
- Two Biological Nutrient Removal Deep Oxidation Ditches
- Two Clarifiers
- Filters
- Ultra Violet Disinfection
- Step Re-aeration
- Outfall
- Two Digesters
- Sludge Dewatering
- Sludge Storage

The project will also include general site work, piping, grading and utility improvements appropriate to the scope and purpose of the project.

### **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.

An Affordability Determination and Finding was performed in accordance with RSMO §644.145 and is enclosed with this construction permit. It was performed in conjunction with the Antidegradation Review. See Appendix A – Water Quality and Antidegradation Review.

### **PERMIT CONDITIONS:**

1. All construction shall be in accordance with the plans and specifications submitted by Larkin Lamp Rynearson on October 29, 2013 and approved by the Department on December 13, 2013.

2. Regulation 10 CSR 20-4.040(19)(B)1 requires that projects be publicly advertised, allowing sufficient time for bids to be prepared and submitted. Projects should be advertised at least 30 days prior to bid opening.
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. As per 10 CSR 20-4.040, all changes in contract price or time within the approved scope of work must be by change order in accordance with Section 20 of this rule.
5. 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 Kansas City Regional Office per 10 CSR 20-7.015(9)(E)2.
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.”

  - A. 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.
  - B. Sewer mains shall be laid at least ten feet (10') 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 ten foot (10') 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.
  - C. Manholes should be located at least ten feet (10') horizontally from any existing or proposed water main.

- 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 (1) of the following methods must be specified:
- 1) 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
  - 2) Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends ten feet (10') 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.
7. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one (1) 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. Starting September 1, 2012, 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](http://www.dnr.mo.gov/env/wpp/epermit/help.htm).
- See [www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm](http://www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm) for more information.
8. 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/](http://www.dnr.mo.gov/env/wpp/401/) for more information.
9. Upon completion of construction, the city of Odessa, MO will become the continuing authority for operation, maintenance, and modernization of these facilities.
10. In accordance with 10 CSR 20-6.010(5)(D), submit the enclosed form Statement of Work Completed to the Department following completion of construction. Submit an electronic copy of the as builts with this form.

Appendix A

# Water Quality and Antidegradation Review

*For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge to  
a tributary to Owl Creek*

*by  
City of Odessa,  
NW Wastewater Treatment Plant*



December, 2010

## Table of Contents

1. Facility Information .....	4
2. Water Quality Information.....	4
2.1. Water Quality History:.....	4
3. Receiving Waterbody Information .....	4
4. General Comments .....	5
5. Antidegradation Review Information .....	5
5.1. Tier Determination.....	5
5.2. Existing Water Quality .....	5
5.3. Demonstration of Necessity (Alternative Analysis) and Social and Economic Importance ....	5
5.3.1. Affordability Analysis .....	6
5.3.2. Regionalization Alternative .....	7
5.3.3. Social and Economic Importance Evaluation -- Affected Community and Relevant Social and Economic Factors.....	8
6. General Assumptions of the Water Quality and Antidegradation Review.....	8
7. Mixing Considerations.....	8
8. Permit Limits and Monitoring Information .....	9
9. Receiving Water Monitoring Requirements .....	9
10. Derivation and Discussion of Limits .....	9
10.1. Outfall #001 – Main Facility Outfall .....	10
10.2. Limit Derivation .....	10
10.3. Outfall #002 –Emergency Outfall.....	13
11. Antidegradation Review Preliminary Determination .....	13
Table 1. Pollutants of Concern and Tier Determination.....	5
Table 2: Economic Efficiency Comparison of Treatment Alternatives with Effluent Concent'ns ...	6
Table 3: Affordability Comparison of Treatment Alternatives with Annual Costs for the City of Odessa.....	7
Table 4. Effluent Limits.....	9
Appendix A: Map of Discharge Location.....	14
Appendix B: Social and Economic Importance Evaluation .....	15
Appendix C: Dissolved Oxygen Modeling using Streeter Phelps.....	18
Appendix D: Antidegradation Review Summary Attachments.....	20

### 1. Facility Information

FACILITY NAME: City of Odessa NW WWTF

NPDES #: MO-0026379

#### FACILITY TYPE/DESCRIPTION:

The current permitted design flow is 0.144 MGD. Actual flow is 0.204 MGD, which exceeds the design flow. The current facility is a two-cell facultative lagoon. The proposed design flow will be 1.0 MGD. The new facility will be a Deep oxidation ditch (biological nutrient removal) with a Jet Aeration System and a separate clarifier treatment unit. The applicant submitted a portion of the facility planning report that describes the facility as having influent screening, flow equalization, activated sludge with two oxidation ditches having Jet Aeration, secondary clarification, sludge dewatering and storage, filtration, and ultraviolet disinfection. Based on the information provided by the applicant, adding filtration to the oxidation ditch treatment was found to be economically efficient because it only exceeded the base case costs by nine (9) percent. The department evaluated the affordability of both the proposed treatment system and the proposed system with filtration. The results of this analysis show that both options have questionable affordability. Because both options are marginally affordable, the department has chosen to impose the BOD5 and TSS limitations that are achievable without filtration, but the department encourages the City of Odessa to consider adding filtration to their system. Note that the City will eliminate Outfall 002 and the current outfall 001 will continue.

EDU*:	<u>Central Plains/ Blackwater/Lamine</u>	ECOREGION:	<u>Plains</u>
8- DIGIT HUC:	<u>10300101</u>	LEGAL DESCRIPTION:	<u>SE ¼ SE ¼ Sec. 27 T49N R28W</u>
COUNTY:	<u>Lafayette</u>	UTM COORDINATES:	<u>X- 414880.351/Y-4319101.374</u>

\* - Ecological Drainage Unit

### 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:

Bypass outfalls such as the current outfall 002 are not allowed. The city did not report discharge monitoring for pH and BOD5 on one occasion in 12/31/08 and 12/31/09, respectively. Violations for BOD occurred on 11/31/06 and 5/31/06, respectively. Violation of TSS limitation occurred on 06/30/09.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001*	1.55	Secondary	Tributary to Owl Creek	0.1
002	NA	Emergency outfall- <i>no longer authorized</i>	NA	NA

\*NOTE THAT OUTFALL 002 WILL BE ELIMINATED AND THE CURRENT OUTFALL 001 WILL CONTINUE.

### 3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Tributary to Owl Creek	U	-	0	0	0	General Criteria
Owl Creek	C	3443	0.1	0.1	1.0	LWW, AQL, WBC(B) General Criteria

\*\* 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: Owl Creek  
 Upper end segment\* UTM coordinates: X- 414880.351 / Y- 4319101.374 (Outfall#001)  
 Lower end segment\* UTM coordinates: X-412006/ Y-4322145 (Confluence with East Fork Sni-A-Bar Creek)

\*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

#### 4. General Comments

Larkin Group Consulting Engineers prepared, on behalf of City of Odessa, the *Antidegradation Review Report on Odessa NW Wastewater Treatment Plant for Odessa, Missouri* revised October 2010. A Geohydrological Evaluation for this facility was completed. According to the Division of Geology and Land Survey, the stream is gaining for discharge purposes (Appendix A: Map). Applicant elected to demonstrate through alterative analysis that discharge of all pollutants of concern (POC) has significant degradation to the receiving stream. This analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the above submitted report and summary forms in Appendix D were used to develop this review document. The applicant obtained a Missouri Department of Conservation Natural Heritage Review. No further review was required as the level 1 review found no evidence of endangered species in database record searches.

#### 5. Antidegradation Review Information

The following is a review of the *Antidegradation Review Report on Odessa NW Wastewater Treatment Plant for Odessa, Missouri* revised August 2010

##### 5.1. TIER DETERMINATION

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

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD5/DO	*	significant	
Total Suspended Solids (TSS)	**	significant	
Ammonia	*	significant	
pH	***	significant	Permit limits applied
Bacteria/Escherichia coli (E. coli)	*	significant	Permit limits applied

\*Tier 2 assumed. \*\* Tier determination not possible: No in-stream standards for these parameters. \*\*\* Tier determination not possible: Standards for these parameters are ranges.

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

- Tier Determination and Effluent Summary
- For pollutants of concern, the attachments are:
- Attachment A, Tier 2 with significant degradation.

##### 5.2. EXISTING WATER QUALITY

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

##### 5.3. DEMONSTRATION OF NECESSITY (ALTERNATIVE ANALYSIS) AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri’s antidegradation implementation procedures specify that if the proposed activity results in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Using alternatives analysis to determine the necessity of the discharge, ten alternatives from non-degrading to less degrading to degrading alternatives were evaluated.

