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 Lincoln
Lincoln Wastewater Treatment Facility
NW 320 Bc
Lincoln, MO 65338

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

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

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

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

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

March 1, 2019
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

February 28, 2021
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The facility is converting to a no-discharge surface irrigation system and doing collection system improvements and rehabilitation. The facility will be constructing a third cell for storage, while modifying the existing cell #2 and #3 to become a larger cell #2, by removing the berm and deepening the cell. As part of the construction, the facility plans to remove sludge from the lagoons to increase the capacity of the lagoon and to do a one-time sludge removal from the lagoons will occur and it will be land applied at the appropriate rates. The construction will include the installation of a pump station to get the water from the new cell #3 to the land application fields. The facility has a design average flow of 175,000 gpd (268 days of storage) with a design flow plus 10 year rainfall minus evaporation of 200,000 gpd (198 days of storage). Surface irrigation will occur with center pivots and the City has 108 acres for application.

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

II. 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 permit contains no new conditions or requirements that convey a new cost to the facility.

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 consistent with plans and specifications signed and sealeded by MECO Engineering Company and as described in this permit.

3. The Department must be contacted in writing prior to making any changes to the 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(11).

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 Kansas City Regional Office per 10 CSR 20-7.015(9)(G).

5. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.

6. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B).The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.

7. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 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. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See 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 dnr.mo.gov/env/wpp/401/ for more information.

9. Upon completion of construction:

   A. The City of Lincoln will become the continuing authority for operation and maintenance of these facilities;

   B. Submit an electronic copy of the as builts; and

   C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and reques the operating permit modification be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The facility is converting to a no-discharge surface irrigation system and doing collection system improvements.

2. FACILITY DESCRIPTION

The Lincoln WWTF is located at NW 320 BC, Lincoln, in Benton County, Missouri. The facility has a design average flow of 175,000 gpd and serves a hydraulic population equivalent of approximately 1750 people. The facility is converting to a no-discharge surface irrigation system. The facility will be constructing a third cell for storage, while modifying the existing cell #2 and #3 to become a larger cell #2, by removing the berm and deepening the cell. The construction will include the installation of a pump station to get the water from the new cell #3 to the land application fields.

3. COMPLIANCE PARAMETERS

With surface irrigation, the previous compliance parameters were removed and the facility will report monthly on the parameters listed below. Additionally with the conversion to surface irrigation, Lincoln wants the ability to apply during nighttime hours, which is why the center pivots selected are fully automated with the ability to remotely turn on and off, progam for the duration of the irrigation event, ability to read flow meters and to receive alarms. The system will automatically shut down if there is a problem outside its programmed for, including low pressure or if it gets stuck or out of aligment.

STORAGE BASIN & IRRIGATION OPERATIONAL MONITORING PARAMETER(S)	UNITS	**FINAL LIMITATIONS**	
		DAILY TOTAL	MONTHLY TOTAL
Storage Basin Freeboard	feet	*	*
Precipitation	inches	*	*
Irrigation Period	hours	*	*
Volume Irrigated	gallons	*	*
Irrigation Area	acres	*	*
Irrigation Rate	inches	*	*

*monitoring only

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Existing major components which will remain in use include the following:

- Lagoon Cell No. 1 – The influent is pumped into Lagoon Cell No. 1 is non-aerated and has a surface area of 10.92 acres and a wastewater volume of 10.4 million gallons (MG).
    - Due to being an existing lagoon and the overflow to lagoon cell #2, the cell has 0.5 ft of freeboard and has 3 feet of operating depth with 2 feet of sludge storage and an existing clay liner.
    - This provides approximately 52 days of retention at the proposed 200,000 gpd or 59.4 days at design flow of 175,000 gpd.

Construction will cover the following items:

- Collection System- The collection system work will include the lining of sewer lines and manholes and the replacement of sewer lines and manholes based on the video inspection and cleaning activities. The brick manholes will be either be lined or replaced with a concrete manhole.
- Lagoon Cell No. 2– Lagoon Cell is the reconstructed cells 2 and 3 and is non-aerated.
    - With the reconstruction and deepening of the cell 2, a one-time sludge removal will occur. It is estimated that 1469 dry tons of sludge will be removed.
    - The new cell #2 has a surface area of 4.38 acres and a wastewater volume of 12.1 MG gallons.
    - The cell has 1 ft of freeboard, 10 ft of operating depth, and 2 ft for sludge storage.
    - This provides approximately 60.5 total days of retention at 200,000 gpd and 69.1 days at design flow of 175,000 gpd.
- Lagoon Cell No. 3 is a new storage cell connected by transfer piping from cell 2. It will have a surface area of 6.9 acres and a wastewater volume of 24.4 MG.
    - 2 ft of freeboard, 13 ft of operating depth, and 2 ft of sludge depth.
    - This provides approximately 122 total days of retention at 200,000 gpd and 139.4 days at design flow of 175,000 gpd.
- Land Application Pump Station – Construction of a duplex land application pump station to transfer treated wastewater from Lagoon Cell No. 3 to the land application site.
    - The pump to Application Site 1 is 25 HP pump capable of operating at 450 gpm at 140 feet of TDH.
    - The pump to Application Site 2 is 40 HP pump capable of operating at 670 gpm at 155 feet of TDH.
    - Two spare pumps will be purchased and stored until necessary as part of the construction.

