



PROJECT MANUAL

Closure of Multiple Lagoons and Wells Central Missouri Correctional Facility Jefferson City, Missouri

Designed By: Allstate Consultants
3312 Lemone Industrial
Columbia, MO 65201

Date Issued: October 12, 2022

Project No.: C1919-01

STATE *of* MISSOURI

OFFICE *of* ADMINISTRATION
Facilities Management, Design & Construction

SECTION 000107 – PROFESSIONAL SEALS AND CERTIFICATIONS

PROJECT NUMBER C1919-01 CLOSURE OF LAGOONS AND WELL, MULTIPLE

THE FOLLOWING DESIGN PROFESSIONAL HAS SIGNED AND SEALED THE ORIGINAL PLANS AND SPECIFICATIONS FOR THIS PROJECT, WHICH ARE ON FILE WITH THE DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION:

STEPHEN LIN, P.E.

PE-20050010012



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SECTION 000115-LIST OF DRAWINGS

PART I-GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section provides a comprehensive list of the drawings that comprise the Bid Documents for this project.

PART 2-PRODUCTS (NOT APPLICABLE)

PART 3-EXECUTION

3.1 LIST OF DRAWINGS

- A. The following list of drawings is a part of the Bid Documents:

| | TITLE | SHEET# | DATE | CAD# |
|-----|--|------------|------------|----------|
| 1. | Cover Sheet | Sheet C-1 | 10/12/2022 | C-SIT-01 |
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| 4. | Demolition Plan | Sheet C-4 | 10/12/2022 | C-SIT-04 |
| 5. | Grading & Lagoon Closure Details | Sheet C-5 | 10/12/2022 | C-SIT-05 |
| 6. | Topographic Survey & Biosolids Sampling Results | Sheet C-6 | 10/12/2022 | C-SIT-06 |
| 7. | Grading & Lagoon Closure Details | Sheet C-7 | 10/12/2022 | C-SIT-07 |
| 8. | Borrow Area Grading Plan | Sheet C-8 | 10/12/2022 | C-SIT-08 |
| 9. | Sanitary Sewer (Record Drawing) | Sheet C-9 | 10/12/2022 | C-SIT-09 |
| 10. | Pump Station (Record Drawing) | Sheet C-10 | 10/12/2022 | C-SIT-10 |
| 11. | Pump Station (Record Drawing) | Sheet C-11 | 10/12/2022 | C-SIT-11 |

| | | | | |
|-----|------------------------------------|------------|------------|----------|
| 12. | Lagoon Details (Record Drawing) | Sheet C-12 | 10/12/2022 | C-SIT-12 |
| 13. | Well Closure Plans and Profiles | Sheet C-13 | 10/12/2022 | C-SIT-13 |

END OF SECTION 000115

SECTION 001116 - INVITATION FOR BID

1.0 OWNER:

- A. The State of Missouri
Office of Administration,
Division of Facilities Management, Design and Construction
Jefferson City, Missouri

2.0 PROJECT TITLE AND NUMBER:

- A. Closure of Multiple Lagoons and Wells
Central Missouri Correctional Facility
Jefferson City, Missouri
Project No.: C1919-01

3.0 BIDS WILL BE RECEIVED:

- A. Until: 1:30 PM, Thursday, December 15, 2022
- B. **Only electronic bids on MissouriBUYS shall be accepted: <https://missouribuys.mo.gov>. Bidder must be registered to bid.**

4.0 DESCRIPTION:

- A. Scope: The Project of the closure of two (2) earthen berm lagoon structures located at the Central Missouri Correctional Center (CMCC) and the Missouri Vocational Enterprises (MVE) Tire Recycling Facility along with the Closure of three (3) deep wells that were used for the Central Missouri Correctional Center (CMCC) facility's water supply.
- B. MBE/WBE/SDVE Goals: MBE 10%, WBE 10%, and SDVE 3%. **NOTE: Only MBE/WBE firms certified by the State of Missouri Office of Equal Opportunity as of the date of bid opening, or SDVE(s) meeting the requirements of Section 34.074, RSMo and 1 CSR 30-5.010, can be used to satisfy the MBE/WBE/SDVE participation goals for this project.**
- C. ****NOTE:** Bidders are provided new Good Faith Effort (GFE) forms on MissouriBUYS.

5.0 PRE-BID MEETING:

- A. Place/Time: 10:00 AM, Friday, December, 2, 2022, Truman Building, room 510, 301 W. High St., Jefferson City, MO
- B. Access to State of Missouri property requires presentation of a photo ID by all persons

6.0 HOW TO GET PLANS & SPECIFICATIONS:

- A. View Only Electronic bid sets are available at no cost or paper bid sets for a deposit of \$100 from American Document Solutions (ADS). MAKE CHECKS PAYABLE TO: American Document Solutions. Mail to: American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433, <https://www.adsplanroom.net>. NOTE: Prime contractors will be allowed a maximum of two bid sets at the deposit rate shown above. Other requesters will be allowed only one bid set at this rate. Additional bid sets or parts thereof may be obtained by any bidder at the cost of printing and shipping by request to American Document Solutions at the address shown above. **Bidder must secure at least one bid set to become a planholder.**
- B. **Refunds: Return plans and specifications in unmarked condition within 15 working days of bid opening to American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433. Deposits for plans not returned within 15 working days shall be forfeited.**
- C. Information for upcoming bids, including downloadable plans, specifications, Invitation for Bid, bid tabulation, award, addenda, and access to the ADS planholders list, is available on the Division of Facilities Management, Design and Construction's web site: <https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans>.

7.0 POINT OF CONTACT:

- A. Designer: Ron Shy, 573-875-8799, email: rshy@allstateconsultants.net
- B. Project Manager: Eric Hibdon, 573-522-0322, email: Eric.Hibdon@oa.mo.gov

8.0 GENERAL INFORMATION:

- A. The State reserves the right to reject any and all bids and to waive all informalities in bids. No bid may be withdrawn for a period of 20 working days subsequent to the specified bid opening time. The contractor shall pay not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, as determined by the Missouri Department of Labor and Industrial Relations and as set out in the detailed plans and specifications.
- B. Bid results will be available at <https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans> after it is verified that at least one bid is awardable and affordable.

Very Important MissouriBUYS Instructions to Help Submit a Bid Correctly

- A. The bidder shall submit his or her bid and all supporting documentation on MissouriBUYS eProcurement System. No hard copy bids shall be accepted. Go to <https://missouribuys.mo.gov> and register. The bidder must register and complete a profile fully with all required documents submitted prior to submitting a bid.
- B. Once registered, log in.
1. Under "Solicitation" select "View Current Solicitations."
 2. Under "Filter by Agency" select "OA-FMDC-Contracts Chapter 8", then click "Filter Solicitation" button.
 3. Select "Active Solicitations" tab.
 4. To see the Solicitation Summary, click on the Project Number and the summary will open. Click each heading to open detailed information.
- C. Here are simplified instructions for uploading the bid to MissouriBUYS:
1. Find the solicitation by completing Steps 1 through 4 above.
 2. Select the three dots under "Actions." Select "Add New Response."
 3. When the Quote box opens, give the response a title and select "OK."
 4. The detailed solicitation will open. Select "Check All" for the Original Solicitation Documents, open each document, and select "Accept." If this step is not completed, a bid cannot be uploaded. Scroll to the bottom of the page and select "Add Attachments." If you do not see this command, not all documents have been opened and accepted.
 5. The Supplier Attachments box will open. Select "Add Attachment" again.
 6. The Upload Documents box will open. Read the instructions for uploading. Disregard the "Confidential" check box.
 7. Browse and attach up to 5 files at a time. Scroll to bottom of box and select "Upload." The Supplier Attachments box will open. Repeat Steps 5 through 7 if more than 5 files are to be uploaded.
 8. When the Supplier Attachments box opens again and uploading is complete, select "Done." A message should appear that the upload is successful. If it does not, go to the Bidder Response tab and select "Submit."
 9. The detailed solicitation will open. At the bottom select "Close."
- D. Any time a bidder wants to modify the bid, he or she will have to submit a new one. FMDC will open the last response the bidder submits. The bidder may revise and submit the bid up to the close of the solicitation (bid date and time). Be sure to allow for uploading time so that the bid is successfully uploaded prior to the 1:30 PM deadline; we can only accept the bid if it is uploaded before the deadline.
- E. If you want to verify that you are uploading documents correctly, please contact Paul Girouard: 573-751-4797, paul.girouard@oa.mo.gov ; April Howser: 573-751-0053, April.Howser@oa.mo.gov ; or Mandy Roberson: 573-522-0074, Mandy.Roberson@oa.mo.gov.
- F. If you are experiencing login issues, please contact Web Procure Support (Proactis) at 866-889-8533 anytime from 7:00 AM to 7:00 PM Central Time, Monday through Friday. If you try using a userid or password several times that is incorrect, the system will lock you out. Web Procure Support is the only option to unlock you! If you forget your userid or password, Web Procure Support will provide a temporary userid or password. Also, if it has been a while since your last successful login and you receive an "inactive" message, contact Web Procure (Proactis). If you are having a registration issue, you may contact Cathy Holliday at 573-751-3491 or by email: cathy.holliday@oa.mo.gov.

IMPORTANT REMINDER REGARDING REQUIREMENT FOR OEO CERTIFICATION

A. SECTION 002113 – INSTRUCTIONS TO
BIDDERS: Article 15.0, Section D1:

As of July 1, 2020, all MBE, WBE, and MBE/WBE contractors, subcontractors, and suppliers must be certified by the State of Missouri, Office of Equal Opportunity. No certifications from other Missouri certifying agencies will be accepted.

SECTION 002113 – INSTRUCTIONS TO BIDDERS

1.0 - SPECIAL NOTICE TO BIDDERS

- A. If awarded a contract, the Bidder's employees, and the employees of all subcontractors, who perform the work on the project must adhere to requirements in Section 013513 – Site Security and Health Requirements as applicable per Agency.
- B. The Bidder's prices shall include all city, state, and federal sales, excise, and similar taxes that may lawfully be assessed in connection with the performance of work, and the purchased of materials to be incorporated in the work. THIS PROJECT IS NOT TAX EXEMPT.

2.0 - BID DOCUMENTS

- A. The number of sets obtainable by any one (1) party may be limited in accordance with available supply.
- B. For the convenience of contractors, sub-contractors and suppliers, copies of construction documents are on file at the office of the Director, Division of Facilities Management, Design and Construction and on the Division's web site - <https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans>.

3.0 - BIDDERS' OBLIGATIONS

- A. Bidders must carefully examine the entire site of the work and shall make all reasonable and necessary investigations to inform themselves thoroughly as to the facilities available as well as to all the difficulties involved in the completion of all work in accordance with the specifications and the plans. Bidders are also required to examine all maps, plans and data mentioned in the specifications. No plea of ignorance concerning observable existing conditions or difficulties that may be encountered in the execution of the work under this contract will be accepted as an excuse for any failure or omission on the part of the contractor to fulfill in every detail all of the requirements of the contract, nor accepted as a basis for any claims for extra compensation.
- B. Under no circumstances will contractors give their plans and specifications to another contractor. Any bid received from a contractor whose name does not appear on the list of plan holders may be subject to rejection.

4.0 - INTERPRETATIONS

- A. No bidder shall be entitled to rely on oral interpretations as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction. Every request for interpretation shall be made in writing and submitted with all supporting documents not less than five (5) working days before opening of bids. Every interpretation made to a bidder will be in the form of an addendum and will be sent as promptly as is practicable to all persons to whom plans and specifications have been issued. All such addenda shall become part of the contract documents.
- B. Approval for an "acceptable substitution" issued in the form of an addendum as per Paragraph 4A above, and as per Article 3.1 of the General Conditions; ACCEPTABLE SUBSTITUTIONS shall constitute approval for use in the project of the product.
- C. An "acceptable substitution" requested after the award of bid shall be approved if proven to the satisfaction of the Owner and the Designer as per Article 3.1, that the product is acceptable in design, strength, durability, usefulness, and convenience for the purpose intended. Approval of the substitution after award is at the sole discretion of the Owner.
- D. A request for "Acceptable Substitutions" shall be made on the Section 006325 Substitution Request Form. The request shall be sent directly to the project Designer. A copy of said request should also be mailed to the Owner, Division of Facilities Management, Design and Construction, Post Office Box 809, Jefferson City, Missouri 65102.

5.0 - BIDS AND BIDDING PROCEDURE

- A. Bidders shall submit all submission forms and accompanying documents listed in SECTION 004113 – BID FORM, Article 5.0, ATTACHMENTS TO BID by the stated time or their bid will be rejected for being non-responsive.

Depending on the specific project requirements, **the following is a GENERIC list** of all possible bid forms that may be due with bid submittals and times when they may be due. Please check for specific project requirements on the proposal form (Section 004113). ***Not all of the following bid forms may be required to be submitted.***

Bid Submittal – due before stated date and time of bid opening (see IFB):

| | |
|--------|---|
| 004113 | Bid Form (all pages are always required) |
| 004322 | Unit Prices Form |
| 004336 | Proposed Subcontractors Form |
| 004337 | MBE/WBE/SDVE Compliance Evaluation Form |
| 004338 | MBE/WBE/SDVE Eligibility Determination for Joint Ventures |
| 004339 | MBE/WBE/SDVE GFE Determination |
| 004340 | SDVE Business Form |
| 004541 | Affidavit of Work Authorization |
| 004545 | Anti-Discrimination Against Israel Act Certification form |

- B. All bids shall be submitted without additional terms and conditions, modification or reservation on the bid forms with each space properly filled. Bids not on these forms will be rejected.
- C. All bids shall be accompanied by a bid bond executed by the bidder and a duly authorized surety company, certified check, cashier's check or bank draft made payable to the Division of Facilities Management, Design and Construction, State of Missouri, in the amount indicated on the bid form, Section 004113. Failure of the contractor to submit the full amount required shall be sufficient cause to reject his bid. The bidder agrees that the proceeds of the check, draft or bond shall become the property of the State of Missouri, if for any reason the bidder withdraws his bid after closing, or if on notification of award refuses or is unable to execute tendered contract, provide an acceptable performance and payment bond, provide evidence of required insurance coverage and/or provide required copies of affirmative action plans within ten (10) working days after such tender.
- D. The check or draft submitted by the successful bidder will be returned after the receipt of an acceptable performance and payment bond and execution of the formal contract. Checks or drafts of all other bidders will be returned within a reasonable time after it is determined that the bid represented by same will receive no further consideration by the State of Missouri. Bid bonds will only be returned upon request.

6.0 - SIGNING OF BIDS

- A. A bid from an individual shall be signed as noted on the Bid Form.
- B. A bid from a partnership or joint venture shall require only one signature of a partner, an officer of the joint venture authorized to bind the venture or an attorney-in-fact. If the bid is signed by an officer of a joint venture or an attorney-in-fact, a document evidencing the individual's authority to execute contracts should be included with the bid form.
- C. A bid from a limited liability company (LLC) shall be signed by a manager or a managing member of the LLC.
- D. A bid from a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation manually written. Title of office held by the person signing for the corporation shall appear, along with typed name of said individual. Corporate license number shall be provided and, if a corporation organized in a state other than Missouri, a Certificate of Authority to do business in the State of Missouri shall be attached. In addition, for corporate proposals, the President or Vice-President should sign as the bidder. If the signator is other than the corporate president or vice president, the bidder must provide satisfactory evidence that the signator has the legal authority to bind the corporation.

- E. A bid should contain the full and correct legal name of the Bidder. If the Bidder is an entity registered with the Missouri Secretary of State, the Bidder's name on the bid form should appear as shown in the Secretary of State's records.
- F. The Bidder should include its corporate license number on the Bid Form and, if the corporation is organized in a state other than Missouri, a Certificate of Authority to do business in the State of Missouri shall be attached to the bid form.

7.0 - RECEIVING BID SUBMITTALS

- A. It is the bidder's sole responsibility to assure receipt by Owner of bid submittals by the date and time specified in the Invitation for Bid. Bids received after the date and time specified shall not be considered by the Owner.
- B. Bids must be submitted through the MissouriBUYS statewide eProcurement system (<https://www.missouribuy.com/>) in accordance with the instructions for that system. The Owner shall only accept bids submitted through MissouriBUYS. Bids received by the Owner through any other means, including hard copies, shall not be considered and will be discarded by the Owner unopened.
- C. To respond to an Invitation for Bid, the Bidder must first register with MissouriBUYS by going through the MissouriBUYS Home Page (<https://www.missouribuy.com/>), clicking the "Register" button at the top of the page, and completing the Vendor Registration. Once registered, the Bidder accesses its account by clicking the "Login" button at the top of the MissouriBUYS Home Page. Enter your USERID and PASSWORD, which the Bidder will select. Under Solicitations, select "View Current Solicitations." A new screen will open. Under "Filter by Agency" select "OA-FMDC-Contracts Chapter 8." Under "Filter by Opp. No." type in the State Project Number. Select "Submit." Above the dark blue bar, select "Other Active Opportunities." To see the Solicitation Summary, single click the Opp. No. (Project Number) and the summary will open. Single quick click each blue bar to open detailed information. The Bidder must read and accept the Original Solicitation Documents and complete all identified requirements. The Bidder should download and save all of the Original Solicitation Documents on its computer so that the Bidder can prepare its response to these documents. The Bidder should upload its completed response to the downloaded documents as an attachment to the electronic solicitation response.
- D. Step-by-step instructions for how a registered vendor responds to a solicitation electronically are provided in Section 001116 – Invitation For Bid.
- E. The Bidder shall submit its bid on the forms provided by the Owner on MissouriBUYS with each space fully and properly completed, including all amounts required for alternate bids, unit prices, cost accounting data, etc. The Owner may reject bids that are not on the Owner's forms or that do not contain all requested information.
- F. No Contractor shall stipulate in his bid any conditions not contained in the specifications or standard bid form contained in the contract documents. To do so may subject the Contractor's bid to rejection.
- G. The completed forms shall be without interlineations, alterations or erasures.

8.0 - MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bidder may withdraw his bid at any time prior to scheduled closing time for receipt of bids, but no bidder may withdraw his bid for a period of twenty (20) working days after the scheduled closing time for receipt of bids.
- B. The Bidder shall modify his or her original bid by submitting a revised bid on MissouriBUYS.

9.0 - AWARD OF CONTRACT

- A. The Owner reserves the right to reject any and/or all bids and further to waive all informalities in bidding when deemed in the best interest of the State of Missouri.
- B. The Owner reserves the right to let other contracts in connection with the work, including but not by way of limitation, contracts for the furnishing and installation of furniture, equipment, machines, appliances and other apparatus.

- C. In awarding the contract the Owner may take into consideration the bidder's skill, facilities, capacity, experience, responsibility, previous work record, financial standing and the necessity of prompt and efficient completion of work herein described. Inability of any bidder to meet the requirements mentioned above may be cause for rejection of his bid. However, no contract will be awarded to any individual, partnership or corporation, who has had a contract with the State of Missouri declared in default within the preceding twelve months.
- D. Award of alternates, if any, will be made in numerical order unless all bids received are such that the order of acceptance of alternates does not affect the determination of the low bidder.
- E. No bid shall be considered binding upon the Owner until the written contract has been properly executed, a satisfactory bond has been furnished, evidence of required insurance coverage, submittal of executed Section 004541, Affidavit of Work Authorization form, documentation evidencing enrollment and participation in a federal work authorization program has been received and an affirmative action plan submitted. Failure to execute and return the contract and associated documents within the prescribed period of time shall be treated, at the option of the Owner, as a breach of bidder's obligation and the Owner shall be under no further obligation to bidder.
- F. If the successful bidder is doing business in the State of Missouri under a fictitious name, he shall furnish to Owner, attached to the Bid Form, a properly certified copy of the certificate of Registration of Fictitious Name from the State of Missouri, and such certificate shall remain on file with the Owner.
- G. Any successful bidder which is a corporation organized in a state other than Missouri shall furnish to the Owner, attached to the Bid Form, a properly certified copy of its current Certificate of Authority to do business in the State of Missouri, such certificate to remain on file with the Owner. No contract will be awarded by the Owner unless such certificate is furnished by the bidder.
- H. Any successful bidder which is a corporation organized in the State of Missouri shall furnish at its own cost to the Owner, if requested, a Certificate of Good Standing issued by the Secretary of State, such certificate to remain on file with the Owner.
- I. Transient employers subject to Sections 285.230 and 285.234, RSMo, (out-of-state employers who temporarily transact any business in the State of Missouri) may be required to file a bond with the Missouri Department of Revenue. No contract will be awarded by the Owner unless the successful bidder certifies that he has complied with all applicable provisions of Section 285.230-234.
- J. Sections 285.525 and 285.530, RSMo, require business entities to enroll and participate in a federal work authorization program in order to be eligible to receive award of any state contract in excess of \$5,000. Bidders should submit with their bid an Affidavit of Work Authorization (Section 004541) along with appropriate documentation evidencing such enrollment and participation. Section-004541, Affidavit of Work Authorization is located on the MissouriBUYS solicitation for this project. Bidders must also submit an E-Verify Memorandum before the Owner may award a contract to the Bidder. Information regarding a E-Verify is located at <https://www.uscis.gov/e-verify/>. The contractor shall be responsible for ensuring that all subcontractors and suppliers associated with this contract enroll in E-Verify.

10.0 - CONTRACT SECURITY

- A. The successful bidder shall furnish a performance/payment bond as set forth in General Conditions Article 6.1 on a condition prior to the State executing the contract and issuing a notice to proceed.

11.0 - LIST OF SUBCONTRACTORS

- A. If required by "Section 004113 – Bid Form," each bidder must submit as part of their bid a list of subcontractors to be used in performing the work (Section 004336). The list must specify the name of the single designated subcontractor, for each category of work listed in "Section 004336 - Proposed Subcontractors Form." If work within a category will be performed by more than one subcontractor, the bidder must provide the name of each subcontractor and specify the exact portion of the work to be done by each. Failure to list the Bidder's firm, or a subcontractor for each category of work identified on the Bid Form or the listing of more than one subcontractor for any category without designating the portion of work to be performed by each shall be cause for rejection of the bid. If the bidder intends to perform any of the designated subcontract work with the use of his own employees, the bidder shall make that fact

clear, by listing his own firm for the subject category. **If any category of work is left vacant, the bid shall be rejected.**

12.0 - WORKING DAYS

- A. Contract duration time is stated in working days and will use the following definition in determining the actual calendar date for contract completion:
 - 1. Working days are defined as all calendar days except Saturdays, Sundays and the following State of Missouri observed holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday, Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day.

13.0 - AMERICAN AND MISSOURI - MADE PRODUCTS AND FIRMS

- A. By signing the bid form and submitting a bid on this project, the Bidder certifies that it will use American and Missouri products as set forth in Article 1.7 of the General Conditions. Bidders are advised to review those requirements carefully prior to bidding.
- B. A preference shall be given to Missouri firms, corporations or individuals, or firms, corporations or individuals that maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less.
- C. Pursuant to Section 34.076, RSMo, a contractor or Bidder domiciled outside the boundaries of the State of Missouri shall be required, in order to be successful, to submit a bid the same percent less than the lowest bid submitted by a responsible contractor or Bidder domiciled in Missouri as would be required for such a Missouri domiciled contractor or Bidder to succeed over the bidding contractor or Bidder domiciled outside Missouri on a like contract or bid being let in the person's domiciliary state and, further, the contractor or Bidder domiciled outside the boundaries of Missouri shall be required to submit an audited financial statement as would be required of a Missouri domiciled contractor or Bidder on a like contract or bid being let in the domiciliary state of that contractor or Bidder.

14.0 – ANTI-DISCRIMINATION AGAINST ISRAEL ACT CERTIFICATION:

- A. Pursuant to section 34.600, RSMo, if the Bidder meets the section 34.600, RSMo, definition of a “company” and the Bidder has ten or more employees, the Bidder must certify in writing that the Bidder is not currently engaged in a boycott of goods or services from the State of Israel as defined in section 34.600, RSMo, and shall not engage in a boycott of goods or services from the State of Israel, if awarded a contract, for the duration of the contract. The Bidder is requested to complete and submit the applicable portion of Section 004545 - Anti-Discrimination Against Israel Act Certification with their Bid Form. The applicable portion of the exhibit must be submitted prior to execution of a contract by the Owner and issuance of Notice to Proceed. If the exhibit is not submitted, the Owner shall rescind its Intent to Award and move to the next lowest, responsive, responsible bidder.

15.0 - MBE/WBE/SDVE INSTRUCTIONS

- A. Definitions:
 - 1. **“MBE”** means a Minority Business Enterprise.
 - 2. **“MINORITY”** has the same meaning as set forth in 1 C.S.R. 10-17.010.
 - 3. **“MINORITY BUSINESS ENTERPRISE”** has the same meaning as set forth in section 37.020, RSMo.
 - 4. **“WBE”** means a Women's Business Enterprise.
 - 5. **“WOMEN'S BUSINESS ENTERPRISE”** has the same meaning as set forth in section 37.020, RSMo.
 - 6. **“SDVE”** means a Service-Disabled Veterans Enterprise.
 - 7. **“SERVICE-DISABLED VETERAN”** has the same meaning as set forth in section 34.074, RSMo.

8. **“SERVICE-DISABLED VETERAN ENTERPRISE”** has the same meaning as “Service-Disabled Veteran Business” set forth in section 34.074, RSMo.

B. MBE/WBE/SDVE General Requirements:

1. For all bids greater than \$100,000, the Bidder shall obtain MBE, WBE and SDVE participation in an amount equal to or greater than the percentage goals set forth in the Invitation for Bid and the Bid Form, unless the Bidder is granted a Good Faith Effort waiver by the Director of the Division, as set forth below. If the Bidder does not meet the MBE, WBE and SDVE goals, or make a good faith effort to do so, the Bidder shall be non-responsive, and its bid shall be rejected.
2. The Bidder should submit with its bid all of the information requested in the MBE/WBE/SDVE Compliance Evaluation Form for every MBE, WBE, or SDVE subcontractor or material supplier the Bidder intends to use for the contract work. The Bidder is required to submit all appropriate MBE/WBE/SDVE documentation before the stated time and date set forth in the Invitation for Bid. If the Bidder fails to provide such information by the specified date and time, the Owner shall reject the bid.
3. The Director reserves the right to request additional information from a Bidder to clarify the Bidder’s proposed MBE, WBE, and/or SDVE participation. The Bidder shall submit the clarifying information requested by the Owner within two (2) Working Days of receiving the request for clarification.
4. Pursuant to section 34.074, RSMo, a Bidder that is a SDVE doing business as Missouri firm, corporation, or individual, or that maintains a Missouri office or place of business, shall receive a three-point bonus preference in the contract award evaluation process. The bonus preference will be calculated and applied by reducing the bid amount of the eligible SDVE by three percent of the apparent low responsive bidder’s bid. Based on this calculation, if the eligible SDVE’s evaluation is less than the apparent low responsive bidder’s bid, the eligible SDVE’s bid becomes the apparent low responsive bid. This reduction is for evaluation purposes only, and will have no impact on the actual amount(s) of the bid or the amount(s) of any contract awarded. In order to be eligible for the SDVE preference, the Bidder must complete and submit with its bid the Missouri Service Disabled Veteran Business Form, and any information required by the form. The form is available on the MissouriBUYS solicitation for this project.

C. Computation of MBE/WBE/SDVE Goal Participation:

1. A Bidder who is a MBE, WBE, or SDVE may count 100% of the contract towards the MBE, WBE or SDVE goal, less any amounts awarded to another MBE, WBE or SDVE. (NOTE: A MBE firm that bids as general contractor must obtain WBE and SDVE participation; a WBE firm that bids as a general contractor must obtain MBE and SDVE participation; and a SDVE firm that bids as general contractor must obtain MBE and WBE participation.) In order for the remaining contract amount to be counted towards the MBE, WBE or SDVE goal, the Bidder must complete the MBE/WBE/SDVE Compliance Evaluation Form (Section 004337) identifying itself as an MBE, WBE or SDVE.
2. The total dollar value of the work granted to a certified MBE, WBE or SDVE by the Bidder shall be counted towards the applicable goal.
3. Expenditures for materials and supplies obtained from a certified MBE, WBE, or SDVE supplier or manufacturer may be counted towards the MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE assumes the actual and contractual responsibility for the provision of the materials and supplies.
4. The total dollar value of the work granted to a second or subsequent tier subcontractor or a supplier may be counted towards a Bidder’s MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE properly assumes the actual and contractual responsibility for the work.
5. The total dollar value of work granted to a certified joint venture equal to the percentage of the ownership and control of the MBE, WBE, or SDVE partner in the joint venture may be counted towards the MBE/WBE/SDVE goals.
6. Only expenditures to a MBE, WBE, or SDVE that performs a commercially useful function in the work may be counted towards the MBE, WBE and SDVE goals. A MBE, WBE, or SDVE performs a commercially useful function when it is responsible for executing a distinct element of the work

and carrying out its responsibilities by actually performing, managing and supervising the work or providing supplies or manufactured materials.

D. Certification of MBE/WBE/SDVE Subcontractors:

1. In order to be counted towards the goals, an MBE or WBE must be certified by the State of Missouri Office of Equal Opportunity and an SDVE must be certified by the State of Missouri, Office of Administration, Division of Purchasing and Material Management or by the Department of Veterans Affairs.
2. The Bidder may determine the certification status of a proposed MBE or WBE subcontractor or supplier by referring to the Office of Equal Opportunity (OEO)'s online MBE/WBE directory (<https://apps1.mo.gov/MWBCertifiedFirms/>). The Bidder may determine the eligibility of a SDVE subcontractor or supplier by referring to the Division of Purchasing and Materials Management's online SDVE directory (<https://oa.mo.gov/sites/default/files/sdvelisting.pdf>) or the Department of Veterans Affairs' directory (<https://vetbiz.va.gov/basic-search/>).
3. Additional information, clarifications, etc., regarding the listings in the directories may be obtained by calling the Division at (573)751-3339 and asking to speak to the Contract Specialist of record as shown in the Supplementary Conditions (Section 007300).

E. Waiver of MBE/WBE/SDVE Participation:

1. If a Bidder has made a good faith effort to secure the required MBE, WBE and/or SDVE participation and has failed, the Bidder shall submit with its bid the information requested in MBE/WBE/SDVE Good Faith Effort (GFE) Determination form. The GFE forms are located on the MissouriBUYS solicitation for this project. The Director will determine if the Bidder made a good faith effort to meet the applicable goals. If the Director determines that the Bidder did not make a good faith effort, the bid shall be rejected as being nonresponsive to the bid requirements. Bidders who demonstrate that they have made a good faith effort to include MBE, WBE, and/or SDVE participation will be determined to be responsive to the applicable participation goals, regardless of the percent of actual participation obtained, if the bid is otherwise acceptable.
2. In determining whether a Bidder has made a good faith effort to obtain MBE, WBE and/or SDVE participation, the Director may evaluate the factors set forth in 1 CSR 30-5.010(6)(C) and the following:
 - a. The amount of actual participation obtained;
 - b. How and when the Bidder contacted potential MBE, WBE, and SDVE subcontractors and suppliers;
 - c. The documentation provided by the Bidder to support its contacts, including whether the Bidder provided the names, addresses, phone numbers, and dates of contact for MBE/WBE/SDVE firms contacted for specific categories of work;
 - d. If project information, including plans and specifications, were provided to MBE/WBE/SDVE subcontractors;
 - e. Whether the Bidder made any attempts to follow-up with MBE, WBE or SDVE firms prior to bid;
 - f. Amount of bids received from any of the subcontractors and/or suppliers that the Bidder contacted;
 - g. The Bidder's stated reasons for rejecting any bids;
3. If no bidder has obtained any participation in a particular category (MBE/WBE/SDVE) or made a good faith effort to do so, the Director may waive that goal rather than rebid.

F. Contractor MBE/WBE/SDVE Obligations

1. If awarded a contract, the Bidder will be contractually required to subcontract with or obtain materials from the MBE, WBE, and SDVE firms listed in its bid, in amounts equal to or greater than the dollar amount bid, unless the amount is modified in writing by the Owner.
2. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor's bid, the Contractor must satisfactorily explain to the Director why it cannot comply with the requirement and why failing meeting the requirement was beyond the Contractor's control. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:
 - a. Declaring the Contractor ineligible to participate in any contracts with the Division for up to twelve (12) months (suspension); and/or
 - b. Declaring the Contractor be non-responsive to the Invitation for Bid, or in breach of contract and rejecting the bid or terminating the contract.
3. If the Contractor replaces an MBE, WBE, or SDVE during the course of this contract, the Contractor shall replace it with another MBE, WBE, or SDVE or make a good faith effort to do so. All MBE, WBE and SDVE substitutions must be approved by the Director.
4. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE obligations. At a minimum, the Contractor shall report the dollar-value of work completed by each MBE, WBE, or SDVE during the preceding month and the cumulative total of work completed by each MBE, WBE or SDVE to date with each monthly application for payment. The Contractor shall also make a final report, which shall include the total dollar-value of work completed by each MBE, WBE, and SDVE during the entire contract.

**STATE OF MISSOURI
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION
*MBE/WBE/SDVE DIRECTORY***

The MBE/WBE Directory for goods and services is maintained by the Office of Equal Opportunity (OEO). The current Directory can be accessed at the following web address:

<https://apps1.mo.gov/MWBCertifiedFirms/>

Please note that you may search by MBE, WBE, or both as well as by region, location of the business by city or state, as well as by commodity or service.

The SERVICE DISABLED VETERAN ENTERPRISE (SDVE) Directory (s) may be accessed at the following web addresses:

<https://oa.mo.gov/sites/default/files/sdvelisting.pdf>

<https://vetbiz.va.gov/basic-search/>



State of Missouri Construction Contract

THIS AGREEMENT is made (DATE) by and between:

Contractor Name and Address

hereinafter called the "Contractor,"

and the **State of Missouri**, hereinafter called the "**Owner**", represented by the Office of Administration, Division of Facilities Management, Design and Construction, on behalf of the Department of Corrections.

WITNESSETH, that the Contractor and the Owner, for the consideration stated herein agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all labor and materials and perform all work required for furnishing and installing all labor, materials, equipment and transportation and everything necessarily inferred from the general nature and tendency of the plans and specifications for the proper execution of the work for:

Project Name: **Closure of Multiple Lagoons and Wells
Central Missouri Correctional Facility
Jefferson City, Missouri**

Project Number: **C1919-01**

in strict accordance with the Contract Documents as enumerated in Article 7, all of which are made a part hereof.

ARTICLE 2. TIME OF COMPLETION

The contract performance time is **120 working days** from the transmittal date of this agreement. The contract completion date is **MONTH, DAY, YEAR**. This time includes ten (10) working days for the Contractor to receive, sign and return the contract form along with required bonding and insurance certificates. Failure of the Contractor to provide correct bonding and insurance within the ten (10) working days shall not be grounds for a time extension. Receipt of proper bonding and insurance is a condition precedent to the formation of the contract and if not timely received, may result in forfeiture of the Contractor's bid security. Work may not commence until the Owner issues a written Notice to Proceed and must commence within seven (7) working days thereafter.