Among the non-degrading alternatives, land application with seasonal storage, subsurface irrigation, recycle or reuse, and discharge to a regional facility were evaluated. Land application and subsurface irrigation were considered impracticable due large amount of land required, cost, and loss of revenue from residential development. Recycle/reuse was eliminated as impracticable because of the perceived greater environmental degradation to Owl Creek. Connection to a regional facility was considered practicable and evaluated in the economic efficiency analysis.

Two other options were explored: An alternative discharge location and improved operation and maintenance of existing facility. Discharge to the Missouri River was considered; but, the 10 miles of transmission main with easements acquisition was a limiting factor to this option and was considered impracticable. Improved maintenance to the existing facility (lagoon) was considered impracticable because the expansion would not allow the City to meet effluent limitations.

Among the degrading to less degrading alternatives were biological nutrient removal (BNR), BNR with filtration, and membrane biological reactor (MBR). These alternatives are treatment options for a proposed discharge to Owl Creek. The most degrading option is the BNR or base case treatment. The practicability of the above-identified alternatives was evaluated for their effectiveness.

Only those alternatives that were considered practicable were included in the economical efficiency analysis. The regional connection, BNR (base case), BNR with filtration, and membrane biological reactor were considered practicable and evaluated for economic efficiency. This analysis showed that the environmental benefits from increasing cost of treatment did not justify more expenditure beyond the biological nutrient removal with filtration alternative (see Table 2 and Appendix D, Attachment A), which was 109% from the base case treatment alternative.

The Biological Nutrient Removal (BNR) was the applicant’s preferred alternative based on the provided analysis. An affordability analysis was conducted to determine if the Biological Nutrient Removal with filtration should be selected given its economic efficiency (Table 3).

**TABLE 2: ECONOMIC EFFICIENCY COMPARISON OF TREATMENT ALTERNATIVES WITH EFFLUENT CONCENTRATIONS**

PARAMETER	CONNECTION TO REGIONAL FACILITY**	BIOLOGICAL NUTRIENT REMOVAL (BNR)	BNR WITH FILTRATION	MEMBRANE BIOLOGICAL REMOVAL
BOD <sub>5</sub> (mg/L)	≤10	≤15	≤10	≤5
TSS (mg/L)	≤15	≤25	≤10	≤5
DO (mg/L)	≥5	≥5	≥5	≥5
Ammonia (mg/L)	≤2.0	≤2	≤2	≤1
E. Coli (col/100 mL)	≤206	≤206	≤206	≤ 206
Oil & Grease (mg/L)	≤10	≤10	≤10	≤10
Practicable	Yes	Yes	Yes	Yes
Present Worth*	\$23,569,000	\$11,616,000	\$12,714,000	\$21,558,000
Cost per Gallon	\$23.57	\$11.62	\$12.71	\$21.56
Base-to-Alternative Ratio cost	1:2.0	1:1.0 (Base)	1:1.09	1:1.9
Economically Efficient	No	Yes	Yes	No

\* 20 year design life and 6 % interest rate. \*\* Limitations are those of the SE WWTP MO-0026387

### 5.3.1.AFFORDABILITY ANALYSIS

Table 3: Affordability Comparison of Treatment Alternatives with Annual Costs for the City of Odessa

Affordability of Wastewater Technology (1.0MGD)					
Technology	Total Annualized Capital Cost*	Annualized Capital Cost Per Household	Annual Operating and Maintenance	Municipal Preliminary Screener	Affordability
Biological Nutrient Removal	\$ 1,012,762	\$ 537	\$ 339,000	1.58	Questionable Affordability
Biological Nutrient Removal w/ Filtration	\$ 1,108,445	\$ 587	\$ 340,000	1.73	Questionable Affordability
Membrane BioReactor	\$ 1,879,464	\$ 996	\$ 522,000	2.93	Not Affordable
Secondary Test Score =	1.5				

\* Total Annualized Capital Cost - Annualized O&M Costs = Total Annual Capital Costs  
 Annualization Factor = 0.0872

Equipment Life Expectancy (yrs.)	20
Interest Rate	6

Table 3 was developed using data obtained from the Larkin Group Consulting Engineers and the City of Odessa via email correspondence. The Municipal Preliminary Screener (MPS) was first developed using the ratio of the (Annual Pollution Control Cost per Household / Median Household Income) x 100. If the total annual cost per household (existing annual cost per household, plus the incremental cost related to the full treatment option) is less than 1.0 percent of median household income, we assume that the treatment necessary to prevent degradation is not expected to impose economic hardship on households. Communities with MPS results equal to or greater than 1.0 percent proceed to the Secondary Test. The MPS for the City of Odessa was greater than 1.0 percent for all treatment, therefore the secondary test score was used. The secondary test indicates the community's ability to obtain financing and describes the socio-economic health of the community. Using these indicators and a scoring system, an impact estimate was calculated on the treatment necessary to prevent degradation. The overall score shown in Table 3 is 1.5. The score combined with the MPS screener percentage that applies to each facility showed that both the biological nutrient removal (BNR) and BNR with filtration were marginally affordable. The City's secondary test score fell because of the lack of a bond rating.

Because of the above mention results, the community's preferred alternative should be the BNR with filtration, not the BNR. Both the BNR with filtration and BNR have the same affordability, yet the BNR with filtration remains economically efficient and less degrading to the receiving waters. The department prefers the BNR with filtration based on the available information on economic efficiency, social and economic importance of the discharge, and the demonstrated community affordability (however marginal) for the BNR with filtration.

*Note: Because the BNR with filtration and BNR both have questionable or marginal affordability to the City of Odessa, the department will impose the BOD<sub>5</sub> and TSS effluent limitations for the BNR. While the department prefers the BNR with filtration, this will give the City the flexibility to construct either the BNR with filtration or without filtration.*

### 5.3.2. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. The applicant provided discussion of this alternative. The alternative analysis mentions the City of Odessa as the regional authority, so a waiver required under 10 CSR 20-6.010(3) (B) 1 Continuing Authorities is not required.

5.3.3. SOCIAL AND ECONOMIC IMPORTANCE EVALUATION -- AFFECTED COMMUNITY AND RELEVANT SOCIAL AND ECONOMIC FACTORS

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community in the geographical area in which the waters are located. According to the AIP, the affected community includes those living near the site of the project as well as those in the community that are expected to directly or indirectly benefit from the project. The applicant first identified the community that will be affected by the proposed degradation of water quality. The affected community is the City of Odessa and those near the degraded segment from the discharge site identified above.

The following are examples of social and economic factors given in the Missouri AIP: Measures of employment or income, increasing production, increasing or improving housing, increasing the community tax base, providing necessary public services, correcting a public health safety or environmental problem. A number of relevant factors were identified including 1) increasing capacity for growth through commercial and industrial development, 2) addressing employment, and 3) increasing community tax base. Within a Social and Economic Benefits section, each factor was evaluated and a letter from the City of Odessa was provided (see letter attached in Appendix B). Also, Appendix D, Attachment A: Tier 2 with Significant Degradation form contains a summary of this information.

6. *General Assumptions of the Water Quality and Antidegradation Review*

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

7. *Mixing Considerations*

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

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

	Flow (cfs)	MZ (cfs)	ZID (cfs)
<b>7Q10</b>	0	0	0
<b>1Q10</b>	0	0	0
<b>30Q10</b>	0	0	0

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

8. *Permit Limits and Monitoring Information*

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

UAA WAS CONDUCTED ON JUNE 30, 2005. NO DECISION HAS BEEN MADE ON THE UAA, THUS WBCR (B) IS RETAINED.

**OUTFALL #001**

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

TABLE 4. EFFLUENT LIMITS

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	*		*		Once/day
BOD <sub>5</sub> (MG/L)***		23	15	PEL	Once/Month
TSS (MG/L)		23	15	PEL	Once/Month
PH (S.U.)	6.5 – 9.0		6.5 – 9.0	FSR	Once/Month
TEMPERATURE (°C)	*		*	N/A	Once/Month
AMMONIA AS N (MG/L) (MAY 1 – OCT 31)	3.7		1.4	PEL/ WQBEL	Once/Month
AMMONIA AS N (MG/L) (NOV 1 – APR 30)	7.5		2.9	PEL/ WQBEL	Once/Month
DISSOLVED OXYGEN (MG/L)	5.0 MINIMUM		5.0 MINIMUM	WQBEL	Once/Month
OIL & GREASE (MG/L)	15		10	FSR	Once/Month
ESCHERICHIA COLIFORM (E. COLI) (NOTE 1)	1030**		206**	FSR	Once/Week
NUTRIENTS, TOTAL NITROGEN OR TOTAL PHOSPHORUS	The department is currently developing Criteria for Streams.				