- Land Application Site – Construction of approximately 5,100 lf of 8-inch PVC SDR-21 force main with cleanouts and air release valves to transfer wastewater from the land application pump station to the land application site. The land application site is adjacent to the lagoons and is fenced.
    - The purchased land application site is approximately 186 acres with 108 acres being used for application. Forage crops are expected to be grown onsite.
        - Application Site 1 is 42 acres
        - Application Site 2 is 66.1 acres
    - Maximum application rates are 0.25 inches/hour, 1 inch/day, 3 inches/week, and 24 inches/year.
        - At the design flow, the minimum irrigation volume per year is 63,875,000 gallons which is less than the available irrigation volume of the 108 acres at 24 inches per year per acre of 70,444,186 gallons.
        - The soils evaluation report completed by Dr. Miles stated that application rates could go up to 40 inches per year; however the design is based on 24 inches per year.
- Wastewater Irrigation –
    - Center Pivots – Two center pivots with drop pipe sprinklers will deliver wastewater for irrigation at the land application site. Telemetry will be provided for each pivot.
        - Center Pivot 1 is 1055 ft long with a 45 ft end gun. It is designed to operate at 48 psi with a flow of 450 gpm and irrigate.
        - Center Pivot 2 is 1304 ft long with a 61.9 ft end gun. It is designed to operate at 38 psi with a flow of 670 gpm and irrigate.
    - The expected nitrogen loading will be 26.3 lbs per acre per year and the total phosphorus loading is expected to be 6.75 lbs per acre per year based on the 24 inches per year.
- In the event of power outage, the storage cells have the capacity to hold flows.