ARTICLE 3. LIQUIDATED DAMAGES

Whenever time is mentioned in this contract, time shall be and is of the essence of this contract. The Owner would suffer a loss should the Contractor fail to have the work embraced in this contract fully completed on or before the time above specified. **THEREFORE**, the parties hereto realize in order to adjust satisfactorily the damages on account of such failure that it might be impossible to compute accurately or estimate the amount of such loss or damages which the Owner would sustain by reason of failure to complete fully said work within the time required by this contract. The Contractor hereby covenants and agrees to pay the Owner, as and for **liquidated damages, the sum of \$700** per day for each and every day, Sunday and legal holidays excepted, during which the work remains incomplete and unfinished. Any sum which may be due the Owner for such damages shall be deducted and retained by the Owner from any balance which may be due the Contractor when said work shall have been finished and accepted. But such provisions shall not release the Bond of the Contractor from liability according to its terms. In case of failure to complete, the Owner will be under no obligation to show or prove any actual or specific loss or damage.

ARTICLE 4. CONTRACT SUM

The Owner shall pay the Contractor for the prompt, faithful and efficient performance of the conditions and undertakings of this contract, subject to additions, and deductions as provided herein, in current funds the sum of:

Base Bid: \$

TOTAL CONTRACT AMOUNT: (\$CONTRACT AMOUNT)

ARTICLE 5. PREVAILING WAGE RATE

MISSOURI PREVAILING WAGE LAW (Sections 290.210 to 290.340, RSMo): The Contractor shall pay not less than the specified hourly rate of wages, as set out in the wage order attached to and made part of the specifications for work under this contract, to all workers performing work under the contract, in accordance with sections 290.210 to 290.340, RSMo. The Contractor shall forfeit a penalty to the Owner of one hundred dollars per day (or portion of a day) for each worker that is paid less than the specified rates for any work done under the contract by the Contractor or by any subcontractor, in accordance with section 290.250, RSMo.

ARTICLE 6. MINORITY/WOMEN/SERVICE DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

The Contractor has been granted a waiver of the 10% MBE and 10% WBE and 3% SDVE participation goals. The Contractor agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows: (OR)

The Contractor has met the MBE/WBE/SDVE participation goals and agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows:

| | |
|--------------------|--------------------|
| MBE/WBE/SDVE Firm: | Subcontract Amt:\$ |
| MBE/WBE/SDVE Firm: | Subcontract Amt:\$ |
| MBE/WBE/SDVE Firm: | Subcontract Amt:\$ |

Total \$

MBE/WBE/SDVE assignments identified above shall not be changed without a contract change signed by the Owner.

The Director of the Division of Facilities Management, Design and Construction or his Designee shall be the final authority to resolve disputes and disagreements between the Contractor and the MBE/WBE/SDVE firms listed above when such disputes impact the subcontract amounts shown above.

ARTICLE 7. CONTRACT DOCUMENTS

The following documents are hereby incorporated into this contract by reference (all division/section numbers and titles are as utilized in the Project Manual published by the Owner for this Project):

1. Division 0 – Procurement and Contracting Information, including, but not limited to:
 - a. Invitation for Bid (Section 001116)
 - b. Instructions to Bidders (Section 002113)
 - c. Supplementary Instructions to Bidders (if applicable) (Section 002213)
 - d. The following documents as completed and executed by the Contractor and accepted by the Owner, if applicable:
 - i. Bid Form (Section 004113)
 - ii. Unit Prices (Section 004322)
 - iii. Proposed Contractors Form (Section 004336)
 - iv. MBE, WBE, SDVE Compliance Evaluation Form(s) (Section 004337)
 - v. MBE, WBE, SDVE Eligibility Determination Form for Joint Ventures (Section 004338)
 - vi. MBE, WBE, SDVE Good Faith Effort (GFE) Determination Form (Section 004339)
 - vii. Missouri Service Disabled Veteran Business Form (Section 004340)
 - viii. Affidavit of Work Authorization (Section 004541)
 - ix. Affidavit for Affirmative Action (Section 005414)

- e. Performance and Payment Bond, completed and executed by the Contractor and surety (Section 006113)
- f. General Conditions (Section 007213)
- g. Supplementary Conditions (Section 007300)
- h. Supplementary General Conditions for Federally Funded/Assisted Construction Projects (Section 007333)
- i. Wage Rate(s) (Section 007346)
- 2. Division 1 – General Requirements
- 3. All Drawings identified in the Project Manual
- 4. All Technical Specifications included in the Project Manual
- 5. Addenda, if applicable

ARTICLE 8 – CERTIFICATION

By signing this contract, the Contractor hereby re-certifies compliance with all legal requirements set forth in Section 6.0, Bidder's Certifications of the Bid Form.

Further, if the Contractor provides any "personal information" as defined in §105.1500, RSMo concerning an entity exempt from federal income tax under Section 501(c) of the Internal Revenue Code of 1986, as amended, the Contractor understands and agrees that it is voluntarily choosing to enter into a state contract and providing such information for that purpose. The state will treat such personal information in accord with §105.1500, RSMo.

By signature below, the parties hereby execute this contract document.

APPROVED:

 Brian Yansen, Director
 Division of Facilities Management,
 Design and Construction

 Contractor's Authorized Signature

I, Corporate Secretary, certify that I am Secretary of the corporation named above and that (CONTRACTOR NAME), who signed said contract on behalf of the corporation, was then (TITLE) of said corporation and that said contract was duly signed for and in behalf of the corporation by authority of its governing body, and is within the scope of its corporate powers.

Corporate Secretary



STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT FOR AFFIRMATIVE ACTION

PROJECT NUMBER

NAME

First being duly sworn on oath states: that

he/she is the ☐ sole proprietor ☐ partner ☐ officer or ☐ manager or managing member of

NAME

a ☐ sole proprietorship ☐ partnership
☐ limited liability company (LLC)

or ☐ corporation, and as such, said proprietor, partner, or officer is duly authorized to make this
affidavit on behalf of said sole proprietorship, partnership, or corporation; that under the contract known as

PROJECT TITLE

Less than 50 persons in the aggregate will be employed and therefore, the applicable Affirmative Action
requirements as set forth in Article 1.4 of the General Conditions of the State of Missouri have been met.

PRINT NAME & SIGNATURE

DATE

NOTARY INFORMATION

| | | | |
|-----------------------------|---------------------------------------|-------------------------------|--------------------------------------|
| NOTARY PUBLIC EMBOSSER SEAL | STATE OF | COUNTY (OR CITY OF ST. LOUIS) | USE RUBBER STAMP IN CLEAR AREA BELOW |
| | SUBSCRIBED AND SWORN BEFORE ME, THIS | | |
| | DAY OF | YEAR | |
| | NOTARY PUBLIC SIGNATURE | MY COMMISSION EXPIRES | |
| | NOTARY PUBLIC NAME (TYPED OR PRINTED) | | |

SECTION 006113 - PERFORMANCE AND PAYMENT BOND FORM

KNOW ALL MEN BY THESE PRESENTS, THAT we _____

as principal, and _____

_____ as Surety, are held and firmly bound unto the

STATE OF MISSOURI. in the sum of _____ Dollars (\$ _____)

for payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written agreement dated the _____

day of _____, 20_____, enter into a contract with the State of Missouri for

(Insert Project Title and Number)

NOW, THEREFORE, if the Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the State of Missouri, with or without notice to the Surety and during the life of any guaranty required under the contract; and shall also faithfully perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made with or without notice to the Surety; and shall also promptly make payment for materials incorporated, consumed or used in connection with the work set forth in the contract referred to above, and all insurance premiums, both compensation and all other kinds of insurance, on said work, and for all labor performed on such work, whether by subcontractor or otherwise, at not less than the prevailing hourly rate of wages for work of a similar character (exclusive of maintenance work) in the locality in which the work is performed and not less than the prevailing hourly rate of wages for legal holiday and overtime work (exclusive of maintenance work) in the locality in which the work is performed both as determined by the Department of Labor and Industrial Relations or determined by the Court of Appeal, as provided for in said contract and in any and all duly authorized modifications of said contract that may be hereafter made, with or without notice to the Surety, then, this obligation shall be void and of no effect, but it is expressly understood that if the Principal should make default in or should fail to strictly, faithfully and efficiently do, perform and comply with any or more of the covenants, agreements, stipulations, conditions, requirements or undertakings, as specified in or by the terms of said contract, and with the time therein named, then this obligation shall be valid and binding upon each of the parties hereto and this bond shall remain in full force and effect; and the same may be sued on at the instance of any material man, laborer, mechanic, subcontractor, individual, or otherwise to whom such payment is due, in the name of the State of Missouri, to the use of any such person.

AND, IT IS FURTHER specifically provided that any modifications which may hereinafter be made in the terms of the contract or in the work to be done under it or the giving by the Owner of any extension of the time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal to the other, shall not in any way release the Principal and the Surety, or either or any of them, their heirs, executors, administrators and successors, from their liability hereunder, notice to the Surety of any such extension, modifications or forbearance being hereby waived.

IN WITNESS WHEREOF, the above bounden parties have executed the within instrument this _____ day of _____, 20 ____.

AS APPLICABLE:

AN INDIVIDUAL

Name: _____

Signature: _____

A PARTNERSHIP

Name of Partner: _____

Signature of Partner: _____

Name of Partner: _____

Signature of Partner: _____

CORPORATION

Firm Name: _____

Signature of President: _____

SURETY

Surety Name: _____

Attorney-in-Fact: _____

Address of Attorney-in-Fact: _____

Telephone Number of Attorney-in-Fact: _____

Signature Attorney-in-Fact: _____

NOTE: Surety shall attach Power of Attorney



STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
PRODUCT SUBSTITUTION REQUEST

PROJECT NUMBER

PROJECT TITLE AND LOCATION

CHECK APPROPRIATE BOX

- ☐ **SUBSTITUTION PRIOR TO BID OPENING**
(Minimum of (5) working days prior to receipt of Bids as per Article 4 – Instructions to Bidders)
- ☐ **SUBSTITUTION FOLLOWING AWARD**
(Maximum of (20) working days from Notice to Proceed as per Article 3 – General Conditions)

FROM: BIDDER/CONTRACTOR (PRINT COMPANY NAME)

TO: ARCHITECT/ENGINEER (PRINT COMPANY NAME)

Bidder/Contractor hereby requests acceptance of the following product or systems as a substitution in accordance with provisions of Division One of the Bidding Documents:

SPECIFIED PRODUCT OR SYSTEM

SPECIFICATION SECTION NO.

SUPPORTING DATA

- ☐ Product data for proposed substitution is attached (include description of product, standards, performance, and test data)
- ☐ Sample ☐ Sample will be sent, if requested

QUALITY COMPARISON

| | SPECIFIED PRODUCT | SUBSTITUTION REQUEST |
|--------------|-------------------|----------------------|
| NAME, BRAND | | |
| CATALOG NO. | | |
| MANUFACTURER | | |
| VENDOR | | |

PREVIOUS INSTALLATIONS

| | |
|----------|--------------------|
| PROJECT | ARCHITECT/ENGINEER |
| LOCATION | DATE INSTALLED |

SIGNIFICANT VARIATIONS FROM SPECIFIED PRODUCT

REASON FOR SUBSTITUTION

DOES PROPOSED SUBSTITUTION AFFECT OTHER PARTS OF WORK?☐ YES ☐ NO

IF YES, EXPLAIN

SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR REDESIGN OF STRUCTURE OR A/E WORK☐ YES ☐ NO**BIDDER'S/CONTRACTOR'S STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENT:**

We have investigated the proposed substitution. We believe that it is equal or superior in all respects to specified product, except as stated above; that it will provide the same Warranty as specified product; that we have included complete implications of the substitution; that we will pay redesign and other costs caused by the substitution which subsequently become apparent; and that we will pay costs to modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning as a result of the substitution.

BIDDER/CONTRACTOR

DATE

REVIEW AND ACTION☐ Resubmit Substitution Request with the following additional information:

☐ Substitution is accepted.☐ Substitution is accepted with the following comments:

☐ Substitution is not accepted.

ARCHITECT/ENGINEER

DATE



STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
FINAL RECEIPT OF PAYMENT AND RELEASE

PROJECT NUMBER

KNOW ALL MEN BY THESE PRESENT THAT: hereinafter called "Subcontractor" who heretofore entered into an agreement with hereinafter called "Contractor", for the performance of work and/or furnishing of material for the construction of the project entitled

(PROJECT TITLE, PROJECT LOCATION, AND PROJECT NUMBER)

at

(ADDRESS OF PROJECT)

for the State of Missouri (Owner) which said subcontract is by this reference incorporated herein, in consideration of such final payment by Contractor.

DOES HEREBY:

1. ACKNOWLEDGE that they have been **PAID IN FULL** all sums due for work and materials contracted or done by their Subcontractors, Material Vendors, Equipment and Fixture Suppliers, Agents and Employees, or otherwise in the performance of the Work called for by the aforesaid Contract and all modifications or extras or additions thereto, for the construction of said project or otherwise.
2. RELEASE and fully, finally, and forever discharge the Owner from any and all suits, actions, claims, and demands for payment for work performed or materials supplied by Subcontractor in accordance with the requirements of the above referenced Contract.
1. REPRESENT that all of their Employees, Subcontractors, Material Vendors, Equipment and Fixture Suppliers, and everyone else has been **paid in full** all sums due them, or any of them, in connection with performance of said Work, or anything done or omitted by them, or any of them in connection with the construction of said improvements, or otherwise.

DATED this day of , 20 .

NAME OF SUBCONTRACTOR

BY (TYPED OR PRINTED NAME)

SIGNATURE

TITLE

ORIGINAL: FILE/Closeout Documents



STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

MBE/WBE/SDVE PROGRESS REPORT

Remit with **ALL** Progress and Final Payments

(Please check appropriate box) ☐CONSULTANT ☐CONSTRUCTION

| | |
|---|----------------|
| PAY APP NO. | PROJECT NUMBER |
| CHECK IF FINAL <input type="checkbox"/> FINAL | DATE |

| PROJECT TITLE | | | |
|--|-----------------------------------|--|--|
| PROJECT LOCATION | | | |
| FIRM | | | |
| ORIGINAL CONTRACT SUM (Same as Line Item 1. on Form A of Application for Payment) \$ | | TOTAL CONTRACT SUM TO DATE (Same as Line Item 3. on Form A of Application for Payment) \$ | |
| THE TOTAL MBE/WBE/SDVE PARTICIPATION DOLLAR AMOUNT OF THIS PROJECT AS INDICATED IN THE ORIGINAL CONTRACT: \$ | | | |
| SELECT MBE, WBE, SDVE | TOTAL AMOUNT OF SUBCONTRACT | \$ AMOUNT PAID-TO-DATE (include approved contract changes) | CONSULTANT/SUBCONSULTANT OR CONTRACTOR/SUBCONTRACTOR/SUPPLIER COMPANY NAME |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |
| <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVE | \$ | \$ | |

INSTRUCTIONS FOR MBE/WBE/SDVE PROGRESS REPORT

CONTRACTOR OR CONSULTANT TO FILL OUT AND REMIT WITH EACH PAY APPLICATION:

The MBE/WBE/SDVE Progress Report for the project is issued with the contract comprising values reported in the consultant's Proposal or on the successful contractor's Section 004337 Compliance Evaluation Forms.

At Initial Pay Application fill in the following:

1. Pay App No. Start with 1.
2. Fill in the Project Number and Date.
3. Enter Project Title, Project Location, and Firm.
4. Fill in the "Original Contract Sum" and "Total Contract Sum To Date" (Reference applicable Line Items on Form A of Application for Payment).
5. Indicate the Total Participation Dollar Amount from the Original Contract.
6. Select MBE, WBE, or SDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier.
7. Enter the "Total Amount of Subcontract", "\$ Amount (Paid-To-Date)", and Company Name.

For all subsequent Pay Applications fill in the following:

1. Pay App No.
2. If Final Pay App, check box.
3. Fill in the Project Number and Date.
4. Enter Project Title, Project Location, and Firm
5. At each Pay App fill in the "Original Contract Sum" and "Total Contract Sum To Date" (reference applicable Line Items on Form A of Application for Payment).
6. Indicate the Total Participation Dollar Amount from the Original Contract.
7. Select MBE, WBE, or SDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier
8. Enter the "Total Amount of Subcontract", "\$ Amount (Paid-To-Date)", and Company Name.



STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT – COMPLIANCE WITH PREVAILING WAGE LAW

PROJECT NUMBER

Before me, the undersigned Notary Public, in and for the County of _____

State of _____ personally came and appeared _____

(NAME)

of the _____

(POSITION)

(NAME OF THE COMPANY)

(a corporation) (a partnership) (a proprietorship) and after being duly sworn did depose and say that all provisions and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works project have been fully satisfied and there has been no exception to the full and completed compliance with said provisions and requirements and with Wage Determination No: _____ issued by the Department of Labor and Industrial Relations, State of Missouri on the _____ day of _____ 20 _____ in carrying out the contract and working in connection with _____

(NAME OF PROJECT)

Located at _____ in _____ County

(NAME OF THE INSTITUTION)

Missouri, and completed on the _____ day of _____ 20 _____

SIGNATURE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSER OR
BLACK INK RUBBER STAMP SEAL

STATE

COUNTY (OR CITY OF ST. LOUIS)

SUBSCRIBED AND SWORN BEFORE ME, THIS

DAY OF

YEAR

USE RUBBER STAMP IN CLEAR AREA BELOW

NOTARY PUBLIC SIGNATURE

MY COMMISSION
EXPIRES

NOTARY PUBLIC NAME (TYPED OR PRINTED)

FILE: Closeout Documents

GENERAL CONDITIONS

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SECTION 007213 - GENERAL CONDITIONS

- A. These General Conditions apply to each section of these specifications. The Contractor is subject to the provisions contained herein.
- B. The General Conditions are intended to define the relationship of the Owner, the Designer and the Contractor thereby establishing certain rules and provisions governing the operation and performance of the work so that the work may be performed in a safe, orderly, expeditious and workmanlike manner.

ARTICLE 1 – GENERAL PROVISIONS

ARTICLE 1.1 - DEFINITIONS

As used in these contract documents, the following terms shall have the meanings and refer to the parties designated in these definitions.

- 1. **"COMMISSIONER"**: The Commissioner of the Office of Administration.
- 2. **"CONSTRUCTION DOCUMENTS"**: The "Construction Documents" shall consist of the Project Manual, Drawings and Addenda.
- 3. **"CONSTRUCTION REPRESENTATIVE"**: Whenever the term "Construction Representative" is used, it shall mean the Owner's Representative at the work site.
- 4. **"CONTRACTOR"**: Party or parties who have entered into a contract with the Owner to furnish work under these specifications and drawings.
- 5. **"DESIGNER"**: When the term "Designer" is used herein, it shall refer to the Architect, Engineer, or Consultant of Record specified and defined in Paragraph 2.0 of the Supplemental Conditions, or his duly authorized representative. The Designer may be either a consultant or state employee.
- 6. **"DIRECTOR"**: Whenever the term "Director" is used, it shall mean the Director of the Division of Facilities Management, Design and Construction or his Designee, representing the Office of Administration, State of Missouri. The Director is the agent of the Owner.
- 7. **"DIVISION"**: Shall mean the Division of Facilities Management, Design and Construction, State of Missouri.

- 8. **"INCIDENTAL JOB BURDENS"**: Shall mean those expenses relating to the cost of work, incurred either in the home office or on the job-site, which are necessary in the course of doing business but are incidental to the job. Such costs include office supplies and equipment, postage, courier services, telephone expenses including long distance, water and ice and other similar expenses.
- 9. **"JOINT VENTURE"**: An association of two (2) or more businesses to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge.
- 10. **"OWNER"**: Whenever the term "Owner" is used, it shall mean the State of Missouri.
- 11. **"PROJECT"**: Wherever the term "Project" is used, it shall mean the work required to be completed by the construction contract.
- 12. **"PROJECT MANUAL"**: The "Project Manual" shall consist of Introductory Information, Invitation for Bid, Instructions to Bidders, Bid Documents, Additional Information, Standard Forms, General Conditions, Supplemental General Conditions, General Requirements and Technical Specifications.
- 13. **"SUBCONTRACTOR"**: Party or parties who contract under, or for the performance of part or this entire Contract between the Owner and Contractor. The subcontract may or may not be direct with the Contractor.
- 14. **"WORK"**: Labor, material, supplies, plant and equipment required to perform and complete the service agreed to by the Contractor in a safe, expeditious, orderly and workmanlike manner so that the project shall be complete and finished in the best manner known to each respective trade.
- 15. **"WORKING DAYS"**: are all calendar days except Saturdays, Sundays and the following holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday (observed), Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day (observed), Thanksgiving Day, Christmas Day.

ARTICLE 1.2 DRAWINGS AND SPECIFICATIONS

- A. In case of discrepancy between drawings and specifications, specifications shall govern. Should discrepancies in architectural drawings, structural drawings and mechanical drawings occur,

architectural drawings shall govern and, in case of conflict between structural and mechanical drawings, structural drawings shall govern.

- B. Specifications are separated into titled divisions for convenience of reference only and to facilitate letting of contracts and subcontracts. The Contractor is responsible for establishing the scope of work for subcontractors, which may cross titled divisions. Neither the Owner nor Designer will establish limits and jurisdiction of subcontracts.
- C. Figured dimensions take precedence over scaled measurements and details over smaller scale general drawings. In the event of conflict between any of the documents contained within the contract, the documents shall take precedence and be controlling in the following sequence: addenda, supplementary general conditions, general conditions, division 1 specifications, technical division specifications, drawings, bid form and instructions to bidders.
- D. Anything shown on drawings and not mentioned in these specifications or vice versa, as well as any incidental work which is obviously necessary to complete the project within the limits established by the drawings and specifications, although not shown on or described therein, shall be performed by the Contractor at no additional cost as a part of his contract.
- E. Upon encountering conditions differing materially from those indicated in the contract documents, the Contractor shall promptly notify the Designer and Construction Representative in writing before such conditions are disturbed. The Designer shall promptly investigate said conditions and report to the Owner, with a recommended course of action. If conditions do materially differ and cause an increase or decrease in contract cost or time required for completion of any portion of the work, a contract change will be initiated as outlined in Article 4 of these General Conditions.
- E. Only work included in the contract documents is authorized, and the Contractor shall do no work other than that described therein or in accordance with appropriately authorized and approved contract changes.

ARTICLE 1.3 - COMPLIANCE WITH LAWS, PERMITS, REGULATIONS AND INSPECTIONS

- A. Since the Owner is the State of Missouri, municipal or political subdivisions, zoning ordinances, construction codes (other than licensing of trades), and other like ordinances are not applicable to construction on Owner's property, and Contractor will not be required to submit drawings and specifications to any municipal or political subdivision, authority, obtain

construction permits or any other licenses (other than licensing of trades) or permits from or submit to inspections by any municipality or political subdivision relating to the construction for this project. All permits or licenses required by municipality or political subdivision for operation on property not belonging to Owner shall be obtained by and paid for by Contractor. Each Contractor shall comply with all applicable laws, ordinances, rules and regulations that pertain to the work of this contract.

- B. Contractors, subcontractors and their employees engaged in the businesses of electrical, mechanical, plumbing, carpentry, sprinkler system work, and other construction related trades shall be licensed to perform such work by the municipal or political subdivision where the project is located, if such licensure is required by local code. Local codes shall dictate the level (master, journeyman, and apprentice) and the number, type and ratio of licensed tradesmen required for this project within the jurisdiction of such municipal or political subdivision.
- C. Equipment and controls manufacturers and their authorized service and installation technicians that do not maintain an office within the jurisdiction of the municipal or political subdivision but are a listed or specified contractor or subcontractor on this project are exempt from Paragraph 1.3 B above.
- D. The Contractor shall post a copy of the wage determination issued for the project and included as a part of the contract documents, in a prominent and easily accessible location at the site of construction for the duration of the project.
- E. Any contractor or subcontractor to such contractor at any tier signing a contract to work on this project shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The contractor shall forfeit as a penalty to the public body on whose behalf the contract is made or awarded, two thousand five hundred dollars plus one hundred dollars for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training.

ARTICLE 1.4 - NONDISCRIMINATION IN EMPLOYMENT

- A. The Contractor and his subcontractors will not discriminate against individuals based on race,

color, religion, national origin, sex, disability, or age, but may use restrictions which relate to bona fide occupational qualifications. Specifically, the Contractor and his subcontractors shall not discriminate:

1. Against recipients of service on the basis of race, color, religion, national origin, sex, disability or age.
2. Against any employee or applicant, for employment on the basis of race, color, religion, national origin, sex or otherwise qualified disability status.
3. Against any applicant for employment or employee on the basis of age, where such applicant or employee is between ages 40 and 70 and where such Contractor employs at least 20 persons.
4. Against any applicant for employment or employee on the basis of that person's status as a disabled or Vietnam-era veteran.

The Contractor and his Subcontractors will take affirmative action to insure applicants for employment and employees are treated equally without regard to race, color, religion, national origin, sex, disability, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion and transfer; recruitment or recruitment advertising; and selection for training, including apprenticeship. The Contractor and his Subcontractors will give written notice of their commitments under this clause to any labor union with which they have bargaining or other agreements.

- B. The Contractor and his subcontractors shall develop, implement, maintain and submit in writing to the Owner an affirmative action program if at least fifty (50) persons in the aggregate are employed under this contract. If less than fifty (50) persons in the aggregate are to be employed under this contract, the Contractor shall submit, in lieu of the written affirmative action program, a properly executed Affidavit for Affirmative Action in the form included in the contract specifications. For the purpose of this section, an "affirmative action program" means positive action to influence all employment practices (including, but not limited to, recruiting, hiring, promoting and training) in providing equal employment opportunity regardless of race, color, sex, national origin, religion, age (where the person affected is between age 40 and 70), disabled and Vietnam-era veteran status, and disability. Such "affirmative action program" shall include:

1. A written policy statement committing the total organization to affirmative action and

assigning management responsibilities and procedures for evaluation and dissemination;

2. The identification of a person designated to handle affirmative action;
3. The establishment of non-discriminatory selection standards, objective measures to analyze recruitment, an upward mobility system, a wage and salary structure, and standards applicable to lay-off, recall, discharge, demotion and discipline;
4. The exclusion of discrimination from all collective bargaining agreements; and
5. Performance of an internal audit of the reporting system to monitor execution and to provide for future planning.

In the enforcement of this non-discrimination clause, the Owner may use any reasonable procedures available, including, but not limited to: requests, reports, site visits and inspection of relevant documents of contractors and subcontractors.

- C. In the event of the Contractor's or his subcontractor's noncompliance with any provisions of this Article of the Contract, the Owner may cancel this contract in whole or in part or require the Contractor to terminate his contract with the subcontractor.

ARTICLE 1.5 - ANTI-KICKBACK

No employee of the division, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract or in any part hereof. No officer, employee, designer, attorney, or administrator of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

ARTICLE 1.6 - PATENTS AND ROYALTIES

- A. The Contractor shall hold and save the Owner and its officers, agents, servants and employees harmless from liabilities of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of this contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents.
- B. If the Contractor uses any design, device or materials covered by letters, patent or copyright,

the Contractor shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, without exception, that the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract and shall indemnify the Owner for any cost, expense or damage it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

ARTICLE 1.7 - PREFERENCE FOR AMERICAN AND MISSOURI PRODUCTS AND SERVICES

- A. By virtue of statutory authority a preference will be given to Missouri labor and to products of mines, forests and quarries of the state of Missouri when they are found in marketable quantities in the state, and all such materials shall be of the best quality and suitable character that can be obtained at reasonable market prices, all as provided for in Section 8.280, Missouri Revised Statutes and Cumulative Supplements.
- B. Furthermore, pursuant to Section 34.076 Missouri Revised Statutes and Cumulative Supplements, a preference shall be given to those persons doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less. In addition, in order for a non-domiciliary bidder to be successful, his bid must be that same percentage lower than a domiciliary Missouri bidder's bid, as would be required for a Missouri bidder to successfully bid in the non-domiciliary state.
- C. In accordance with the Missouri Domestic Products Procurement Act Section 34.350 RSMo and Cumulative Supplements any manufactured goods or commodities used or supplied in the performance of this contract or any subcontract thereto shall be manufactured, assembled or produced in the United States, unless the specified products are not manufactured, assembled or produced in the United States in sufficient quantities to meet the agency's requirements or cannot be manufactured, assembled or produced in the United States within the necessary time in sufficient quantities to meet the contract requirements, or if obtaining the specified products manufactured, assembled or produced in the

United States would increase the cost of this contract for purchase of the product by more than ten percent.

ARTICLE 1.8 - COMMUNICATIONS

- A. All notices, requests, instructions, approvals and claims must be in writing and shall be delivered to the Designer and copied to the Construction Representative for the project except as required by Article 1.12 Disputes and Disagreements, or as otherwise specified by the Owner in writing as stated in Section 012600. Any such notice shall be deemed to have been given as of the time of actual receipt.
- B. The Contractor shall attend on-site progress and coordination meetings, as scheduled by the Construction Representative, no less than once a month.
- C. The Contractor shall ensure that major subcontractors and suppliers shall attend monthly progress meetings as necessary to coordinate the work, and as specifically requested by the Construction Representative.

ARTICLE 1.9 - SEPARATE CONTRACTS AND COOPERATION

- A. The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs.
- B. The Contractor shall consult the drawings for all other contractors in connection with this work. Any work conflicting with the above shall be brought to the attention of the Owner's Representative before the work is performed. If the Contractor fails to do this, and constructs any work which interferes with the work of another contractor, the Contractor shall remove any part so conflicting and rebuild same, as directed by the Owner's Representative at no additional cost to the Owner.
- C. Each contractor shall be required to coordinate his work with other contractors so as to afford others reasonable opportunity for execution of their work. No contractor shall delay any other contractor by neglecting to perform contract work at the proper time. If any contractor causes delay to another, they shall be liable directly to that contractor for such delay in addition to any liquidated damages which might be due the Owner.
- D. Should the Contractor or project associated subcontractors refuse to cooperate with the instructions and reasonable requests of other Contractors or other subcontractors in the overall

coordinating of the work, the Owner may take such appropriate action and issue directions, as required, to avoid unnecessary and unwarranted delays.

- E. Each Contractor shall be responsible for damage done to Owner's or other Contractor's property by him/her or workers in his employ through their fault or negligence.
- F. Should a Contractor sustain any damage through any act or omission of any other Contractor having a contract with the Owner, the Contractor so damaged shall have no claim or cause of action against the Owner for such damage, but shall have a claim or cause of action against the other Contractor to recover any and all damages sustained by reason of the acts or omissions of such Contractor. The phrase "acts or omissions" as used in this section shall be defined to include, but not be limited to, any unreasonable delay on the part of any such contractors.

ARTICLE 1.10 - ASSIGNMENT OF CONTRACT

- A. No assignment by Contractor of any amount or any part of this contract or of the funds to be received there under will be recognized unless such assignment has had the written approval of the Director and the surety has been given due notice of such assignment and has furnished written consent thereto. In addition to the usual recitals in assignment contracts, the following language must be set forth: "It is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor of this contract and to claims or liens for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firms or corporations rendering such services or supplying such materials."

ARTICLE 1.11 - INDEMNIFICATION

- A. Contractor agrees to indemnify and save harmless Owner and its respective commissioners, officers, officials, agents, consultants and employees and Designer, their agents, servants and employees, from and against any and all liability for damage arising from injuries to persons or damage to property occasioned by any acts or omissions of Contractor, any subcontractors, agents, servants or employees, including any and all expense, legal or otherwise, which may be incurred by Owner or Designer, its agents, servants or employees, in defense of any claim, action or suit.
- B. The obligations of the Contractor under this paragraph shall not extend to the liability of the Designer, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, contract changes, design or specifications, or (2) giving of or the failure to

give directions or instructions by the Designer, his agents or employees as required by this contract documents provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 1.12 - DISPUTES AND DISAGREEMENTS

It is hereby expressly agreed and understood that in case any controversy or difference of opinion arises during construction, best efforts will be given to resolution at the field level. Should those efforts be unsuccessful, the Contractor has the right to appeal in writing, the decision of the Director's Designee to the Director at Room 730 Truman Building, P.O. Box 809, Jefferson City, Missouri 65102. The decision of the Director shall be final and binding on all parties.

ARTICLE 2 -- OWNER/DESIGNER RESPONSIBILITIES

- A. The Owner shall give all orders and directions contemplated under this contract relative to the execution of the work. During progress of work the Owner will be represented at the project site by the Construction Representative and/or Designer, whose responsibilities are to see that this contract is properly fulfilled.
- B. The Owner shall at all times have access to the work whenever it is in preparation or progress. The Contractors shall provide proper facilities for such access and for inspection and supervision.
- C. All materials and workmanship used in the work shall be subject to the inspection of the Designer and Construction Representative, and any work which is deemed defective shall be removed, rebuilt or made good immediately upon notice. The cost of such correction shall be borne by the Contractor. Contractor shall not be entitled to an extension of the contract completion date in order to remedy defective work. All rejected materials shall be immediately removed from the site of the work.
- D. If the Contractor fails to proceed at once with the correction of rejected defective materials or workmanship, the Owner may, by separate contract or otherwise, have the defects remedied or rejected. Materials removed from the site and charge the cost of the same against any monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.
- E. Failure or neglect on the part of Owner to observe faulty work, or work done which is not in accordance with the drawings and specifications shall not relieve the Contractor from responsibility

for correcting such work without additional compensation.

- F. The Owner shall have the right to direct the Contractor to uncover any completed work.
 - 1. If the Contractor fails to adequately notify the Construction Representative and/or Designer of an inspection as required by the Contract Documents, the Contractor shall, upon written request, uncover the work. The Contractor shall bear all costs associated with uncovering and again covering the work exposed.
 - 2. If the Contractor is directed to uncover work, which was not otherwise required by the Contract Documents to be inspected, and the work is found to be defective in any respect, no compensation shall be allowed for this work. If, however, such work is found to meet the requirements of this contract, the actual cost of labor and material necessarily involved in the examination and replacement plus 10% shall be allowed the Contractor.
- G. The Designer shall give all orders and directions contemplated under this contract relative to the scope of the work and shall give the initial interpretation of the contract documents.
- H. The Owner may file a written notice to the Contractor to dismiss immediately any subcontractors, project managers, superintendents, foremen, workers, watchmen or other employees whom the Owner may deem incompetent, careless or a hindrance to proper or timely execution of the work. The Contractor shall comply with such notice as promptly as practicable without detriment to the work or its progress.
- I. If in the Owner's judgment it becomes necessary at any time to accelerate work, when ordered by the Owner in writing, the Contractor shall redirect resources to such work items and execute such portions of the work as may be required to complete the work within the current approved contract schedule.

ARTICLE 3 -- CONTRACTOR RESPONSIBILITIES

The Contractor shall register and utilize the Owner's eBuilder digital project management system for submission of documents described in the following sections. This includes but is not limited to submittals as required by designer, payment applications, Request for Information (RFI), construction change orders, Request for Proposals (RFP), Designer Supplemental Instructions (DSI), etc.