NOTE 1 – COLONIES/100 ML

NOTE 2– WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT-PEL; TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION EFFLUENT LIMIT--NDEL; OR FSR --FEDERAL/STATE REGULATION; OR N/A--NOT APPLICABLE.

ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

\* - Monitoring requirements only.

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

\*\*\*This facility is required to meet a removal efficiency of 85% or more for BOD<sub>5</sub> and TSS. Influent BOD<sub>5</sub> and TSS data should be reported to ensure removal efficiency requirements are met.

9. *Receiving Water Monitoring Requirements*

No receiving water monitoring requirements recommended at this time.

10. *Derivation and Discussion of Limits*

Wasteload allocations and limits were calculated using two methods:

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

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

Where C = downstream concentration  
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). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration).

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

2) Alternative Analysis-based – Using the preferred alternative's treatment capacity for conventional pollutants such as BOD<sub>5</sub> and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the significantly-degrading effluent average monthly and daily maximum limits are determined by applying the WLA multiplied by 1.19 as the average monthly (AML), and multiplying the AML by 3.11 to derive the maximum daily limit. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD<sub>5</sub> and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD<sub>5</sub> and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

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

#### **10.2. LIMIT DERIVATION**

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

*Because the BNR with filtration and BNR both have questionable affordability to the City of Odessa, the department will impose the BOD<sub>5</sub> and TSS effluent limitations for the BNR.*

- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** BOD<sub>5</sub> limits of 15 mg/L monthly average, 23 mg/L average weekly. These limitations are non-degrading and protective of existing water quality. The technology-based secondary limitations at 10 CSR 20-7.015 (8) of 30 mg/L monthly and 45 mg/L average weekly are less protective of water quality standards than the treatment capacity-based limitations.

Using the final limitation stated above, modeling in Appendix C demonstrated that BOD<sub>5</sub> effluent is protective of water quality standards for DO. Streeter Phelps modeling indicated that at approximately 0.0 miles from the outfall location, DO was modeled to be 5.0 mg/L, which was lowest DO concentration resulting from BOD decay. At the classified Owl Creek that is 0.1 miles from the discharge, the DO concentration was above the water quality standards. Therefore, staff consider the effluent limitations of 23 mg/L as the average weekly and 15 mg/L as the monthly average protective of aquatic life. The monthly average was calculated by dividing the 23 mg/L by 1.5..... 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).

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

- **Total Suspended Solids (TSS).** 15 mg/L monthly average, 23 mg/L average weekly limit. The technology-based secondary limitations at 10 CSR 20-7.015 (8) of 30 mg/L monthly and 45 mg/L average weekly are less protective of water quality standards than the treatment capacity-based limitations. Effluent limit determination for BOD<sub>5</sub> and TSS are based on the capacity of the treatment and protection of the water quality standards. As mentioned above, the results of the Streeter-Phelps analysis will provide additional basis for the limits. TSS will mirror the limits of BOD<sub>5</sub> as EPA indicated that treatment capacity typically is the same for both POCs. Therefore, the technology-based limitations must be applied.

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

- **pH.** pH shall be maintained in the range from 6.5– 9.0 standard units [10 CSR 20-7.015(8)(A)2.].
- **Temperature.** Monitoring requirement only. Temperature affects the toxicity of Ammonia.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

For the preferred alternative, the applicant's consulting engineer provided an ammonia treatment capacity value reference from Metcalf and Eddy, 2003. *Wastewater Engineering Treatment and Reuse*, 4<sup>th</sup> Edition. The value of 2.0 mg/L was treated as the monthly average (AML) for all seasons. A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation.

The department also evaluated numerous oxidation ditches in the state with ammonia monitoring. Most of the facilities that were evaluated averaged ammonia concentrations at or below 1.0 mg/L. EPA's *Technical Support Document for Water Quality Based Toxic Controls* (EPA/505/2-90-001) prefers the 99<sup>th</sup> percentile value when evaluating the monitoring data. The 99<sup>th</sup> percentiles for summer and winter were near the average monthly Water Quality-based Effluent Limits developed below. The department is recommending the seasonal limits that are presented below as effluent limits for ammonia.

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

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

### Summer

$$C_e = (((Q_e + Q_s) * C) - (Q_s * C_s)) / Q_e$$

Chronic WLA:  $C_e = ((1.55 + 0.0)1.5 - (0.0 * 0.01)) / 1.55$

$$C_e = 1.5 \text{ mg/L}$$

Acute WLA:  $C_e = ((1.55 + 0.0)12.1 - (0.0 * 0.01)) / 1.55$

$$C_e = 12.1 \text{ mg/L}$$

$$LTA_c = 1.5 \text{ mg/L (0.780)} = \mathbf{1.2 \text{ mg/L}}$$

[CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]

$$LTA_a = 12.1 \text{ mg/L (0.321)} = 3.88 \text{ mg/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$MDL = 1.2 \text{ mg/L (3.11)} = 3.7 \text{ mg/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$AML = 1.2 \text{ mg/L (1.19)} = 1.4 \text{ mg/L}$$

[CV = 0.6, 95<sup>th</sup> Percentile, n = 30]

### Winter

Chronic WLA:  $C_e = ((1.55 + 0.0)3.1 - (0.0 * 0.01)) / 1.55$

$$C_e = 3.1 \text{ mg/L}$$

Acute WLA:  $C_e = ((0.2 + 0.0)12.1 - (0.0025 * 0.01)) / 1.55$

$$C_e = 12.1 \text{ mg/L}$$

$$LTA_c = 3.1 \text{ mg/L (0.780)} = \mathbf{2.4 \text{ mg/L}}$$

[CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]

$$LTA_a = 12.1 \text{ mg/L (0.321)} = 3.9 \text{ mg/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$MDL = 2.4 \text{ mg/L (3.11)} = 7.5 \text{ mg/L}$$

[CV = 0.6, 99<sup>th</sup> Percentile]

$$AML = 2.4 \text{ mg/L (1.19)} = 2.9 \text{ mg/L}$$

[CV = 0.6, 95<sup>th</sup> Percentile, n = 30]

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	3.7	1.4
Winter	7.5	2.9

- E. coli.** Effluent limitations for WBCR(B) are 206 colonies per 100 ml monthly average and 1030 colonies per 100 ml weekly average [10 CSR 20-7.015 (8)(A)4.] and [10 CSR 20-7.031(4)(C), Table A]. At a minimum, weekly monitoring is required during the recreational season with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Further, the limit may change depending on the outcome of future state effluent regulation revision. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7**.

- **Dissolved Oxygen** [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life is 5.0 mg/L daily minimum and monthly average. DO Modeling required 5.0 mg/L of DO in the discharge to sustain DO in the stream. The applicant assumed an upstream dissolved oxygen (DO) of 5.0 mg/L as input to the Streeter Phelps model. The applicant also assumed 5.0 mg/L as DO in the effluent. For that reason, a dissolved oxygen limitation for the effluent will be imposed.
- **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. These limits are water quality based and were created to prevent a sheen on surface water. Therefore, there are no antidegradation requirements for oil and grease beyond meeting the above limits.
- **Total Nitrogen and Total Phosphorus**. One or both of these nutrients must be addressed once the nutrient criteria for streams are included in the water quality standards in 2015. No limitation or monitoring will be required for this review. Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7**.

### ***10.3. OUTFALL #002 –EMERGENCY OUTFALL***

Emergency outfalls are no longer allowed and will be eliminated in the facility upgrade.