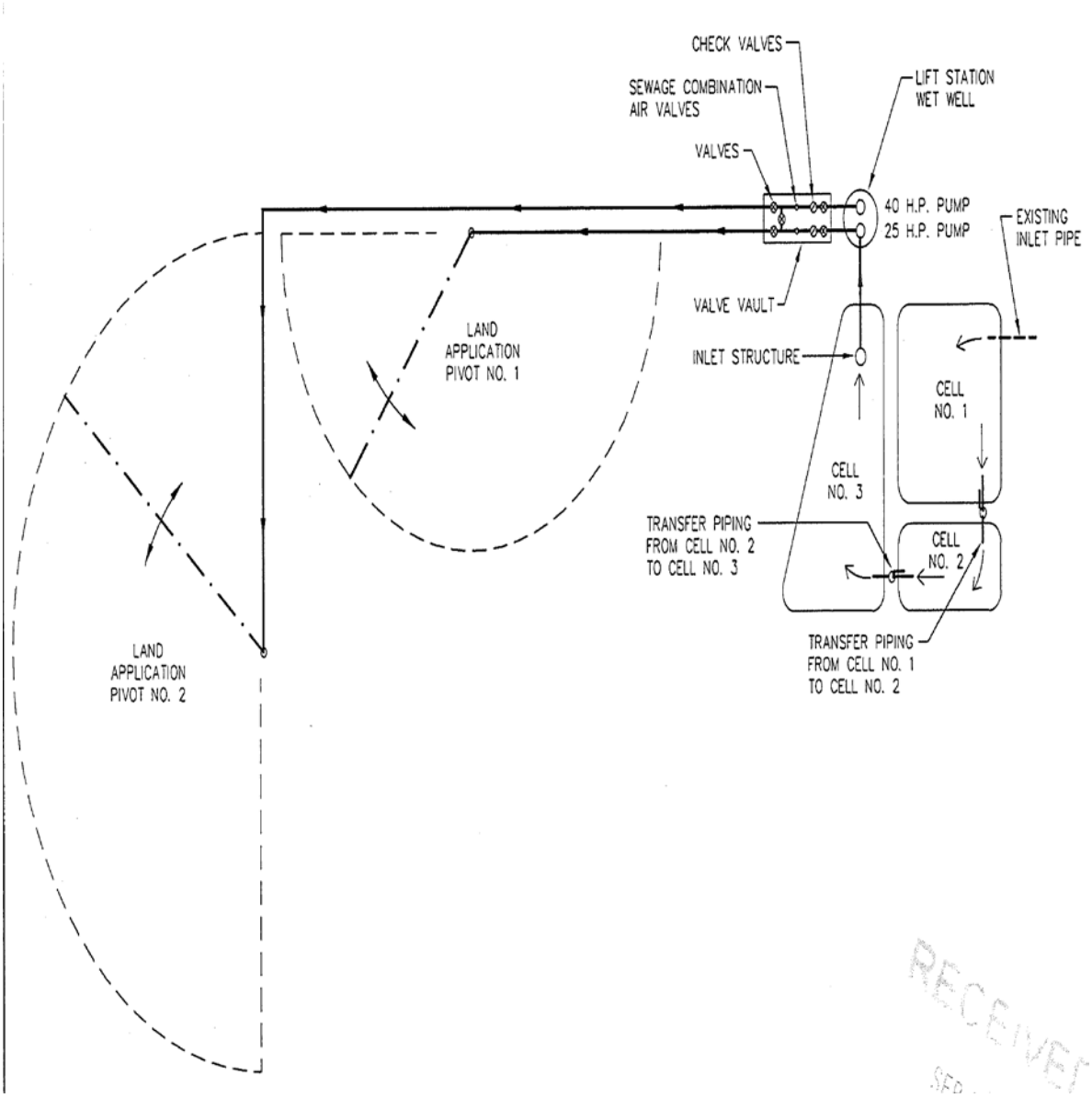
5. OPERATING PERMIT

Operating permit MO-0120227 will require a modification to reflect the construction activities. The modified Lincoln WWTF operating permit was successfully public noticed from January 25, 2019 to February 25, 2019 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued. The operating permit modification has been paid.

Leasue Meyers, EI
Engineering Section
leasue.meyers@dnr.mo.gov

Cindy LePage, P.E.
Engineering Section
cindy.lepage@dnr.mo.gov

APPENDIX – FACILITY MAP:



RECEIVED

AP30026
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RECEIVED
SEP 14 2018

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. 33844
DATE RECEIVED 9-14-18	

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: USDARD, CDBG 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: _____

1.4 Has the department approved the proposed project's facility plan*?
☑ YES Date of Approval: 9/7/2018 ☐ 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
Lincoln Wastewater Improvements

2.2 PROJECT DESCRIPTION
The project consists of sewer system rehabilitation and increasing size of existing cells 2 and 3 for increased storage. Construction of new storage cell. Construction of two half circle center pivot irrigation systems.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
As part of the project sludge will be cleaned out of existing cells 2 and 3 and land applied on the future land application area. See Summary of Design for description and loading rates.

2.4 DESIGN INFORMATION
A. Current population: 1190; Design population: 1750

B. Actual Flow: 125,200 gpd; Design Average Flow: 175,000 gpd;
Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd;
Design Wet Weather Event: 204,000 gpd

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
$ 5,558,200.00

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Lincoln WWTF	(660) 547-2718	lincolnmaintshop@embarq.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
Intersection of Flennery Rd & old hwy 65	Lincoln	MO	65338	Benton

Wastewater Treatment Facility: Mo- (Outfall Of)

3.1 Legal Description: ¼, sw ¼, nw ¼, Sec. 22 , T 42N , R 22W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 469771 Northing (Y): 4250994
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: No-Discharge

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
City of Lincoln	(660) 547-2718	lincolncityhall@embarqmail.com

ADDRESS	CITY	STATE	ZIP CODE
122 East Main	Lincoln	MO	65338

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	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
City of Lincoln	(660) 547-2718	lincolncityhall@embarqmail.com

ADDRESS	CITY	STATE	ZIP CODE
122 East Main	Lincoln	MO	65338

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Leland Neher PE/MECO Engineering	(573) 893-5558	lneher@mecoengineering .com

ADDRESS	CITY	STATE	ZIP CODE
2701 Industrial Drive	Jefferson City	MO	65109

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	DATE
John King	9/10/2018

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Mayor	(660) 547-2718	lincolncityhall@embarqmail.com

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: 3 (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. SEE ATTACHED
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). SEE ATTACHED
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: 2 ft Basin #2: 2 ft See ATTACHED

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: 1 ft Basin #2: 0.0 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 2 Total Acres 108.1 Maximum % field slopes 2%
Location: _____ ¼, SW ¼, NW ¼, 22 Sec. 42N T 22W R Benton County 42 Acres
Location: _____ ¼, NE ¼, NE ¼, 20 Sec. 42N T 22W R Benton County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ 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)