ARTICLE 3.1 -- ACCEPTABLE SUBSTITUTIONS

- A. The Contractor may request use of any article, device, product, material, fixture, form or type of construction which in the judgment of the Owner and Designer is equal in all respects to that named. Standard products of manufacturers other than those specified will be accepted when, prior to the ordering or use thereof, it is proven to the satisfaction of the Owner and Designer that they are equal in design, strength, durability, usefulness and convenience for the purpose intended.
- B. Any changes required in the details and dimensions indicated on the drawings for the substitution of products other than those specified shall be properly made at the expense of the Contractor requesting the substitution or change.
- C. The Contractor shall submit a request for such substitutions in writing to the Owner and Designer within twenty (20) working days after the date of the "Notice to Proceed." Thereafter no consideration will be given to alternate forms of accomplishing the work. This Article does not preclude the Owner from exercising the provisions of Article 4 hereof.
- D. Any request for substitution by the Contractor shall be submitted in accordance with SECTION 002113 - INSTRUCTIONS TO BIDDERS.
- E. When a material has been approved, no change in brand or make will be permitted unless:
 - 1. Written verification is received from the manufacturer stating they cannot make delivery on the date previously agreed, or
 - 2. Material delivered fails to comply with contract requirements.

ARTICLE 3.2 -- SUBMITTALS

- A. The Contractor's submittals must be submitted with such promptness as to allow for review and approval so as not to cause delay in the work. The Contractor shall coordinate preparation and processing of submittals with performance of construction activities.

Coordinate each submittal with fabrication, = purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

Submit four (4) copies to the Designer and additional copies as required for the subcontractors and material suppliers. Also provide copies to meet the requirements for maintenance manuals.

- B. All subcontractors' shop drawings and schedules shall be submitted by the Contractor and shall bear evidence that Contractor has received, reviewed, and approved them. Any shop drawings and

schedules submitted without this evidence will be returned to the Contractor for resubmission.

- C. The Contractor shall include with the shop drawing, a letter indicating any and all deviations from the drawings and/or specifications. Failure to notify the Designer of such deviations will be grounds for subsequent rejection of the related work or materials. If, in the opinion of the Designer, the deviations are not acceptable, the Contractor will be required to furnish the item as specified and indicated on the drawings.
- D. The Designer shall check shop drawings and schedules with reasonable promptness and approve them only if they conform to the design concept of the project and comply with the information given in the contract documents. The approval shall not relieve the Contractor from the responsibility to comply with the drawings and specifications, unless the Contractor has called the Designer's attention to the deviation, in writing, at the time of submission and the Designer has knowingly approved thereof. An approval of any such modification will be given only under the following conditions:
 - 1. It is in the best interest of the Owner
 - 2. It does not increase the contract sum and/or completion time
 - 3. It does not deviate from the design intent
 - 4. It is without prejudice to any and all rights under the surety bond.
- E. No extension of time will be granted because of the Contractor's failure to submit shop drawings and schedules in ample time to allow for review, possible resubmission, and approval. Fabrication of work shall not commence until the Contractor has received approval. The Contractor shall furnish prints of approved shop drawings and schedules to all subcontractors whose work is in any way related to the work under this contract. Only prints bearing this approval will be allowed on the site of construction
- F. The Contractor shall maintain a complete file on-site of approved shop drawings available for use by the Construction Representative.

ARTICLE 3.3 – AS-BUILT DRAWINGS

- A. The Contractor shall update a complete set of the construction drawings, shop drawings and schedules of all work monthly by marking changes, and at the completion of their work (prior to submission of request for final payment) note all changes and turn the set over to the Construction Representative. The updates shall show all addenda, all field changes that were made to adapt to field conditions, changes resulting from contract

changes or supplemental instructions, and all locations of structures, buried installations of piping, conduit, and utility services. All buried and concealed items both inside and outside shall be accurately located as to depth and referenced to permanent features such as interior or exterior wall faces and dimensions shall be given in a neat and legible manner in a contrasting colored pencil or ink. If approved by the Designer, an electronic file format may be provided.

ARTICLE 3.4 – GUARANTY AND WARRANTIES

A. General Guaranty

- 1. Neither the final certificate of payment nor any provision in the contract documents nor partial use or occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with contract requirements.
- 2. The Contractor or surety shall remedy any defects in the work and pay for any damage to property resulting there from which shall appear within a period of one (1) year from the date of substantial completion unless a longer period is otherwise specified or a differing guaranty period has been established in the substantial completion certificate. The Owner will give notice of observed defects with reasonable promptness.
- 3. In case of default on the part of the Contractor in fulfilling this part of this contract, the Owner may correct the work or repair the damage and the cost and expense incurred in such event shall be paid by or recoverable from the Contractor or surety.
- 4. The work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's guaranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment

B. Extended Warranty

Manufacturer's certificates of warranty shall be obtained for all major equipment. Warranty shall be obtained for at least one year. Where a longer

period is offered at no additional cost or called for in the specific equipment specifications, the longer period shall govern.

ARTICLE 3.5 -- OPERATION AND MAINTENANCE MANUALS

A. Immediately after equipment submittals are approved and no later than ten (10) working days prior to the substantial completion inspection, the Contractor shall provide to the Designer three (3) copies of operating instructions and service manuals, containing the following:

1. Start-up and Shut-down Procedures: Provide a step-by-step write up of all major equipment. When manufacturer's printed start-up, trouble shooting and shut-down procedures are available; they may be incorporated into the operating manual for reference.
2. Operating Instructions: Written operating instructions shall be included for the efficient and safe operation of all equipment.
3. Equipment List: List of all major equipment as installed shall be prepared to include model number, capacities, flow rate, name plate data, shop drawings and air and water balance reports.
4. Service Instructions: Provide the following information for all pieces of equipment.
 - a. Recommended spare parts including catalog number and name of local supplier or factory representative.
 - b. Belt sizes, types, and lengths.
 - c. Wiring diagrams.
5. Manufacturer's Certificate of Warranty as described in Article 3.4.
6. Prior to the final payment, furnish to the Designer three (4) copies of parts catalogs for each piece of equipment furnished by him/her on the project with the components identified by number for replacement ordering.

B. Submission of operating instructions shall be done in the following manner.

1. Manuals shall be in quadruplicate, and all materials shall be bound into volumes of standard 8½" x 11" hard binders. Large drawings too bulky to be folded into 8½" x 11" shall be separately bound or folded and in envelopes, cross referenced and indexed with the manuals.
2. The manuals shall identify project name, project number, and include the name and

address of the Contractor, subcontractors and manufacturers who were involved with the activity described in that particular manual.

3. Internally subdivide the binder contents with permanent page dividers, logically organized with tab titles clearly printed under reinforced laminated plastic tabs.
4. Contents: Prepare a Table of Contents for each volume, with each product or system description identified.

ARTICLE 3.6 -- OTHER CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall keep on site, during progress of the work, a competent superintendent satisfactory to the Construction Representative. The superintendent shall represent the Contractor and all agreements made by the superintendent shall be binding. The superintendent shall carefully study and compare all drawings, specifications and other instructions and shall promptly notify the Construction Representative and Designer, in writing, any error, inconsistency or omission which may be discovered. The superintendent shall coordinate all work on the project. Any change of the superintendent shall be approved by the Construction Representative.
- B. Contractor shall, at all times, enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her.
- C. The Contractor shall supply sufficient labor, material, plant and equipment and pay when due any laborer, subcontractor or supplier for supplies furnished and otherwise prosecute the work with diligence to prevent work stoppage and insure completion thereof within the time specified.
- D. The Contractor and each of his subcontractors shall submit to the Construction Representative, through the Designer such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.
- E. The Contractor, subcontractors, and material suppliers shall upon written request, give the Owner access to all time cards, material invoices, payrolls, estimates, profit and loss statements, and all other direct or indirect costs related to this work.
- F. The Contractor shall be responsible for laying out all contract work such as layout of architectural, structural, mechanical and electrical work, which shall be coordinated with layouts of subcontractors

for general construction work. The Contractor is also responsible for unloading, uncrating and handling of all materials and equipment to be erected or placed by him/her, whether furnished by Contractor or others. No extra charges or compensation will be allowed as a result of failure to verify dimensions before ordering materials or fabricating items.

- G. The Contractor must notify the Construction Representative at least one working day before placing concrete or burying underground utilities, pipelines, etc.
- H. Contractors shall prearrange time with the Construction Representative for the interruption of any facility operation. Unless otherwise specified in these documents, all connections, alterations or relocations as well as all other portions of the work will be performed during normal working hours.
- I. The Contractor shall coordinate all work so there will not be prolonged interruptions of existing equipment operation. Any existing plumbing, heating, ventilating, air conditioning or electrical disconnections necessary for the project, which affect portions of this construction or building or any other building must be scheduled with the Construction Representative to minimize or avoid any disruption of facility operations. In no case, unless previously approved in writing by the Construction Representative, shall utilities be left disconnected at the end of a work day or over a weekend. Any interruption of utilities either intentionally or accidentally shall not relieve the Contractor responsible for the interruption from the responsibility to repair and restore the utility to normal service. Repairs and restoration shall be made before the workers responsible for the repair and restoration leave the job.
- J. Contractors shall limit operations and storage of materials to the area within the project, except as necessary to connect to existing utilities, and shall not encroach on neighboring property. The Contractor shall be responsible for repair of their damage to property on or off the project site occurring during construction of project. All such repairs shall be made to the satisfaction of the property owner.
- K. Unless otherwise permitted, all materials shall be new and both workmanship and materials shall be of the best quality.
- L. Unless otherwise provided and stipulated within these specifications, the Contractor shall furnish, construct, and/or install and pay for materials, devices, mechanisms, equipment, all necessary personnel, utilities including, but not limited to water, heat, light and electric power, transportation

services, applicable taxes of every nature, and all other facilities necessary for the proper execution and completion of the work.

- M. Contractor shall carefully examine the plans and drawings and shall be responsible for the proper fitting of his material, equipment and apparatus into the building.
- N. The Contractor or subcontractors shall not overload, or permit others to overload, any part of any structure during the performance of this contract.
- O. All temporary shoring, bracing, etc., required for the removal of existing work and/or for the installation of new work shall be included in this contract. The Contractor shall make good, at no cost to the Owner, any damage caused by improper support or failure of shoring in any respect. Each Contractor shall be responsible for shoring required to protect his work or adjacent property and improvements of Owner and shall be responsible for shoring or for giving written notice to adjacent property owners. Shoring shall be removed only after completion of permanent supports.
- P. The Contractor shall provide at the proper time such material as is required for support of the work. If openings are required, whether shown on drawings or not, the Contractor shall see that they are properly constructed.
- Q. During the performance of work the Contractor shall be responsible for providing and maintaining warning signs, lights, signal devices, barricades, guard rails, fences and other devices appropriately located on site which will give proper and understandable warning to all persons of danger of entry onto land, structure or equipment.
- R. The Contractor shall be responsible for protection, including weather protection, and proper maintenance of all equipment and materials.
- S. The Contractor shall be responsible for care of the finished work and shall protect same from damage or defacement until substantial completion by the Owner. If the work is damaged by any cause, the Contractor shall immediately begin to make repairs in accordance with the drawings and specifications. Contractor shall be liable for all damage or loss unless attributable to the acts or omissions of the Owner or Designer. Any claim for reimbursement shall be submitted in accordance with Article 4. After substantial completion the Contractor will only be responsible for damage resulting from acts or omissions of the Contractor or subcontractors through final warranty.
- T. In the event the Contractor encounters an unforeseen hazardous material, the Contractor

shall immediately stop work in the area affected and report the condition to the Owner and Designer in writing. The Contractor shall not be required, pursuant to Article 4, to perform, any work relating to hazardous materials.

- U. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 4.
- V. Before commencing work, Contractors shall confer with the Construction Representative and facility representative and review any facility rules and regulations which may affect the conduct of the work.
- W. Project signs will only be erected on major projects and only as described in the specifications. If no sign is specified, none shall be erected.

ARTICLE 3.7 -- SUBCONTRACTS

- A. Subcontractor assignments as identified in the bid form shall not be changed without written approval of the Owner. The Owner will not approve changes of a listed subcontractor unless the Contractor documents, to the satisfaction of the Owner that the subcontractor cannot or will not perform the work as specified.
- B. The Contractor is fully responsible to the Owner for the acts and omissions of all subcontractors and of persons either directly or indirectly employed by them.
- C. Every subcontractor shall be bound by the applicable terms and provisions of these contract documents, but no contractual relationship shall exist between any subcontractor and the Owner unless the right of the Contractor to proceed with the work is suspended or this contract is terminated as herein provided, and the Owner in writing elects to assume the subcontract.
- D. The Contractor shall upon receipt of "Notice to Proceed" and prior to submission of the first payment request, notify the Designer and Construction Representative in writing of the names of any subcontractors to be used in addition to those identified in the bid form and all major material suppliers proposed for all parts of the work.

ARTICLE 4 -- CHANGES IN THE WORK

4.1 CHANGES IN THE WORK

- A. The Construction Representative, without giving notice to the surety and without invalidating this contract, may order extra work or make changes by

altering, adding to or deducting from the work, this contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract. A claim for extension of time caused by any change must be adjusted at the time of ordering such change. No future request for time will be considered.

- B. Each Contract Change shall include all costs required to perform the work including all labor, material, equipment, overheads and profit, delay, disruptions, or other miscellaneous expenses. No subsequent requests for additional compensation including claims for delay, disruption, or reduced efficiency as a result of each change will be considered. Values from the Schedule of Values will not be binding as a basis for additions to or deductions from the contract price.
- C. The amount of any adjustment in this contract price for authorized changes shall be agreed upon before such changes become effective and shall be determined, through submission of a request for proposal, as follows:
 - 1. By an acceptable fixed price proposal from the Contractor. Breakdowns shall include all takeoff sheets of each Contractor and subcontractor. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.
 - 2. By a cost-plus-fixed-fee (time and material) basis with maximum price, total cost not to exceed said maximum. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.
 - 3. By unit prices contained in Contractor's original bid form and incorporated in the construction contract.
- D. Overhead and Profit on Contract Changes shall be applied as follows:

- 1. The overhead and profit charge by the Contractor and all subcontractors shall be considered to include, but is not limited to: incidental job burdens, small truck (under 1 ton) expense, mileage, small hand tools,

warranty costs, company benefits and general office overhead. Project supervision including field supervision and job site office expense shall be considered a part of overhead and profit unless a compensable time extension is granted.

2. The percentages for overhead and profit charged on Contract Changes shall be negotiated, and may vary according to the nature, extent, and complexity of the work involved. However, the overhead and profit for the Contractor or subcontractor actually performing the work shall not exceed 14%. When one or more tiers of subcontractors are used, in no event shall any Contractor or subcontractor receive as overhead and profit more than 3% of the cost of the work performed by any of his subcontractors. In no case shall the total overhead and profit paid by the Owner on any Contract Changes exceed twenty percent (20%) of the cost of materials, labor and equipment (exclusive of Contractor or any Subcontractor overhead and profit) necessary to put the contract change work in place.
 3. The Contractor will be allowed to add the cost of bonding and insurance to their cost of work. This bonding and insurance cost shall not exceed 2% and shall be allowed on the total cost of the added work, including overhead and profit.
 4. On proposals covering both increases and decreases in the amount of this contract, the application of overhead and profit shall be on the net change in the cost of the work.
 5. The percentage for overhead and profit to be credited to the Owner on Contract Changes that are solely decreases in the quantity of work or materials shall be negotiated, and may vary according to the nature, extent and complexity of the work involved, but in no case shall be less than ten percent (10%). If the percentage for overhead and profit charged for work added by Contract Changes for this contract has been negotiated to less than 10%, the negotiated rate shall then apply to credits as well.
- E. No claim for an addition to this contract sum shall be valid unless authorized as aforesaid in writing by the Owner. In the event that none of the foregoing methods are agreed upon, the Owner may order the Contractor to perform work on a time and material basis. The cost of such work shall be determined by the Contractor's actual labor and material cost to perform the work plus overhead and profit as outlined herein. The

Designer and Construction Representative shall approve the Contractor's daily time and material invoices for the work involved.

- F. If the Contractor claims that any instructions involve extra cost under this contract, the Contractor shall give the Owner's Representative written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work. No such claim shall be valid unless so made and authorized by the Owner, in writing.
- G. In an emergency affecting the safety of life or of the structure or of adjoining property, the Contractor, without special instruction or authorization from the Construction Representative, is hereby permitted to act at their discretion to prevent such threatened loss or injury. The Contractor shall submit a claim for compensation for such emergency work in writing to the Owner's Representative.

ARTICLE 4.2 – CHANGES IN COMPLETION TIME

- A. Extension of the number of work days stipulated in the Contract for completion of the work with compensation may be made when:
 1. The contractor documents that proposed Changes in the work, as provided in Article 4.1, extends construction activities critical to contract completion date, OR
 2. The Owner suspends all work for convenience of the Owner as provided in Article 7.3, OR
 3. An Owner caused delay extends construction activities critical to contract completion (except as provided elsewhere in these General Conditions). The Contractor is to review the work activities yet to begin and evaluate the possibility of rescheduling the work to minimize the overall project delay.
- B. Extension of the number of work days stipulated in the Contract for completion of the work without compensation may be made when:
 1. Weather-related delays occur, subject to provisions for the inclusion of a specified number of "bad weather" days when provided for in Section 012100-Allowances, OR
 2. Labor strikes or acts of God occur, OR
 3. The work of the Contractor is delayed on account of conditions which were beyond the control of the Contractor, subcontractors or suppliers, and were not the result of their fault or negligence.
- C. No time extension or compensation will be provided for delays caused by or within the control

of the Contractor, subcontractors or suppliers and for concurrent delays caused by the Owner.

- D. The Contractor shall notify the Owner promptly of any occurrence or conditions which in the Contractor's opinion results in a need for an extension of time. The notice shall be in writing and shall include all necessary supporting materials with details of any resultant costs and be submitted in time to permit full investigation and evaluation of the Contractor's claim. The Owner shall promptly acknowledge the Contractor's notice and, after recommendation from the Owner's Representative and/or Designer, shall provide a decision to the Contractor. Failure on the part of the Contractor to provide such notice and to detail the costs shall constitute a waiver by the Contractor of any claim. Requests for extensions of time shall be for working days only.

ARTICLE 5 - CONSTRUCTION AND COMPLETION

ARTICLE 5.1 – CONSTRUCTION COMMENCEMENT

- A. Upon receipt of the "Intent to Award" letter, the Contractor must submit the following properly executed instruments to the Owner:
1. Contract;
 2. Performance/payment bond as described in Article 6.1;
 3. Certificates of Insurance, or the actual policies themselves, showing that the Contractor has obtained the insurance coverage required by Article 6.2.
 4. Written Affirmative Action Plans as required in Article 1.4.

Above referenced items must be received by the Owner within ten (10) working days after the effective date of the contract. If not received, the Owner may treat the failure to timely submit them as a refusal by the Contractor to accept a contract for this work and may retain as liquidated damages the Contractor's bid bond, cashier's check or certified check as provided in the Instructions to Bidders. Upon receipt the Owner will issue a "Notice to Proceed" with the work to the Contractor.

- B. Within the time frame noted in Section 013200 - Schedules, following receipt of the "Notice to Proceed", the Contractor shall submit to the Owner a progress schedule and schedule of values, showing activities through the end of the contract period. Should the Contractor not receive written notification from the Owner of the disapproval of the schedule of values within fifteen (15) working

days, the Contractor may consider it approved for purpose of determining when the first monthly Application and Certification for Payment may be submitted.

- C. The Contractor may commence work upon receipt of the Division of Facilities Management, Design and Construction's "Notice to Proceed" letter. Contractor shall prosecute the work with faithfulness and energy, and shall complete the entire work on or before the completion time stated in the contract documents or pay to the Owner the damages resulting from the failure to timely complete the work as set out within Article 5.4.

ARTICLE 5.2 -- PROJECT CONSTRUCTION

- A. Each Contractor shall submit for the Owner's approval, in reproducible form, a progress schedule showing the rate of progress and the order of the work proposed to carry on various phases of the project. The schedule shall be in conformance with the requirements outlined in Section 013200 – Schedules.
- B. Contractor shall employ and supply a sufficient force of workers, material, and equipment and shall pay when due, any worker, subcontractor or supplier and otherwise prosecute the work with such diligence so as to maintain the rate of progress indicated on the progress schedule, prevent work stoppage, and insure completion of the project within the time specified.

ARTICLE 5.3 -- PROJECT COMPLETION

- A. Substantial Completion. A Project is substantially complete when construction is essentially complete and work items remaining to be completed can be done without interfering with the Owner's ability to use the Project for its intended purpose.
1. Once the Contractor has reached what they believe is Substantial Completion, the Contractor shall notify the Designer and the Construction Representative of the following:
 - a. That work is essentially complete with the exception of certain listed work items. The list shall be referred to as the "Contractor's Punch."
 - b. That all Operation and Maintenance Manuals have been assembled and submitted in accordance with Article 3.5A.
 - c. That the Work is ready for inspection by the Designer and Construction Representative. The Owner shall be entitled to a minimum of ten working

days notice before the inspection shall be performed.

2. If the work is acceptable, the Owner shall issue a Certificate of Substantial Completion, which shall set forth the responsibilities of the Owner and the Contractor for utilities, security, maintenance, damage to the work and risk of loss. The Certificate shall also identify those remaining items of work to be performed by the Contractor. All such work items shall be complete within 30 working days of the date of the Certificate, unless the Certificate specifies a different time. If the Contractor shall be required to perform tests that must be delayed due to climatic conditions, it is understood that such tests and affected equipment will be identified on the Certificate and shall be accomplished by the Contractor at the earliest possible date. Performance of the tests may not be required before Substantial Completion can be issued. The date of the issuance of the Certificate of Substantial Completion shall determine whether or not the work was completed within the contract time and whether or not Liquidated Damages are due.
 3. If the work is not acceptable, and the Owner does not issue a Certificate of Substantial Completion, the Owner shall be entitled to charge the Contractor with the Designer's and Owner's costs of re-inspection, including time and travel.
- B. Partial Occupancy. Contractor agrees that the Owner shall be permitted to occupy and use any completed or partially completed portions of the Project, when such occupancy and use is in the Owner's best interest. Owner shall notify Contractor of its desire and intention to take Partial Occupancy as soon as possible but at least ten (10) working days before the Owner intends to occupy. If the Contractor believes that the portion of the work the Owner intends to occupy is not ready for occupancy, the Contractor shall notify the Owner immediately. The Designer shall inspect the work in accordance with the procedures above. If the Contractor claims increased cost of the project or delay in completion as a result of the occupancy, he shall notify the Owner immediately but in all cases before occupancy occurs.
- C. Final Completion. The Project is finally complete when the Certificate of Substantial Completion has been issued and all work items identified therein as incomplete have been completed, and when all administrative items required by the contract have been completed. Final Completion entitles the Contractor to payment of the outstanding balance of the contract amount including all change orders

and retainage. Within five (5) working days of the date of the Certificate of Substantial Completion, the Contractor shall identify the cost to complete any outstanding items of work. The Designer shall review the Contractor's estimate and either approve it or provide an independent estimate for all such items. If the Contractor fails to complete the remaining items within the time specified in the Certificate, the Owner may terminate the contract and go to the surety for project completion in accordance with Article 7.2 or release the contract balance to the Contractor less 150% of the approved estimate to complete the outstanding items. Upon completion of the outstanding items, when a final cost has been established, any monies remaining shall be paid to the Contractor. Failure to complete items of work does not relieve the Contractor from the obligation to complete the administrative requirements of the contract, such as the provisions of Article 5.3 FAILURE TO COMPLETE ALL ITEMS OF WORK UNDER THE CONTRACT SHALL BE CONSIDERED A DEFAULT AND BE GROUNDS FOR CONTRACT TERMINATION AND DEBARMENT.

- D. Liquidated Damages. Contractor agrees that the Owner may deduct from the contract price and retain as liquidated damages, and not as penalty or forfeiture, the sum stipulated in this contract for each work day after the Contract Completion Day on which work is not Substantially Complete. Assessment of Liquidated Damages shall not relieve the Contractor or the surety of any responsibility or obligation under the Contract. In addition, the Owner may, without prejudice to any other rights, claims, or remedies the Owner may have including the right to Liquidated Damages, charge the Contractor for all additional expenses incurred by the Owner and/or Designer as the result of the extended contract period through Final Completion. Additional Expenses shall include but not be limited to the costs of additional inspections.
- E. Early Completion. The Contractor has the right to finish the work before the contract completion date; however, the Owner assumes no liability for any hindrances to the Contractor unless Owner caused delays result in a time extension to the contract completion date. The Contractor shall not be entitled to any claims for lost efficiencies or for delay if a Certificate of Substantial Completion is given on or before the Contract Completion Date.

ARTICLE 5.4 -- PAYMENT TO CONTRACTOR

- A. Payments on account of this contract will be made monthly in proportion to the work which has been completed. Request for payment must be submitted on the Owner's forms. No other pay request will

be processed. Supporting breakdowns must be in the same format as Owner's forms and must provide the same level of detail. The Designer will, within 5 working days from receipt of the contractor's request for payment either issue a Certificate for Payment to the Owner, for such amount as the Designer determines is properly due, or notify the Contractor in writing of reasons for withholding a Certificate. The Owner shall make payment within 30 calendar days after the "Application and Certification for Payment" has been received and certified by the Designer. The following items are to be attached to the contractor's pay request:

1. Updated construction schedule
 2. Certified payrolls consisting of name, occupation and craft, number of hours worked and actual wages paid for each individual employee, of the Contractor and all subcontractors working on the project
- B. The Owner shall retain 5 percent of the amount of each such payment application, except as allowed by Article 5.4, until final completion and acceptance of all work covered by this contract.
- C. Each payment made to Contractor shall be on account of the total amount payable to Contractor and all material and work covered by paid partial payment shall thereupon become the sole property of Owner. This provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made or restoration of any damaged work or as a waiver of the right of Owner to require fulfillment of all terms of this contract.
- D. Materials delivered to the work site and not incorporated in the work will be allowed in the Application and Certification for Payment on the basis of one hundred (100%) percent of value, subject to the 5% retainage providing that they are suitably stored on the site or in an approved warehouse in accordance with the following requirements:
1. Material has previously been approved through submittal and acceptance of shop drawings conforming to requirements of Article 3.2 of General Conditions.
 2. Delivery is made in accordance with the time frame on the approved schedule.
 3. Materials, equipment, etc., are properly stored and protected from damage and deterioration and remain so - if not, previously approved amounts will be deleted from subsequent pay applications.

4. The payment request is accompanied by a breakdown identifying the material equipment, etc. in sufficient detail to establish quantity and value.
- E. The Contractor shall be allowed to include in the Application and Certification for Payment, one hundred (100%) of the value, subject to retainage, of major equipment and material stored off the site if all of the following conditions are met:
1. The request for consideration of payment for materials stored off site is made at least 15 working days prior to submittal of the Application for Payment including such material. Only materials inspected will be considered for inclusion on Application for Payment requests.
 2. Materials stored in one location off site are valued in excess of \$25,000.
 3. That a Certificate of Insurance is provided indicating adequate protection from loss, theft conversion or damage for materials stored off site. This Certificate shall show the State of Missouri as an additional insured for this loss.
 4. The materials are stored in a facility approved and inspected, by the Construction Representative.
 5. Contractor shall be responsible for, Owner costs to inspect out of state facilities, and any delays in the completion of the work caused by damage to the material or for any other failure of the Contractor to have access to this material for the execution of the work.
- F. The Owner shall determine the amount, quality and acceptability of the work and materials which are to be paid for under this contract. In the event any questions shall arise between the parties, relative to this contract or specifications, determination or decision of the Owner or the Construction Representative and the Designer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.
- G. Payments Withheld: The Owner may withhold or nullify in whole or part any certificate to such extent as may be necessary to protect the Owner from loss on account of:
1. Defective work not remedied. When a notice of noncompliance is issued on an item or items, corrective action shall be undertaken immediately. Until corrective action is completed, no monies will be paid and no additional time will be allowed for the item or

items. The cost of corrective action(s) shall be borne by the Contractor.

2. A reasonable doubt that this contract can be completed for the unpaid balance.
3. Failure of the Contractor to update as-built drawings monthly for review by the Construction Representative.
4. Failure of the Contractor to update the construction schedule.

When the Construction Representative is satisfied the Contractor has remedied above deficiencies, payment shall be released.

H. Final Payment: Upon receipt of written notice from the Contractor to the Designer and Project Representative that the work is ready for final inspection and acceptance, the Designer and Project Representative, with the Contractor, shall promptly make such inspection. If the work is acceptable and the contract fully performed, the Construction Representative shall complete a final acceptance report and the Contractor will be directed to submit a final Application and Certification for Payment. If the Owner approves the same, the entire balance shall be due and payable, with the exception of deductions as provided for under Article 5.4.

1. Where the specifications provide for the performance by the Contractor of (certain tests for the purpose of balancing and checking the air conditioning and heating equipment and the Contractor shall have furnished and installed all such equipment in accordance with the specifications, but said test cannot then be made because of climatic conditions, such test shall may be considered as required under the provisions of the specifications, Section 013300 and this contract may be substantial Full payment will not be made until the tests have been made and the equipment and system is finally accepted. If the tests are not completed when scheduled, the Owner may deduct 150% of the value of the tests from the final payment.
2. The final payment shall not become due until the Contractor delivers to the Construction Representative:
 - a) A complete file of releases, on the standard form included in the contract documents as "Final Receipt of Payment and Release Form", from subcontractors and material suppliers evidencing payment in full for services, equipment and materials, as the case may require, if the Owner approves, or a consent from

the Surety to final payment accepting liability for any unpaid amounts.

- b) An Affidavit of Compliance with Prevailing Wage Law, in the form as included in this contract specifications, properly executed by each subcontractor, and the Contractor
 - c) Certified copies of all payrolls
 - d) As-built drawings
3. If any claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a claim including all costs and a reasonable attorney's fee.
 4. Missouri statute requires prompt payment from the Owner to the Contractor within thirty calendar days and from the Contractor to his subcontractors within fifteen calendar days. Failure to make payments within the required time frame entitles the receiving party to charge interest at the rate of one and one half percent per month calculated from the expiration of the statutory time period until paid.
 5. The value of all unused unit price allowances and/or 150% of the value of the outstanding work items, and/or liquidated damages may be deducted from the final pay request without executing a Contract Change. Any unit price items which exceed the number of units in the contract may be added by Contract Change.

ARTICLE 6 -- INSURANCE AND BONDS

ARTICLE 6.1 -- BOND

- A. Contractor shall furnish a performance/payment bond in an amount equal to 100% of the contract price to guarantee faithful performance of the contract and 100% of the contract price to guarantee the payment of all persons performing labor on the project and furnishing materials in connection therewith under this contract as set forth in the standard form of performance and payment bond included in the contract documents. The surety on such bond shall be issued by a surety company authorized by the Missouri Department of Insurance to do business in the state of Missouri.
- B. All Performance/Payment Bonds furnished in response to this provision shall be provided by a bonding company with a rating of B+ or higher as established by A.M. Best Company, Inc. in their most recent publication.

ARTICLE 6.2 – INSURANCE

A. The successful Contractor shall procure and maintain for the duration of the contract issued a policy or policies of insurance for the protection of both the Contractor and the Owner and their respective officers, officials, agents, consultants and employees. The Owner requires certification of insurance coverage from the Contractor prior to commencing work.

B. Minimum Scope and Extent of Coverage

1. General Liability

Commercial General Liability, ISO coverage form number or equivalent CG 00 01 ("occurrence" basis), or I-SO coverage form number CG 00 02, or ISO equivalent.

If ISO equivalent or manuscript general liability coverage forms are used, minimum coverage will be as follows: Premises/Operations; Independent Contractors; Products/Completed Operations; personal injury; Broad Form Property Damage including Completed Operations; Broad Form Contractual Liability Coverage to include Contractor's obligations under Article 1.11 Indemnification and any other Special Hazards required by the work of the contract.

2. Automobile Liability

Business Automobile Liability Insurance, ISO Coverage form number or equivalent CA 00 01 covering automobile liability, code 1 "ANY AUTO".

3. Workers' Compensation and Employer's Liability

Statutory Workers' Compensation Insurance for Missouri and standard Employer's Liability Insurance, or the authorization to self-insure for such liability from the Missouri Division of Workers' Compensation.

4. Builder's Risk or Installation Floater Insurance

Insurance upon the work and all materials, equipment, supplies, temporary structures and similar items which may be incident to the performance of the work and located at or adjacent to the site, against loss or damage from fire and such other casualties as are included in extended coverage in broad "All Risk" form, including coverage for Flood and Earthquake, in an amount not less than the replacement cost of the work or this contract price, whichever is greater, with loss payable to Contractor and Owner as their respective interests may appear.

Contractor shall maintain sufficient insurance to cover the full value of the work and materials as the work progresses, and shall furnish Owner copies of all endorsements. If Builder's Risk Reporting- Form of Endorsement is used, Contractor shall make all reports as required therein so as to keep in force an amount of insurance which will equal the replacement cost of the work, materials, equipment, supplies, temporary structures, and other property covered thereby; and if, as a result of Contractor's failure to make any such report, the amount of insurance so recoverable shall be less than such replacement cost, Contractor's interest in the proceeds of such insurance, if any, shall be subordinated to Owner's interest to the end that Owner may receive full reimbursement for its loss.

C. Minimum Limits of Insurance

1. General Liability

Contractor

\$2,000,000 combined single limit per occurrence for bodily injury, personal injury, and property damage

\$2,000,000 annual aggregate

2. Automobile Liability

\$2,000,000 combined single limit per occurrence for bodily injury and property damage

3. Workers' Compensation and Employers Liability

Workers' Compensation limits as required by applicable State Statutes (generally unlimited) and minimum of \$1,000,000 limit per accident for Employer's Liability.

General Liability and Automobile Liability insurance may be arranged under individual policies for the full limits required or by a combination of underlying policies with the balance provided by a form-following Excess or Umbrella Liability policy.

D. Deductibles and Self-Insured Retentions

All deductibles, co-payment clauses, and self-insured retentions must be declared to and approved by the Owner. The Owner reserves the right to request the reduction or elimination of unacceptable deductibles or self-insured retentions, as they would apply to the Owner, and their respective officers, officials, agents, consultants and employees. Alternatively, the Owner may request Contractor to procure a bond guaranteeing

payment of losses and related investigations, claims administration, and defense expenses.

E. Other Insurance Provisions and Requirements

The respective insurance policies and coverage, as specified below, must contain, or be endorsed to contain the following conditions or provisions:

1. General Liability

The Owner, and its respective commissioners, officers, officials, agents, consultants and employees shall be endorsed as additional insured's by ISO form CG 20 26 Additional Insured - Designated Person or Organization. As additional insured's, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured's. Insurance of self-insurance programs maintained by the designated additional -insured's shall be excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's general liability insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner, or for any of their officers, officials, agents, consultants or employees.

2. Automobile Insurance

The Owner, and their respective officers, officials, agents, consultants and employees shall be endorsed as additional insured's by ISO form CG 20 26 - Additional Insured Designated Person or Organization. As additional insured's, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured's. Insurance or self-insurance

programs maintained by the designated additional insured's shall be in excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's automobile insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner or for any of its officers, officials, agents, consultants or employees.