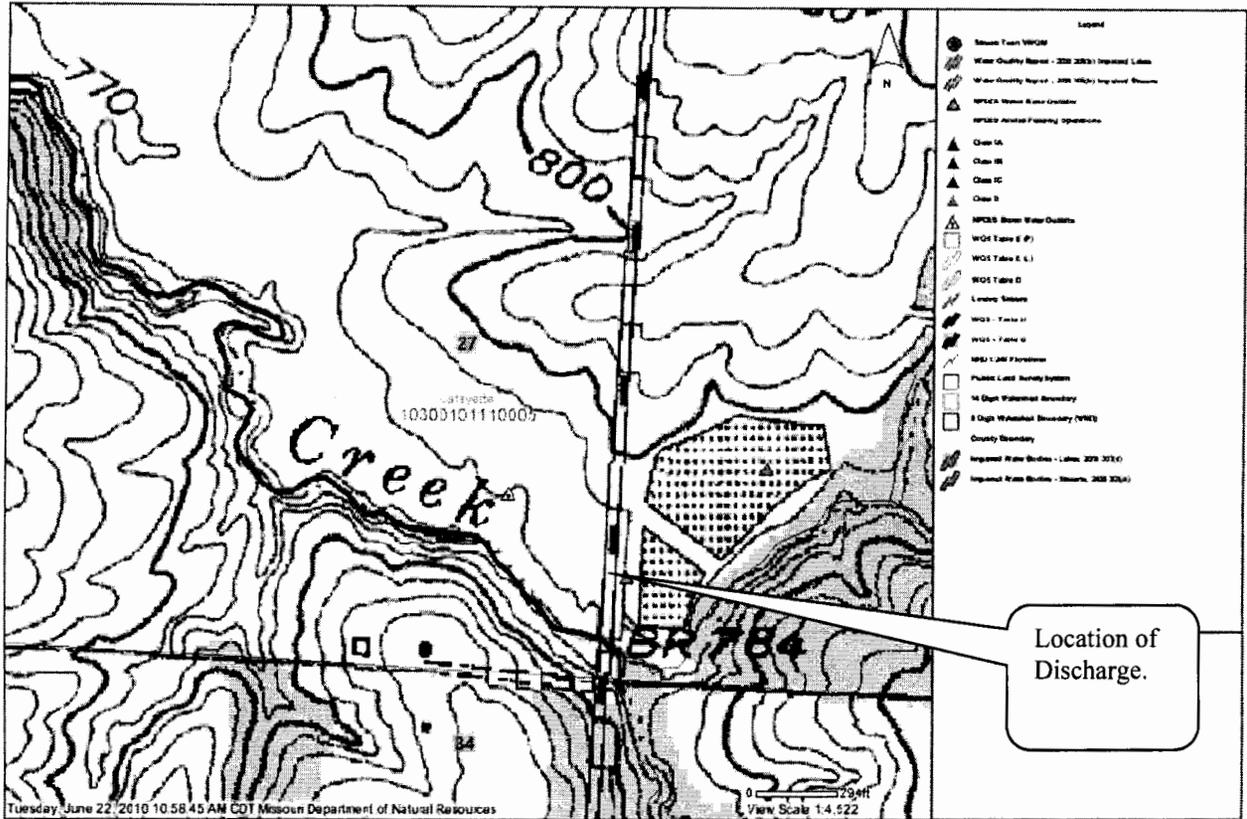
## **11. ANTIDegradation REVIEW PRELIMINARY DETERMINATION**

The City of Odessa's new 1.0 MGD facility will result in degradation of the segment identified in Tributary to Owl Creek. 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: Todd J. Blanc  
Date: 12/09/2010  
Unit Chief: John Rustige, P.E.

Appendix A: Map of Discharge Location

### City of Odessa WWTF



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.



# CITY OF ODESSA

P.O. Box 128  
125 S. Second  
Odessa, MO 64076  
816-230-5577  
Fax 816-633-4985

20 October, 2010

MODNR  
Attn: Todd Blanc,  
Environmental Specialist IV  
NPDES Permits and Engineering Section  
Water Protection Program  
P.O. Box 176  
Jefferson City, MO 65102

Re: Antidegradation Review Report  
1 MGD Odessa NW WWTP Expansion  
Lafayette County, NPDES No. MO-0026379

Dear Mr. Blanc,

This letter is being written in response to the MODNR comment letter dated September 15, 2010 on the Antidegradation Review Report on the 1.0 MGD Odessa NW Wastewater Treatment Plant Expansion. Comment 16 requested a letter of the City of Odessa Administrator covering the social and economic importance evaluations which would be included with the public notice. This letter is presenting a social and economic evaluation of the preferred alternative.

## **I. Social and Economic Importance of Preferred Alternative**

As previously stated, the preferred alternative to expand the Odessa WWTP was assumed to result in significant degradation. As part of the Missouri Antidegradation Rule and Implementation Procedure (dated April 20, 2007 and Revised May 7, 2008), by allowing significant degradation to the receiving water, important economic and social development of the affected community must be demonstrated. The social and economic importance evaluation shall result in demonstrating social and economic benefits to the community that will occur from any activity involving a new or expanded discharge. The following three steps, required by the Missouri Antidegradation Rule and Implementation Procedure, will be analyzed to demonstrate the social and economic importance:

- Identification of the affected community.
- Identification of relevant factors that characterize the social and economic conditions of the affected community.
- Description of the important social and economic development associated with the preferred alternative, or project.

### **A. Affected Community**

"The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located," which includes those living near the site of the project as well as those in the community that are expected to directly or indirectly benefit from the project." (Missouri Antidegradation Rule and Implementation Procedure)

The City of Odessa is located approximately 28 miles east of Kansas City, Missouri, in Lafayette County, along U.S. 70 Highway. The WWTP is located on the north-west side of Odessa, along Hughs Road just north of Owl Creek. The expanded plant will serve the areas within the Owl Creek Watershed, which includes the area south of Highway 70 and west of State Highway 131 inside the Odessa city

## Appendix B: Social and Economic Importance Evaluation (cont'd)

limits. The northeast, eastern and southeast portions of Odessa are served by the Odessa SE Wastewater Treatment Plant.

Although the expanded treatment plant only services about half of the City of Odessa, it can be assumed that the entire area within the Odessa city limits, as well as the community surrounding the treatment plant just outside of the city limits, will directly or indirectly benefit from the expansion of the Odessa NW WWTP. The plant will especially encourage growth along the I-70 corridor west of Odessa towards Kansas City. A number of businesses and factories have shown interest in locating in this area. Social and economic growth on the west side of Odessa would also support growth in other areas of the City as well.

### **B. Relevant Social and Economic Factors**

The following are examples of social and economic factors given in the Missouri Antidegradation Rule and Implementation Procedure:

- Measures of employment or income
- Increasing production
- Increasing or improving housing
- Increasing the community tax base
- Providing necessary public services (e.g., fire department, school, infrastructure)
- Correcting a public health, safety or environmental problem

The approach outlined in the U.S. EPA's water quality standards handbook EPA-823-B-95-002 (1995) - "Interim Economic Guidance for Water Quality Standards" provides a guide for explaining the important socioeconomic factors supported by the discharging activity. The following social and economic measures from that handbook will be used to characterize the affected community and to describe the development of these factors as related to the proposed project:

- Median Household Income
- Unemployment Rate
- Taxable Property Value
- Commercial and Industrial Development Potential

Information provided in the following section addresses the City of Odessa as a whole and not just the service area for the treatment plant.

### **C. Important Social and Economic Development**

#### **1. Median Household Income**

According to the 2000 U.S. Census data, the average median household income for the City of Odessa is \$34,007. *DemographicsNow* estimates the 2009 average median household income for the City of Odessa at \$42,844. It is anticipated that the median household income for the City will increase with the implementation of the proposed project. Expansion of the WWTP increases the capacity of the facility to accept more wastewater flow. An increased capacity allows for growth in the area, including both residential and commercial businesses.

Increased growth for a city generates more jobs that require increased job skills that will, in turn, pay higher salaries, resulting in an increase in median family income per household.

#### **2. Unemployment Rate**

The 2000 U.S. Census reports that approximately 4.4% of the Odessa population over the age of 16 is unemployed. *DemographicsNow* estimates the 2009 unemployment rate at approximately 11.1% of the Odessa population over the age of 16. It is predicted that the employment rate for the City of Odessa will increase with the expansion of the WWTP. As previously stated, expansion of the WWTP creates additional capacity needed to accept flow from additional growth and development. Growth and development for the city will create the need for additional retail and commercial businesses, as well as public facilities to accommodate the increased population, which will create more jobs for the affected community.

---

**3. Taxable Property Value**

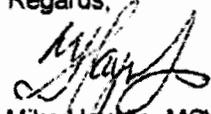
The Lafayette County Assessor's Office has indicated that the 2010 assessed value for Personal Property is \$8,670,110 and for Real-estate is \$39,885,708 for the City of Odessa, Missouri, which does not include the rail road and utilities. Thus the total taxable property value for the City of Odessa is \$48,555,818 not including the rail road and utilities. As the city grows with the expansion of the treatment facility, the average property value is likely to increase. New housing and commercial developments are planned for the growing city, which will increase the value of new homes. Various improvements to the City's existing businesses and facilities, including infrastructure, roadways, and public facilities, will spruce up the surrounding community, thereby increasing the property value of the existing homes. This project is anticipated to increase the community tax base.