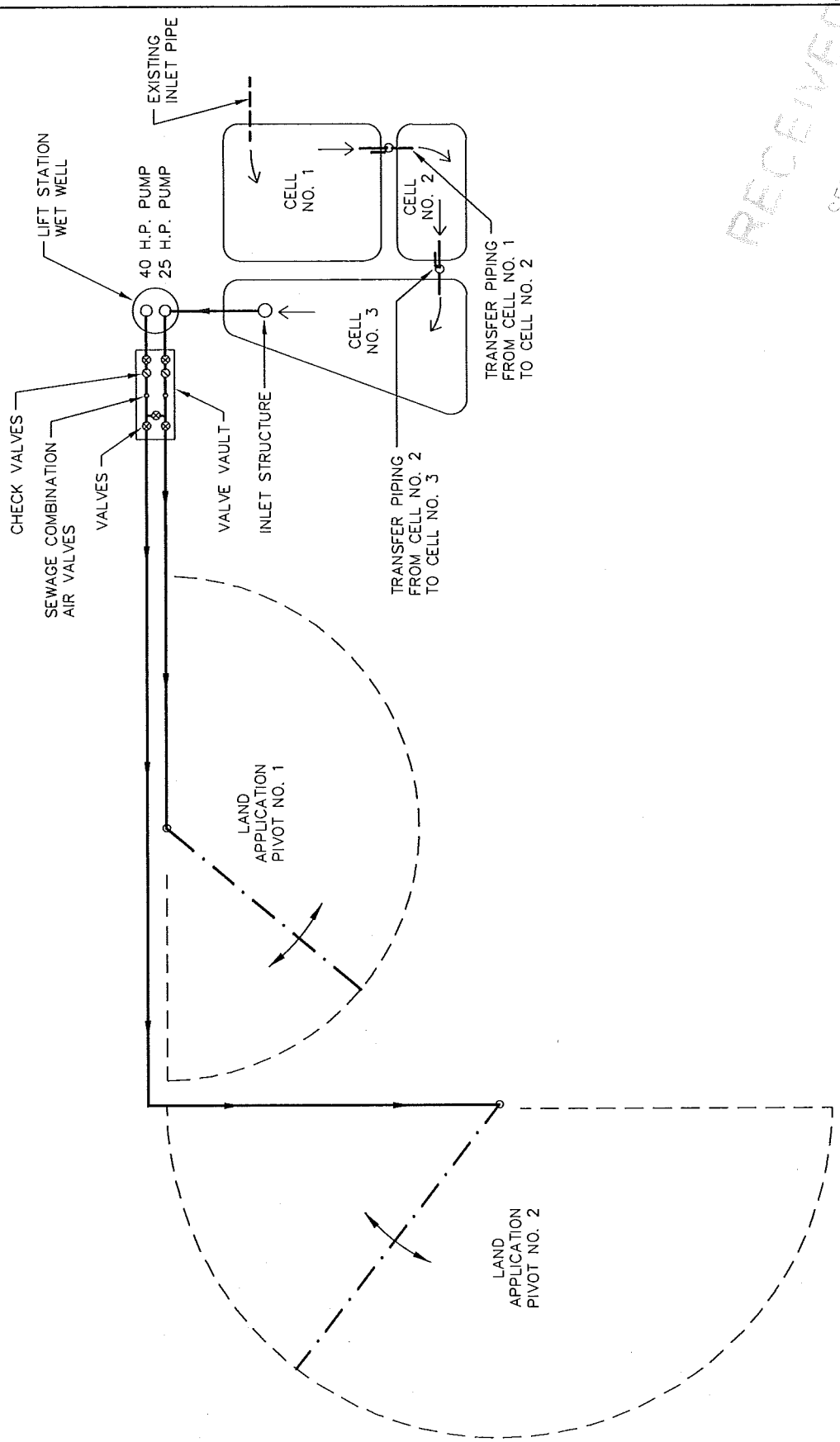
10.4 Wastewater flow (dry weather) gallons per day: Average annual 175,000
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: 25 inches/year 0.25 inches/hour 0.5 inches/day 2.0 inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: 74,460,000 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



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WASTEWATER TREATMENT FACILITIES
CITY OF LINCOLN
BENTON COUNTY, MISSOURI

PROCESS FLOW DIAGRAM

DESIGNED	DRAWN	CHECKED	APPROVED	RELEASED	SCALE	DRAWING NO.	PROJECT NO.	SHEET NO.
L. NEHER	R. HAYES				NO SCALE	491002 process diagram	491-002	1 OF 1