3. Workers' Compensation/Employer's Liability

Contractor's workers' compensation insurance shall be endorsed with NCCI form WC 00 03 01 A - Alternative Employer Endorsement. The Alternative Employer Endorsement shall designate the Owner as "alternate employers."

4. All Coverages

Each insurance policy required by this section of the Contract shall contain a stipulation, endorsed if necessary, that the Owner will receive a minimum of a thirty (30) calendar day advance notice of any policy cancellation. Ten (10) calendar days advance notice is required for policy cancellation due to non-payment of premium.

F. Insurer Qualifications and Acceptability

Insurance required hereunder shall be issued by an A.M. Best, "B+" rated, Class IX insurance company approved to conduct insurance business in the state of Missouri.

G. Verification of Insurance Coverage

Prior to Owner issuing a Notice to Proceed, the Contractor shall furnish the Owner with Certificate(s) of Insurance and with any applicable original endorsements evidencing the required insurance coverage. The insurance certificates and endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements received by the Owner are subject to review and approval by the Owner. The Owner reserves the right to require certified copies of all required policies at any time. If the scope of this contract will exceed one (1) year - or, if any of Contractor's applicable insurance coverage expires prior to completion of the work or services required under this contract -

the Contractor will provide a renewal or replacement certificate before continuing work or services hereunder. If the Contractor fails to provide documentation of required insurance coverage, the Owner may issue a stop work order and no additional contract completion time and/or compensation shall be granted as a result thereof.

ARTICLE 7 – SUSPENSION OR TERMINATION OF CONTRACT

ARTICLE 7.1 - FOR SITE CONDITIONS

When conditions at the site of the proposed work are considered by the Owner to be unsatisfactory for prosecution of the work, the Contractor may be ordered in writing to suspend the work or any part thereof until reasonable conditions exist. When such suspension is not due to fault or negligence of the Contractor, time allowed for completion of such suspended work will be extended by a period of time equal to that lost due to delay occasioned by ordered suspension. This will be a no cost time extension.

ARTICLE 7.2 - FOR CAUSE

A. Termination or Suspension for Cause:

1. If the Contractor shall file for bankruptcy, or should make a general assignment for the benefit of the creditors, or if a receiver should be appointed on account of insolvency, or if the contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials, or if the contractor should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of this contract, then the Owner may serve notice on the Contractor and the surety setting forth the violations and demanding compliance with this contract. Unless within ten (10) consecutive calendar days after serving such notice, such violations shall cease and satisfactory arrangements for correction be made, the Owner may suspend the Contractor's right to proceed with the work or terminate this contract.
2. In the event the Owner suspends Contractor's right to proceed with the work or terminates the contract, the Owner may demand that the Contractor's surety take over and complete the work on this contract, after the surety submits a written proposal to the Owner and receives written approval and upon the surety's failure or refusal to do so within ten (10) consecutive

calendar days after demand therefore, the Owner may take over the work and prosecute the same to completion by bid or negotiated contract, or the Owner may elect to take possession of and utilize in completing the work such materials, supplies, appliances and plant as may be on the site of the work, and all subcontractors, if the Owner elects, shall be bound to perform their contracts.

- B. The Contractor and its surety shall be and remain liable to the Owner for any excess cost or damages occasioned to the Owner as a result of the actions above set forth.
- C. The Contractor in the event of such suspension or termination shall not be entitled to receive any further payments under this contract until the work is wholly finished. Then if the unpaid balance under this contract shall exceed all expenses of the Owner as certified by the Director, such excess shall be paid to the Contractor; but, if such expenses shall exceed the unpaid balance as certified by the Director, the Contractor and their surety shall be liable for and shall pay the difference and any damages to the Owner.
- D. In exercising Owner's right to secure completion of the work under any of the provisions hereof, the Director shall have the right to exercise Owner's sole discretion as to the manner, methods and reasonableness of costs of completing the work.
- E. The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.
- F. The Contractor in the event of such suspension or termination may be declared ineligible for Owner contracts for a minimal period of twelve (12) months. Further, no contract will be awarded to any Contractor who lists in their bid form any subcontractor whose prior performance has contributed, as determined by the Owner, to a breach of a contract. In order to be considered for state-awarded contracts after this period, the Contractor/subcontractor will be required to forward acceptance reports to the Owner regarding successful completion of non-state projects during the intervening twelve (12) months from the date of default. No contracts will be awarded to a subcontractor/Contractor until the ability to perform responsibly in the private sector has been proven to the Owner.

ARTICLE 7.3 -- FOR CONVENIENCE

- A. The Owner may terminate or suspend the Contract or any portion of the Work without cause at any time, and at the Owner's convenience. Notification of a termination or suspension shall be in writing

and shall be given to the Contractor and their surety. If the Contract is suspended, the notice will contain the anticipated duration of the suspension or the conditions under which work will be permitted to resume. If appropriate, the Contractor will be requested to demobilize and re-mobilize and will be reimbursed time and costs associated with the suspension.

B. Upon receipt of notification, the Contractor shall:

1. Cease operations when directed.
2. Take actions to protect the work and any stored materials.
3. Place no further subcontracts or orders for material, supplies, services or facilities except as may be necessary to complete the portion of the Contract that has not been terminated. No claim for payment of materials or supplies ordered after the termination date shall be considered.
4. Terminate all existing subcontracts, rentals, material, and equipment orders.

5. Settle all outstanding liabilities arising from termination with subcontractors and suppliers.

6. Transfer title and deliver to the Owner, work in progress, completed work, supplies and other material produced or acquire for the work terminated, and completed or partially completed plans, drawings information and other property that, if the Contract had been completed, would be required to be furnished to the Owner.

C. For termination without cause and at the Owner's convenience, in addition to payment for work completed prior to date of termination, the Contractor may be entitled to payment of other documented costs directly associated with the early termination of the contract. Payment for anticipated profit and unapplied overhead will not be allowed.

SECTION 007300 - SUPPLEMENTARY CONDITIONS

1.0 GENERAL:

- A. These Supplementary General Conditions clarify, add, delete, or otherwise modify standard terms and conditions of DIVISION 0, BIDDING AND CONTRACTING REQUIREMENTS.

2.0 CONTACTS:

Designer:

Ron Shy
Allstate Consultants
3312 Lemone Industrial Blvd
Columbia, Mo 65201
Telephone: 573-875-8799
rshy@allstateconsultants.net

Construction Representative:

Carl Haley
Division of Facilities Management, Design and Construction
709 Missouri BLVD
Jefferson City, MO 65101
Telephone: 573-526-0473
Email: Carl.Haley@oa.mo.gov

Project Manager:

Eric Hibdon
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, Missouri 65102
Telephone: 573-522-0322
Email: Eric.Hibdon@oa.mo.gov

Contract Specialist:

Mandy Roberson
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, Missouri 65102
Telephone: 573-522-0074
Email: Mandy.Roberson@oa.mo.gov

3.0 NOTICE: ALL BID MATERIALS ARE DUE AT THE TIME OF BID SUBMITTAL. THERE IS NO SECOND SUBMITTAL FOR THIS PROJECT.

4.0 FURNISHING CONSTRUCTION DOCUMENTS:

- A. The Owner will furnish the Contractor with approximately 3 complete sets of drawings and specifications at no charge.
- B. The Owner will furnish the Contractor with approximately 3 sets of explanatory or change drawings at no charge.
- C. The Contractor may make copies of the documents as needed with no additional cost to the Owner.

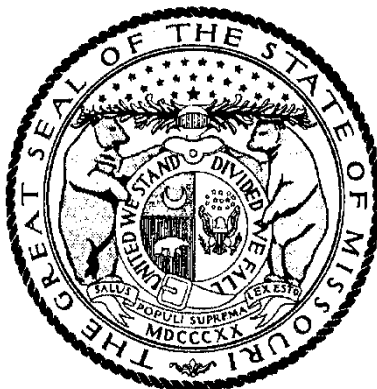
5.0 SAFETY REQUIREMENTS

Contractor and subcontractors at any tier shall comply with RSMo 292.675 and Article 1.3, E, of Section 007213, General Conditions.

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MICHAEL L. PARSON, Governor

Annual Wage Order No. 29

Section 026
COLE COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by

Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: March 10, 2022

Last Date Objections May Be Filed: April 11, 2022

Prepared by Missouri Department of Labor and Industrial Relations

| OCCUPATIONAL TITLE | **Prevailing Hourly Rate |
|------------------------------|--------------------------------|
| Asbestos Worker | \$53.18 |
| Boilermaker | \$27.22* |
| Bricklayer | \$51.39 |
| Carpenter | \$47.88 |
| Lather | |
| Linoleum Layer | |
| Millwright | |
| Pile Driver | |
| Cement Mason | \$41.24 |
| Plasterer | |
| Communications Technician | \$55.00 |
| Electrician (Inside Wireman) | \$55.64 |
| Electrician Outside Lineman | \$74.20 |
| Lineman Operator | |
| Lineman - Tree Trimmer | |
| Groundman | |
| Groundman - Tree Trimmer | |
| Elevator Constructor | \$27.22* |
| Glazier | \$56.16 |
| Ironworker | \$61.89 |
| Laborer | \$41.21 |
| General Laborer | |
| First Semi-Skilled | |
| Second Semi-Skilled | |
| Mason | \$27.22* |
| Marble Mason | |
| Marble Finisher | |
| Terrazzo Worker | |
| Terrazzo Finisher | |
| Tile Setter | |
| Tile Finisher | |
| Operating Engineer | \$60.02 |
| Group I | |
| Group II | |
| Group III | |
| Group III-A | |
| Group IV | |
| Group V | |
| Painter | \$39.08 |
| Plumber | \$66.28 |
| Pipe Fitter | |
| Roofer | \$51.92 |
| Sheet Metal Worker | \$54.06 |
| Sprinkler Fitter | \$62.10 |
| Truck Driver | \$41.74 |
| Truck Control Service Driver | |
| Group I | |
| Group II | |
| Group III | |
| Group IV | |

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

Heavy Construction Rates for
COLE County

Section 026

| OCCUPATIONAL TITLE | **Prevailing Hourly Rate |
|-------------------------------|--------------------------------|
| Carpenter | \$53.63 |
| Millwright | |
| Pile Driver | |
| Electrician (Outside Lineman) | \$74.20 |
| Lineman Operator | |
| Lineman - Tree Trimmer | |
| Groundman | |
| Groundman - Tree Trimmer | |
| Laborer | \$43.21 |
| General Laborer | |
| Skilled Laborer | |
| Operating Engineer | \$58.94 |
| Group I | |
| Group II | |
| Group III | |
| Group IV | |
| Truck Driver | \$45.80 |
| Truck Control Service Driver | |
| Group I | |
| Group II | |
| Group III | |
| Group IV | |

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

OVERTIME and HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, "**overtime work**" shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

SECTION 011000- SUMMARY OF WORK

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Project consists of the closure of two (2) earthen berm lagoon structures located at the Central Missouri Correctional Center (CMCC) and the Missouri Vocational Enterprises (MVE) Tire Recycling Facility. Both lagoon structures have had Closure Plans prepared and were approved by the Missouri Department of Natural Resources (MDNR) for closure. The CMCC facility is a four (4) cell structure that had a water surface area of approximately 10.6 acres and the MVE facility is a one (1) cell structure with a water surface of about 1.7 acres.
- B. The Project consists of the Closure of three (3) deep wells that were used for the Central Missouri Correctional Center (CMCC) facility's water supply. Since the Correctional facility is no longer in use, the wells are being abandoned and Closed per MDNR requirements. Each well is housed inside a concrete block well house and the Contractor will be required to Close the wells as they exist inside the structure.
 - 1. Project Location: The CMCC facility and the MVE Tire Recycling Center facility are located approximately 3.0 miles northwest of Jefferson City, Missouri adjacent to State Route Y.
 - 2. Owner: State of Missouri, Office of Administration, Division of Facilities Management, Design and Construction, Harry S Truman State Office Building, Post Office Box 809, 301 West High Street, Jefferson City, Missouri 65102.
- C. Contract Documents, dated October 12, 2022 were prepared for the Project by Allstate Consultants LLC, 3312 LeMone Industrial Boulevard, Columbia, Missouri 65201.
- D. The Work consists of Demolition of the Pump Station, Lagoon Aerators and Superstructure, utility disconnections, capping inlet and outlet piping, dewatering the MVE lagoon and one-cell of the CMCC lagoon, grading the lagoons closed, and revegetating the disturbed area and the Closure of the three (3) deep wells
- E. The Work will be constructed under a single prime contract.

1.3 CONTRACTOR USE OF PREMISES

- A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.
- B. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.
 - 1. Owner Occupancy: Allow for Owner occupancy and use.
 - 2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.4 OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: The Owner may occupy the site during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.

END OF SECTION 011000

SECTION 012100 – ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Contract Change.
- B. Types of allowances include the following:
 - 1. Weather allowances.
- C. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Contract Changes for allowances.

1.3 WEATHER ALLOWANCE

- A. Included within the completion period for this project are a specified number of “bad weather” days (see Schedule of Allowances).
- B. The Contractor’s progress schedule shall clearly indicate the bad weather day allowance as an “activity” or “activities”. In the event weather conditions preclude performance of critical work activities for 50% or more of the Contractor’s scheduled workday, that day shall be declared unavailable for work due to weather (a “bad weather” day) and charged against the above allowance. Critical work activities will be determined by review of the Contractor’s current progress schedule.
- C. The Contractor’s Representative and the Construction Representative shall agree monthly on the number of “bad weather” days to be charged against the allowance. This determination will be documented in writing and be signed by the Contractor and the Construction Representatives. If there is a failure to agree on all or part of the “bad weather” days for a particular month, that disagreement shall be noted on this written document and signed by each party’s representative. Failure of the Contractor’s representative to sign the “bad weather” day documentation after it is presented, with or without the notes of disagreement, shall constitute agreement with the “bad weather” day determination contained in that document.
- D. There will be no modification to the time of contract performance due solely to the failure to deplete the “bad weather” day allowance.

- E. Once this allowance is depleted, a no cost Contract Change time extension will be executed for “bad weather” days, as defined above, encountered during the remainder of the Project.

PART 2 - PRODUCTS (Not Used)

2.1 SCHEDULE OF ALLOWANCES

- A. Weather Allowance: Included within the completion period for this Project is **thirty (30)** “bad weather” days.

END OF SECTION 012100

SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract Modifications.
- B. Related Sections include the following:
 - 1. Division 1, Section 012100 "Allowances" for procedural requirements for handling and processing Allowances.
 - 2. Division 0, Section 007213, Article 3.1 "Acceptable Substitutions" for administrative procedures for handling Requests for Substitutions made after Contract award.
 - 3. Division 0, Section 007213, Article 4.0 "Changes in the Work" for Contract Change requirements.

1.3 REQUESTS FOR INFORMATION

- A. In the event that the Contractor or Subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Documents requires clarification or interpretation, the Contractor shall submit a "Request for Information" (RFI) in writing to the Designer. A RFI may only be submitted by the Contractor and shall only be submitted on the RFI forms provided by the Owner. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed. In the RFI, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
- B. Responses to RFI shall be issued within ten (10) working days of receipt of the Request from the Contractor unless the Designer determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Designer, the Designer will, within five (5) working days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a RFI on a time sensitive activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Designer to respond to the request provided that the Designer responds within the ten (10) working days set forth above.
- C. Responses from the Designer will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a RFI will cause a change to the requirements of the Contract Document, the Contractor shall give written notice to the Designer requesting a Contract Change for the work. Failure to give such written notice within ten (10) working days, shall waive the Contractor's right to seek additional time or cost under Article 4, "Changes in the Work" of the General Conditions.

1.4 MINOR CHANGES IN THE WORK

- A. Designer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Amount or the Contract Time, on "Designer's Supplemental Instructions" (DSI).

1.5 PROPOSAL REQUESTS

- A. The Designer or Owner Representative will issue a detailed description of proposed Changes in the Work that may require adjustment to the Contract Amount or the Contract Time. The proposed Change Description will be issued using the "Request for Proposal" (RFP) form. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by the Designer or Owner Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within ten (10) working days after receipt of Proposal Request, submit a proposal for the cost adjustments to the Contract Amount and the Contract Time necessary to execute the Change. The Contractor shall submit his proposal on the appropriate Contract Change Detailed Breakdown form. Subcontractors may use the appropriate Contract Change Detailed Breakdown form or submit their proposal on their letterhead provided the same level of detail is included. All proposals shall include:
 - a. A detailed breakdown of costs per Article 4.1 of the General Conditions.
 - b. If requesting additional time per Article 4.2 of the General Conditions, include an updated Contractor's Construction Schedule that indicates the effect of the Change including, but not limited to, changes in activity duration, start and finish times, and activity relationship.

1.6 CONTRACT CHANGE PROCEDURES

- A. On Owner's approval of a Proposal Request, the Designer or Owner Representative will issue a Contract Change for signatures of Owner and Contractor on the "Contract Change" form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REFERENCED FORMS

- A. The following forms can be found on our website at <https://oa.mo.gov/facilities/vendor-links/architectengineering-forms> or <https://oa.mo.gov/facilities/vendor-links/contractor-forms>:
 - 1. Request for Information
 - 2. Designer's Supplemental Instructions
 - 3. Request for Proposal
 - 4. Contract Change
 - 5. Contract Change Detailed Breakdown – SAMPLES

6. Contract Change Detailed Breakdown – General Contractor (GC)
7. Contract Change Detailed Breakdown – Subcontractor (SUB)

END OF SECTION 012600

SECTION 013100 – COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Projects including, but not limited to, the following:
 - 1. Administrative and supervisory personnel.
 - 2. Project meetings.
- B. Related Sections include the following:
 - 1. Division 1, Section 013200 "Schedules" for preparing and submitting Contractor's Construction Schedule.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections, which depend on each other for proper installation, connection, and operation.
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Progress meetings.
 - 4. Project Closeout activities.
- B. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 SUBMITTALS

- A. Key Personnel Names: Within fifteen (15) work days of starting construction operations, submit a list of key personnel assignments including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

- A. The Owner's Construction Representative will schedule a Pre-Construction Meeting prior to beginning of construction. The date, time, and exact place of this meeting will be determined after Contract Award and notification of all interested parties. The

Contractor shall arrange to have the Job Superintendent and all prime Subcontractors present at the meeting. During the Pre-Construction Meeting, the construction procedures and information necessary for submitting payment requests will be discussed and materials distributed along with any other pertinent information.

1. Minutes: Designer will record and distribute meeting minutes.
- B. Progress Meetings: The Owner's Construction Representative will conduct Monthly Progress Meetings as stated in Articles 1.8.B and 1.8.C of Section 007213 "General Conditions".
1. Minutes: Designer will record and distribute to Contractor the meeting minutes.
 2. Contractor shall record significant conference discussions, agreements, and disagreements including required corrective measures and actions.
 3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
 5. Project name
 6. Name and address of Contractor
 7. Name and address of Designer
 8. RFI number including RFIs that were dropped and not submitted
 9. RFI description
 10. Date the RFI was submitted
 11. Date Designer's response was received
 12. Identification of related DSI or Proposal Request, as appropriate

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013115 - PROJECT MANAGEMENT COMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.
- B. Division 1, Section 013300 - Submittals
- C. Division 1, Section 012600 – Contract Modification Procedures

1.2 SUMMARY

- A. Project Management Communications: The Contractor shall use the Internet web based project management communications tool, E-Builder® ASP software, and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.
 - 1. Project management communications is available through E-Builder® as provided by "e-Builder®" in the form and manner required by the Owner.
 - 2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited
- B. Support: E-Builder® will provide on-going support through on-line help files.
- C. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties' obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the project specified herein.
- D. Purpose: The intent of using E-Builder® is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files
- E. Authorized Users: Access to the web site will be by individuals who are authorized users.
 - 1. Individuals shall complete the E-Builder New Company/User Request Form located at the following web site: <https://oa.mo.gov/facilities/vendor-links/contractor-forms>.

Completed forms shall be emailed to the following email address: OA.FMDCE-BuilderSupport@oa.mo.gov.

2. Authorized users will be contacted directly and assigned a temporary user password.
 3. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.
- F. Administrative Users: Administrative users have access and control of user licenses and all posted items. **DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!** Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).
- G. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using E-Builder® to send messages. Communication functions are as follows:
1. Document Integrity and Revisions:
 - a. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
 - b. The system shall make it easy to identify revised or superseded documents and their predecessors.
 - c. Server or Client side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.
 2. Document Security:
 - a. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties communication except for Administrative Users. **DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!**
 3. Document Integration:
 - a. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.
 4. Reporting:
 - a. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.
 5. Notifications and Distribution:
 - a. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be

accomplished by secure email of outgoing documents and attachments, readable by a standard email client.

6. Required Document Types:
 - a. RFI, Request for Information.
 - b. Submittals, including record numbering by drawing and specification section.
 - c. Transmittals, including record of documents and materials delivered in hard copy.
 - d. Meeting Minutes.
 - e. Application for Payments (Draft or Pencil).
 - f. Review Comments.
 - g. Field Reports.
 - h. Construction Photographs.
 - i. Drawings.
 - j. Supplemental Sketches.
 - k. Schedules.
 - l. Specifications.
 - m. Request for Proposals
 - n. Designer's Supplemental Instructions
 - o. Punch Lists

- H. Record Keeping: Except for paper documents, which require original signatures and large format documents (greater than 8½ x 11 inches), all other 8½ x 11 inches documents shall be submitted by transmission in electronic form to the E-Builder® web site by licensed users.

- a. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier shall respond to documents received in electronic form on the web site, and consider them as if received in paper document form.
 - b. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.
 - c. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.

- I. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the following:

1. Providing suitable computer systems for each licensed user at the users normal work location¹ with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
2. Each of the above referenced computer systems shall have the following minimum system² and software requirements:
 - a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)
 - 1) Operating System: Windows XP or newer
 - 2) Internet Browser: Internet Explorer 6.01SP2+ (Recommend IE7.0+)
 - 3) Minimum Recommend Connection Speed: 256K or above
 - 4) Processor Speed: 1 Gigahertz and above
 - 5) RAM: 512 mb
 - 6) Operating system and software shall be properly licensed.
 - 7) Internet Explorer version 7 (current version is a free distribution for download). This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.
 - 8) Adobe Acrobat Reader (current version is a free distribution for download).
 - 9) Users should have the standard Microsoft Office Suite (current version must be purchased) or the equivalent.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable.)

END OF SECTION 013115

¹ The normal work location is the place where the user is assigned for more than one-half of his time working on this project.

² The minimum system herein will not be sufficient for many tasks and may not be able to process all documents and files stored in the E-Builder® Documents area.

SECTION 013200 – SCHEDULE – BAR CHART

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for a Bar Chart Schedule for the project construction activities, schedule of submittals, and schedule for testing.

PART 2 - PRODUCTS – (Not Applicable)

PART 3 - EXECUTION

3.1 SUBMITTAL PROCEDURES

- A. The Contractor shall submit to the Designer, within ten (10) working days following the Notice to Proceed, a Progress Schedule including Schedule of Values showing the rate of progress the Contractor agrees to maintain and the order in which he proposed to carry out the various phases of Work. No payments shall be made to the Contractor until the Progress Schedule has been approved by the Owner.
 - 1. The Schedule of Values must have the following line items included with the value of the item as indicated below:
 - a. O&M's (Owner's Manual)
 - 1) \$1,000,000.00 (One million) and under – 2% of the total contract amount
 - 2) Over \$1,000,000.00 (One million) – 1% of the total contract amount
 - b. Close Out Documents
 - 1) \$1,000,000.00 (One million) and under – 2% of the total contract amount
 - 2) Over \$1,000,000.00 (One million) – 1% of the total contract amount
 - c. General Conditions
 - 1) No more than 10%
- B. The Contractor shall submit an updated Schedule for presentation at each Monthly Progress Meeting. The Schedule shall be updated by the Contractor as necessary to reflect the current Schedule and its relationship to the original Schedule. The updated Schedule shall reflect any changes in the logic, sequence, durations, or completion date. Payments to the Contractor shall be suspended if the Progress Schedule is not adequately updated to reflect actual conditions.

- C. The Contractor shall submit Progress Schedules to Subcontractors to permit coordinating their Progress Schedules to the general construction Work. The Contractor shall coordinate preparation and processing of Schedules and reports with performance of other construction activities.

3.2 CONSTRUCTION PROGRESS SCHEDULE – BAR CHART SCHEDULE

- A. Bar-Chart Schedule: The Contractor shall prepare a comprehensive, fully developed, horizontal bar chart-type Contractor's Construction Schedule. The Contractor for general construction shall prepare the Construction Schedule for the entire Project. The Schedule shall show the percentage of work to be completed at any time, anticipated monthly payments by Owner, as well as significant dates (such as completion of excavation, concrete foundation work, underground lines, superstructure, rough-ins, enclosure, hanging of fixtures, etc.) which shall serve as check points to determine compliance with the approved Schedule. The Schedule shall also include an activity for the number of "bad" weather days specified in Section 012100 – Allowances.
 - 1. The Contractor shall provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.
 - a. If practical, use the same Schedule of Values breakdown for schedule time bars.
 - 2. The Contractor shall provide a base activity time bar showing duration for each construction activity. Each bar is to indicate start and completion dates for the activity. The Contractor is to place a contrasting bar below each original schedule activity time for indicating actual progress and planned remaining duration for the activity.
 - 3. The Contractor shall prepare the Schedule on a minimal number of separate sheets to readily show the data for the entire construction period.
 - 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on schedule with other construction activities. Include minor elements involved in the overall sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
 - 5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other required schedules and reports.
 - 6. Indicate the Intent to Award and the Contract Substantial Completion dates on the schedule.
- B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the following:
 - 1. Requirement for Phased completion
 - 2. Work by separate Contractors
 - 3. Work by the Owner
 - 4. Pre-purchased materials
 - 5. Coordination with existing construction
 - 6. Limitations of continued occupancies

7. Un-interruptible services
 8. Partial Occupancy prior to Substantial Completion
 9. Site restrictions
 10. Provisions for future construction
 11. Seasonal variations
 12. Environmental control
- C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work. Such stages include, but are not necessarily limited to, the following:
1. Subcontract awards
 2. Submittals
 3. Purchases
 4. Mockups
 5. Fabrication
 6. Sample testing
 7. Deliveries
 8. Installation
 9. Testing
 10. Adjusting
 11. Curing
 12. Startup and placement into final use and operation
- D. Area Separations: Provide a separate time bar to identify each major area of construction for each major portion of the Work. For the purposes of this Article, a “major area” is a story of construction, a separate building, or a similar significant construction element.
1. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Permanent space enclosure
 - c. Completion of mechanical installation
 - d. Completion of the electrical portion of the Work
 - e. Substantial Completion

3.3 SCHEDULE OF SUBMITTALS

- A. Upon acceptance of the Construction Progress Schedule, prepare and submit a complete schedule of submittals. Coordinate the submittal schedule with Section 013300 SUBMITTALS, the approved Construction Progress Schedule, list of subcontracts, Schedule of Values and the list of products.
- B. Prepare the schedule in chronological order. Provide the following information

1. Scheduled date for the first submittal
 2. Related Section number
 3. Submittal category
 4. Name of the Subcontractor
 5. Description of the part of the Work covered
 6. Scheduled date for resubmittal
 7. Scheduled date for the Designer's final release or approval
- C. Distribution: Following the Designer's response to the initial submittal schedule, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with submittal dates indicated.
1. Post copies in the Project meeting room and temporary field office.
 2. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned part of the Work and are no longer involved in construction activities.
- D. Schedule Updating: Revise the schedule after each meeting or other activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

3.4 SCHEDULE OF INSPECTIONS AND TESTS

- A. Prepare a schedule of inspections, tests, and similar services required by the Contract Documents. Submit the schedule with (15) days of the date established for commencement of the Contract Work. The Contractor is to notify the testing agency at least (5) working days in advance of the required tests unless otherwise specified.
- B. Form: This schedule shall be in tabular form and shall include, but not be limited to, the following:
1. Specification Section number
 2. Description of the test
 3. Identification of applicable standards
 4. Identification of test methods
 5. Number of tests required
 6. Time schedule or time span for tests
 7. Entity responsible for performing tests
 8. Requirements for taking samples
 9. Unique characteristics of each service
- C. Distribution: Distribute the schedule to the Owner, Architect, and each party involved in performance of portions of the Work where inspections and tests are required.

END OF SECTION 013200

SECTION 013300 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work including the following:
 - 1. Construction Photographs
- B. Administrative Submittals: Refer to General and Supplementary Conditions other applicable Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
 - 1. Construction Progress Schedule including Schedule of Values
 - 2. Performance and Payment Bonds
 - 3. Insurance Certificates
 - 4. Applications for Payment
 - 5. Certified Payroll Reports
 - 6. Partial and Final Receipt of Payment and Release Forms
 - 7. Affidavit – Compliance with Prevailing Wage Law
 - 8. Record Drawings
 - 9. Notifications, Permits, etc.
- C. The Contractor shall at all times make a copy, of all approved submittals, available on site to the Construction Representative.

1.3 SUBMITTAL PROCEDURES

- A. The Contractor shall comply with the General and Supplementary Conditions and other applicable sections of the Contract Documents. The Contractor shall submit, with such promptness as to cause no delay in his work or in that of any other contractors, all required submittals indicated in Part 3.1 of this section and elsewhere in the Contract Documents. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

1.4 QUALITY ASSURANCE DOCUMENTS

- A. The Contractor shall comply with the General Conditions, Article 3.2
- B. Construction Photographs: The Contractor shall submit record construction photographs as specified in this Section and in other Sections of the Contract Documents.
 - 1. The Contractor shall submit digital photographs. The Construction Administrator shall determine the quantity and naming convention at the preconstruction meeting.
 - 2. The Contractor shall identify each photograph with project name, location, number, date, time, and orientation.
 - 3. The Contractor shall submit progress photographs monthly unless specified otherwise. Photographs shall be taken one (1) week prior to submitting.
 - 4. The Contractor shall take four (4) site photographs from differing directions and a minimum of five (5) interior photographs indicating the relative progress of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS TABLE BELOW

| SPEC SECTION | TITLE | CATEGORY |
|---------------------|----------------------------------|--------------------------|
| 013200 | Schedules | Construction Schedule |
| 013200 | Schedules | Schedule of Values |
| 013200 | Schedules | List of Subcontractors |
| 013200 | Schedules | Major Material Suppliers |
| 312500 | Silt Fence | Product Data |
| 329200 | Fertilizer | Product Data |
| 329200 | Seed | Product Data |
| Drawing C-4 | Controlled Low-Strength Material | Product Data |
| Drawing C-7 | Straw Mulch | Product Data |
| Drawing C-13 | Cement Grout | Product Data |
| Drawing C-13 | Pea Gravel | Sample |

END OF SECTION 013300

SECTION 013513.10 – SITE SECURITY AND HEALTH REQUIREMENTS (OA)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUBMITTALS

- A. List of required submittals:
 - 1. Materials Safety Data Sheets for all hazardous materials to be brought onsite.
 - 2. A list of the names of all employees who will submit fingerprints for a background check, and the signed privacy documents identified below for each employee.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE

- A. The Contractor shall arrange with Facility Representatives to establish procedures for the controlled entry of workers and materials into the work areas at the Facility.
- B. The Contractor shall establish regular working hours with Facility Representatives. The Contractor must report changes in working hours or overtime to Facility Representatives and obtain approval twenty-four (24) hours ahead of time. The Contractor shall report emergency overtime to Facility Representatives as soon as it is evident that overtime is needed. The Contractor must obtain approval from Facility Representatives for all work performed after dark.
- C. The Contractor shall provide the name and phone number of the Contractor's employee or agent who is in charge onsite; this individual must be able to be contacted in case of emergency. The Contractor must be able to furnish names and address of all employees upon request.
- D. All construction personnel shall visibly display issued identification cards.

3.2 FIRE PROTECTION, SAFETY, AND HEALTH CONTROLS

- A. The Contractor shall take all necessary precautions to guard against and eliminate possible fire hazards.
 - 1. Onsite burning is prohibited.
 - 2. The Contractor shall store all flammable or hazardous materials in proper containers located outside the buildings or offsite, if possible.
 - 3. The Contractor shall provide and maintain, in good order, during construction fire extinguishers as required by the National Fire Protection Association. In areas of flammable liquids, asphalt, or electrical hazards, 15-pound carbon dioxide or 20-pound dry chemical extinguishers shall be provided.

- B. The Contractor shall not obstruct streets or walks without permission from the Owner's Construction Representative and Facility Representatives.
- C. The Contractor's personnel shall not exceed the speed limit of 15 mph while at the Facility unless otherwise posted.
- D. The Contractor shall take all necessary, reasonable measures to reduce air and water pollution by any material or equipment used during construction. The Contractor shall keep volatile wastes in covered containers, and shall not dispose of volatile wastes or oils in storm or sanitary drains.
- E. The Contractor shall keep the project site neat, orderly, and in a safe condition at all times. The Contractor shall immediately remove all hazardous waste, and shall not allow rubbish to accumulate. The Contractor shall provide onsite containers for collection of rubbish and shall dispose of it at frequent intervals during the progress of the Work.

For all hazardous materials brought onsite, Material Safety Data Sheets shall be on site and readily available upon request at least a day before delivery.

- F. Alcoholic beverages or illegal substances shall not be brought upon the Facility premises. The Contractor's workers shall not be under the influence of any intoxicating substances while on the Facility premises.

3.3 SECURITY CLEARANCES AND RESTRICTIONS

A. FMDC REQUIRED FINGERPRINTING FOR CRIMINAL BACKGROUND AND WARRANTS CHECK

1. All employees of the Contractor are required to submit fingerprints to the Missouri State Highway Patrol to enable the Office of Administration, Division of Facilities Management, Design and Construction (FMDC) to receive state and national criminal background checks on such employees. FMDC reserves the right to prohibit any employee of the Contractor from performing work in or on the premises of any facility owned, operated, or utilized by the State of Missouri for any reason.
2. The Contractor shall ensure all of its employees submit fingerprints to the Missouri State Highway Patrol and pay for the cost of such background checks. The Contractor shall submit to FMDC via email to FMDCSecurity@oa.mo.gov a list of the names of the Contractor's employees who will be fingerprinted and a signed Missouri Applicant Fingerprint Privacy Notice, Applicant Privacy Rights and Privacy Act Statement for each employee. All employees of the Contractor approved by FMDC to work at a State facility must obtain a contractor ID badge from FMDC prior to beginning work on-site, unless the Director of FMDC, at the Director's discretion, waives the requirement for a contractor ID badge. The Contractor and its employees must comply with the process for background checks and contractor ID badges found on FMDC's website at: <https://oa.mo.gov/fmdc-contractor-id-badges>.
3. Pursuant to section 43.540, RSMo, FMDC participates in the Missouri Rap Back and National Rap Back programs as of August 28, 2018. This means that the Missouri State Highway Patrol, Central Records Repository, and the Federal Bureau of Investigation will retain the fingerprints submitted by each of the Contractor's employees, and those fingerprints will be searched against other fingerprints on file, including latent fingerprints. While retained, an employee's

fingerprints may continue to be compared against other fingerprints submitted or retained by the Federal Bureau of Investigation, including latent fingerprints.