**4. Commercial and Industrial Development Potential**

At the end of the year 2000, the area within the corporate limits covered some 2,048 acres, of which 1,130 acres was zoned residential, 328 acres commercial, and 557 acres industrial (from Comprehensive Master Plan Update 2002 City of Odessa, Missouri). The City plans for development to continue along the I70 corridor. Expansion of the Odessa WWTP will allow commercial and industrial development to continue to occur without restrictions.

This NW WWTP expansion provides necessary public services.

Regards,



Mike Haystip, MSW, MPA  
City Administrator

Appendix C: Dissolved Oxygen Modeling using Streeter Phelps  
 Streeter-Phelps analysis of critical dissolved oxygen sag.

Based on Lotus File DO SA G2.WK1 Revised 19-Oct-93

**INPUT**

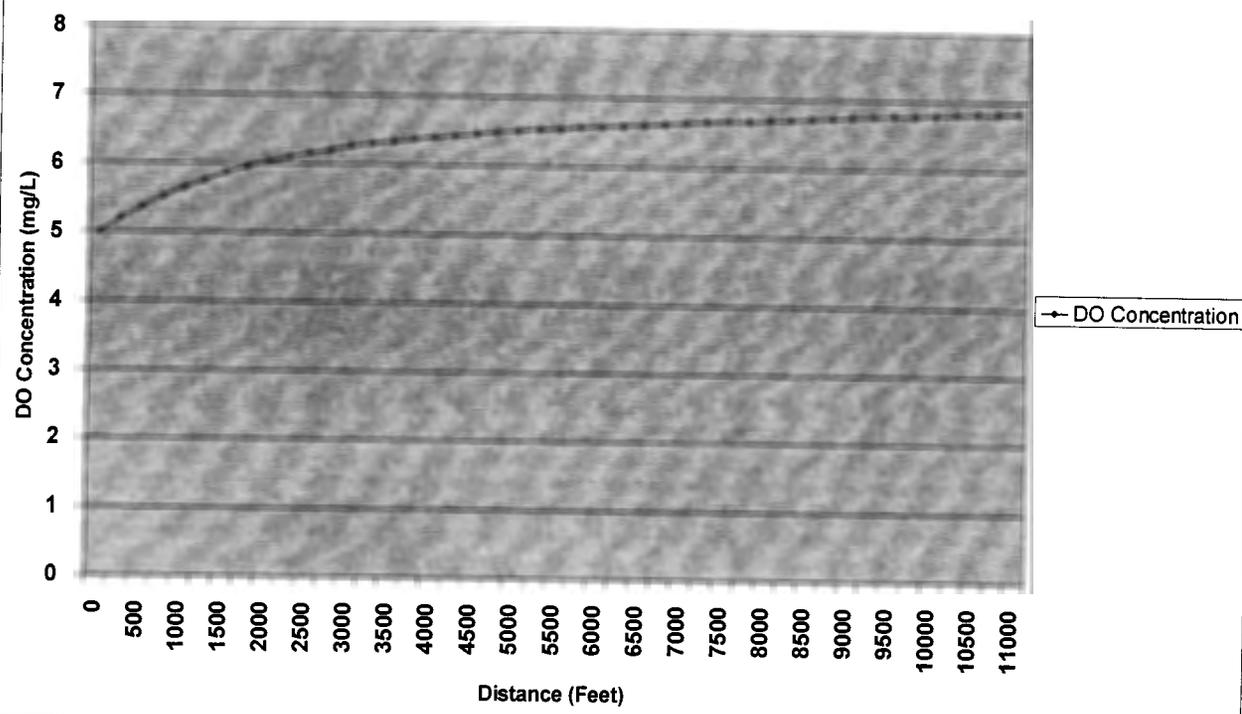
<b>1. EFFLUENT CHARACTERISTICS</b>			
Discharge (cfs):			1.55
CBOD5 (mg/L):			17.5
NBOD (mg/L):			5
Dissolved Oxygen (mg/L):			5
Temperature (deg C):			26
<b>2. RECEIVING WATER CHARACTERISTICS</b>			
Upstream Discharge (cfs):			0.5
Upstream CBOD5 (mg/L):	<b>Assumed</b>		1.5
Upstream NBOD (mg/L):	<b>Assumed</b>		0.2
Upstream Dissolved Oxygen (mg/L):	<b>Water Quality Standards</b>		5
Upstream Temperature (deg C):	<b>Assumed</b>		26
Elevation (ft NGVD):	<b>7.5" topographic Map</b>		790
Downstream Average Channel Slope (ft/ft):	<b>7.5" topographic Map</b>		0.0078
Downstream Average Channel Depth (ft):	<b>JUNE 30, 2005 Use Attainability Analy</b>		0.5
Downstream Average Channel Velocity (fps):	<b>JUNE 30, 2005 Use Attainability Analy</b>		1
<b>3. REAERATION RATE (Base e) AT 20 deg C (day<sup>-1</sup>):</b>			53.00
Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values
Churchill	1.5 - 6	2 - 50	36.99
O'Connor and Dobbins	.1 - 1.5	2 - 50	36.66
Owens	.1 - 6	1 - 2	77.87
Tsivoglou-Wallace	.1 - 6	.1 - 2	53.87
<b>4. BOD DECAY RATE (Base e) AT 20 deg C (day<sup>-1</sup>):</b>			3.33
Reference			Suggested Value
Wright and McDonnell, 1979			3.33

**OUTPUT**

<b>1. INITIAL MIXED RIVER CONDITION</b>	
CBOD5 (mg/L):	13.6
NBOD (mg/L):	3.8
Dissolved Oxygen (mg/L):	5.0
Temperature (deg C):	26.0
<b>2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)</b>	
Reaeration (day <sup>-1</sup> ):	61.10
BOD Decay (day <sup>-1</sup> ):	4.39
<b>3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU</b>	
Initial Mixed CBODU (mg/L):	20.0
Initial Mixed Total BODU (CBODU + NBOD, mg/L):	23.8
<b>4. INITIAL DISSOLVED OXYGEN DEFICIT</b>	
Saturation Dissolved Oxygen (mg/L):	7.886
Initial Deficit (mg/L):	2.89
<b>5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):</b>	0.000000
<b>6. DISTANCE TO CRITICAL DO CONCENTRATION (feet):</b>	0.00
<b>7. CRITICAL DO DEFICIT (mg/L):</b>	2.89
<b>8. CRITICAL DO CONCENTRATION (mg/L):</b>	5.00

Appendix C. continued.

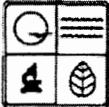
Dissolved Oxygen Sag Curve for WWTF Expansion



## Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant. 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: Only one water body segment end location was not provided but was determined by staff. The proposed BOD effluent concentration were not accurate given the treatment capacity of the preferred alternative and the resulting the DO modeling; thus this WQAR assigned different limitations than proposed by the applicant. The proposed ammonia concentrations were accurate but are a reflect both the treatment capacity of the proposed facility and the water quality based effluent limitations.
- 2) Attachment B: No changes needed.



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

<b>1. FACILITY</b>			
NAME ODESSA NW WWTP		TELEPHONE NUMBER WITH AREA CODE 816-230-5577	
ADDRESS (PHYSICAL) 7114 HUGHES ROAD		CITY ODESSA	STATE MO
			ZIP CODE 64076
<b>2. RECEIVING WATER BODY SEGMENT #1</b>			
NAME OWL CREEK			
2.1 UPPER END OF SEGMENT (Location of discharge) UTM _____ OR Lat +3901005, Long -09358596			
2.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."			
<b>3. WATER BODY SEGMENT #2 (IF APPLICABLE)</b>			
NAME			
3.1 UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
3.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
<b>4. WATER BODY SEGMENT #3 (IF APPLICABLE)</b>			
NAME			
4.1 UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
4.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
<b>5. PROJECT INFORMATION</b>			
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete No Degradation Evaluation – Conclusion of Antidegradation Review form. Submit with the appropriate Construction Permit Application as no antidegradation review is required.			
If yes to one of the above questions, skip to Section 8 - Wet Weather.			

