

**STATE OF MISSOURI**  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



## CONSTRUCTION PERMIT

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

<p>Twin Oaks Subdivision Homeowners Association Oak Meadow Dr. Jackson, MO 63755</p>
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for the construction of (described facilities):

<p>See attached.</p>
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Permit Conditions:

<p>See attached.</p>
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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.

August 11, 2016  
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

August 10, 2018  
Expiration Date

John Madras, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

Twin Oaks Subdivision is located about 2 miles outside Jackson, MO and is replacing their recirculating pea gravel filter with moving bed biological reactors (MBBR). There are two 22,200 gallon septic tanks existing onsite that will be utilized, along with the existing pump station, pump, and disinfection system. The MBBR is a pre-cast two-stage treatment basin. The first stage basin will be for biological oxygen demand (BOD<sub>5</sub>) removal, with the second basin for nitrification. The MBBR needs a minimum media surface area of 3754.6 m<sup>2</sup> to work. The MBBR basin provides 5 hours of detention time at design average flow and 2.5 hours of detention time at peak hourly flow. The clarifier is a precast dual hopper clarifier, which provides a surface settling rate of 442 gallons per square foot. The design flow will remain at 22, 200 gpd.

### **II. COST ANALYSIS FOR COMPLIANCE**

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a “finding of affordability” on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

The department is not required to complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

### **III. CONSTRUCTION PERMIT CONDITIONS**

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

1. This construction permit does not authorize discharge.
2. All construction shall be in accordance with the plans and specifications submitted by 21 Design Group and Strickland Engineering on April 19, 2016.
3. The department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).
4. State and federal law does not permit bypassing of raw wastewater; therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department’s Southeast Regional Office per 10 CSR 20-7.015(9)(E)2.

5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"
6. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."
7. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
  - A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
  - B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.
  - C. Manholes shall be located with the top access at or above grade level.
  - D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
    - a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
    - b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.

8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department's ePermitting system available online at [www.dnr.mo.gov/env/wpp/epermit/help.htm](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.
9. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the department's Water Protection Program at 573-751-1300 for more information. See [www.dnr.mo.gov/env/wpp/401/](http://www.dnr.mo.gov/env/wpp/401/) for more information.
10. A full closure plan shall be submitted to the department's Southeast Regional Office for review and approval of any permitted wastewater treatment system being replaced. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit No. MO- 0131334. Closure shall not commence until the submitted closure plan is approved by the department. Form J – Request for Termination of a State Operating Permit, shall be submitted to the Water Protection Program for termination of any existing Missouri state operating permit, once closure is completed in accordance with the approved closure plan.
11. Upon completion of construction;
  - A. Twin Oaks Subdivision Homeowners Association will become the continuing authority for operation, maintenance, and modernization of these facilities;
  - B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued; and
  - C. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications.

#### **IV. REVIEW SUMMARY**

##### **1. AMMONIA**

The Water Protection Program is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri

criteria. The department has initiated stakeholder discussions on this topic and at this time, there is no firm target date for starting the rulemaking to adopt new standards. More information can be found at <http://dnr.mo.gov/pubs/pub2481.pdf>.

The facility received notification of EPA’s proposed criteria in the facility plan approval letter, August 17, 2015 and in the public noticed draft modification to the operating permit, July 7, 2016. The facility included the construction of the second moving bed biological reactor to provide nutrient removal to meet the estimated effluent limit of 0.6 mg/L, per the construction permit application and approved facility plan.

**2. CONSTRUCTION PURPOSE**

The purpose of construction is to meet the previous schedule of compliance established in the 2011 permit renewal to meet ammonia effluent limits.

**3. FACILITY DESCRIPTION**

Septic tank/Influent pump station/Septic tank/Two MBBR basins/Clarifier/Chlorine Disinfection/Dechlorination/ Sludge returned to septic tank or hauled by contract hauler.