4. As part of the Missouri and National Rap Back programs, FMDC will receive notification if a new arrest is reported for an employee whose fingerprints have been submitted for FMDC after August 28, 2018. If the employee is performing work on a State contract at the time of the arrest notification, FMDC will request and receive the employee's updated criminal history records. If the employee is no longer performing work on a State contract, FMDC will not obtain updated criminal records.
5. Pursuant to section 43.540, RSMo, the Missouri State Highway Patrol will provide the results of the employee's background check directly to FMDC. FMDC may NOT release the results of a background check to the Contractor or provide the Contractor any information obtained from a background check, either verbally or in writing. FMDC will notify the Contractor only whether an employee is approved to work on State property.
6. Each employee who submits fingerprints to the Missouri State Highway Patrol has a right to obtain a copy of the results of his or her background check. The employee may challenge the accuracy and completeness of the information contained in a background check report and obtain a determination from the Missouri State Highway Patrol and/or the FBI regarding the validity of such challenge prior to FMDC making a final decision about his or her eligibility to perform work under a State contract.
7. The Contractor shall notify FMDC via email to FMDCSecurity@oa.mo.gov if an employee is terminated or resigns from employment with the Contractor. If the Contractor does not anticipate performing work on a State contract in the future, the Contractor may request that FMDC remove its employees from the Rap Back programs. However, if removed from the Rap Back programs, employees will be required to submit new fingerprints should the contractor be awarded another State contract.
8. Upon award of a Contract, the Contractor should contact FMDC at FMDCSecurity@oa.mo.gov to determine if its employees need to provide a new background check. If a Contractor's employee has previously submitted a fingerprint background check to FMDC as part of the Missouri and National Rap Back programs, the employee may not need to submit another fingerprint search for a period of three to six years, depending upon the circumstances. The Contractor understands and agrees that FMDC may require more frequent background checks without providing any explanation to the Contractor. The fact that an additional background check is requested by FMDC does not indicate that the employee has a criminal record.

3.4 DISRUPTION OF UTILITIES

- A. The Contractor shall give a minimum of seventy-two (72) hours written notice to the Construction Representative and Facility Representative before closing any access drives, and shall make temporary access available, if possible. The Contractor shall not obstruct streets, walks, or parking.

END OF SECTION 013513.10

SECTION 015000- CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for construction facilities and temporary controls including temporary utilities, support facilities, security, and protection that will be provided as needed by the contractor. There are no existing utilities on the site that are available for this project, so contractor must provide all temporary utilities.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Sanitary facilities, including drinking water
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds
 - 2. Temporary enclosures
 - 3. Temporary project identification signs and bulletin boards
 - 4. Waste disposal services
 - 5. Construction aids and miscellaneous services and facilities
- D. Security and protection facilities include, but are not limited to, to following:
 - 1. Temporary fire protection
 - 2. Barricades, warning signs, and lights
 - 3. Environmental protection

1.3 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations including, but not limited to, the following:
 - 1. Health and safety regulations
 - 2. Utility company regulations
 - 3. Police, fire department, and rescue squad rules
 - 4. Environmental protection regulations
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations". ANSI A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities".
 - 1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code".

- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist onsite.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials. If acceptable to the Designer, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry".
 - 1. For job-built sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
 - 2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sized and thicknesses indicated.
 - 3. For fences and vision barriers, provide minimum 3/9" (9.5mm) thick exterior plywood.
 - 4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8" (16mm) thick exterior plywood.
- C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of (15) or less. For temporary enclosures, provide translucent, nylon-reinforced laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- D. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Designer, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" (19mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100' (30m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110 to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

- D. **Electrical Power Cords:** Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage rating.
- E. **Lamps and Light Fixtures:** Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixture where exposed to moisture.
- F. **Heating Units:** Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- G. **Temporary Offices:** Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. **Temporary Toilet Units:** Provide self-contained, single-occupant toilet units of the chemical, aerated re-circulation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- I. **Fire Extinguishers:** Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers, or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each Facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. **General:** Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 - 1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Designer. Neither the Owner nor Designer will accept cost or use charges as a basis of claims for Contract Change.
- B. Temporary Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.
1. Install electric power service underground, except where overhead service must be used.
 2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125V, AC 20ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- D. Temporary Lighting: When overhead floor or roof deck has been installed, provide temporary lighting with local switching.
1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Toilets: Install self-contained toilet units. Use of pit-type privies will not be permitted. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
1. Shield toilets to ensure privacy.
 2. Provide separate facilities for male and female personnel.
 3. Provide toilet tissue materials for each facility.
- F. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a health and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
1. Provide paper towels or similar disposable materials for each facility.
 2. Provide covered waste containers for used material.
 3. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
- G. Drinking-Water Facilities: Provide containerized, tap-dispenser, bottled-water drinking-water units, including paper supply.
1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45°F to 55°F (7°C to 13°C).

- H. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.
 - 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial.
- B. Storage Facilities: Limited areas for storage of building materials are available onsite. Available storage areas are shown on the drawings. The Contractor shall provide his own security. Specific locations for storage and craning operations will be discussed at the Pre-Bid Meeting and the Pre-Construction Meeting.
- C. Construction Parking: Parking at the site will be provided in the areas designated at the Pre-Construction Meeting.
- D. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
 - 1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
 - 2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
- E. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80°F (27°C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of the types needed to protect against reasonable predictable and controllable fire losses. Comply with NFPA 10 “Standard for Portable Fire Extinguishers” and NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”.
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one (1) extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

- B. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing red or amber lights.
 - 1. Storage: Where materials and equipment must be stored and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- C. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
- C. Termination and Removal: Unless the Designer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

END OF SECTION 015000

SECTION 017400 – CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for cleaning during the Project.
- B. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.
 - 1. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator for the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

- A. General
 - 1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
 - 2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
 - 3. At least ~~every~~ <twice> each month, and more often if necessary, completely remove all scrap, debris, and waste material from the jobsite.
 - 4. Provide adequate storage for all items awaiting removal from the jobsite, observing all requirements for fire protection and protection of the ecology.
- B. Site
 - 1. Daily, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
 - 2. Weekly, inspect all arrangements of materials stored onsite. Re-stack, tidy, or otherwise service all material arrangements.

3. Maintain the site in a neat and orderly condition at all times.

C. Structures

1. Daily, inspect the structures and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, sweep all interior spaces clean. "Clean" for the purposes of this paragraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and handheld broom.
3. In preparation for installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using all equipment and materials required to achieve the required cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily while work is being performed in the space in which finish materials have been installed. "Clean" for the purposes of this subparagraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Construction Representative, may be injurious to the finish of the finish floor material.

3.2 FINAL CLEANING

- A. General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
- B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.
 1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities including landscape development areas, of rubbish, waste material, litter, and foreign substances.
 2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 3. Remove petrochemical spills, stains, and other foreign deposits.
 4. Remove tools, construction equipment, machinery, and surplus material from the site.
 5. Remove snow and ice to provide safe access to the building.
 6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 8. Broom clean concrete floors in unoccupied spaces.
 9. Vacuum clean carpet and similar soft surfaces removing debris and excess nap. Shampoo, if required.
 10. Clean transparent material, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-

obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

11. Remove labels that are not permanent labels.
 12. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - a. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.
 13. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 14. Clean plumbing fixtures to a sanitary condition free of stains, including stains resulting from water exposure.
 15. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 16. Clean ducts, blowers, and coils if units were operated without filters during construction
 17. Clean food-service equipment to a sanitary condition, ready and acceptable for its intended use.
 18. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs and defective and noisy starters in fluorescent and mercury vapor fixtures.
 19. Leave the Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests. Comply with regulations of local authorities.
- D. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.
- E. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.
1. Where extra materials of value remain after Final Acceptance by the Owner, they become the Owner’s property.

END OF SECTION 017400

SECTION 024116 - STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolishing designated structures.
 - 2. Demolishing designated foundations.
 - 3. Demolishing designated slabs-on-grade.
 - 4. Disconnecting and capping designated utilities.
 - 5. Removing demolished materials.

1.2 UNIT PRICES

- A. Demolished Materials:
 - 1. Basis of Payment: Includes demolition, loading, removal from Site.

1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of capped utilities, subsurface obstructions, etc.

1.4 QUALITY ASSURANCE

- A. Perform Work according to **OSHA** standards.
- B. Permits: Obtain required permits from authorities having jurisdiction.

1.5 EXISTING CONDITIONS

- A. Notify Engineer upon discovery of hazardous materials.

PART 2 - PRODUCTS

2.1 Not Used.

2.2 FILL MATERIALS

- A. Fill Material: On site materials as designated on the drawings.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Notify affected utility companies before starting Work and comply with utility's requirements.

3.2 DEMOLITION

- A. Use of explosives is **not** permitted.
- B. Remove foundation walls and footings to minimum of two (2) feet below finished grade.
- C. Remove concrete slabs-on-grade as designated on the drawings.
- D. Fill underground tanks with sand or fine gravel and cover with minimum of 2 feet of fill material; disconnect and remove piping.
- E. Do not burn or bury materials on-Site; leave Site in clean condition.

END OF SECTION 024116

SECTION 310000 - GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stripping and stockpiling topsoil.
2. Stabilizing lagoon bottom for closure and filling.
3. Excavating lagoon berms.
4. Placing and compacting fill in lagoon.
5. Spreading topsoil and final grading.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Lagoon Fill:

1. Basis of Measurement: By lump sum.
2. Basis of Payment: Includes drying, scarifying, compacting and otherwise stabilizing lagoon bottom; stripping and stockpiling topsoil; excavating berms; placing and compacting fill in lifts in lagoon; overbuilding at surface, spreading topsoil and grading finished surface to drain.

1.3 SUBMITTALS

- A. Materials Source:** Name of any imported materials suppliers or sources.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents:** Record actual locations of any utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.5 QUALITY ASSURANCE

- A. Contractor provide documentation letter that specified number of passes of compaction equipment were performed.**

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Verify survey bench mark and intended elevations for Work are as indicated.

2.2 PREPARATION

- A. Call local utility line information service not less than 3 working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.
- D. Protect plant life and other features remaining as portion of final landscaping.
- E. Protect bench marks from excavating equipment and vehicular traffic.

2.3 TOPSOIL EXCAVATION

- A. Excavate topsoil for use in finish grading.
- B. Stockpile in area designated on site.

2.4 LAGOON BOTTOM PREPARATION

- A. Dry, scarify, manipulate, compact or otherwise stabilize lagoon bottom prior to placement of earth fill. If lagoon subgrade is too wet to support compaction equipment, Contractor may stabilize lagoon bottom with thorough incorporation of lime or Class C fly ash using a disc or other suitable implement prior to compacting subgrade with one uniform coverage of hauling equipment (scraper) tire tracks or two uniform coverages of spreading equipment (dozer) tracks. Each coverage includes a complete coverage of the surface area with either scraper tire tracks or dozer tracks.

2.5 SITE SOIL EXCAVATION

- A. Excavate and stockpile topsoil.
- B. Excavate site soil from lagoon berms.
- C. Benching Slopes: Horizontally bench existing slopes greater than 4H:1V to key placed fill material into slopes.

2.6 FILLING

- A. Fill areas to plan contours and elevations with unfrozen materials.
- B. Place fill material in continuous and approximately horizontal layers having a loose thickness of 12 inches or less.
- C. Place first lift and spread and uniformly seat with one uniform coverage of hauling equipment (scraper) tire tracks or two uniform passes of spreading equipment (dozer) tracks. After spreading second lift, uniformly compact second lift and each subsequent lift with three uniform coverages of a sheepsfoot or padfoot roller or three uniform coverages of loaded scraper tire tracks.
- D. Spread topsoil so that topsoil and compacted fill are overbuilt 6 inches above surrounding grade and are sloped to drain.
- E. Make grade changes gradual. Blend slope into level areas.

2.7 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10th of a foot from required elevation.

2.8 FIELD QUALITY CONTROL

- A. Document that required number of passes of compaction equipment are being made each day of work.

END OF SECTION 310000

SECTION 312500 - EROSION CONTROL/STORM WATER POLLUTION PREVENTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Installation of temporary water pollution control measures to prevent discharge of pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, or other harmful material from the project.
- B. Other related documents.

1.2 GENERAL

- A. The Contractor shall manage his operations to control water pollution in accordance with this specification and applicable State regulations. Construction of permanent drainage facilities and other contract work, contributing to control of erosion, shall be scheduled at the earliest practicable time.
- B. The Contractor shall furnish, install, maintain, and remove temporary erosion control measures. The Contractor shall prevent silt or polluted storm water discharge from the site.
- C. The Owner's Representative may require installation of additional erosion control facilities, by the Contractor, if in the sole opinion of the Owner's Representative, the Contractor's efforts are inadequate.

1.3 DEFINITIONS

- A. General Permit: The General Permit for storm water discharges associated with construction activity (Land Disturbance General Permit No. MO-R100038) issued to FMDC as a blanket permit by the Missouri Department of Natural Resources, Water Pollution Program.
- B. Storm Water Pollution Prevention Plan (SWPPP): A plan required by the General Permit that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the storm water, and a description of measures or practices to control these pollutants.
- C. Best Management Practice (BMP): Any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces pollution.
- D. Temporary Berm: A temporary ridge of compacted soil, with or without a shallow ditch, constructed at the top of slopes or transverse to the centerline of a slope. The berm diverts storm runoff to temporary outlets to discharge water with minimal erosion.
- E. Temporary Slope Drain: A temporary facility used to carry water down a slope.

- F. Ditch Check: An obstruction placed at frequent intervals across ditches, creating small ponds to cause sediment to settle and be contained.
- G. Sediment Basin: An excavated or dammed storage area to trap and store sediment and prevent the discharge of silt.
- H. Temporary Seeding and Mulching: Placement of a quick ground cover to reduce erosion in areas expected to be re-disturbed.
- I. Straw Bales: Standard agricultural bales used to filter the flow of water, trap, deposit sediment, and/or divert water.
- J. Silt Fence: A geotextile barrier fence to contain sediment by removing suspended particles from water passing through the fence.
- K. Temporary Pipe: Conduit utilized to carry water under haul roads, silt fences, etc., and prevent equipment from direct contact with water when crossing an active or intermittent stream.
- L. Sediment Removal: Removal of accumulated sediment to restore the efficiency of sediment control features.

1.4 SUBMITTALS

- A. The Contractor shall submit his proposed "Erosion Control Plan" for review and approval by the Owner's Representative. Approval of the plan does not relieve the Contractor of his contractual responsibility to prevent the discharge of pollutants into the receiving drainage ways.
- B. The Contractor shall review the Storm Water Pollution Prevention Plan (SWPPP) provided by the Designer, make appropriate field corrections to the document, and submit final corrected copies of the SWPPP to the Owner and facility.

1.5 RELATED SECTIONS

- A. Section 3 29 200 - Lawns and Grasses

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Temporary slope drains: Stone, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe or flexible rubber pipe.
- B. Ditch Checks:
 - 1. Rock ditch checks: 2" to 3" clean gravel or limestone.
 - 2. Straw bale ditch checks: Rectangular wheat straw bales in good condition. Other foliage may be substituted for straw in accordance with MoDOT 802.2.1.
 - 3. Silt fence ditch checks: Geotextile meeting the requirements of this specification.

- C. Riprap for Temporary Erosion Control: Type 1 Rock Blanket conforming to MoDOT 611.32.
- D. Pipe: Corrugated metal (16 Ga.) or ADS N12 Corrugated Plastic.
- E. Temporary Seeding:
 - 1. December 1 to March 1: 50 lbs oats/acre.
 - 2. March 1 to December 1: 50 lbs cereal rye or wheat.
 - 3. Mulch shall be wheat straw.
- F. Wire Supported and Self Supporting Silt Fence:
 - 1. Geotextile Fabric
 - a. Fibers used in geotextiles shall consist of longchain synthetic polymers, composed of at least 85 percent by weight polyolefins, polyesters, or polyamides. They shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including selvages.
 - b. The geotextile shall be free of any treatment or coating which might adversely alter its physical properties after installation.
 - c. Geotextile shall be furnished in 36" width rolls.
 - d. Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure.
 - e. Each roll shall be labeled or tagged to provide product identification sufficient for inventory.
 - f. Rolls shall be stored in a manner, which protects them from the elements.
 - g. Geotextile shall conform to the following:

TABLE 1
PHYSICAL REQUIREMENTS¹ FOR
TEMPORARY SILT FENCE GEOTEXTILES

| <u>Property</u> | <u>Test Method</u> | <u>Wire Fence Supported Requirements</u> | <u>Self Supported Requirements</u> |
|--|---------------------|--|--|
| Tensile Strength, Lbs. | ASTM D4632 | 90 Minimum ² | 90 Minimum ² |
| Elongation at 50% Minimum | | | |
| Tensile Strength (45 Lbs.) | ASTM D4632 | N/A | 50 Maximum |
| Filtering Efficiency, % | VTM-51 ³ | 75 | 75 |
| Flow Rate gal/ft/min | VTM-51 ³ | 0.3 | 0.3 |
| Ultraviolet Degradation at 500 hrs. | ASTM D4355 | Minimum 70% Strength Retained | Minimum 70% Strength Retained |

Notes: 1. All numerical values represent minimum average roll value.

- A. When tested in any principal direction.
- B. Virginia DOT test method.

- 2. Posts: Wood, steel or synthetic posts may be used. Posts shall have a minimum length of 36" plus embedment depth (24" min.). Posts shall have sufficient strength to resist damage during installation and to support applied loads.
- 3. Support Fence: Wire or other support fence shall be at least 24" high and strong enough to support applied loads.
- 4. Prefabricated Fence: Prefabricated fence systems may be used provided they meet all of the above material requirements.

2.2 CERTIFICATION AND SAMPLING:

- A. The Contractor shall furnish a manufacturer's certification, stating the material conforms to the requirements of these specifications.
- B. The certification shall include, or have attached, typical results of tests for the specified properties, representative of the materials supplied.
- C. The Owner's Representative reserves the right to sample and test any material offered for use.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Owner's Representative may limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, or fill operations.
- B. The Owner's Representative may direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams, other watercourses, lakes, ponds, or other areas of water impoundment. Work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, use of temporary mulches, seeding or other control devices or methods to control erosion.
- C. The Contractor shall incorporate permanent erosion control features at the earliest practicable time.
- D. The Contractor at no additional cost shall provide temporary pollution control measures needed to control erosion during normal construction practices to the Owner.
- E. Contractor shall designate trained and knowledgeable personnel to coordinate all SWPPP activities, and identify these personnel to the Owner's Representative during construction. Missouri Department of Natural Resources offers training classes in Erosion Control free of charge in Jefferson City. Contact for training: David Goggins at (573) 751-2556.

- F. The SWPPP is a living document. As the conditions of the site changes, the SWPPP should be updated by the Contractor.
- G. The SWPPP is subject to random inspection by the Owner. The SWPPP should be kept up to date by the Contractor and available for inspection at any time.
- H. If Contractor determines that any BMP should need modification, the changes shall be dated and documented, and all necessary field changes performed.

3.2 LIMITATION OF AREA DISTURBED:

- A. The Contractor's operations shall be scheduled to install permanent erosion control features immediately after clearing and grubbing, and grading.
- B. The surface area of erodible earth material exposed at one time by clearing and grubbing, excavating, fill, or borrow shall not exceed 200,000 square feet without written approval of the Owner's Representative.
- C. The Owner's Representative may limit the area of clearing and grubbing, excavation, borrow, and embankment operations commensurate with the Contractor's capability and progress in completing the finish grading, mulching, seeding, and other such permanent pollution control measures current.
- D. The Contractor shall respond to seasonal variations. If required by weather, temporary erosion control measures shall be taken immediately.

3.3 RIVERS, STREAMS, AND IMPOUNDMENTS:

- A. Construction operations in rivers, streams, and impoundments shall be restricted to areas, which must be entered for the construction of temporary or permanent structures.
- B. Rivers, streams, and impoundments shall be promptly cleared of falsework, piling, debris, or other obstructions as soon as practical.
- C. Frequent fording of live streams with construction equipment will not be permitted.
- D. Temporary bridges or other structures shall be used when the Contractor's operations include cycling of equipment across streams, rivers, or impoundments.
- E. Mechanized equipment shall not be operated in flowing streams except as required to construct channel changes and temporary or permanent structures.

3.4 BORROW AND WASTE AREAS

- A. Material pits other than commercially operated sources and material spoil areas shall be subject to pollution control measures of this specification. An offsite location does not relieve the Contractor of his contractual obligation to prevent the introduction of silt or other pollutants into receiving waterways.

3.5 CONFLICT WITH FEDERAL, STATE OR LOCAL LAWS, RULES OR REGULATIONS

- A. In case of conflict between these requirements and pollution control laws, rules, or regulations or other Federal, State or local agencies, the more restrictive laws, rules, or regulations shall apply.

3.6 TEMPORARY BERMS

- A. Temporary berms shall be constructed at the top of newly constructed slopes and / or transverse to grade to divert runoff and prevent erosion until permanent controls are installed and / or slopes are stabilized. Two types of temporary berms will be utilized under conditions listed below:
 - 1. Type "A" Berm: At the end of each day's operations on embankments.
 - 2. Type "B" Berm: At shut down of embankment operations for the winter season or discontinuation of work at the direction of, or with concurrence of the Owner's Representative.
- B. Interceptor berms transverse to centerline may be used when temporary berms are installed on grades in excess of 1 percent and at locations where water is to be carried down the fill slope by temporary or permanent slope drains.
- C. Construction Requirements:
 - 1. Type A Berms shall be constructed to the approximate dimensions indicated on the drawings. Berms shall be machine compacted with a minimum of one pass over the entire width with a bulldozer tread, grader wheel, or other approved method.
 - 2. Type "B" Berms shall be constructed to the approximate dimensions indicated on the drawings. These berms shall be machine compacted with a minimum of three passes over the entire width with a bulldozer tread, grader wheel, or other approved method.
 - 3. Type "A" and Type "B" Berms must drain to a compacted outlet at a slope drain. The top width of these berms may be wider and the side slopes flatter on transverse berms to allow equipment to pass over these berms with a minimal disruption.

3.7 TEMPORARY SLOPE DRAINS

- A. General:
 - 1. Temporary slope drains are required to concentrate water flowing down a slope prior to installation of permanent facilities. Slope drains shall be placed at approximately 500-foot intervals or as directed by the Owner's Representative.
- B. General Requirements
 - 1. The Contractor shall install a temporary silt fence in locations shown on the drawings, around inlets that accept flow carrying silt, and other locations necessary to prevent the discharge of silt from the site.

2. Installation shall conform to the drawing detail.
3. Fence construction shall be adequate to handle the stress from hydraulic and sediment loading.

C. Construction Requirements:

1. Temporary slope drains shall be anchored to prevent disruption by the force of the water flowing in the drain.
2. The inlet end shall be constructed to channel water into the drain.
3. The outlet ends of these temporary slope drains shall have some means of dissipating the energy of this water to reduce erosion downstream.
4. Unless otherwise directed by the Owner's Representative, temporary slope drains shall be removed when no longer necessary and the site restored to match the surroundings.

3.8 DITCH CHECKS

A. General:

1. Rock ditch checks may be used on ditches with grades of 4 percent or less.
2. Straw bale ditch checks may be used on all ditches.
 - a. The silt fence fabric may be eliminated for grades of 2 percent or less.
3. Silt fence ditch check may be used on all ditches.
4. A straw bale ditch check or a silt fence ditch check may be used in lieu of a sediment basin for drainage areas less than two acres. The basin shall have a volume of 1,815 CF per acre of contributing drainage area.

B. Construction Requirements:

1. Construct rock ditch checks in accordance with the drawing detail.
 - a. Achieve complete coverage of the ditch or swale and insure the center of the check is lower than the edges.
2. Construct straw bale ditch checks in accordance with the drawing detail.
3. Construct silt fence ditch checks in accordance with the drawing detail.

C. Maintenance:

1. Inspect ditch checks for sediment accumulation after each rainfall.
2. Sediment shall be removed when it reaches one-half of the original height.
 - a. Regular inspections shall insure that the center of a rock check is lower than the edges. Correct erosion caused by high flows around the edges of the check immediately.

3.9 SEDIMENT BASIN

A. General

1. Sediment basins are used for drainage areas of two (2) to five (5) acres or for a roadway ditch exceeding 1,000 consecutive feet in length. Break larger drainage areas or longer ditches into smaller areas.

B. Construction Requirements:

1. The area where a sediment basin is to be constructed shall be cleared of vegetation.
2. Construct the inlets of sediment basins with a wide cross-section and a minimum grade to prevent turbulence and allow deposition of soil particles.
 - a. The minimum depth is 2'; the maximum depth is 6'.
 - b. The minimum width is 5'; the maximum width is 20'.
 - c. The minimum length is 25'; the maximum length is 200'.
 - d. The minimum volume shall be 1,815 CF per acre of drainage area.
3. Sediment basins shall remain in service until all disturbed areas draining into the structure have been stabilized.
4. When use of sediment basin is discontinued, backfill all excavations and compact fill. Fill material shall be removed and the existing ground restored to the original or plan grade.
5. Maintenance
6. When the depth of sediment reaches 1/3 of the depth of structure in any part of the pool, all accumulation shall be removed.
7. Removed sediment shall be disposed of in locations that the sediment will not erode into the construction areas or into natural waterways. The same holds true for excavated material removed during construction of the sediment basin.

3.10 TEMPORARY SEEDING AND MULCHING

A. General

1. This item is applicable to all projects.
2. Seeding and/or mulching shall be a continuous operation on all cut slopes, fill slopes, and borrow pits during the construction process. All disturbed areas shall be seeded and mulched within five (5) working days after the last construction activity in all locations where necessary to eliminate erosion.

B. Construction Requirements:

1. Permanent seeding and mulching following temporary seeding will be performed during the favorable seeding seasons only.
2. Temporary seeding mixtures and planting season:
 - a. December 1 to March 1: 50 lbs. oat grain per acre
 - b. March 1 to December 1: 50 lbs. (cereal rye or wheat) per acre
3. Temporary mulch, fertilizer, and lime for seeding:
 - a. Fertilizer and mulch for temporary seed mixtures shall be applied in accordance with Section 02921.

- b. Fertilizer shall be applied at the rate specified for permanent seeding.
- c. Lime will not be required for temporary seeding.

3.11 STRAW BALES

A. General

- 1. Install at the bottom of embankment slopes less than 10' high to divert runoff from sheet flow and intercept some of the sediment in the sheet flow.
- 2. Install as ditch checks in small ditches and drainage areas.
- 3. Install on the lower side of cleared areas to catch sediment from sheet flow.

B. Construction Requirements:

- 1. Bales of straw shall be utilized to control erosion, trap sediment, and divert runoff.
- 2. Bales must be adequately braced from behind.

3.12 SILT FENCE

A. General

- 1. Install along the toe of fills over 10' in height, along the right-of-way line, parallel to streams or around an inlet to prevent sediment from entering the pipe system.

B. General Requirements:

- 1. The Contractor shall install a temporary silt fence in locations shown on the drawings, around inlets that accept flows containing silt, and other locations necessary to prevent the discharge of silt from the site.
- 2. Installation shall conform to the detail at the end of this section.
- 3. Fence construction shall be adequate to handle the stress from hydraulic and sediment loading.

C. Installation

- 1. Geotextile at the bottom of the fence shall be buried as indicated on the detail.
- 2. The trench shall be backfilled and the soil compacted over the geotextile. The geotextile shall be spliced together as indicated on the detail.
- 3. Post Installation
 - a. Post spacing shall not exceed 8' for wire support fence installation or 5' for self supported installations.
 - b. Posts shall be driven a minimum of 24" into the ground. Where rock is encountered, posts shall be installed in a manner approved by the Owner's Representative.
 - c. Closer spacing, greater embedment depth and/or wider posts shall be used in low areas, soft, or swampy ground to ensure adequate resistance to applied loads.

4. When support fence is used, the mesh shall be fastened securely to the upstream side of the post.
 - a. The mesh shall extend into the trench a minimum of 2" and extend a maximum of 36" above the original ground surface.
5. When self-supported fence is used, the geotextile shall be securely fastened to fence posts.
6. Maintenance
 - a. The Contractor shall maintain the integrity of silt fences as long as they are necessary to contain sediment runoff.
 - b. The Contractor shall inspect all temporary silt fences immediately after each rainfall and at least daily, during prolonged rainfall.
 - c. The Contractor shall immediately correct deficiencies.
 - d. The Contractor shall make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness.
 - e. Where a single fence is not adequate to handle the volume of silt or flows are not completely intercepted, additional silt fences shall be installed.
7. The Contractor shall remove and dispose of sediment deposits when the deposit approaches one-half the height of the fence.
8. The silt fence shall remain in place until the upstream surface is stabilized. Upon removal, the Contractor shall remove the silt fence, dispose of excess silt, and restore the disturbed area in accordance with Section 02921.

3.13 TEMPORARY PIPE

A. General:

1. The Contractor shall install temporary pipes and fill at locations, to be crossed by the Contractor's equipment, which carry a concentrated flow during rain events.

B. Construction Requirements:

1. All temporary pipes shall be installed in the same manner as permanent pipe is installed on the project to assure that the water does not cause erosion around the pipe.
2. Material to backfill the pipe should be placed in 6" lifts and mechanically compacted. Compaction testing will not be required.

3.14 SEDIMENT REMOVAL

A. General

1. Sediment deposits shall be removed when:
 - a. The deposits reach approximately one-half the height of a ditch check, straw bale barrier or silt fence.

- b. The sediments have reduced the ponded volume of sediment basins to one-third of the original volume.
 - c. Requested by the Owner's Representative.
- B. Sediment removed from erosion control features shall be deposited in a location where it will not erode into construction areas or watercourses.

END OF SECTION 312500

SECTION 329200-LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division Specification sections, and the Approved DNR Land Disturbance Permit, apply to the Work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. Furnish all materials, labor, equipment and services necessary to perform all Work.
- B. Work included in this Section includes clearing of weeds, seed bed preparation, installation of erosion control fabric and seeding operations required for seeding of the areas shown on Drawings.

1.3 SPECIFICATIONS AND STANDARDS

- A. U.S. Department of Agriculture: SRA 156 U.S. Department of Agriculture, Rules and Regulations under the Federal Seed Act.
- B. American Joint Committee on Horticultural Nomenclature Standard: 1942 Edition Standardized Plant Names.

PART 2 - PRODUCTS

2.1 SEED

- A. All seed shall be furnished in sealed, standard containers, unless otherwise approved. Seed which has become wet, moldy, or otherwise damaged will not be acceptable.
- B. Each container of seed shall be fully labeled in accordance with the Federal Seed Act and seed certifications shall be signed and made part of seed invoices.
- C. Seed shall be Fescue, 97 percent pure live seed
- D. Invoices and tags for seed shall show type furnished. Upon acceptance of the seeded areas, a final check of total quantities of seed used will be made against total area seeded and if minimum rates of application or specified quantities have not been met, the Engineer will require distribution of additional quantities of these materials to make up minimum application specified.

2.2 FERTILIZER

- A. Fertilizer shall be uniform in composition, free-flowing, suitable for application with approved equipment and delivered to the site unopened in original containers each bearing the manufacturer's guaranteed analysis and in conformity with state fertilizer laws. Fertilizer shall contain the following minimum percentage of plant food by weight.
 - 1. 12 percent available nitrogen
 - 2. 12 percent available phosphoric acid
 - 3. 12 percent available potash

- B. Fertilizer application rates shall be 100 lbs. per acre.
- C. Invoices for fertilizer shall show grade furnished. Upon acceptance of the seeded areas, a final check of total quantities of fertilizer used will be made against total area seeded and if minimum rates of application or specified quantities have not been met, the Architect will require distribution of additional quantities of these materials to make up minimum application specified.

2.3 EROSION CONTROL FABRIC

- A. Fabric shall be "Soil Saver" as is distributed by Jim Walls Company in Dallas, Texas (214) 239-8577; or "Curlex Blankets" as is distributed by Americal Excelsior Company in North Kansas City, Missouri (816) 842-3034; or approved equal.

2.4 STAPLES

- A. Staples shall be a No. 11 gauge steel wire formed into a "U" shape, 6 inches long.

PART 3 - EXECUTION

3.1 GROUND PREPARATION

- A. General: the ground areas are to be seeded and fertilized as indicated on the Drawings and/or as specified herein. Equipment necessary for the proper preparation of the ground surface and for handling and placing all required materials shall be on hand, in good condition and shall be approved before the Work is started.
- B. Clearing: Prior to tillage, seeding or other specified operations, all vegetation which might interfere with the indicated treatment of the areas shall be mowed, grubbed, raked and the debris removed from the site. Prior to or during grading and tillage operations, the ground surface shall be cleared of materials which might hinder final operations. Areas which have been disturbed shall be finish graded and/or developed as indicated on the Drawings or as specified.
- C. Tillage: After the areas required to be seeded have been brought to the finish grades as specified, they shall be thoroughly tilled to a depth of at least 6 inches by plowing, disking, harrowing or other approved methods until the condition of the soil is acceptable to the Architect. Work shall be performed only during period when beneficial results are likely to be obtained. When conditions are such by reason of drought, excessive moisture, or other factors that satisfactory results are not likely to be obtained, Work shall be stopped. Work shall be resumed only when desired results are likely to be obtained.
- D. Leveling: Any undulations or irregularities in the surface resulting from tillage, fertilizing or other operations shall be leveled with a float drag before seeding operations are begun.
- E. Fertilizing: Fertilizer shall be distributed uniformly at the rate previously specified per acre over the areas to be seeded and shall be incorporated into the soil to a depth of at least 3 to 4 inches by disking, harrowing or other approved methods. The incorporation of fertilizer may be a part of the tillage operation hereinbefore specified. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will not be accepted. Fertilizer shall be incorporated into the soil a minimum of 10 days before seed is planted.
- F. Inspection: A minimum of 48 hours prior notice must be given to the Construction Administrator before fertilizing may commence.

- G. Planting Time: All seeding Work shall be done between the dates of April 1 to May 15 for spring planting and from August 15 to October 15 for fall planting except as otherwise directed in writing by the Construction Administrator.
- H. Planting Condition: No planting shall be done until a permanent source of water is available at the site for use by the Owner.

3.2 SEEDING

- A. General: Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rains, traffic, or other cause shall be reworked to restore the ground condition previously specified. Seed shall be planted by drill seeding.
- B. Drill Seeding: Seed shall be uniformly drilled to an average depth of ½ inch and at the rate of 30 lbs. per acre using equipment having drills not more than 6 ½ inches apart. Row markers shall be used with the drill seeder.
- C. Rolling: Immediately after seeding, except for slopes 3 horizontal to 1 vertical and greater, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width. Do not roll areas seeded with seed drills equipped with rollers.
- D. Inspection: A minimum of 48 hours prior notice must be given to the Construction Administrator before seeding may commence.

3.3 INSTALLATION OF EROSION CONTROL FABRIC

- A. Fabric shall be rolled out in place. Fabric shall be applied without stretching and shall lie smoothly but loosely on the soil surface. The Contractor shall refer to the Drawings for details of fabric fastening.
- B. Application of the erosion control fabric shall occur the same day that the seeding of an area has taken place.
- C. Fabric shall completely cover all areas which are shown on the Drawings to be protected from erosion. After fabric installation, the entire area shall be rolled with a smooth roller weighing between 200 to 250 pounds. After rolling, the fabric shall be in intimate contact with the soil surface at all points. Any clods, etc., which hold the fabric off the ground should be removed. The fabric shall be forced down into any depressions and held there with a staple.