**6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY**

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

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

Comments/Discussion:

**7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)**

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

Water Body Segment One Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
BACTERIA (FECAL C.)		
BACTERIA (E. COLI)		
BOD5, DO		
TSS		
AMMONIA		

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

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

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

**8. WET WEATHER ANTICIPATIONS**

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

What is the Wet Weather Flow Peaking Factor in relation to design flow? 4

Wet Weather Design Summary:  
 PLANT IS ABLE TO HANDLE 4 MGD. PEAK FLOWS CAN ALSO BE EQUALIZED IN THE EXISTING 2 CELL LAGOON.

MO 780-2025 (05-09)

**9. SUMMARY OF THE PROPOSED ANTIDegradation REVIEW EFFLUENT LIMITS**

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

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	MG/L	19	19	29
TSS	MG/L	30	30	45
Dissolved Oxygen	MG/L	5.0 MINIMUM	--	--
Ammonia	MG/L	1.4SUMMER/ 2.9WINTER	1.4SUMMER/ 2.9WINTER	3.7SUMMER/ 7.6WINTER
Bacteria (E. Coli)	#/100 ML	206	206	--
OIL & GREASE	MG/L	10	10	--

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

Attach the Antidegradation Review report and all supporting documentation.

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

SIGNATURE *Vance Allen Neal* DATE *6-9-2010*

NAME AND OFFICIAL TITLES  
ASSOCIATE ENGINEER

COMPANY NAME  
LARKIN GROUP, INC

ADDRESS CITY STATE ZIP CODE  
9200 Ward Parkway, Suite 200 Kansas City MO 64114

TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
(816) 361-0440 VNEAL@LARKIN-GRP.COM

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

SIGNATURE *[Signature]* DATE *9 JUNE 2010*

NAME AND OFFICIAL TITLES  
MIKE HAYSLIP, MSW, MPA, CITY ADMINISTRATOR

ADDRESS CITY STATE ZIP CODE  
125 S. 2ND STREET. PO BOX 128 Odessa MO 64076

TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
816-230-5577 MHAYSLIP@CITYOFODESSAMO.COM

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

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

SIGNATURE *[Signature]* DATE *9 JUNE 2010*

NAME AND OFFICIAL TITLES  
MIKE HAYSLIP, MSW, MPA, CITY ADMINISTRATOR

ADDRESS CITY STATE ZIP CODE  
125 S. 2ND STREET. PO BOX 128 Odessa MO 64076

TELEPHONE NUMBER WITH AREA CODE E-MAIL ADDRESS  
816-230-5577 MHAYSLIP@CITYOFODESSAMO.COM



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

<b>1. FACILITY</b>					
NAME Odessa NW Wastewater Treatment Plant				TELEPHONE NUMBER WITH AREA CODE (816) 230-5577	
ADDRESS (PHYSICAL) 7114 Hughes Road		CITY Odessa		STATE MO	ZIP CODE 64076
<b>2. RECEIVING WATER BODY SEGMENT #1</b>					
NAME Owl Creek					
<b>3. WATER BODY SEGMENT #2 (IF APPLICABLE)</b>					
NAME					
<b>4. IDENTIFYING ALTERNATIVES</b>					
Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided." as stated in the Antidegradation Implementation Procedure Section II.B.1. Per 10 CSR 20-6.010(4)(D)1., the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report. (N/A)					
Non-degrading alternatives: Land Application, Sub-surface irrigation (N/A), Alternative discharge location (N/A), Recycling or reuse (N/A)					
Alternatives ranging from less-degrading to degrading including Preferred Alternative (All must meet water quality standards):					
Alternatives	Level of Treatment Attainable for each Pollutant of Concern				
	BOD (mg/L)	TSS (mg/L)	Ammonia as N (mg/L)	Bacteria (E. Coli) (#/100mL)	
Base Project					
#1 Biological Nutrient Removal (BNR)	15	25	2	206	
#2 BNR w/Filter	10	<10	<2	206	
#3 MBR	<5	<5	<1	206	
<b>Identifying Alternatives Summary:</b> _____					
All three alternatives provide advanced Biological Nutrient Removal (BNR) Activated Sludge Treatment with UV disinfection. The BNR and BNR w/filter options have separate clarifiers which the City prefers. The Facility Plan and attached report discusses all the alternatives.					
Non-Degrading			Less-Degrading		
1 Land Application & Seasonal Storage			1 Improved O&M of existing facility		
2 Subsurface Irrigation & Seasonal Storage			2 Alt #1 Base BNR WWTP		
3 Recycling or Reuse			3 Alt #2 BNR with Filtration WWTP		
4 Diversion of Affluent to Regional SE WWTP			4 Alt #3 MBR WWTP		
5 Alternative Discharge to Missouri River					

MO786-2021 (01/09)

## 5. DETERMINATION OF THE REASONABLE ALTERNATIVE

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

### Practicability Summary:

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

The non-degrading alternatives, except Regional Treatment Facility, were all determined not practicable for various reasons including soils, land values, easements, etc. Regional SE WWTP, Base BNR WWTP, BNR with Filtration WWTP & MBR WWTP were considered practical alternatives. All plant expansion and upgrades alternatives within current plant property boundaries. The alternatives all protect water quality and existing uses.

### Economic Efficiency Summary:

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

Alternate #1-The Base BNR Project is considered affordable. Also

Alternate #2-BNR with Filtration Project is 109% of the Base Project cost which is considered economically efficient.

Alternate #3-MBR Project is not considered economically efficient since over 120% of base project.

Alternate #4-SE WWTP is not considered economically efficient since over 120% of base project.

### Affordability Summary:

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

The Base BNR Project is the preferred alternative. The BNR with Filtration is also economically efficient.

### Preferred Chosen Alternative:

Odessa is proposing to upgrade and expand the existing Wastewater Treatment Plant from 0.144 MGD to 1.0 MGD. The proposed facility is a Biological Nutrient Removal Activated Sludge Plant, fine screening, grit removal, clarifiers, UV disinfection, reaeration, digesters, sludge dewatering and dewatered sludge storage.

### Reasons for Rejecting the other Evaluated Alternatives:

All non-degrading alternatives were considered not economically efficient and thus rejected. Alternative three and four were considered not economically efficient since they were over 120% of the Base Project.

### Comments/Discussion:

The City has chosen a Biological Nutrient Removal Activated Sludge Plant with separate clarifiers. A new headworks, UV disinfection and reaeration, digestion, dewatering and sludge storage. All alternatives protect water quality and existing uses.

**6. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE**

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

**Identify the affected community:**

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

City of Odessa and Lafayette County will be affected. Schools, hospitals, neighbors and downstream landowners. Land on both sides of Highway I-70 will be opened for Industrial and Commercial growth.

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

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

Medium Household Income: \$42,844

Unemployment Rate: 11.1%

Taxable Property Value: \$48,555,818

Commercial Industrial Potential: High

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

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

Provide for growth for the next 20 years Important tax base for the City and County. Services are provided more efficiently to denser population growth areas then to scattered rural housing, provide for improved water quality in the receiving stream. Commercial and industrial growth along the I-70 corridor around Odessa will be encouraged.

**PROPOSED PROJECT SUMMARY:**

City of Odessa is proposing to upgrade and expand the existing Wastewater Treatment Facility. This expansion would increase the design flow from 0.144 MGD to 1.0 MGD. The proposed facility is a deep oxidation ditch with jet aeration, fine screening, grit removal, separate clarifiers, UV disinfection, digesters, sludge dewatering, sludge storage equalization.

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

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

SIGNATURE <i>Vance Neal</i>	DATE 10-25-2010
--------------------------------	--------------------

PRINT NAME Vance A. Neal	LICENSE #: E-27875
-----------------------------	-----------------------

TELEPHONE NUMBER WITH AREA CODE (816) 361-0440	E-MAIL ADDRESS: vneal@larkin-grp.com
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**OWNER:** I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE <i>[Signature]</i>	DATE 25 OCT 2010
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**CONTINUING AUTHORITY:** I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE <i>[Signature]</i>	DATE 25 OCT 2010
---------------------------------	---------------------

Odessa

JUL 10 2013

RECEIVED



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY**

PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY

FACILITY NAME Odessa NW WWTP	
PERMIT NO. MO.-0026379	COUNTY Lafayette

**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.
- 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**

AP1090-1  
 CP0001260  
 C11761



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM B2 – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW MORE THAN 100,000 GALLONS PER DAY**

**FOR AGENCY USE ONLY**

CHECK NUMBER

1260333

DATE RECEIVED

FEE SUBMITTED

7/10/13

\$450.008B

**PART A – BASIC APPLICATION INFORMATION**

1. This application is for:

An operating permit and antidegradation review public notice.