Twin Oaks Subdivision is located about 2 miles outside Jackson, MO. The existing system was built in 2005/2006. The existing facility was two septic tanks, a recirculating pea gravel filter, with chlorine disinfection. Below is a summary of their performance from 2010-2016. The facility had a schedule of compliance in their 2011 renewal for upgrades to meet ammonia effluent limits. The subdivision decided to abandon the recirculating pea gravel filter and replace it with two moving bed bioreactors and a clarifier to achieve ammonia removal. It is expected the upgrade of the system and the removal of the ammonia, will allow the chlorine disinfection system to work better.

Parameter	Units	Average Monthly Effluent Limit	Average Performance from DMRs †
Flow	MGD	*	0.0193
BOD <sub>5</sub>	mg/L	30	25.8
TSS	mg/L	30	7.6
Ammonia as N-summer	mg/L	*/2.3	27.1
Ammonia as N-winter	mg/L	*/4.9	29.0
pH	SU	6.5-9.0	7.3
Total Residual Chlorine	µg/L	<130	3.25 (<130)

\*monitoring only

† Average of DMRs from 2010-2016

**4. COMPLIANCE PARAMETERS**

The effluent limits the facility is required to meet are listed below. The facility will have to meet ammonia effluent limits. As the facility currently uses chlorine disinfection, a monitoring requirement was added for dissolved oxygen monitoring. The ammonia effluent limits were recalculated from the 2011 schedule of compliance to effluent limits using the department’s default temperature and pH.

PARAMETER	Unit	Daily Maximum	Weekly Average	Monthly Average
Flow	MGD	*		*
BOD <sub>5</sub>	mg/L		45	30
TSS	mg/L		45	30
<i>Escherichia coli</i> **	#/100mL	1030		206
Ammonia as N (Apr 1 –Sep 30)	mg/L	3.6		1.4
Ammonia as N (Oct 1 – Mar 31)	mg/L	7.5		2.9
Chlorine, Total Residual	µg/L	< 130		< 130
PARAMETER	Unit	Minimum		Maximum
pH	SU	6.5		9.0
PARAMETER	Unit	Daily Minimum		Monthly Avg Min
Dissolved Oxygen (DO)	mg/L	*		*

**5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

The Twin Oaks WWTF will utilize the existing septic tanks, pump, and disinfection system. The design flow will remain at 22, 200 gpd.

**Septic tank:** Wastewater flows into the two septic tank, which are 22,200 gallon tanks with a baffle. The use of the septic tanks will provide flow equalization to the moving bed biological reactors.

**Moving Bed Bioreactor:** The moving bed biological reactors (MBBR) is a pre-cast two-stage treatment basin. The first stage basin will be for biological oxygen demand (BOD<sub>5</sub>) removal, with the second basin for nitrification. The basins will have a water depth of 10 foot. The basins will be placed partially in the ground. The blower is capable of supplying 220 scfm of air at 5.5 psig, and there will be two blowers added.

- In the first stage for BOD removal, the detention time at design average flow is 159 minutes and is 80 minutes at peak hourly flow. The first basin requires 1307.8 m<sup>2</sup> surface area of the media, with 15.8 scfm of air required.
- In the second stage for nitrification, the process needs 2446.8 m<sup>2</sup> of media surface area and 15.5 scfm of air is required. The MBBR has 142 minutes of detention time at design average flow and 71 minutes at peak flow.

**Clarifier:** The clarifier is a precast dual hopper clarifier. The clarifier is 8 ft. in diameter with a surface area of 50.24 ft<sup>2</sup>, which provides a surface settling rate of 442 gallons per square foot which is less than the maximum of 1000 gpd per square foot required in 10 CSR 20-8.020(13)(B)7B. The clarifier tank hopper meets the minimum slope of 60° and provides more than 2 feet of water depth as required in 10 CSR 20-8.020(13)(B)7C. The inlet baffle extends 6 inches above the water level and 2 feet below the water level, as required in 10 CSR 20-8.020(13)(B)7D.

All sludge is expected to be returned to the first cell of the septic tank. From there the sludge will be pumped and hauled by contract hauler.