3.4 MAINTENANCE

- A. General: The project areas shall be kept clean at all times and care shall be taken that use of the premises shall not be unduly hampered by Work herein specified. The intent of this Section is to ensure a healthy, well-established turf, and prevent soil erosion in compliance with the Land Disturbance Permit issued by the Missouri Department of Natural Resources.
- B. Responsibility: The Owner shall be responsible for maintenance of all seeded areas upon completion of seeding and general acceptance by the Construction Administrator.
- C. Damage: Damage to seeded areas during the project shall be repaired by the persons responsible for causing such damage.

3.5 GENERAL ACCEPTANCE

- A. The Construction Administrator shall make an inspection of the seeded areas upon completion of seeding. Seeded areas shall be considered acceptable if the specified quantities of fertilizer & seed have been properly applied.

3.6 GUARANTEE

- A. The Contractor is responsible for the proper application of the fertilizer & seeding. Watering, weeding, re-seeding, and mowing will be the responsibility of the Owner after proper application of the seed.

END OF SECTION 329200

PROJECT NO. C1919-01
CLOSURE OF LAGOONS & WELL, MULTIPLE
FOR
CENTRAL MISSOURI CORRECTIONAL CENTER

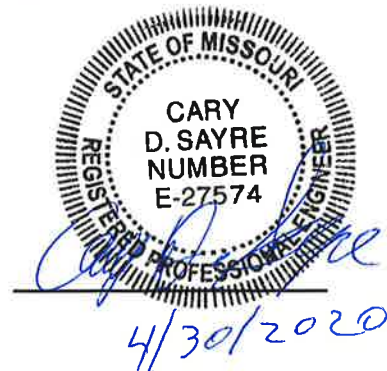
BY: STATE OF MISSOURI, OFFICE OF ADMINISTRATION, DIVISION OF FACILITIES
MANAGEMENT, DESIGN AND CONSTRUCTION

STORM WATER POLLUTION PREVENTION PLAN
(SWPPP)



ALLSTATE
CONSULTANTS

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allstateconsultants.net



**Construction Phase
Storm Water Pollution Prevention Plan
(SWPPP)**

for

**PROJECT NO. C1919-01
CLOSURE OF LAGOONS AND WELL, MULTIPLE
FOR
CENTRAL MISSOURI CORRECTIONAL CENTER**

in

COLE COUNTY, MO

for

**STATE OF MISSOURI, OFFICE OF ADMINISTRATION, DIVISION OF
FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION**

Construction Phase
Storm Water Pollution Prevention Plan
(SWPPP)

for

Project No. C1919-01
Closure of Lagoons and Well, Multiple
For
Central Missouri Correctional Center

in

Cole County, Missouri

Prepared for:

State of Missouri
Office of Administration
Division of Facilities Management, Design and Construction

May 1, 2020

by:

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3312 LeMone Industrial Blvd.
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PART 1.0
INTRODUCTION

1.0 INTRODUCTION

1.1 THE CONSTRUCTION NPDES PERMIT AND SWPPP

The NPDES general permit is for storm water discharges from construction activities that are classified as "associated with industrial activity" by EPA regulation. For construction projects that require the disturbance of more than one acre the U. S. Environmental Protection Agency (EPA) requires that the project owner or contractor apply for a storm water permit under the National Pollutant Discharge Elimination System (NPDES) program. For the purposes of the NPDES program, construction activities are defined as clearing, excavating, grading, or other land disturbing activities.

The State of Missouri is delegated by the EPA to administer the NPDES general permit for construction activities within the state that disturb one acre or more. A Missouri State Operating Permit for storm water discharges is required in accordance with Missouri regulations 10 CSR 20-6.200. Under the Missouri Clean Water Law, the Missouri Department of Natural Resources, Division of Environmental Quality, Water Pollution Control Program requires Form E - Application for General Permit and a Form G - Application for Storm Water Permit, or Form O- Permit for Land Disturbance (if the site is less than five acres in size).

This document comprises the Storm Water Pollution Prevention Plan (SWPPP) required by the State of Missouri Department of Natural Resources (MDNR), Division of Environmental Quality. This SWPPP establishes a plan to manage the quality of storm water runoff from construction activities associated with Project No. C1919-01 Closure of Lagoons and Well, Multiple for Central Missouri Correctional Center in Cole County west of Jefferson City, Missouri on Highway 179.

1.2 PROJECT LOCATION AND DESCRIPTION

This project is located in Cole County, Missouri in NW ¼ of SE ¼ of Section 18, T45N, R12W or 38° 38' 38" N 92° 16' 35" W. (see figure1-1 on following page). The total land area to be disturbed during the construction process across the site is approximately 17.0 Acres. Construction should be completed by Spring of 2024.

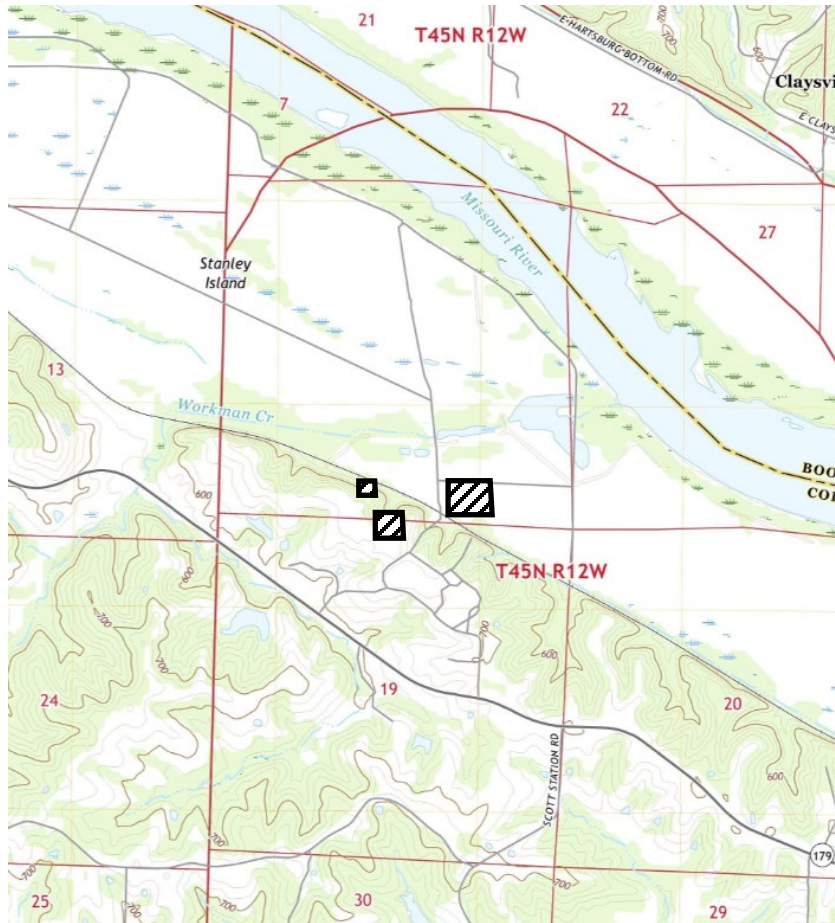

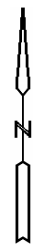


Figure 1-1
Regional Area
Central Missouri Correctional Center– Cole County,
MO
Date: May 1, 2020

Location: Hartsburg Quadrangle
NW ¼, SE ¼, Sec 18, T45N, R12W
Cole County, Missouri

PREPARED BY: Allstate Consultants LLC
 3312 LeMone Industrial Boulevard.
 Columbia, Missouri 65201
 573-875-8799

| LEGEND | |
|-----------------|---|
| Project area(s) |  |



1.3 PROJECT OWNER AND OPERATOR

The project is run by the State of Missouri Office of Administration, Division of Facilities Management, Design and Construction. The site is owned by the State of Missouri Department of Correction and the address is:

2600 HWY 179
Jefferson City, MO 65109

The project contractor is TBD.

The primary contact for this project will be Terry Bruns. Mr. Bruns can be reached at (573) 526-5184.

Storm Water Inspector: _____
(name) (phone number)

24 hour Emergency Contact: _____
(name) (phone number)

1.4 CONTRACTOR/SUBCONTRACTOR SIGNATORY REQUIREMENTS AND CERTIFICATION

Before conducting any construction disturbances, all contractors and subcontractors must sign a copy of the following certification statement at the owner's office.

1.5 RETENTION OF RECORDS

The State of Missouri, as owner, must maintain a copy of this SWPPP on site from the date of project initiation to the date of final stabilization. The SWPPP shall be retained onsite and available on request. The Owner shall retain copies of the SWPPP and all reports required by the General Permit onsite for a period of at least three years from the date that the project is completed.

1.6 STANDARD PERMIT CONDITIONS

This section contains information on state and federal penalties for non-compliance with the permit as well as termination of coverage of the permit. Further explanation of these issues is stated under each individual heading.

1.6.1 Duty to Comply with Permit Conditions

The EPA has substantial penalties for non-compliance with the permit. Any permit non-compliance constitutes a violation of the Clean Water Act and is grounds for enforcement action including: permit termination; revocation, reissuance, or modifications; or denial of permit renewal application. Individuals responsible for such violations are subject to criminal, civil and administrative penalties.

1.6.2 Final Stabilization and Termination of Coverage

Final stabilization is achieved when all soil-disturbing activities at the site have been completed and when a uniform perennial vegetative cover with a density of 70 percent has been established or equivalent measures (such as the use of riprap, gabions, or geotextiles) have been employed. When the site has been fully stabilized and all storm water discharges from construction activities that are authorized by this permit are eliminated, the final stabilization termination checklist must be completed. Upon completion and submission of MDNR termination Form H, the project will be considered complete.

| CONTRACTOR'S CERTIFICATION | | |
|--|------------------------------|---------------------|
| "I certify under penalty of law that I understand the terms and conditions of this Missouri Storm Water Pollution Prevention Plan and associated NPDES general permit that authorizes the storm water discharges associated with industrial activity from construction site identified as part of this certification". | | |
| Signature | For | Responsible For |
| _____ (Name) | _____ (Company) | _____ _____ |
| _____ (Position) | _____ (Street / P.O. Box) | _____ _____ |
| _____ (Signature) | _____ (City, State, Zip) | _____ _____ |
| _____ (Date) | _____ (Phone) | _____ (Activity) |
| _____ (Name) | _____ (Company) | _____ _____ |
| _____ (Position) | _____ (Street / P.O. Box) | _____ _____ |
| _____ (Signature) | _____ (City, State, Zip) | _____ _____ |
| _____ (Date) | _____ (Phone) | _____ (Activity) |
| _____ (Name) | _____ (Company) | _____ _____ |
| _____ (Position) | _____ (Street / P.O. Box) | _____ _____ |
| _____ (Signature) | _____ (City, State, Zip) | _____ _____ |
| _____ (Date) | _____ (Phone) | _____ (Activity) |

PART 2.0
CONSTRUCTION ACTIVITIES
AND SITE DESCRIPTION

2.0 CONSTRUCTION ACTIVITIES AND SITE DESCRIPTION

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITIES

The scope of this project includes grading for lagoon closures. A tentative sequence of major construction activities follows in Section 2.6. The total area of the site is approximately 725.23 Acres. The total area of the site expected to undergo excavation is approximately 17.0 Acres. Soil disturbing activities within the construction area may include clearing and grubbing, and grading. All construction activities will disturb as little of the existing vegetation as possible.

2.2 POTENTIAL POLLUTANTS

The primary pollutant sources will be disturbed soils and subsequent surface water runoff within the construction site. Other potential pollutant sources include petroleum products needed for the construction equipment. If additional pollutant sources are brought on site, such as portable toilets, chemicals, paint, solvents, etc., these items will be noted and monitored on the storm water site inspection form.

2.3 SOILS

The soils on the site consist of silt loam and lean to fat clays.

2.4 ESTIMATE OF RUNOFF COEFFICIENT

The runoff coefficient "C" is the ratio of the volume of storm water runoff from the project area compared to the total volume of precipitation that falls on the project area. The General Permit requires an estimate of this ratio that represents runoff conditions both before construction and after construction activities are complete and the area is finally stabilized.

The estimate of "C" is based on variables from three general terrain categories: 1) soil properties (porosity, density, etc.), 2) ground slope, and 3) the character of the vegetative cover (woodlands, pasture, grassland, etc.). Another major variable affecting "C" is rainfall intensity and duration. For

any given terrain, the ratio of runoff to rainfall is expected to increase as storm intensity or duration increases.

Pre-construction “C” value = 0.40

Post-construction “C” value = 0.30

2.5 SITE MAPS

A location map shows the project area relative to the surrounding area and is shown as Figure 1-1. The construction drawings for the facility are in Appendix A and include placement of erosion and sediment controls. Detailed descriptions of these Best Management Practices, or BMP’s, are included in Appendix D.

2.6 SEQUENCE OF MAJOR CONSTRUCTION ACTIVITIES

This section contains a description of the construction sequence for the project.

- Secure necessary Land disturbance permits.
- Installation of erosion and sediment control devices.
- Dewater Lagoon Cells and stockpile topsoil
- Demolition and disposal offsite of existing structures, pipe, and electrical.
- Mix berms and sludge at 1:1 ratio
- Finish grading and stabilization
- Seed and mulch to stabilize

2.7 RECEIVING WATERS

The project site drains to an unnamed tributary to the Missouri River.

2.8 DRAINAGE AREAS

In compliance with EPA and DNR regulations, clearing and grubbing within fifty (50) feet of defined drainage course should be avoided. Additionally, when changes to defined drainage courses occur as part of the project, clearing and grubbing within fifty (50) feet of the defined drainage course will be delayed until all materials and equipment necessary to protect and complete the drainage change are on site. Changes to the defined drainage course will be completed as quickly as possible once the work has been initiated. The area impacted by the land disturbance of the drainage course change will be revegetated or protected from erosion as quickly as possible. Areas within fifty (50) feet of defined drainage ways will be recontoured as needed, as well as revegetated, seeded, or otherwise protected within five (5) working days after grading has ceased.

2.8.1 Sedimentation Basins/Traps

A sedimentation basin/trap will be used when necessary and will be sized to comply with the governing authorities' guidelines. The basin/trap will be cleaned out and otherwise maintained as needed until the drainage area is stabilized. Both temporary and permanent sedimentation basins will have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

PART 3.0
BEST MANAGEMENT PRACTICES

3.0 BEST MANAGEMENT PRACTICES

3.1 EROSION AND SEDIMENT CONTROL DEVICES

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried off of a land area and deposited in receiving water. This section, in conjunction with Appendix D, provides a general description of the most appropriate measures planned for this project. Appendix A contains construction drawings that clearly delineate each BMP proposed and its location. All applicable soil erosion and sediment control measures shall be implemented in accordance with the guidelines contained herein prior to commencement of field construction activities. Measures shall be maintained during and after the construction activity until final stabilization is accomplished. Upon successful revegetation of the disturbed area, all temporary soil erosion and sediment control measures will be removed. Appropriate impediments for storm water discharge will be implemented, and bench marks referenced for proper installation, operation, and maintenance of drainage courses.

3.1.1 Temporary Stabilization

Temporary stabilization consists of activities such as terracing, mulching, or reseeding vegetation in all disturbed, unvegetated areas that are exposed during prolonged periods of construction inactivity. Due to the short nature of the many project activities, temporary stabilization will not always be required. However, temporary stabilization measures will be implemented if construction halts for more than 14 days and if construction will not resume within 21 days. If the slope is greater than 3:1, or greater than 3% and greater than 150 feet in length; the area will be protected from erosion by stabilizing the area with mulch, or another similarly effective BMP, if the activity ceases for more than 7 days. Exceptions include: 1) Snow or frozen ground; 2) Activities that will resume after 14 days; or 3) Arid or Semi-arid areas. This requirement does not apply to sedimentary basins or areas that drain thereto.

3.1.2 Permanent Stabilization

Permanent stabilization consists of the final planting of vegetation in all disturbed, unvegetated areas affected by construction. Permanent stabilization (groundcover) practices will be properly implemented within 30 days of final construction. See Section 3.3 for further details.

3.1.3 Temporary Erosion Control Practices

Prior to initiating construction, all temporary erosion and sediment control practices shown on the construction drawings will be in place. The erosion and sediment control details for these practices are located in Appendix D.

3.2 MAINTENANCE

All erosion and sediment control devices shown on the construction drawings shall be installed pursuant to the specifications in the construction details in Appendix D. These erosion and sediment control devices shall be checked: 1) on a weekly basis; and 2) within 72 hours of each 0.5-inch or greater rainfall event. A good faith effort will be made to inspect erosion and sediment control devices within 24 hours of a rainfall event that occurs Monday through Thursday.

Maintenance inspection reports will be completed after each inspection and included in the project file. If inspection results indicate a need for revision to the SWPPP, the plan shall be revised and implemented as appropriate, within seven calendar days following the inspection. The inspection reports shall identify any incidents of non-compliance. Copies of the report forms are to be completed by the designated SWPPP personnel inspector. A copy of the form to be used is attached in Appendix B and will be photocopied and used as needed for individual inspections.

Ineffective temporary erosion control measures shall be reported to the owner/contractor within 24 hours of identification so that they may be repaired in an efficient manner. Sediment will be removed from behind a silt fence when it reaches one-third the height of the barrier. The temporary erosion control devices shall be left in place until the site is permanently stabilized with vegetation (at least 70 percent cover). Following the completion of construction and planting activities, the

construction inspector shall conduct periodic site reviews to ensure that vegetation establishment is satisfactory. If vegetation cover is not adequate, special steps to correct problems shall be implemented such as re-seeding, mulching, sodding, or the use of erosion control blankets.

3.3 FINAL STABILIZATION AND CLEAN UP

After completion of final grading, the disturbed areas will be revegetated. All temporary soil erosion and sediment control measures shall be removed within 30 days after final site stabilization is achieved. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. All disturbed areas to be revegetated shall be seeded in accordance with soil erosion and sediment control practices. Revegetation of upland areas shall be conducted as specified in Table 3-1.

3.3.1 Seeding

When unfavorable conditions preclude permanent seeding, a temporary ground cover of quick germinating grasses shall be established. Permanent seeding will be done over all areas of soil disturbance using the seed mixture rates as indicated in Table 3-1. Adjustments made to table 3-1 may be made due to specific site characteristics, and/or upon the recommendation of a qualified professional.

Table 3-1
Seeding Mix and Rates

| Seed Mix | Application Rate (Pounds per 1,000 square feet) |
|--|---|
| Areas of slope less than 4H:1V | |
| K-31 Fescue | 8 |
| Areas of slope greater than or equal to 4H:1V | |
| Perennial Ryegrass | 8 |
| K-31 Fescue | 3 |

3.3.2 Fertilizing

Limestone shall be applied at a rate of two tons/acre or pulverized agricultural grade limestone at 90 lbs./1000sq. ft. A typical 12-12-12 fertilizer shall be applied at a rate of 100 lbs. per acre. The lime and fertilizer shall be applied evenly and incorporated into the top 4 to 6 inches of soil. Wetland areas will have no lime or fertilizer applied to them.

PART 4.0
OTHER POLLUTION
PREVENTION CONTROLS

4.0 OTHER POLLUTION PREVENTION CONTROLS

4.1 WASTE DISPOSAL

All waste material will be collected and stored in a secure container or removed from the project site. The waste container will be inspected regularly with contents disposed of properly by the owner. No waste oil or other petroleum-based products will be disposed of on site (e.g. buried, poured, etc.); but shall be taken off-site for proper disposal.

4.2 HAZARDOUS WASTE

Any hazardous waste material will be disposed of in the manner specified by local and state regulations and by the manufacturer. Site personnel will be instructed to be aware of this requirement (see Part 5).

4.3 SANITARY WASTE

All sanitary waste will be collected from portable units as required and properly disposed of off-site in compliance with local and state regulations.

4.4 OFF-SITE VEHICLE TRACKING

Public roads that provide access to the right-of-way will be monitored for any tracking of sediments (mud, etc.) from the site onto the road as follows:

- 1) Weekly during dry periods, and
- 2) Daily after rainfall events that leave the project area wet and construction activity is proceeding.

The same inspection process will be implemented for the generation of dust during dry periods.

4.5 NON-STORM WATER DISCHARGES

There are no non-storm water discharges expected with this construction activity. However, the following non-storm water discharges are allowed under section 1.3 B of the CGP:

1. Discharges from fire-fighting activities
2. Fire hydrant flushings

3. Waters used to wash vehicles where detergents are not used
4. Water used to control dust in accordance with Subpart 3.4 G of the CGP
5. Portable water including uncontaminated water line flushings
6. Routine external building wash down that does not use detergents.
7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
8. Uncontaminated air conditioning or compressor condensate.
9. Uncontaminated ground water or spring water
10. Fountain or footing drains where flows are not contaminated with process materials such as solvents.
11. Uncontaminated excavation dewatering
12. Landscape irrigation

PART 5.0
SPILL PREVENTION AND CONTROL PLAN

5.0 SPILL PREVENTION AND CONTROL PLAN

5.1 INTRODUCTION

The Spill Prevention and Control Plan (SPCP) describes measures to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the proposed project in the State of Missouri. This plan identifies the potentially hazardous materials to be used during this project; describes transport, storage, and disposal procedures for these substances; and outlines procedures to be followed in the event of a spill of a contaminating or toxic substance.

5.2 MATERIAL MANAGEMENT PRACTICES

Properly managing these materials on the construction site will greatly reduce the potential for storm water pollution of these materials. Good housekeeping along with proper use and storage of these construction materials form the basis for proper management of potentially hazardous material.

5.2.1 Good Housekeeping

The proper use of materials and equipment along with the use of general common sense greatly reduces the potential for contaminating storm water runoff. The following is a list of good housekeeping practices to be used during the construction project:

- Storage of hazardous materials, chemicals, fuels, and oils and fueling of construction equipment, shall not be performed within 100 feet of any stream bank, wetland, water supply well, spring, or other water body.
- Contractor and contractor's employees shall be properly trained in handling materials used and/or kept at the job site.
- Contractors shall have proper access to all necessary safety items.
- Trash containers will be provided for waste disposal, and regular site clean-up will be conducted.
- An effort will be made to store only enough product required to do the job.

- Materials stored on the site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacture's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of the product will be used before disposing of the container.
- Manufacturer's recommendations for proper use and disposal of a product will be followed.
- If surplus product must be disposed of, manufacturers or local and state recommended methods for proper disposal will be followed.
- When possible, materials should be stored with secondary containment and in a covered structure such as a building or job trailer.

5.2.2 Product-Specific Practices

Due to the chemical makeup of specific products, certain handling and storage procedures are required to promote the safety of handlers and prevent the possibility of pollution. Care shall be taken to follow all directions and warnings for products used on the site. All pertinent information can be found on the Material Safety Data Sheets (MSDS) for each product. The MSDS sheets should be located with each product container they represent. Several product-specific practices are listed in the following sections.

5.2.2.1 Petroleum Products

On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, that are clearly labeled. Preferably the containers will be stored in a covered truck or trailer that provides secondary containment for the products.

Bulk storage tanks having a capacity of greater than 55 gallons will be provided with secondary containment. Containment can be provided by a temporary earthen berm or other means. After each

rainfall, the contents of the secondary containment area will be inspected by the contractor. If there is no visible sheen on the collected water, it will be pumped away in a manner that does not cause scouring. If a sheen is present, it must be cleaned up prior to discharging the water.

Bulk fuel or lubricating oil dispensers shall have a valve that must be held open to allow the flow of fuel. During fueling operations, the contractor shall have personnel present to detect and contain spills.

5.2.2.2 Fertilizers

Fertilizers used to stimulate vegetation growth will be used in minimal amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to storm water.

5.3 SPILL CONTROL AND CLEANUP

In addition to the best management procedures discussed previously, the following spill control and cleanup practices will be followed to prevent storm water pollution in the event of a spill:

- Spills will be contained and cleaned up immediately after discovery.
- Manufacturers' methods for spill cleanup of a material will be followed as described on the material's MSDS.
- Materials and equipment needed for cleanup procedures will be kept readily available on the site, either at an equipment storage area or on contractor's trucks. Equipment to be kept on the site will include but not be limited to brooms, dust pans, shovels, granular absorbents, sand, saw dust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
- Personnel on the site will be made aware of cleanup procedures and the location of spill cleanup equipment.
- Toxic, hazardous, or petroleum product spills required to be reported by regulation will be documented to the appropriate federal, state, and local agencies.
- Spills will be documented and a record of the spills will be kept with this SWPPP.

If a spill occurs that is reportable to the federal, state, or local agencies, the contractor is responsible for making the notifications.

The federal reportable spill quantity for petroleum products is defined in 40 CFR 11.0 as any oil spill that:

- Violates applicable water quality standards,
- Causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or,
- Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

Currently in the State of Missouri, a reportable spill of petroleum is the discharge into the environment of more than 50 gallons. It is the responsibility of the owner and contractor to comply with current regulations if changes were to occur.

A list of commonly used hazardous materials and reportable quantities is included in Appendix C of this document; however, the federal reportable spill quantities for all hazardous materials are listed in 40 CFR, Part 302.4 in the table entitled "List of Hazardous Substances and Reportable Quantities." A procedure for determining a reportable spill is included in Appendix C along with a copy of the Spill Report Form to be filled out in case of a spill.

The reportable spill quantity for hazardous materials in the State of Missouri follows the Federal reportable quantity listed in 40 CFR, Part 302.4

If a spill is reportable, the contractor's superintendent will, within 2 hours of the spill, notify the Owner, as well as:

Federal:

National Response Center - 1-800-424-8802

EPA Region 7: 24-hour Emergency Response Center - (913) 281-0991

State:
Missouri Emergency Response Commission

Department of Natural Resources

(573) 634-2436 (in-state, 24 hours)

If a reportable release occurs, a modification to the SWPPP must be made within 14 days. The modification shall include: a description of the release, the date of the release; an explanation of why the spill happened; a description of procedures to prevent future spills or releases from happening; and a description of response procedures should a spill or release occur again. A written description of the release must be submitted to the permitting authority that includes: a description of the release, including the type of material and an estimated amount of spill; the date of the release; an explanation of why the spill happened; and a description of the steps taken to prevent and control future releases. These modifications to the SWPPP must be made by the contractor and will be documented on the form in Appendix C.

APPENDICES

APPENDIX A
CONSTRUCTION
PLANS AND DETAILS

APPENDIX B
INSPECTION FORMS

**STORMWATER MANAGEMENT
SITE INSPECTION FORM**

Inspector Name/Title: _____ Date _____

Project Name _____

Project Number: _____ Client _____

Contractor _____

Has there been any Precipitation in the past 7 days? _____ Yes _____ No
If so, describe, as well as current weather conditions:

Do any BMP's need maintenance or attention? _____ Yes _____ No

Describe any deficiencies and measures taken to correct them:

Are there any areas where land disturbance operations have temporarily or permanently stopped? _____ Yes _____ No

Are there major grading activities taking place on site? _____ Yes _____ No

Note any changes that will be made to the SWPPP:

Location of pollutant discharge/ additional concerns or comments:

SIGNATURE OF INSPECTOR _____

**STORMWATER MANAGEMENT
SITE INSPECTION FORM
EXPANDED**

The deficiencies present and corrective measures taken to increase the effectiveness of BMP's at _____ are as follows:

SILT FENCE:

EARTH DIKES/DIVERSION BERMS:

SEDIMENT TRAPS/ROCK CHECKS:

PIPE SLOPE DRAINS

DRAINAGE SWALE:

SEDIMENT BASIN:

BUFFER STRIPS/VEGETATIVE BYWAYS:

CRITICAL AREAS THAT NEED TO BE MONITORED:

APPENDIX C
SPILL REPORT FORM

Procedures for Determining if a Hazardous Material Spill is a Reportable Quantity

- 1) First determine the type and quantity of material that has been spilled.
- 2) Obtain a material safety data sheet (MSDS) for the spilled material and determine whether any of the constituents are listed in Table 302.4 in 40 CFR 302.
- 3) If none of the constituents in the spilled material are listed in the table (excluding ethylene glycol), the spill is not reportable.
- 4) If the constituents in the spilled material are listed in the table, use the following equation to determine the pounds of material spilled:

$$\text{Pounds Spilled} = (V) (Wt\%) (Sg) (0.0834)$$

Where:

V = Volume of the material spilled, in gallons

Wt% = The weight percent of the constituents in the spilled material (see the MSDS)

Sg = Specific gravity of spilled material (see MSDS)

For Example:

V = 7 Gallons

Wt% = 1.04

Sg = 1.04

$$\text{Pounds Spilled} = (7) (3.5) (1.04) (0.834) = 2.13 \text{ pounds}$$

- 5) If, based on the calculation, the pounds spilled are Greater than the Final RQ (reportable quantity) value listed in Table 302.4 of 40 CFR 302 or the State's reportable quantity minimum amount, the spill must be reported to the appropriate federal, state, and local agencies.

Storm Water Pollution Prevention Plan

Spill Report Form

Spill Reported By: _____
Name Phone Number

Date Reported: _____ Time: _____

Date of Spill: _____ Time: _____

Name of Facility: _____

Legal Description: _____ 1/4 _____ 1/4 _____ 1/4 SEC _____, TWP _____, Range _____,
County _____

Describe Spill Location and Events Leading to Spill: _____

Material Spilled: _____

Source of Spill: _____

Amount Spilled (Gallons or Pounds)- _____

Amount Spilled to Waterway (Gallons or Pounds): _____

Nearest Municipality: _____

Containment or Cleanup Action: _____

List Environmental Damage (fish kill, etc.) _____

List Injuries or Personal Contamination: _____

Date and Time Cleanup Completed or Terminated: _____

If Cleanup Delayed, Nature and Duration of Delay: _____

Description of Materials Contaminated: _____

Approximate Depth of Soil Excavation: _____

Action To Be Taken to Prevent Future Spills: _____

Agencies Notified:

Local: _____ Date: _____

State: _____ Date: _____

Federal: _____ Date: _____

Signed: _____

Contractor Superintendent or
Environmental Inspector

Table of Common Hazardous Materials Reportable Quantities

| Hazardous Substance | CASRN | Statutory Codedagger | RCRA Waste # | Final RQ Pounds (Kg) |
|------------------------|------------|----------------------|--------------|----------------------|
| Acetic Acid | 64-19-7 | 1 | | 5000 (2270) |
| Acetone | 67-64-1 | 4 | U002 | 5000 (2270) |
| Aluminum Sulfate | 10043-01-3 | 1 | | 5000 (2270) |
| Ammonia | 7664-41-7 | | | 100 (45.4) |
| Arsenic | 1327-53-3 | 1,4 | PO11 | 1 (0.454) |
| Chlorine | 7782-50-5 | 1,3 | | 10 (4.54) |
| Chloroform | 67-66-3 | 1,2,3,4 | UO44 | 10 (4.54) |
| Creosote | N.A. | 4 | UO51 | 1 (0.454) |
| Cupric Sulfate | 7758-98-7 | 1 | | 10 (4.54) |
| Diazanone | 333-41-5 | 1 | | 1 (0.454) |
| Ethanal | 75-07-0 | 1,3,4 | UOO1 | 1000 (454) |
| Ethyl Chloride | 75-00-3 | 2,3 | | 1000 (454) |
| Ethylene Glycol | 107-21-1 | 3 | | 5000 (2270) |
| Fluorine | 7782 | 4 | PO56 | 10 (4.54) |
| Hydrochloric Acid | 7647-01-0 | 1,3 | | 5000 (2270) |
| Lead | 7439-92-1 | 2 | | 10 (4.54) |
| Lindane | 58-89-9 | 1,2,3,4 | U129 | 1 (0.454) |
| Mercury | 7439-97-6 | 2,3,4 | U151 | 1 (0.454) |
| Phosphoric Acid | 7664-38-2 | 1 | | 5000 (2270) |
| Phosphorus | 7723 | 1,3 | | 1 (0.454) |
| Potassium Permanganate | 7722-64-7 | 1 | | 1000 (454) |
| Propane | 96-12-8 | 4 | U194 | 5000 (2270) |
| Sodium Hydroxide | 1310-17-2 | 1 | | 1000 (454) |
| Sodium Hypochlorite | 7681-52-9 | 1 | | 100 (45.4) |
| Vinyl Chloride | 75-01-4 | 2,3,4 | U239 | 100 (45.4) |
| | | | | |

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**APPENDIX D
DESCRIPTION OF
IMPLEMENTED BMP'S**

Temporary Seeding

Practice Description Recommended

The establishment of fast-growing annual vegetation to provide economical erosion control for up to 12 months and reduce the amount of sediment moving off the site. Annual plants which sprout rapidly and survive for only one growing season are suitable for establishing temporary vegetative cover.

This practice applies where short-lived vegetation can be established before final grading or in a season not suitable for permanent seeding. It helps prevent costly maintenance operations on other erosion control systems such as sediment basin clean-out. Temporary or permanent seeding is necessary to protect earthen structures such as dikes, diversions, and the banks and dams of sediment basins.

Minimum Requirements

Prior to start of construction, plant materials, seeding rates and times should be specified by a qualified professional. Plans and specifications should be referred to by field personnel throughout the construction process. To ensure emergence, vigorous growth of seedlings and continued plant growth, prepare seedbed, add lime and fertilizer according to soil tests, mulch all but the most ideal sites and follow seeding dates.

- **Seedbed Preparation:** Loosen soil to depth of 3 inches for broadcast seeding or drilling. If compacted, loosen soils for no till drilling. Avoid excessively wet conditions.
- **Amendments:** Fertilizer and lime (if soil pH is less than 5.3) incorporated 3 to 6 inches into the soil. See Table 5.1.
- **Seed Quality:** Certified seed, tested within the past 9 months
- **Plants:** Recommended temporary erosion control plant species. Rate of application and seeding dates are listed in Tables 5.2 and 5.3.
- **Mulch:** 75% of the ground surface should be covered with approved mulching materials (See *Mulching*). Mulching is critical for the less than ideal situations found on development sites.
- **General:** Inspect seeded areas 2 to 4 weeks after seeding for establishment, erosion control and weed control. Repair and reseed as necessary.
- **Reseed:** After 1 year if site is not in permanent vegetation

Installation

Successful vegetative establishment is directly dependent on the nutrients in the soil. For optimum results, take soil samples from the top 6 inches in each area to be seeded. Submit samples to a soil testing laboratory for liming and fertilizer amendment recommendations.

Seedbed Preparation

Seedbed preparation is essential for the seed to germinate and grow. For broadcast seeding and drilling, loosen the soil to a depth of approximately 3 inches. For no-till drilling, the soil surface does not need to be loosened unless the site has surface compaction. Use a disk, ripper, chisel, harrow or other acceptable tillage equipment to loosen compacted, hard or crusted soil surfaces. Avoid preparing the seedbed under excessively wet conditions.

Liming

Acid soils with an extremely low pH can prevent seeding success. Most of the recommended temporary vegetation is tolerant of low pH soils and will establish on all but the lowest pH soils. If soil pH in the region is known to be extremely low, **conduct a soil pH test** to determine if limestone is necessary for temporary seeding. Amend soils with lime according to information in Table 5.1. Soils with a pH above 7.0 should not be limed.