A construction permit following an appropriate operating permit and antidegradation review public notice.

A construction permit, a concurrent operating permit and antidegradation review public notice.

A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required).

An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_

An operating permit renewal: Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

An operating permit modification: Permit #MO- \_\_\_\_\_ Reason: \_\_\_\_\_

1.1 Is this a Federal/State Funded Project?  Yes  No Funding Agency/Project #: C295675-01

1.2 Is the appropriate fee included with the application (See instructions for appropriate fee)?  Yes  No

**2. FACILITY**

NAME Odessa NW WWTP		TELEPHONE NUMBER WITH AREA CODE 816-633-4764	
ADDRESS (PHYSICAL) 7114 Hughes Road	CITY Odessa	STATE Mo	ZIP 64076
2.1 LEGAL DESCRIPTION (Plant Site):		¼, SW ¼, SE ¼, Sec. 27, T 49, R 28W County Lafayette	
2.2 UTM Coordinates Easting (X): <u>27</u> Northing (Y): <u>49</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			

**3. OWNER** City of Odessa, MO ↑ Outfall 001 location E 2934642, N 1038529 ↑

NAME City of Odessa	TITLE City Clerk	TELEPHONE NUMBER WITH AREA CODE 816-230-5577	
ADDRESS 125 2nd St. P.O. Box 128	CITY Odessa	STATE Mo	ZIP 64076

3.1 Request review of draft permit prior to Public Notice?  Yes  No

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

NAME CITY OF ODESSA	CITY ODESSA
ADDRESS 125 2ND ST P.O. 128	CERTIFICATE NUMBER (IF APPLICABLE) STATE MO ZIP 64076

**5. OPERATOR**

NAME PAUL CONWAY	TITLE CHIEF OPERATOR/PW DIRECTOR	TELEPHONE NUMBER WITH AREA CODE 816-633-4764
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**6. FACILITY CONTACT**

NAME PAUL CONWAY	TITLE CHIEF OPERATOR/PW DIRECTOR
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MO 780-1805 (09-08)

FACILITY NAME ODESSA SE WWTP	PERMIT NO. MO- 0026387	OUTFALL NO. 001
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**PART A – BASIC APPLICATION INFORMATION**

**7. ADDITIONAL FACILITY INFORMATION**

7.1 BRIEF DESCRIPTION OF FACILITIES

New Mechanical 1 MGD WWTP Includes: Flow equalization with existing lagoons, Infl. & Effl. Flow Measurement, Fine Screening, Grit Removal, 2 BNR Deep Oxidation Ditches, 2 Clarifiers, Filters, UV, Step Reaeration, Outfall, 2 Digesters, Sludge Dewatering & Storage

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. (YOU MAY SUBMIT MORE THAN ONE MAP IF ONE MAP DOES NOT SHOW THE ENTIRE AREA.)

- a. The area surrounding the treatment plant, including all unit processes.
- b. The location of the downstream landowner(s). (See Item 10.)
- c. 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.
- d. The actual point of discharge.
- e. 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.
- f. Any areas where the sewage sludge produced by the treatment works is stored, treated or disposed.
- g. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act, or 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 PROCESS FLOW DIAGRAM OR SCHEMATIC. PROVIDE A DIAGRAM SHOWING THE PROCESSES OF THE TREATMENT PLANT. ALSO, PROVIDE A WATER BALANCE SHOWING ALL TREATMENT UNITS, INCLUDING DISINFECTION (E.G. CHLORINATION AND DECHLORINATION). THE WATER BALANCE MUST SHOW DAILY AVERAGE FLOW RATES AT INFLUENT AND DISCHARGE POINTS AND APPROXIMATE DAILY FLOW RATES BETWEEN TREATMENT UNITS. INCLUDE A BRIEF NARRATIVE DESCRIPTION OF THE DIAGRAM.

7.4 FACILITY SIC CODE 4952	DISCHARGE SIC CODE: 4952	FACILITY NAICS CODE: 2371	DISCHARGE NAICS CODE: 2371
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7.5 NUMBER OF SEPARATE DISCHARGE POINTS  
one

7.6 NUMBER OF PEOPLE PRESENTLY CONNECTED OR POPULATION EQUIVALENT  
3,100

DESIGN POPULATION EQUIVALENT  
10,000

NUMBER OF UNITS PRESENTLY CONNECTED  
 HOMES \_\_\_\_\_ APARTMENTS \_\_\_\_\_ TRAILERS \_\_\_\_\_ OTHER \_\_\_\_\_

TOTAL DESIGN FLOW (ALL OUTFALLS)  
Average Design = 1.0 MGD, Peak Design = 4.0 MGD

ACTUAL FLOW  
0.309 MGD

7.7 DOES ANY BYPASSING OCCUR ANYWHERE IN THE COLLECTION SYSTEM OR AT THE TREATMENT FACILITY?  
 Yes  No  (If Yes, attach an explanation.)

7.8 LENGTH OF THE SANITARY SEWER COLLECTION SYSTEM IN MILES  
8

7.9 IS INDUSTRIAL WASTE DISCHARGED TO THE FACILITY IDENTIFIED IN ITEM 2? Yes  No

7.10 WILL THE DISCHARGE BE CONTINUOUS THROUGH THE YEAR? Yes  No

A. DISCHARGE WILL OCCUR DURING THE FOLLOWING MONTHS

B. HOW MANY DAYS OF THE WEEK WILL THE DISCHARGE OCCUR?

7.11 IS WASTEWATER LAND APPLIED? (If Yes, Attach Form I)  
Yes  No

7.12 DOES THIS FACILITY DISCHARGE TO A LOSING STREAM OR SINKHOLE? Yes  No

7.13 HAS A WASTE LOAD ALLOCATION STUDY BEEN COMPLETED FOR THIS FACILITY?  
Yes  No

7.14 LIST ALL PERMIT VIOLATIONS, INCLUDING EFFLUENT LIMIT EXCEEDANCES IN THE LAST FIVE YEARS. ATTACH A SEPARATE SHEET IF NECESSARY. IF NONE, WRITE NONE.

**8. LABORATORY CONTROL INFORMATION**

8.1 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 ODESSA SE WWTP	PERMIT NO. MO- 0026379	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 304 tons/year at full capacity Actual Dry Tons/Year lagoon treatment at present

9.3 CAPACITY OF SLUDGE HOLDING STRUCTURES

9.4 SLUDGE STORAGE PROVIDED  
 Cubic Feet <sup>95,034 + 36,000</sup> Days of Storage <sup>89 + 215 dewatered</sup> Average Percent Solids of Sludge 2.5% & 16%  No Sludge Storage is Provided

9.5 TYPE OF STORAGE  
 Holding Tank  Basin  Building  Concrete Pad  Other (Describe) dewatered sludge storage

9.6 SLUDGE TREATMENT  
 Anaerobic Digester  Storage Tank  Lime Stabilization  Lagoon  
 Aerobic Digester  Air or Heat Drying  Composting  Other (Attach Description)

9.7 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) \_\_\_\_\_

9.8 PERSON RESPONSIBLE FOR HAULING SLUDGE TO DISPOSAL FACILITY

NAME  
CITY OF ODESSA

ADDRESS 125 S.2ND ST. P.O. 128	CITY Odessa	STATE Mo	ZIP 64076
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CONTACT PERSON PAUL CONWAY	TELEPHONE NUMBER WITH AREA CODE 816-230-5577	PERMIT NO. MO- 0026379
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9.9 SLUDGE USE OR DISPOSAL FACILITY

By Applicant  By Others (Complete Below)

NAME

ADDRESS	CITY	STATE	ZIP
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CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-
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9.10 DO THE SLUDGE OR BIOSOLIDS DISPOSAL COMPLY WITH FEDERAL SLUDGE REGULATIONS UNDER 40 CFR 503?  
 Yes  No (Attach Explanation)

**10. DOWNSTREAM LANDOWNER(S). (ATTACH ADDITIONAL SHEETS AS NECESSARY.)**

NAME  
1) Howard Baker 2) Terry Shively Box 7549

ADDRESS RR #3	CITY Odessa	STATE Mo	ZIP 64076
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**11. DRINKING WATER SUPPLY INFORMATION**

11.1 SOURCE OF YOUR DRINKING WATER SUPPLY

A. PUBLIC SUPPLY (MUNICIPAL OR WATER DISTRICT WATER) (IF PUBLIC, PLEASE GIVE NAME OF PUBLIC SUPPLY)  
 City of Odessa Municipal Water in City & Lafayette County Public Water Supply District #1 in County