**Chlorine disinfection system:** The chlorine disinfection system was constructed with the original plant construction in 2005. There are two tablet feeders, one for chlorination and one for dechlorination.

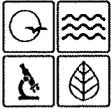
**6. OPERATING PERMIT MODIFICATION**

Operating permit MO-0131334 will require a modification to reflect the construction activities. Upon construction completion submit a Statement of Work Complete form and a request to issue the permit modification. The operating permit modification was public noticed July 8 – August 8, 2016 with no comments received. The facility has already paid for their operating permit modification.

The existing pea gravel filter will be removed at a later date when funding is available for removal. A Closure Plan for the removal of the recirculating pea gravel filter must be submitted for approval to the Southeast Regional Office.

Leasue Meyers, EI  
Engineering Section  
[leasue.meyers@dnr.mo.gov](mailto:leasue.meyers@dnr.mo.gov)

MO-0131334  
 RECEIVED  
 APR 19 2016  
 CP0001837  
 AP 23519  
 C116156



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**APPLICATION FOR CONSTRUCTION PERMIT - WASTEWATER FACILITY**

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED \$1000.00	CHECK NO. 2092
DATE RECEIVED 4-19-16	

**APPLICATION OVERVIEW**

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

**PART A – BASIC INFORMATION**

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

- 1.1 Is this a Federal/State funded project?  YES  N/A Funding Agency: \_\_\_\_\_ Project #: \_\_\_\_\_
- 1.2 Is this an application for an agrichemical?  YES (See instructions.)  N/A
- 1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?  
 YES Date of Approval: N/A
- 1.4 Has the department approved the proposed project's facility plan\*?  
 YES Date of Approval: 8/17/15  NO  N/A (If Not Applicable, complete No. 1.5.)
- 1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report\* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?  
 YES  NO
- 1.6 Is a copy of the appropriate plans\* and specifications\* included with this application?  
 YES Denote which form is submitted:  Hard copy  Electronic copy (See instructions.)  NO
- 1.7 Is a summary of design\* included with this application?  YES  NO
- 1.8 Is a general operating permit applicable?  
 YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.  
 NO Enclose the appropriate operating permit application and fee submittal. Denote which form:  B  B2
- 1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency?  YES  NO
- 1.10 Is the appropriate fee included with this application?  YES  NO (See instructions for appropriate fee.)

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

**2.0 PROJECT INFORMATION**

2.1 NAME OF PROJECT  
 Twin Oaks WWTF

2.2 PROJECT DESCRIPTION  
 Project will consist of installing a new Moving Bed Biofilm Reactor (MBBR) and clarifier. The existing pea gravel filter will remain connected to the system, but will be removed at a later date when additional funding is available to the HOA.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION  
 Any sludge is removed from the influent septic tank by pumping and hauling.

2.4 DESIGN INFORMATION  
 A. Current population: 222; Design population: 222  
 B. Actual Flow: 22,200 gpd; Design Average Flow: 22,200 gpd;  
 Actual Peak Daily Flow: \_\_\_\_\_ gpd; Design Maximum Daily Flow: \_\_\_\_\_ gpd;  
 Design Wet Weather Event: \_\_\_\_\_

2.5 ADDITIONAL INFORMATION  
 A. Is a topographic map attached?  YES  NO  
 B. Is a process flow diagram attached?  YES  NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST  
 \$ 75,000.00