Table 5.1 Liming Requirements for Temporary Sites

| pH Test | Plant Response | Recommended Application of Agricultural Limestone |
|------------------|------------------|---|
| below 6.0 | poor growth | lime according to soil test |
| 6.0 - 6.5 | adequate growth | no lime recommended |
| greater than 6.5 | greater than 6.5 | no lime recommended |

Fertilizer

Subsoil will most likely be deficient in nutrients required for growth. A **soil test will provide the best guide** for the amount and types of fertilizer to apply for optimum plant growth. A general recommendation is to broadcast 90 lbs. of **actual** N-P-K per acre for areas receiving more than 30 inches of precipitation and 50 lbs. of N-P-K per acre in areas receiving less than 30 inches of precipitation.* For best results incorporate the fertilizer into the top 3 to 6 inches before seeding.

* For example, to compute the bulk pounds of product to use

$$\frac{\text{Actual \# Needed}}{\% \text{ Available}} \quad \text{or} \quad \frac{90\#}{28\%} = 321\# \text{ Bulk}$$

Seeding

Apply seed evenly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. Plant small grains no more than 1 1/2 inches deep. Plant grasses and legumes no more than 1/2 inch deep. Prior to mulching, harrow, rake or drag a chain to lightly incorporate broadcast seed and enhance

germination. Cover broadcast or drilled seed with mulch (See *Mulching*). On bare soils, firm lightly with a roller or a cultipacker.

Table 5.2 Temporary Seeding Plant Materials and Minimum Seeding Rate *

| Species | Seeding Rates | | Plant characteristics |
|---|------------------|-----------------------|---|
| | lbs. per Acre | lbs. per 1,000 sq.ft. | |
| Oats | 80 | 2 | not cold tolerant, height up to 2 feet |
| Cereals:Rye/Wheat | 90 / 120 | 2.0 / 2.5 | cold tolerant, height up to 3 feet, low pH tolerant |
| Millet, Sudan grass | 45 / 60 | 1.0 / 1.25 | warm season annual, aggressive growth, height up to 5 feet |
| Annual Ryegrass | 75 | 2 | may be added to mix, not heat tolerant, height up to 16 inches |
| Annual Lespedeza** plus Tall Fescue | 15 plus 45 | 0.5 plus 1.0 | warm season annual legume, makes own nitrogen, tolerates low pH |

* In areas receiving less than 30 inches of precipitation, use 75 percent of these rates.

** If there is any possibility that the seeding will be required to control erosion for more than one year, then consider the addition of fescue or another permanent species as part of a mixture when seeding.

Planting Dates

Plant according to the design plan. In absence of a plan, choose a recommended temporary species or mixture appropriate for the season from Tables 5.2 and 5.3. Plant during optimum seeding dates if at all possible. Use mulch if planting during acceptable seeding dates. Roll and cultipack broadcast seed for good soil-to-seed contact. Use high quality seed. For best results use certified seed. When using uncertified seed, use the highest recommended seeding rate.

Table 5.3 Seeding Dates for Temporary Seedings

[illegible]

1- if site may not be developed within one year, consider permanent species

Table Key:

| | |
|--------------------------|--|
| Optimum Seeding Dates | |
| Acceptable Seeding Dates | |

Mulching

Mulching is recommended to conserve moisture and reduce erosion. Evenly cover 75% of the ground surface with mulch material specified in the design plan. Tack or tie down according to plan (See *Mulching*).

Construction Verification Check materials and installation for compliance with specifications.

Troubleshooting: Consult with a qualified design professional if the following occurs:

- Design specifications for seed variety, seeding dates or mulching cannot be met; substitutions may be required. Unapproved substitutions could lead to failure.

Maintenance

Check temporary seedings within 2 to 4 weeks of planting to see if stands are of adequate thickness (more than 30% of the ground surface covered). Stands should be uniform and dense for best results. Fertilize, reseed and mulch bare and sparse areas immediately to prevent erosion. Mowing is not recommended for cereals seeded alone. Cereals seeded with a grass can be mowed when height is greater than 12 inches. However, to prevent damage to grasses, do not mow shorter than 4 inches. Millets and sudangrass should be mowed before height is greater than 6 inches to allow regrowth and continued erosion protection.

Annual lespedeza and tall fescue may be mowed after height exceeds 8 inches. Do not mow shorter than 4 inches. Replant temporary or permanent vegetation within 12 months as annual plants die off and no longer provide erosion control. Consider no-till planting where possible.

Common Problems

Inadequate seedbed preparation; causes poor seedling emergence and growth—repair gullies, prepare seedbed, fertilize, lime (if necessary), mulch and reseed. Unsuitable choice of plant materials; resulting in poor germination or inadequate stand (less than 30% of the ground surface covered)—choose plant materials appropriate for season, prepare seedbed and replant. Inadequate mulching; resulting in poor or spotty stands—cover area evenly and tack or tie down mulch properly, especially on slopes, ridges and in channels.

Lack of nitrogen; causes poor plant vigor, yellow color and short height—add 50 lbs. of nitrogen fertilizer per acre. Do not apply over the top of existing plants from June 1 to August 15 or on frozen ground.

Dying plants; usually caused by soil compaction that limits root growth and water availability to plants—loosen soil if reseeding is necessary or before seeding permanent vegetation.

Detention Ponds and Basins

Practice Description

A dam designed to hold stormwater runoff and release the water slowly to prevent downstream flooding and stream erosion. Detention ponds and basins are an extremely effective water quality control measure and significantly reduce the frequency of erosive floods downstream. Ideally, a detention pond will store at least the first 1/2 inch of runoff from the design storm and release the remainder at the predevelopment rate. Their usage is best suited to larger, more intensively developed sites of over 20 acres.

Regular detention ponds have less storage and different outlet conduits than extended detention ponds. Both can have permanent pools of water or be designed as dry basins. Both can be designed to hold sediment.

Recommended Minimum Requirements

Prior to start of construction, detention ponds should be designed by a registered design professional. Plans and specifications should be referred to by field personnel throughout the construction process.

The detention pond should be built according to the planned grades and dimensions.

- **Drainage Area:** 20 to 50 acres
- **Structure Life:** 10 years or more
- **Detention:** 24 to 48 hour detention of runoff from the design storm
- **Trap efficiency:** The length to width ratio of the basin should be 2:1 or greater; 5:1 is optimal to capture fine sediments. Inlet: Locate as far upstream as possible from the outlet. Collector Channels: Leading to the detention pond should be constructed of riprap, concrete or paved material to route water to the detention pond.
- **Anti-seep Devices:** Either of the following is recommended:
 - At least two watertight anti-seep collars should be used around the outlet conduit; collars should project 1 to 3 feet from the pipe, or
 - a sand diaphragm
- **Embankment Slopes:** 2.5:1 or flatter; 3:1 where maintained by tractor or other equipment.
- **Basin Slopes:** No steeper than 3:1 and no flatter than 20:1
- **Vegetative Buffer:** A minimum width of 25 feet around the pond
- **Settlement:** Allow for at least 10% of extra fill
- **Site Access:** Reserved for bringing in heavy maintenance equipment and to remove and dispose of sediments

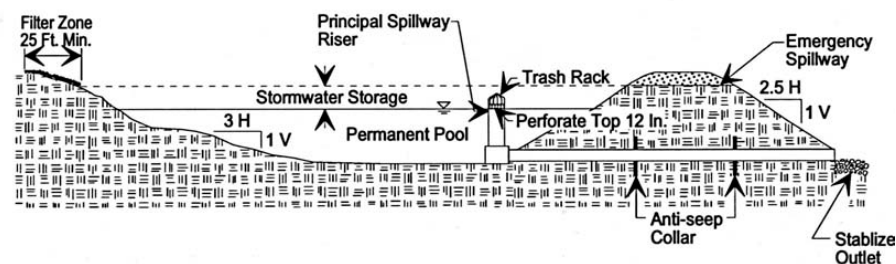


Figure 5.43 Typical Detention Pond

Construction

Site Preparation

Locate the detention pond as close to the stormwater collection system as possible, considering pool area, dam length and spillway conditions. Locate all underground utilities. Clear, strip and grub the dam location, removing all woody vegetation, rocks and other objectionable material.

Follow all federal, state and local requirements on impoundment sites.

Dispose of trees, limbs, logs and other debris in designated disposal areas.

Excavate the embankment foundation (outlet apron first), stockpiling any surface soil having high amounts of organic matter for later use.

Principal Spillway

Clear the sediment pool to facilitate sediment clean out. Situate the spillway pipe and riser on a firm, even foundation. Prepare the pipe bedding.

Place around the barrel a 4-inch layer of moist, clayey, workable soil (not pervious material such as sand, gravel or silt), and compact with hand tampers to at least the density of the foundation soil. (Don't raise the pipe from the foundation when compacting under the pipe haunches.) Perforate the top 12 inches of the riser with 1/2-inch diameter holes spaced 3 inches apart. Set the top elevation of the riser to allow the detention pond to store the first 1/2 inch of basin runoff in this 12-inch perforated zone, or according to the design plan.

Embed the riser at least 12 inches into concrete (which serves as an anti-flotation block). The weight of the concrete should balance the buoyant force acting on the riser.

$$\text{Buoyant Force} = \text{Volume of Riser} \times 62.4 \text{ lbs/ft}^3$$

Surround the base of the riser with 2 feet of clean uniformly graded stone.

Place a trash rack around the riser inlet. The trash rack should have 4- to 6-inch square openings.

At the pipe outlet, install a riprap or concrete apron at least 5 feet wide and 10 feet long to a stable grade.

Optional: A slotted or V-notch weir, constructed within an open channel spillway, can be used in place of a riser and conduit as a principal spillway.

Embankment

Scarify the embankment foundation before placing fill.

Use fill from predetermined borrow areas. It should be clean, stable, mineral soil free of organic material, roots, woody vegetation, rocks and other debris; and must be wet enough to form a ball without crumbling, yet not so wet that water can be squeezed out.

Place the most permeable soil in the downstream toe and the least permeable in the center portion of the dam.

Compact the fill material in 6- to 8-inch continuous layers over the length of the dam. (One way is by routing construction equipment over the dam so that each layer is traversed by at least one wheel of the equipment). Tracked construction equipment does not provide adequate compaction.

Protect the spillway barrel with 2 feet of hand tamped, compacted fill before traversing over the pipe with equipment. Place a stake at the height sediment must be cleaned out of the basin (50% of design elevation).

Emergency Spillway

Construct the spillway in undisturbed soil around one end of the embankment and locate it so that all excess flow will return to the receiving channel without damaging the embankment.

Erosion Control

Stabilize the spillway with vegetation as soon as grading is complete; or install paving material to finished grade if the spillway is not to be vegetated.

Minimize the size of all disturbed areas. At the completion of each phase of construction, vegetate the disturbed areas to minimize erosion.

Use temporary diversions to prevent surface water from running onto disturbed areas.

Divert sediment-laden water to the upper end of the sediment pool to improve trap effectiveness.

Direct all runoff into the pond at low velocity.

Stabilize all disturbed areas (except the lower one-half of the sediment basin) immediately after construction.

Safety

Because detention ponds that impound water are hazardous, the following precautions should be taken:

- Avoid steep slopes; cut and fill slopes should be 2.5:1 or flatter; 3:1 where maintained by tractor or other equipment.
- Fence area and post with warning signs if trespassing is likely.
- Provide a means of dewatering the basin between storm events.

Construction Verification

Check the finished grades and configuration for all earthwork. Check elevations and dimensions of all pipes and structures.

Troubleshooting: Consult with registered design professional if the following occurs:

- Seepage is encountered during construction; it may be necessary to install drains.
- Variations in topography on site indicate detention pond will not function as intended.
- Design specifications for fill, pipe, seed variety or seeding dates cannot be met; substitutions may be required. Unapproved substitutions could lead to failure.

Maintenance

Inspect the detention pond after each storm event.

Remove and properly dispose of sediment when it accumulates to one-half the design volume.

Periodically check the embankment, emergency spillway and outlet for erosion damage, piping, settling, seepage or slumping along the toe or around the barrel; and repair immediately.

Remove trash and other debris from the riser, emergency spillway and pool area. Clean or replace the gravel around the riser if the sediment pool does not drain properly. Remove nuisance vegetation on embankment.

Remove rodents that burrow into the dam.

Common Problems

Piping failure along conduit; caused by improper compaction, omission of anti-seep collar, leaking pipe joints or use of unsuitable soil—repair damage, check pipe joints and seal leak if necessary. Use suitable soil for backfill. Consider installing anti-seep collar.

Erosion of spillway or embankment slopes; caused by inadequate vegetation or improper grading and sloping—repair damage and establish suitable grade and/or vegetation.

Slumping and/or settling of embankment; caused by inadequate compaction and/or use of unsuitable soil—excavate failed material and replace with properly compacted suitable soil.

Slumping failure; caused by steep slopes—excavate failed material and replace with properly compacted suitable soil. Consider flattening slope.

Erosion and caving below principal spillway; caused by inadequate outlet protection—repair damaged area and install proper outlet protection.

Basin not located properly for access; results in difficult and costly maintenance—relocate basin to more accessible area or improve access to site.

Sediment not properly removed; results in inadequate storage capacity— remove sediment at regular frequent intervals and after major storms.

Lack of anti-flotation; results in riser damage from uplift—install antiftotation structure.

Lack of trash guard; results in the riser and barrel being blocked with debris—remove blockage and install properly designed trash guard.

Principal and emergency spillway elevations too high relative to top of dam; results in overtopping—lower principal and emergency spillway elevations to decrease overtopping potential.

Sediment disposal area not designated on design plans; results in improper disposal of accumulated sediment—locate acceptable disposal area and indicate location on plans.

Safety and/or health hazard from pond water; caused by gravel clogging the drainage system—clean out clogged drainage system on regular basis.

Principal spillway too small; results in frequent operation of emergency spillway and increased erosion potential—consider increasing capacity of principal spillway, install supplemental spillway or install suitable erosion protection in emergency spillway.

Stormwater released from pond or basin too rapidly; caused by spillway pipe sized too large—consider resizing spillway pipe.

Riprap-lined Channel

Practice Description

Waterways with an erosion-resistant rock lining designed to carry concentrated runoff to a stable outlet. This practice applies where conditions are expected to be unsuitable for use of grass-lined channels, such as: 1) channels with average grades over 5%, continuous or prolonged flows occur, potential for damage from traffic exists, or soils are erodible and soil properties are not suitable for vegetation; 2) design velocities exceed 5 feet per second; 3) channel location warrants the use of increased protection; or 4) channel will have prolonged periods of wetness which will hinder growth of grass.

Recommended Minimum Requirements

Prior to start of construction, riprap-lined channels should be designed by a registered design professional. Plans and specifications should be referred to by field personnel throughout the construction process. The channel should be built according to planned alignment, grade and cross section.

- **Cross Section:** As shown in the design specifications
- **Side Slopes:** 2:1 or flatter
- **Riprap/Rock:** Size and gradation as shown in design specifications. Riprap should consist of a well-graded mixture of stone. Larger stone should predominate, with sufficient smaller sizes to fill the voids between the stones. The diameter of the largest stone size should be not greater than 1.5 times the d_{50} size.

- **Riprap Thickness:** Minimum thickness of riprap should be 1.5 times the maximum stone diameter.
- **Stone or Rock Quality:** Select stone for riprap from field stone or quarry stone. The stone should be hard, angular, and highly chemical- and weather- resistant. The specific gravity of the individual stones should be at least 2.5.
- **Foundation:** Geotextile filter fabric or rock aggregate filter layer under the riprap
- **Outlet:** Stable, non-erosive

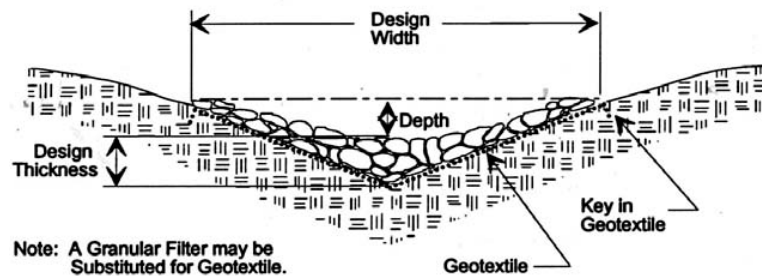


Figure 5.20 Typical V-shaped Riprap-lined Channel

Construction

Site Preparation

Determine exact location of underground utilities.

Remove brush, trees and other debris from the channel and spoil areas, and dispose of properly.

Excavate cross section to the lines and grades shown in design specifications. Over excavate to allow for thickness of riprap and filter material.

Installation

Install geotextile fabric or aggregate in the excavated channel as a foundation for the riprap. Anchor fabric in accordance with design specifications.

As soon as the foundation is prepared, place the riprap to the thickness, depth and elevation shown in the design specifications. It should be a dense, uniform and well-graded mass with few voids.

Blend the finished rock surface with the surrounding land surface so there are no overfalls, channel constrictions or obstructions to flow.

Erosion Control

Stabilize channel inlet points and install needed outlet protection prior to or during channel construction.

Stabilize disturbed areas after construction is completed.

Construction Verification

Check finished grade and cross section of channel throughout the length of the watercourse. Verify channel cross sections at several locations to avoid flow constrictions.

Troubleshooting: Consult with registered design professional if the following occurs:

- Variations in topography on site indicate channel will not function as intended; changes in plan may be needed.
- Design specifications for riprap sizing, filter fabric or aggregate filter cannot be met; substitution may be required. Unapproved substitutions could result in channel erosion.

Maintenance

Inspect channels at regular intervals and after storm events.

When stones have been displaced, remove any debris and replace the stones in such a way as to not restrict the flow of water.

Give special attention to outlets and points where concentrated flow enters the channel, and repair eroded areas promptly.

Check for sediment accumulation, piping, bank instability and scour holes; repair promptly.

Common Problems

Foundation excavation not deep enough or wide enough; may cause riprap to restrict channel flow and result in overflow and erosion— deepen channel and replace riprap.

Side slopes too steep; causes instability, rock material movement and bank failure—flatten side slopes.

Filter omitted or damaged during stone placement; may result in piping and bank instability— install filter and replace stone.

Riprap poorly graded or stones not placed to form a dense, stable channel lining; may result in rock displacement and erosion of the foundation—replace riprap with properly sized, well graded material.

Riprap installed smaller than specified; may result in rock displacement— selectively grouting over rock materials may stabilize the situation.

Riprap not extended far enough downstream; may result in undercutting— the channel should outlet on a stable location; extend riprap as needed.

Riprap not blended to ground surface; may result in gully along edge of riprap— regrade riprap to blend with ground surface.

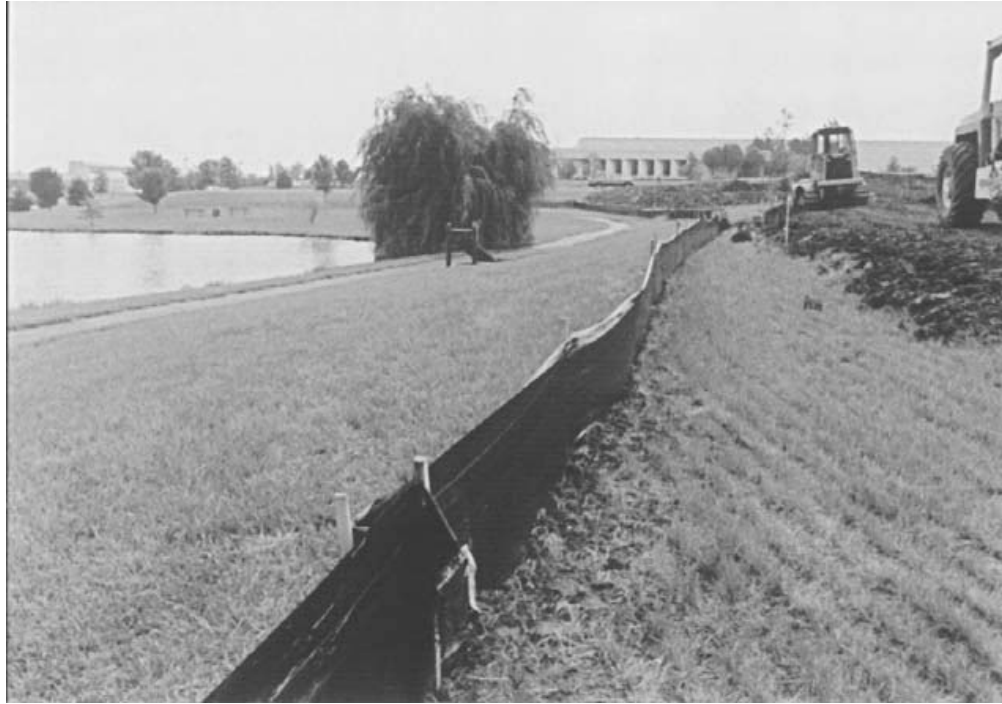
Riprap not installed until after washout of other materials has occurred— replace eroded material and install riprap.

Riprap just dumped and not properly shaped; may result in rock displacement and erosion—repair eroded area and reshape riprap to attain proper channel shape.

Sediment Fence

Practice Description

A temporary sediment barrier consisting of a geotextile fabric which is attached to supporting posts and trenched into the ground. Sediment-laden runoff ponds uphill from the sediment fence and runoff is temporarily stored to allow sediment to settle out of the water. This practice applies where sheet erosion occurs on small disturbed areas. Sediment fences are intended to intercept and detain small amounts of sediment from disturbed areas in order to prevent sediment from leaving the site. Sediment fences can also prevent sheet erosion by decreasing the velocity of the runoff.

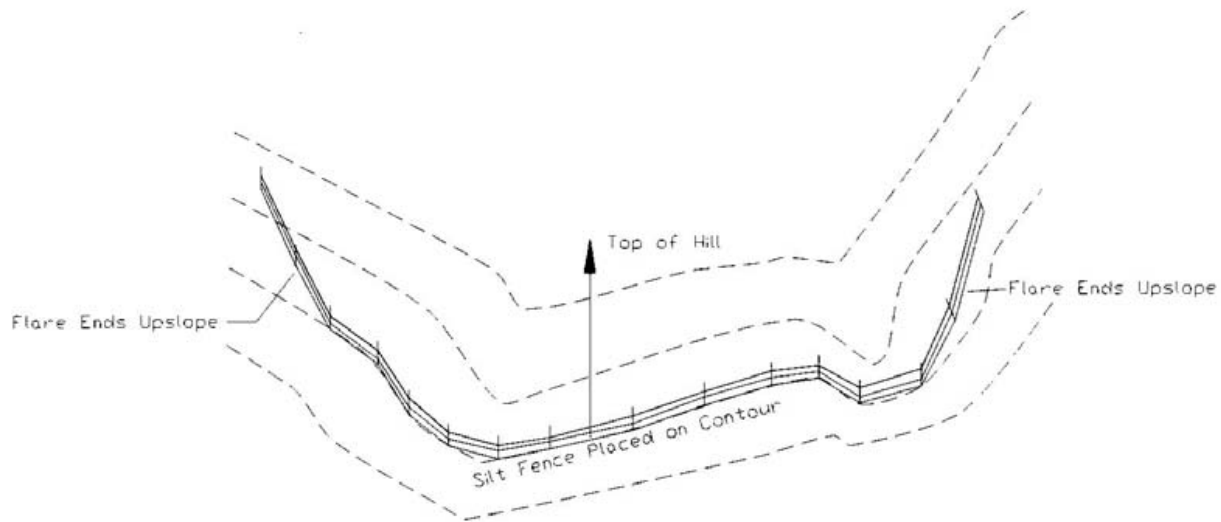


Prior to start of construction, sediment fences should be designed by a qualified professional. Plans and specifications should be referred to by field personnel throughout the construction process.

- **Drainage Area:** Limited to 1/4 acre per 100 feet of fence. Area is further restricted by slope steepness as shown in Table 5.16.
- **Location:** Fence should be built on a nearly level grade and at least 10 feet from the toe of the slope to provide a broad shallow sediment pool. Install on the contour, where fence can intercept runoff as a sheet flow; not located crossing channels, waterways or other concentrated flow paths; not attached to existing trees.
- **Length:** Maximum of 600 feet; flare ends of fence uphill to temporarily impound water as shown in Figure 5.33a.

Table 5.16 Typical Land Slope and Distance for Sediment Fence

| Land Slope (%) | Maximum Slope Distance * above Fence (feet) |
|-----------------|--|
| less than 2 | 100 |
| 2 to 5 | 75 |
| 5 to 10 | 50 |
| greater than 10 | * |



* Follow manufacturers' recommendations for proper spacing.

Figure 5.33a Placement of Sediment Fence

- **Spacing of Support Posts:** 10 feet maximum for fence supported by wire; 6 feet maximum for high strength fabric without supportive wire backing
- **Trench:** Bottom 1 foot of fence must be buried minimum of 6 inches deep.
- **Impounded Water Height:** Depth of impounded water should not exceed 1.5 feet at any point along the fence.
- **Support Posts:** 4-inch diameter wood or 1.33 lb/linear foot steel, buried or driven to a depth of 24 inches with support wire; 2-inch square wood or 1.0 lb/linear foot steel without support wire. Steel posts should have projections for fastening fabric.

Table 5.17 Example Specifications for Sediment Fence Fabric

| Physical Property | Minimum Requirement |
|---|---------------------|
| Filtering Efficiency | 85% |
| Tensile strength at 20% (maximum) elongation: | |
| Standard strength | 30 lb/linear inch |
| High strength | 50 lb/linear inch |

Source: Adapted from North Carolina Field Manual, 1991

- **Support Wire:** Wire fence (14-gauge with 6-inch mesh), necessary if standard strength fabric is used
- **Reinforced, Stabilized Outlets:** Should be located to limit water depth to 1.5 feet measured at lowest point along crest line.
Crest Height: 1 foot maximum
Width of splash pad: 5 feet maximum
Length of splash pad: 5 feet minimum
Supports: 4 foot spacing
- **Synthetic Geotextile Fabric:** Conforming to specifications in Table 5.17 and containing ultraviolet light inhibitors and stabilizers. **Minimum design life of 6 months.**

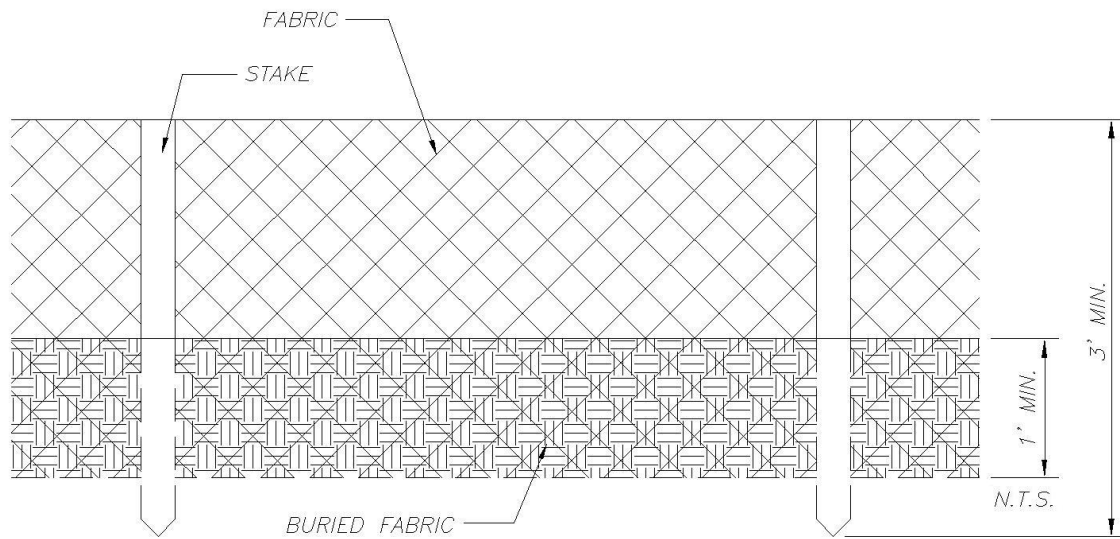


Figure 5.33 Installation of Sediment Fence

Construction

Site Preparation

Determine exact location of underground utilities. Grade alignment of fence as needed to provide broad, nearly level area upstream of fence.

Fence Installation

Dig a trench at least 6 inches deep along the fence alignment as shown in Figure 5.34.

Drive posts at least 24 inches into the ground on the downslope side of the trench. Space posts a maximum of 10 feet if fence is supported by wire, or 6 feet if high strength fabric and no support fence is used.

Fasten support wire fence to upslope side of posts, extending 6 inches into the trench as shown in Fig. 5.33.

Attach continuous length of fabric to upslope side of fence posts. Try to minimize the number of joints. Avoid joints at low points in the fence line. Where joints are necessary, fasten fabric securely to support posts and overlap to the next post.

Place the bottom 1 foot of fabric in the 6-inch deep trench (minimum), lapping toward the upslope side. Backfill with compacted earth or gravel as shown in Figure 5.34.

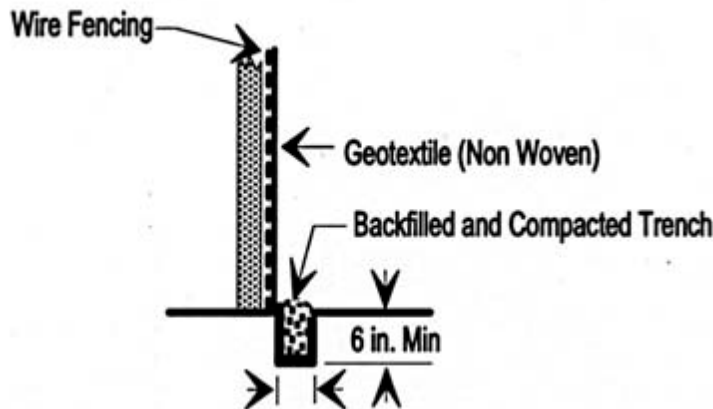


Figure 5.34 Detail of Sediment Fence Installation

To reduce maintenance, excavate a shallow sediment storage area in the upslope side of the fence. Provide good access in areas of heavy sedimentation for clean out and maintenance.

Reinforced Stabilized Outlet Installation

Allow for safe bypass of storm flow to prevent overtopping failure of fence. Set outlet elevation so that water depth cannot exceed 1.5 feet at the lowest point along the fence. Drive posts securely at least 24 inches into the ground, at a spacing of 4 feet. Install a horizontal brace between the support posts to serve as an overflow weir and to support the top of the fabric. Immediately downslope of the fabric, excavate foundation for splashpad a minimum of 5 feet wide, 5 feet long and 1 foot deep. Place 1 foot of riprap in the excavated foundation. The surface of the riprap should be flush with the undisturbed ground (no outfall).

Erosion Control

Stabilize disturbed areas in accordance with vegetation plan.

Construction Verification

Check finished grades and dimensions of the sediment fence. Check materials for compliance with specifications.

Troubleshooting: Consult with registered design professional if any of the following occur:

- Variations in topography on site indicate sediment fence will not function as intended; changes in plan may be needed.

- Design specifications for filter fabric, support posts, support fence, gravel or riprap cannot be met; substitutions may be required. Unapproved substitutions could lead to failure.

Maintenance

Inspect sediment fences at least once a week and after each rainfall. Make any required repairs immediately.

Should the fabric of a sediment-fence collapse, tear, decompose or become ineffective, replace it promptly.

Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid damaging or undermining the fence.

Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

Common Problems

Drainage area too large or too much sediment accumulation allowed before cleanout; results in overtopping, sagging or collapse of fence. Increase sediment storage capacity upslope of fence or remove accumulation more frequently—repair fence.

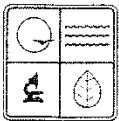
Approach too steep; results in collapse of fence due to high velocity or undercutting of fence—reduce slope of approach area, or consult with registered design professional.

Fence not adequately supported; results in sagging or collapse of fence—add additional supports.

Bottom of fence not buried properly, results in undercutting of fence--reinstall fence using proper method of trenching.

Fence installed across drainageway; results in sagging, collapse or undercutting of fence—relocate fence away from drainageway.

APPENDIX E
FINAL STABILIZATION TERMINATION
FORM H



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH
(SEE MAP FOR APPROPRIATE REGIONAL OFFICE)

FORM H - REQUEST FOR TERMINATION OF A GENERAL PERMIT

UNDER MISSOURI CLEAN WATER LAW

1.00 TYPE OF GENERAL PERMIT REQUESTED TO BE TERMINATED

1.10 PERMIT NUMBER

MO —

2.00 FACILITY

| | | | |
|---------|------|--------|----------|
| NAME | | COUNTY | |
| ADDRESS | CITY | STATE | ZIP CODE |

3.00 OWNER

| | | |
|------|--------|-------|
| NAME | E-MAIL | PHONE |
|------|--------|-------|

APPENDIX F
RELEVANT PERMITS

APPENDIX G
SWPPP AMENDMENTS

**APPENDIX G
SWPPP AMENDMENTS**

| Update | Date |
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1) Any changes made to the SWPPP or onsite erosion control shall be noted here.

APPENDIX H
GRADING AND STABILIZATION LOG

APPENDIX H

GRADING AND STABILIZATION LOG

[illegible]

APPENDIX I
SWPPP TRAINING LOG

APPENDIX I

SWPPP TRAINING LOG

[illegible]

***SWPPP Training is not required; if training occurs it should be noted here.**

APPENDIX J
OWNER CERTIFICATION AND CONSULTANT DECLARATION

Owner's Certification:

I hereby certify that I am the owner of the property described in this plan, or their legally authorized agent, and that I assume full responsibility for the performance of the operation stated in this plan.

Owner: _____
By: _____
Title: _____ Date: _____

Owner's Signature: _____

Consultant's Declaration:

I hereby declare that the site plan, location map, and information contained in Sections 1 and 2 of this SWPPP has been prepared under my direction or supervision in accordance with Boone County's Regulations, and applicable State and Federal Regulations and that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Consultant: _____
By: _____
Title: _____ Date: _____

Consultant's Signature: _____

PROJECT NO. C1919 – 01
CLOSURE OF LAGOONS AND WELL, MULTIPLE
FOR
CENTRAL MISSOURI CORRECTIONAL CENTER

JEFFERSON CITY, MO

MARCH 6, 2020
REVISED MAY 1, 2020
REVISED JULY 10, 2020
REVISED AUGUST 21, 2020
REVISED OCTOBER 12, 2022

OWNER

STATE OF MISSOURI
DEPARTMENT OF CORRECTIONS
2600 HWY 179
JEFFERSON CITY, MO 65109

GOVERNOR: MICHAEL L. PARSON
MDOC: ANNE L. PRECYTHE
MOA: BRIAN YANSEN
MOA: ERIC HIBDON

JOB NO. 19142.02

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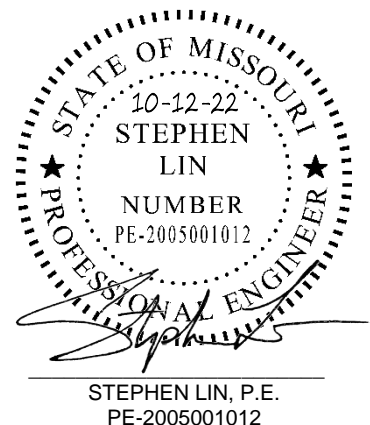


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| | WQ423 – Monitoring Requirements for Biosolids Land Application |
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| | WQ426 – Best Management Practices for Biosolids Land Application |
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 Natural Resources Division of Geological Survey
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1.00 Project Information

1.01 Project No. C1919-01 – Central Missouri Correction Center Closure of Lagoons and Wells, Multiple

In September 2019, Allstate Consultants was contracted by the State of Missouri Office of Administration, Division of Facilities Management, Design and Construction to assess and prepare closure plans for the lagoons and multiple wells at the Central Missouri Correctional Center (CMCC) and the Missouri Vocational Enterprises (MVE) Tire Recycling facility. This report details the wastewater and drinking water facilities being closed and provides instructions for these closure activities. Allstate Consultants reserves the right to modify and/or amend this report if additional information is collected.