B. PRIVATE WELL

C. SURFACE WATER (LAKE, POND OR STREAM)

11.2 DOES YOUR DRINKING WATER SOURCE SERVE AT LEAST 25 PEOPLE AT LEAST 60 DAYS PER YEAR (NOT NECESSARILY CONSECUTIVE DAYS)?  
 Yes  No

11.3 DOES YOUR SPPLY SERVE HOUSING THAT IS OCCUPIED YEAR ROUND BY THE SAME PEOPLE? THIS DOES NOT INCLUDE HOUSING THAT IS OCCUPIED SEASONALLY?  
 Yes  No

**END OF PART A**

<b>MAKE ADDITIONAL COPIES OF THIS FORM FOR EACH OUTFALL</b>			
FACILITY NAME ODESSA NW WWTP		PERMIT NO. MO- 0026379	OUTFALL NO. 001
<b>PART B – ADDITIONAL APPLICATION INFORMATION</b>			
<b>20. INFLOW AND INFILTRATION</b>			
ESTIMATE THE AVERAGE NUMBER OF GALLONS PER DAY THAT FLOW INTO THE TREATMENT WORKS FROM INFLOW AND INFILTRATION. Gallons Per Day Minimal			
BRIEFLY EXPLAIN ANY STEPS UNDERWAY OR PLANNED TO MINIMIZE INFLOW AND INFILTRATION. CCTV/MH Insp. Rehab will include point repairs, new pipe, CIPP, MH Rehab from inspect. ,			
<b>20.1 OPERATION AND MAINTENANCE PERFORMED BY CONTRACTOR(S)</b>			
ARE ANY OPERATIONAL OR MAINTENANCE ASPECTS (RELATED TO WASTEWATER TREATMENT AND EFFLUENT QUALITY) OF THE TREATMENT WORKS THE RESPONSIBILITY OF A CONTRACTOR? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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			
RESPONSIBILITIES OF CONTRACTOR			
<b>20.2 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. (IF NONE, GO TO QUESTION B-20.3.)</b>			
A. List the outfall number that is covered by this implementation schedule Outfall No. 001		B. Indicate whether the planned improvements or implementation schedule are required by local, state or federal agencies. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>20.3 WASTEWATER DISCHARGES:</b> COMPLETE QUESTIONS 20.4 THROUGH 20.7 ONCE FOR EACH OUTFALL (INCLUDING BYPASS POINTS) THROUGH WHICH EFFLUENT IS DISCHARGED. DO NOT INCLUDE INFORMATION ON COMBINED SEWER OVERFLOWS IN THIS SECTION.			
<b>20.4 DESCRIPTION OF OUTFALL</b>			
OUTFALL NUMBER 001 - Outfall 001 location E 2934642, N 1038529			
A. LOCATION ¼ <u>SW</u> ¼ <u>SE</u> Section <u>27</u> Township <u>49</u> Range <u>28</u> <input type="checkbox"/> E <input checked="" type="checkbox"/> W UTM Coordinates Easting (X): <u>27</u> Northing (Y): <u>49</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)			
B. Distance from Shore (If Applicable) _____ ft.	C. Depth Below Surface (If Applicable) _____ ft.	D. Average Daily Flow Rate <u>.3</u> mgd	
E. Does this outfall have either an intermittent or periodic discharge? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Provide the following information:			
Number of Days Per Year Discharge Occurs:	Average Duration of Each Discharge:	Average Flow Per Discharge: mgd	Months in Which Discharge Occurs:
Is Outfall Equipped with a Diffuser? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
<b>20.5 DESCRIPTION OF RECEIVING WATER</b>			
B. Name of Receiving Water TRIBUTARY TO OWL CREEK			
B. Name of Watershed (If Known) Lower Missouri-Crooked		U.S. Soil Conservation Service 14-Digit Watershed Code (If Known) 10300101-110005	
B. Name of State Management/River Basin (If Known)		U.S. Geological Survey 8-Digit Hydrologic Cataloging Unit Code (If Known) 10300101	
B. Critical Flow of Receiving Stream (If Applicable) Acute _____ cfs Chronic _____ cfs		B. Total Hardness of Receiving Stream at Critical Low Flow (If Applicable) mg/L of CaCO <sub>3</sub>	

MO 780-1805 (09-08)

FACILITY NAME ODESSA NW WWTP	PERMIT NO. MO- 0026379	OUTFALL NO. 001
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**PART B – ADDITIONAL APPLICATION INFORMATION (CONTINUED)**

20.6 DESCRIPTION OF TREATMENT

A. WHAT LEVELS OF TREATMENT ARE PROVIDED? Check All That Apply  
 Primary     Secondary     Advanced     Other (Describe)

B. INDICATE THE FOLLOWING REMOVAL RATES (AS APPLICABLE)  
 Design BOD<sub>5</sub> Removal Or Design CBOD<sub>5</sub> Removal      85 %      Design SS Removal      85 %  
 Design P Removal      %      Design N Removal      %      Other      %

C. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe:  
 UV Disinfection System

If disinfection is by chlorination, is dechlorination used for this outfall?     Yes     No

Does the treatment plant have post aeration?     Yes     No

20.7 EFFLUENT TESTING DATA. ALL APPLICANTS THAT DISCHARGE TO WATERS OF THE U.S. 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.

OUTFALL NUMBER

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	VALUE	UNITS	VALUE	UNITS	NO. OF SAMPLES
pH (Minimum)	6.68	S.U.		S.U.	18
pH (Maximum)	8.21	S.U.	7.51	S.U.	18
FLOW RATE	1.575	MGD	.2	MGD	
TEMPERATURE (Winter)	17.1	°C	5.3	°C	274
TEMPERATURE (Summer)	32.7	°C	18.1	°C	270

\*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	NO. OF SAMPLES		

Conventional and Nonconventional Compounds

BIOCHEMICAL OXYGEN DEMAND (Report One)	BOD <sub>5</sub>	36	mg/L	19	mg/L	16	SM 5210 B 21ed	
	CBOD <sub>5</sub>		mg/L		mg/L			
FECAL COLIFORM	3486	#/100 mL	8	#/100 mL	30	SM 9222 D MFC		
TOTAL SUSPENDED SOLIDS (TSS)	61	mg/L	29	mg/L	16	SM 2540 D		
AMMONIA (AS N)	6.5	mg/L	2.3	mg/L	15	SM 4500 NH3	.5	
CHLORINE (TOTAL RESIDUAL, TRC)		mg/L		mg/L				
DISSOLVED OXYGEN	14.9	mg/L	7.8	mg/L	274	SM 4500-OG		
TOTAL KJELDAHL NITROGEN (TKN)		mg/L		mg/L				
NITRATE PLUS NITRITE NITROGEN		mg/L		mg/L				
OIL AND GREASE	<5	mg/L		mg/L	<5	EPA 1664 A	5	
PHOSPHORUS (TOTAL)		mg/L		mg/L				
TOTAL DISSOLVE SOLIDS (TDS)		mg/L		mg/L				
OTHER		mg/L		mg/L				

END OF PART B

**PART C - CERTIFICATION**

**30. CERTIFICATION**

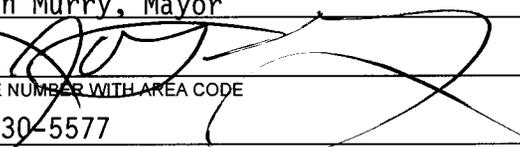
All applicants must complete the Certification Section. This certification must be signed by an officer of the company or city official. All applicants must complete all applicable sections as explained in the Application Overview. By signing this certification statement, applicants confirm that they 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 AND OFFICIAL TITLE (MUST BE AN OFFICER OF THE COMPANY OR CITY OFFICIAL)

Justin Murry, Mayor

SIGNATURE 

TELEPHONE NUMBER WITH AREA CODE

816-230-5577

DATE SIGNED

June 20, 2013

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.

For Design Flows Less than 1 Million Gallons Per Day,  
Send Completed Form to:

**Appropriate Regional Office**

Map of regional offices with addresses and phone numbers is available on the Web at [www.dnr.mo.gov/regions/ro-map.pdf](http://www.dnr.mo.gov/regions/ro-map.pdf).

For Design Flows of 1 Million Gallons Per Day or Greater,  
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 OTHER PARTS OF FORM B2 YOU MUST COMPLETE.**

- Do not complete the remainder of this application, unless:
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.