3.0 WASTEWATER TREATMENT FACILITY				
NAME Twin Oaks WWTF		TELEPHONE NUMBER WITH AREA CODE (573) 243-4080		EMAIL ADDRESS bstrick@stricklandengineering.com
ADDRESS (PHYSICAL) Oak Meadow Dr.		CITY Jackson	STATE MO	ZIP CODE 63755
COUNTY Cape Girardeau				
Wastewater Treatment Facility: Mo- 031334 (Outfall 1 Of 1 )				
3.1 Legal Description: ¼, SW ¼, SW ¼, Sec. 4 , T 31N , R 12E (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 789702 Northing (Y): 4142602 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Unnamed Tributary to Cane Creek (U)				
4.0 PROJECT OWNER				
NAME Twin Oaks Subdivision Homeowners Association		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS 135 Glen Oak Dr.		CITY Jackson	STATE MO	ZIP CODE 63755
5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.				
NAME Twin Oaks Subdivision Homeowners Association		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS 135 Glen Oak Dr.		CITY Jackson	STATE MO	ZIP CODE 63755
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Benjamin Kuenzel/21 Design Group, Inc.		TELEPHONE NUMBER WITH AREA CODE (636) 432-5029		EMAIL ADDRESS ben@21designgroup.net
ADDRESS 1351 Jefferson, Suite 301		CITY Washington	STATE MO	ZIP CODE 63090
7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.				
PROJECT OWNER SIGNATURE				
PRINTED NAME Jeff Tipton				DATE 2/2/10
TITLE OR CORPORATE POSITION Treasurer		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A. REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				

**PART B – LAND APPLICATION ONLY****(Submit only if the proposed construction project includes land application of wastewater.)****8.0 FACILITY INFORMATION**

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

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

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

**9.0 STORAGE BASINS**

9.1 Number of storage basins: \_\_\_\_\_ (Use additional pages if greater than two basins.)

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

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.  
 Basin #1: Length \_\_\_\_\_ Width \_\_\_\_\_ Depth \_\_\_\_\_ Freeboard \_\_\_\_\_ Depth \_\_\_\_\_ Safety \_\_\_\_\_ % Slope \_\_\_\_\_  
 Basin #2: Length \_\_\_\_\_ Width \_\_\_\_\_ Depth \_\_\_\_\_ Freeboard \_\_\_\_\_ Depth \_\_\_\_\_ Safety \_\_\_\_\_ % Slope \_\_\_\_\_

9.4 Storage Basin operating levels (report as feet below emergency overflow level).  
 Basin #1: Maximum operating water level \_\_\_\_\_ ft Minimum operating water level \_\_\_\_\_ ft  
 Basin #2: Maximum operating water level \_\_\_\_\_ ft Minimum operating water level \_\_\_\_\_ ft

9.5 Design depth of sludge in storage basins.  
 Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft

9.6 Existing sludge depth, if the basins are currently in operation.  
 Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft

9.7 Total design sludge storage: \_\_\_\_\_ dry tons and \_\_\_\_\_ cubic feet

**10.0 LAND APPLICATION SYSTEM**

10.1 Type of land application:  Fixed Head Sprinklers  Center Pivot  Traveling Gun  Drip Dispersal  
 Subsurface Low Pressure Pipe  Other (describe) \_\_\_\_\_

10.2 Number of irrigation sites \_\_\_\_\_ Total Acres \_\_\_\_\_ Maximum % field slopes \_\_\_\_\_  
 Location: \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 Location: \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 Location: \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ 1/4, \_\_\_\_\_ Sec. \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ County \_\_\_\_\_ Acres  
 (Use additional pages if greater than three irrigation sites.)

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

10.4 Wastewater flow (dry weather) gallons per day: Average annual \_\_\_\_\_  
 Seasonal \_\_\_\_\_ Off-season \_\_\_\_\_

10.5 Land application rate (design flow including 1-in-10 year storm water flows):  
 Design: \_\_\_\_\_ inches/year \_\_\_\_\_ inches/hour \_\_\_\_\_ inches/day \_\_\_\_\_ inches/week  
 Actual: \_\_\_\_\_ inches/year \_\_\_\_\_ inches/hour \_\_\_\_\_ inches/day \_\_\_\_\_ inches/week

10.6 Total irrigation per year (gallons): Design: \_\_\_\_\_ gal Actual: \_\_\_\_\_ gal

10.7 Actual months used for irrigation (check all that apply):  
 Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

10.8 Land application rate is based on:  
 Hydraulic Loading  Other (describe) \_\_\_\_\_  
 Nutrient Management Plan (N and P) If N and P is selected, is the plan included?  YES  NO