2.00 Wastewater Treatment Facilities

2.01 Permit Number and General Facility Information

| | |
|-------------------------|--|
| Permit No. | MO-0097659 |
| Owner: | Office of Administration/Facilities Management, Design & Construction (OA/FMDC) |
| Address: | 308 West Main, Jefferson City, Missouri 65101 |
| Continuing Authority: | Same as above |
| Address: | Same as above |
| Facility Name: | Central Missouri Correction Facility Wastewater Treatment Facility |
| Facility Address: | 2600 Highway 179, Jefferson City, Missouri 65102 |
| Legal Description: | NW ¼, SE ¼, Sec. 18, T45N, R12W, Cole County |
| UTM Coordinates: | X = 562906, Y = 4277831 |
| Site Number: | 7001 |
| Facility Asset Numbers: | 9327001046 Tire Recycling Building 9327001005 Wastewater Treatment Lagoons 9327001034 Well House No. 1 (Power Plant) 9327001035 Well House No. 3 (Entrance Gate) 9327001036 Well House No. 4 (Back Well) |

2.02 Facility Description

Outfall #001 – Tires & Tubes, includes recycling Facility – SIC #3011, 5014, 5093,
Prison/Correction Facility – SIC #9223, 4952
Four-cell lagoon / aerated primary / oil & water separator / sludge is retained in lagoon.
Design population equivalent is 60.
Design flow is 720 gallons per day.
Actual flow is 360 gallons per day.
Design sludge production is 22.5 dry tons/year.

2.03 Facility Background Information

The CMCC and MVE Tire Recycling Center facility are located approximately 3.0 miles northwest of Jefferson City, Missouri on State Highway 179. The two facilities are located on a 725.23 acre tract currently owned by the State of Missouri Department of Corrections and operated by the Office of Administration. A location map of the lagoons and multiple wells located on the property is provided in Appendix A.

The CMCC facility was closed in June 2005 after decades of operating as a prison farm for male and female inmates and was commonly referred to as the Church Farm Prison. The property contains a four-cell lagoon for the CMCC facility and a stormwater/wastewater lagoon cell for the MVE facility. Prior to closure, the CMCC four-cell lagoon facility had a design flow of approximately 260,000 gallons per day (GPD). The Missouri State Operating Permit No. MO-0097659 (Appendix B) for the CMCC lagoon currently has a design flow of 720 gallons per day. This facility is assumed to be the only current contributor of wastewater to the four-cell lagoon. The MVE facility operated until January 2017 and collected, stored, and shredded a variety of tires under the Missouri State Operating Master General Permit MO-R23D, which expired on February 3, 2016. The MVE lagoon cell acts independently of the CMCC four-cell lagoon and currently does not receive any wastewater flow.

In November 2006, Taliaferro and Browne, Inc. Consulting Engineers-Surveyors conducted sludge depth measurements in the CMCC four-cell lagoon (Appendix C). In 2014 Barr Engineering, on behalf of CMCC, prepared a partial closure plan (Appendix D) of the prison facility four-cell lagoon due to “continued non-discharging conditions and to more appropriately handle the current flows from the CMCC facility”. Per the closure report, water was to be drained from three of the lagoon cells, sludge was to be removed, and the area was to be graded to drain. Field work detailed in the Barr Engineering closure plan was only partially completed as the lagoon berms were not leveled, plowed, graded to drain, and planted with a cover crop.

The following report will detail closure procedures for the lagoon facilities. The information contained in this plan is based upon aerial photography, site inspections, topographic survey, State of Missouri provided documentation, and conversations with multiple state agencies.

2.04 Biosolids Assessment

A volume and mass assessment to quantify the biosolids and chemical composition analysis was conducted in the CMCC four-cell lagoon and MVE lagoon. Biosolids measurements and sampling was performed by Allstate Consultants, and laboratory analysis of chemical composition of biosolids was conducted by Inovatia Laboratories, LLC for closure of the facilities. The CMCC four-cell lagoon was tested utilizing Environmental Protection Agency (EPA) Part 503 while the MVE lagoon was tested with the EPA Part 503 and EPA Part 257 (nonhazardous industrial waste) due to contaminants found in tires. Inovatia also sampled and analyzed the biosolids to determine concentration levels such as nitrogen, potassium, phosphorus, heavy metals, and other trace substances. A copy of the laboratory results can be found in Appendix E. Measurements of the water depths, biosolids’ depths, and topographic surveys of the multiple lagoon sites are provided with this report (Appendix F). Sludge volumes are calculated from the survey data assuming a 3:1 slope below the water surface to the top of the sludge layer. The sludge application rates utilize the area of the lagoon cells contained within the top of berms. The following tables are a summary of the results from the laboratory analysis reports.

A. Central Missouri Correctional Center: Four-Cell Lagoon Facility

Table 1: CMCC Four-Cell Lagoon – Biosolids Volume and Mass

| Description | Units | Cell No. 1 | Cell No. 2 | Cell No. 3 | Cell No. 4 |
|---|--------------|-------------|-------------|-------------|-------------|
| Approximate Basin Dimension (Measured at top of berm) | ft. x ft. | 382' x 156' | 802' x 354' | 194' x 150' | 600' x 152' |
| Area (Top of Sludge Layer) | sq. ft. | 30,119* | 225,189** | 16,600** | 68,436** |
| Area (Top of Sludge Layer) | acre | 0.69 | 5.17 | 0.38 | 1.57 |
| Approximate Basin Depth | ft. | 11.3 | 4 | 4 | 4 |
| Average Water Depth | ft. | 9 | 0 | 0 | 0 |
| Average Sludge Depth | in. | 14 | 3.8 | 1.5 | 1 |
| Total Sludge Volume | cu. ft. | 35,139 | 71,310 | 2,075 | 5,703 |
| Average Percent Solids | % | 2.32 | 74.50 | 72.20 | 76.65 |
| Total Mass | lbs. | 50,914 | 3,315,040 | 93,492 | 272,771 |
| Total Mass (Dry) | tons | 25.5 | 1,657.5 | 46.7 | 136.4 |
| Sludge, Application Rate | tons per ac. | 19.1 | 254.3 | 70.0 | 65.1 |

*Top of Sludge Layer area calculated by projecting a 3:1 slope down from topographic surveyed edge of water in lagoon cell.

** Top of Sludge Layer is lowest contoured area measured during topographic survey of drained lagoon cells.

Table 2: CMCC Four-Cell Lagoon Cell No. 1 – Regulated Pollutants

| Pollutant | Units | Result | Low Metal Concentrations Limit | Ceiling Concentration |
|------------|-------|--------|--------------------------------|-----------------------|
| Arsenic | mg/kg | 0.497 | 41 | 75 |
| Cadmium | mg/kg | 0.990 | 39 | 85 |
| Copper | mg/kg | 461 | 1,500 | 4,300 |
| Lead | mg/kg | 0.497 | 300 | 840 |
| Mercury | mg/kg | 0.200 | 17 | 57 |
| Molybdenum | mg/kg | 0.497 | - | 75 |
| Nickel | mg/kg | 0.497 | 420 | 420 |
| Selenium | mg/kg | 0.497 | 100 | 100 |
| Zinc | mg/kg | 915 | 2,800 | 7,500 |

Table 3: CMCC Four-Cell Lagoon Cell No. 1 – Other Trace Substances

| Pollutant | Result (mg/kg) | Result (lbs./dry ton) | Loading Rate (lbs./ac) | Cumulative Loading (lbs./ac) |
|-----------|----------------|-----------------------|------------------------|------------------------------|
| Aluminum | - | - | - | 4,000 |
| Barium | 330 | 0.66 | 12.60 | - |
| Beryllium | - | - | - | 100 |
| Calcium | 35,000 | 70 | 1,336.85 | - |
| Chromium | 0.497 | 0.001 | 0.02 | - |
| Cobalt | - | - | - | 50 |
| Fluoride | - | - | - | 800 |
| Iron | 20,200 | 40.4 | 771.56 | - |
| Magnesium | 10,600 | 21.2 | 404.88 | - |
| Manganese | 434 | 0.868 | 16.58 | 500 |
| Silver | 0.497 | 0.001 | 0.02 | 200 |
| Sodium | 8,840 | 17.68 | 337.65 | - |
| Sulfur | 4,660 | 9.32 | 177.99 | - |
| Tin | - | - | - | 1,000 |

Table 4: CMCC Four-Cell Lagoon Cell No. 1 – Land Application Monitoring Parameters

| Parameter/Pollutant | Result | Units | Result (lbs./dry ton) |
|---|---------------|--------------|----------------------------------|
| Average Percent Solids | 2.32 | % | - |
| pH | 6.9 | SU | - |
| Nitrogen, Ammoniacal, NH ₃ -N | 52.0 | mg/kg | 0.104 |
| Nitrogen, TKN | 26,100 | mg/kg | 52.2 |
| Nitrogen, Nitrate-Nitrite, NO ₃ -N | 10.0 | mg/kg | 0.02 |
| Organic Nitrogen | 21,700 | mg/kg | 43.4 |
| Nitrogen, Ammonium, NH ₄ -N | 4,400 | mg/kg | 8.8 |
| Plant Available Nitrogen, PAN | 7,430 | mg/kg | 14.86 |
| Phosphorus | 2,250 | mg/kg | 4.5 |
| Potassium | 48.5 | mg/kg | 0.097 |
| Calculated Phosphate, P ₂ O ₅ | 6,900 | mg/kg | 13.8 |
| Calculated Potash, K ₂ O | 7,400 | mg/kg | 14.8 |

Table 5: CMCC Four-Cell Lagoon Cell No. 2 – Regulated Pollutants

| Pollutant | Units | Result | Low Metal Concentrations Limit | Ceiling Concentration |
|------------------|--------------|---------------|---|----------------------------------|
| Arsenic | mg/kg | 3.16 | 41 | 75 |
| Cadmium | mg/kg | 0.632 | 39 | 85 |
| Copper | mg/kg | 40.0 | 1,500 | 4,300 |
| Lead | mg/kg | 12.3 | 300 | 840 |
| Mercury | mg/kg | 0.250 | 17 | 57 |
| Molybdenum | mg/kg | 3.16 | - | 75 |
| Nickel | mg/kg | 15.0 | 420 | 420 |
| Selenium | mg/kg | 3.16 | 100 | 100 |
| Zinc | mg/kg | 122 | 2,800 | 7,500 |

Table 6: CMCC Four-Cell Lagoon Cell No. 2 – Other Trace Substances

| Pollutant | Result (mg/kg) | Result (lbs./dry ton) | Loading Rate (lbs./ac) | Cumulative Loading (lbs./ac) |
|------------------|---------------------------|----------------------------------|-----------------------------------|---|
| Aluminum | - | - | - | 4,000 |
| Barium | 148 | 0.296 | 75.28 | - |
| Beryllium | - | - | - | 100 |
| Calcium | 15,600 | 31.2 | 7,934.57 | - |
| Chromium | 14.8 | 0.030 | 7.53 | - |
| Cobalt | - | - | - | 50 |
| Fluoride | - | - | - | 800 |
| Iron | 19,400 | 38.8 | 9,867.35 | - |
| Magnesium | 3,980 | 7.96 | 2,024.33 | - |
| Manganese | 253 | 0.506 | 128.68 | 500 |
| Silver | 3.16 | 0.006 | 1.61 | 200 |
| Sodium | 386 | 0.772 | 196.33 | - |
| Sulfur | 980 | 1.96 | 498.45 | - |
| Tin | - | - | - | 1,000 |

Table 7: CMCC Four-Cell Lagoon Cell No. 2 – Land Application Monitoring Parameters

| Parameter/Pollutant | Result | Units | Result (lbs./dry ton) |
|----------------------------------|---------------|--------------|----------------------------------|
| Average Percent Solids | 74.50 | % | - |
| pH | 6.9 | SU | - |
| Nitrogen, Ammoniacal, NH3-N | 68.9 | mg/kg | 0.1378 |
| Nitrogen, TKN | 3,160 | mg/kg | 6.32 |
| Nitrogen, Nitrate-Nitrite, NO3-N | 17.5 | mg/kg | 0.035 |
| Organic Nitrogen | 3,160.0 | mg/kg | 6.32 |
| Nitrogen, Ammonium, NH4-N | 0 | mg/kg | 0 |
| Plant Available Nitrogen, PAN | 649.5 | mg/kg | 1.299 |
| Phosphorus | 4,320 | mg/kg | 8.64 |
| Potassium | 2,540 | mg/kg | 5.08 |
| Calculated Phosphate, P2O5 | 13,000 | mg/kg | 26 |
| Calculated Potash, K2O | 3,100 | mg/kg | 6.2 |

Table 8: CMCC Four-Cell Lagoon Cell No. 3 – Regulated Pollutants

| Pollutant | Units | Result | Low Metal Concentrations Limit | Ceiling Concentration |
|------------------|--------------|---------------|---------------------------------------|------------------------------|
| Arsenic | mg/kg | 3.30 | 41 | 75 |
| Cadmium | mg/kg | 0.660 | 39 | 85 |
| Copper | mg/kg | 36.6 | 1,500 | 4,300 |
| Lead | mg/kg | 12.3 | 300 | 840 |
| Mercury | mg/kg | 0.26 | 17 | 57 |
| Molybdenum | mg/kg | 3.3 | - | 75 |
| Nickel | mg/kg | 11.9 | 420 | 420 |
| Selenium | mg/kg | 3.30 | 100 | 100 |
| Zinc | mg/kg | 122 | 2,800 | 7,500 |

Table 9: CMCC Four-Cell Lagoon Cell No. 3 – Other Trace Substances

| Pollutant | Result (mg/kg) | Result (lbs./dry ton) | Loading Rate (lbs./ac) | Cumulative Loading (lbs./ac) |
|------------------|-----------------------|------------------------------|-------------------------------|-------------------------------------|
| Aluminum | - | - | - | 4,000 |
| Barium | 148 | 0.296 | 20.71 | - |
| Beryllium | - | - | - | 100 |
| Calcium | 13,000 | 26 | 1,819.34 | - |
| Chromium | 13.8 | 0.028 | 1.93 | - |
| Cobalt | - | - | - | 50 |
| Fluoride | - | - | - | 800 |
| Iron | 16,300 | 32.6 | 2,281.17 | - |
| Magnesium | 3,550 | 7.1 | 496.82 | - |
| Manganese | 252 | 0.504 | 35.27 | 500 |
| Silver | 3.30 | 0.007 | 0.46 | 200 |
| Sodium | 369 | 0.738 | 51.64 | - |
| Sulfur | 961 | 1.922 | 134.49 | - |
| Tin | - | - | - | 1,000 |

Table 10: CMCC Four-Cell Lagoon Cell No. 3 – Land Application Monitoring Parameters

| Parameter/Pollutant | Result | Units | Result (lbs./dry ton) |
|---|---------------|--------------|------------------------------|
| Average Percent Solids | 72.20 | % | - |
| pH | 6.9 | SU | - |
| Nitrogen, Ammoniacal, NH ₃ -N | 69.3 | mg/kg | 0.1386 |
| Nitrogen, TKN | 4,120 | mg/kg | 8.24 |
| Nitrogen, Nitrate-Nitrite, NO ₃ -N | 12.1 | mg/kg | 0.0242 |
| Organic Nitrogen | 4,120 | mg/kg | 8.24 |
| Nitrogen, Ammonium, NH ₄ -N | 0 | mg/kg | 0 |
| Plant Available Nitrogen, PAN | 836.1 | mg/kg | 1.6722 |
| Phosphorus | 4,040 | mg/kg | 8.08 |
| Potassium | 2,260 | mg/kg | 4.52 |
| Calculated Phosphate, P ₂ O ₅ | 12,400 | mg/kg | 24.8 |
| Calculated Potash, K ₂ O | 2,700 | mg/kg | 5.4 |

Table 11: CMCC Four-Cell Lagoon Cell No. 4 – Regulated Pollutants

| Pollutant | Units | Result | Low Metal Concentrations Limit | Ceiling Concentration |
|------------------|--------------|---------------|---------------------------------------|------------------------------|
| Arsenic | mg/kg | 3.20 | 41 | 75 |
| Cadmium | mg/kg | 0.639 | 39 | 85 |
| Copper | mg/kg | 25.5 | 1,500 | 4,300 |
| Lead | mg/kg | 9.67 | 300 | 840 |
| Mercury | mg/kg | 0.24 | 17 | 57 |
| Molybdenum | mg/kg | 3.2 | - | 75 |
| Nickel | mg/kg | 11.9 | 420 | 420 |
| Selenium | mg/kg | 3.20 | 100 | 100 |
| Zinc | mg/kg | 73.0 | 2,800 | 7,500 |

Table 12: CMCC Four-Cell Lagoon Cell No. 4 – Other Trace Substances

| Pollutant | Result (mg/kg) | Result (lbs./dry ton) | Loading Rate (lbs./ac) | Cumulative Loading (lbs./ac) |
|------------------|-----------------------|------------------------------|-------------------------------|-------------------------------------|
| Aluminum | - | - | - | 4,000 |
| Barium | 159 | 0.318 | 20.72 | - |
| Beryllium | - | - | - | 100 |
| Calcium | 15,000 | 30 | 1,954.26 | - |
| Chromium | 11.9 | 0.024 | 1.55 | - |
| Cobalt | - | - | - | 50 |
| Fluoride | - | - | - | 800 |
| Iron | 17,900 | 35.8 | 2,332.09 | - |
| Magnesium | 3,150 | 6.3 | 410.40 | - |
| Manganese | 237 | 0.474 | 30.88 | 500 |
| Silver | 3.20 | 0.006 | 0.42 | 200 |
| Sodium | 416 | 0.832 | 54.20 | - |
| Sulfur | 762 | 1.524 | 99.28 | - |
| Tin | - | - | - | 1,000 |

Table 13: CMCC Four-Cell Lagoon Cell No. 4 – Land Application Monitoring Parameters

| Parameter/Pollutant | Result | Units | Result (lbs./dry ton) |
|----------------------------------|---------------|--------------|------------------------------|
| Average Percent Solids | 76.65 | % | - |
| pH | 6.8 | SU | - |
| Nitrogen, Ammoniacal, NH3-N | 70.4 | mg/kg | 0.1408 |
| Nitrogen, TKN | 3,850 | mg/kg | 7.7 |
| Nitrogen, Nitrate-Nitrite, NO3-N | 29.5 | mg/kg | 0.059 |
| Organic Nitrogen | 3,850 | mg/kg | 7.7 |
| Nitrogen, Ammonium, NH4-N | 0 | mg/kg | 0 |
| Plant Available Nitrogen, PAN | 799.5 | mg/kg | 1.599 |
| Phosphorus | 5,620 | mg/kg | 11.24 |
| Potassium | 2,270 | mg/kg | 4.54 |
| Calculated Phosphate, P2O5 | 17,000 | mg/kg | 34 |
| Calculated Potash, K2O | 2,700 | mg/kg | 5.4 |

B. MVE Tire Recycling Facility Lagoon Cell

Table 14: MVE Tire Recycling Facility Lagoon Cell – Biosolids Volume and Mass

| Description | Units | Cell #1 |
|---|--------------|-------------|
| Approximate Basin Dimension (Measured at Top of Berm) | ft. x ft. | 340' x 150' |
| Area (Top of Sludge Layer) | sq. ft. | 30,542* |
| Area (Top of Sludge Layer) | acre | 0.70 |
| Approximate Basin Depth | ft. | 12.7 |
| Average Water Depth | ft. | 7 |
| Average Sludge Depth | in. | 6 |
| Total Sludge Volume | cu. ft. | 15,271 |
| Average Percent Solids | % | 5.31 |
| Total Mass | lbs. | 50,599 |
| Total Mass (Dry) | tons | 25.3 |
| Sludge, Application Rate | tons per ac. | 21.6 |

*Top of Sludge Layer area calculated by projecting a 3:1 slope down from topographic surveyed edge of water in lagoon cell.

Table 15: MVE Tire Recycling Facility Lagoon Cell – Regulated Pollutants

| Pollutant | Units | Result | Low Metal Concentrations Limit | Ceiling Concentration |
|------------|-------|--------|--------------------------------|-----------------------|
| Arsenic | mg/kg | 0.05 | 41 | 75 |
| Cadmium | mg/kg | 0.024 | 39 | 85 |
| Copper | mg/kg | 193 | 1,500 | 4,300 |
| Lead | mg/kg | 64.7 | 300 | 840 |
| Mercury | mg/kg | 0.011 | 17 | 57 |
| Molybdenum | mg/kg | 0.05 | - | 75 |
| Nickel | mg/kg | 35.9 | 420 | 420 |
| Selenium | mg/kg | 0.05 | 100 | 100 |
| Zinc | mg/kg | 1,100 | 2,800 | 7,500 |

Table 16: MVE Tire Recycling Facility Lagoon Cell – Other Trace Substances

| Pollutant | Result (mg/kg) | Result (lbs./dry ton) | Loading Rate (lbs./ac) | Cumulative Loading (lbs./ac) |
|-----------|----------------|-----------------------|------------------------|------------------------------|
| Aluminum | - | - | - | 4,000 |
| Barium | 394 | 0.788 | 17.03 | - |
| Beryllium | - | - | - | 100 |
| Calcium | 18,500 | 37 | 799.52 | - |
| Chromium | 41.1 | 0.082 | 1.78 | - |
| Cobalt | - | - | - | 50 |
| Fluoride | 1.0 | 0.002 | 0.04 | 800 |
| Iron | 39,700 | 79.4 | 1,715.72 | - |
| Magnesium | 10,200 | 20.4 | 440.81 | - |
| Manganese | 950 | 1.9 | 41.06 | 500 |
| Silver | 0.05 | 0.0001 | 0.00 | 200 |
| Sodium | 12,200 | 24.4 | 527.25 | - |
| Sulfur | 1,810 | 3.62 | 78.22 | - |
| Tin | - | - | - | 1,000 |

Table 17: MVE Tire Recycling Facility Lagoon Cell – Land Application Monitoring Parameters

| Parameter/Pollutant | Result | Units | Result (lbs./dry ton) |
|----------------------------------|----------|-------|-----------------------|
| Average Percent Solids | 5.31 | % | - |
| pH | 6.50 | SU | - |
| Nitrogen, Ammoniacal, NH3-N | 5.00 | mg/kg | 0.01 |
| Nitrogen, TKN | 5,570.00 | mg/kg | 11.14 |
| Nitrogen, Nitrate-Nitrite, NO3-N | 0.100 | mg/kg | 0.0002 |
| Organic Nitrogen | 1.00 | mg/kg | 0.002 |
| Nitrogen, Ammonium, NH4-N | 5,569.00 | mg/kg | 11.138 |
| Plant Available Nitrogen, PAN | 3,899 | mg/kg | 7.7972 |
| Phosphorus | 1,070.00 | mg/kg | 2.14 |
| Potassium | 5,120.00 | mg/kg | 10.24 |
| Calculated Phosphate, P2O5 | 1.00 | mg/kg | 0.002 |
| Calculated Potash, K2O | 1.00 | mg/kg | 0.002 |

Table 18: MVE Tire Recycling Facility Lagoon Cell – Industrial Waste Pollutants

| Pollutant | Units | Result | Application Rate (lbs./ac.) |
|------------------------------------|-------|------------------------------------|-----------------------------|
| Benzene | mg/kg | Benzene | 0.00022 |
| Carbon Tetrachloride | mg/kg | Carbon Tetrachloride | 0.00022 |
| Chromium (Hexavalent) | mg/kg | Chromium (Hexavalent) | 0.052 |
| 2,4-Dichlorophenoxy Acetic Acid | mg/kg | 2,4-Dichlorophenoxy Acetic Acid | 0.0051 |
| 1,4-Dichlorobenzene | mg/kg | 1,4-Dichlorobenzene | 0.00022 |
| 1,2-Dichloroethane | mg/kg | 1,2-Dichloroethane | 0.00022 |
| 1,1-Dichloroethylene | mg/kg | 1,1-Dichloroethylene | 0.00022 |
| Endrin | mg/kg | Endrin | 0.0022 |
| Flouride | mg/kg | Flouride | 0.043 |
| Lindane | mg/kg | Lindane | 0.0022 |
| Methoxyclor | mg/kg | Methoxyclor | 0.0022 |
| Nitrate | mg/kg | Nitrate | 0.043 |
| Toxaphene | mg/kg | Toxaphene | 0.044 |
| 1,1,1-Trichlorethane | mg/kg | 1,1,1-Trichlorethane | 0.00022 |
| Trichloroethylene | mg/kg | Trichloroethylene | 0.00022 |
| 2,4,5-Trichlorophenoxy Acetic Acid | mg/kg | 2,4,5-Trichlorophenoxy Acetic Acid | 0.0051 |
| Vinyl Chloride | mg/kg | Vinyl Chloride | 0.00022 |

2.05 Lagoon Closure Plan General Requirements

Lagoon closure procedures shall follow all requirements, procedures, testing, monitoring, reporting, recordkeeping, etc. as outlined in the following documents:

1. Missouri State Operating Permits: CMCC four-cell lagoon (Permit No. MO-0097659)
MVE lagoon (Previous Permit No. MO-R23D)
 - a. Part III – Sludge and Biosolids from domestic Wastewater Treatment Facilities located in the Standard Conditions for NDPES Permits issued by the Missouri Department of Natural Resources (MDNR), Missouri Clean Water Commission, dated August 1, 2019.
2. Water Quality guides published by the University of Missouri, University Extension (Appendix G).
 - a. WQ321 – State and EPA Regulations for Domestic Wastewater Sludge and Biosolids
 - b. WQ422 – Land Application of Septage
 - c. WQ423 – Monitoring Requirements for Biosolids Land Application
 - d. WQ424 – Biosolids Standards for Pathogens and Vectors
 - e. WQ425 – Biosolids Standards for Metals and Other Trace Substances
 - f. WQ426 – Best Management Practices for Biosolids Land Application

2.06 CMCC Four-Cell Lagoon Closure Plan

A. General Information

The four-cell lagoon utilized by the CMCC facility shall be closed in place without having to remove any existing sludge. Upon closure, the existing State of Missouri Operating permit MO-0097659 shall be terminated through submittal of MDNR Form H (Appendix H).

B. Land Disturbance

The overall surface area of the four-cell lagoon is approximately 10.61 acres. The Office of Administration shall conduct all land disturbance activities under the MDNR Land Disturbance Permit No. MOR100038. Storm water best management practices (BMP's), such as silt fence, diversionary berms, rock check dams, and straw bale checks, shall be utilized to minimize runoff and pollution of nearby streams. A Storm Water Pollution Prevention Plan shall be developed in accordance with the land disturbance permit requirements.

C. Residuals Analysis

The sludge analysis of the CMCC four-cell lagoon facility determined the regulated pollutants are below the low metal concentrations and ceiling concentration in all cells. In addition, the other trace substances are under the threshold for cumulative loading (lbs./ac). For the lagoon closure, the Plant Available Nitrogen (PAN) loading is limited to 300 lbs./acre with a grass cover crop.

Cell No. 1

The total volume of sludge in the Cell No. 1 is approximately 35,139 cubic feet, which equates to approximately 25.5 dry tons of biosolids. The following is the calculation for PAN loading for the CMCC facility lagoon Cell No. 1.

Plant Available Nitrogen (PAN) is calculated as follows:
(Nitrogen, Nitrate-Nitrite) + (Organic Nitrogen x 0.2) + (Ammonia Nitrogen x Volatilization Factor)
The volatilization factors are 0.7 for surface application and 1 for subsurface application.

Nitrogen, Ammonium = 4,400 mg/kg
Nitrogen, Total Kjeldahl = 26,100 mg/kg
Nitrogen, Nitrate-Nitrite = 10 mg/kg
Organic Nitrogen = 21,700 mg/kg

$$\text{PAN} = (10 \text{ mg/kg}) + (21,700 \text{ mg/kg} \times 0.2) + (4,400 \text{ mg/kg} \times 0.7) = 7430 \text{ mg/kg} \\ 14.86 \text{ lbs./dry ton}$$

Based on the estimate of 25.5 dry tons of biosolids in the lagoon cell, the total PAN is approximately 378.93 lbs. The overall area of the CMCC lagoon cell is approximately 1.33 acres, which equate to a PAN loading of 284.91 lbs./acre.

Cell No. 2

The total volume of sludge in the Cell No. 2 is approximately 71,310 cubic feet, which equates to approximately 1,657.5 dry tons of biosolids. The following is the calculation for PAN loading for the CMCC facility lagoon Cell No. 2.

Plant Available Nitrogen (PAN) is calculated as follows:

(Nitrogen, Nitrate-Nitrite) + (Organic Nitrogen x 0.2) + (Ammonia Nitrogen x Volatilization Factor)
The volatilization factors are 0.7 for surface application and 1 for subsurface application.

Nitrogen, Ammonium = 0 mg/kg
Nitrogen, Total Kjeldahl = 3,160 mg/kg
Nitrogen, Nitrate-Nitrite = 17.5 mg/kg
Organic Nitrogen = 3,160 mg/kg

$$\text{PAN} = (17.5 \text{ mg/kg}) + (3,160 \text{ mg/kg} \times 0.2) + (0 \text{ mg/kg} \times 0.7) = 649.50 \text{ mg/kg} \\ 1.30 \text{ lbs./dry ton}$$

The estimated total PAN is approximately 2,154.75 lbs. The area of Cell No. 2 of the CMCC four-cell lagoon is estimated at 6.52 acres and results in a PAN loading of 330.48 lbs./acre.

Cell No. 3

The total volume of sludge in the Cell No. 3 is approximately 2,075 cubic feet, which equates to approximately 46.7 dry tons of biosolids. The following is the calculation for PAN loading for the CMMC lagoon Cell No. 3.

Plant Available Nitrogen (PAN) is calculated as follows:

(Nitrogen, Nitrate-Nitrite) + (Organic Nitrogen x 0.2) + (Ammonia Nitrogen x Volatilization Factor)
The volatilization factors are 0.7 for surface application and 1 for subsurface application.

Nitrogen, Ammonium = 0 mg/kg
Nitrogen, Total Kjeldahl = 4,120 mg/kg
Nitrogen, Nitrate-Nitrite = 12.1 mg/kg
Organic Nitrogen = 4,120 mg/kg

$$\text{PAN} = (12.1 \text{ mg/kg}) + (4,120 \text{ mg/kg} \times 0.2) + (0 \text{ mg/kg} \times 0.7) = 836.10 \text{ mg/kg} \\ 1.67 \text{ lbs./dry ton}$$

The total estimated PAN is 78.09 lbs. The area of Cell No. 3 of the CMCC four-cell lagoon is estimated at 0.67 acres and results in a PAN loading of 116.55 lbs./acre.

Cell No. 4

The total volume of sludge in Cell No. 4 is approximately 5,703 cubic feet and the biosolids quantity is approximately 136.4 dry tons. The following is the calculation for PAN loading for the CMCC four-cell lagoon Cell No. 4.

Plant Available Nitrogen (PAN) is calculated as follows:

(Nitrogen, Nitrate-Nitrite) + (Organic Nitrogen x 0.2) + (Ammonia Nitrogen x Volatilization Factor)
The volatilization factors are 0.7 for surface application and 1 for subsurface application.

Nitrogen, Ammonium = 0 mg/kg
Nitrogen, Total Kjeldahl = 3,850 mg/kg
Nitrogen, Nitrate-Nitrite = 29.5 mg/kg
Organic Nitrogen = 3.850 mg/kg

$$\text{PAN} = (29.5 \text{ mg/kg}) + (3,850 \text{ mg/kg} \times 0.2) + (0 \text{ mg/kg} \times 0.7) = 799.50 \text{ mg/kg} \\ 1.60 \text{ lbs./dry ton}$$

The total PAN is approximately 218.10 lbs. based on the estimate of 136.4 dry tons of biosolids in the lagoon cell. The overall area of the CMCC lagoon Cell No. 4 is approximately 2.09 acres, which equate to a PAN loading of 104.36 lbs./acre.

Per the partial closure plan prepared by Barr Engineering, Cells No. 2, No. 3, and No. 4 of the CMCC four-cell lagoon were drained. In the following five years, vegetative growth and decay have contributed to the breakdown of the remaining biosolids into a material similar in consistency and chemical composition of topsoil. Sampling analysis may show higher nitrogen loadings that are the product of the CMCC facility biosolids and vegetation breakdown into organic matter following the closure of the facility.

D. Lagoon Dewatering and Biosolids Stabilization

The Contractor shall coordinate with the State of Missouri Office of Administration, Division of Facilities Management, Design and Construction and Department of Corrections to dewater the biosolids at the CMCC four-cell lagoon. In addition to the existing water in Cell No. 1, water shall be pumped from the MVE lagoon into the existing sewer pipe contributing to the CMCC four-cell lagoon. The Contractor shall provide all utilities necessary for completion of the lagoon closures and related construction activities onsite.

The Contractor will utilize Cell No. 2, No. 3, and No. 4 for dewatering Cell No. 1. Cell No. 2, No. 3 and No. 4 shall be utilized for land application and evaporation of the wastewater. A lagoon berm breach between Cell No. 2 and No. 3 will be performed as shown on the Lagoon Closure plan sheets in Appendix I. The Contractor will conduct controlled berm breaches between Cell No. 1 and No. 3, and Cell No. 1 and No. 2. The berm breach should occur in incremental cuts no greater than 1 foot of soil depth removed at a time. As the water level drops to the level of the breach cut, the Contractor may begin the next cut in the berm to release additional water. The wastewater should be evenly distributed across Cell No. 2, No. 3 and No. 4. As an alternate, the Contractor may pump water to evenly disperse wastewater from Cell No. 1 to the three drained cells.

The Contractor map pump effluent to Outfall #001, detailed in the Central Missouri Correctional Facility Wastewater Treatment Facility Missouri State Operating Permit MO-0097659 (Appendix B, page 20). The Contractor shall test the effluent discharge per the requirements detailed in Table A (Page 2) of the permit. The design daily flow is 720 gallons per day. The Contractor may surpass this daily flow but must test the higher discharge to ensure the effluent limitations and monitoring requirements are still being met. Monitoring reports shall be submitted quarterly by the Contractor. There shall be no discharge of floating solids or visible foam in other than trace amounts. The Contractor will need to verify the outfall pipe and associated structures are still in place and in working order prior to utilizing for dewatering of CMCC Lagoon Cell No. 1.

After the removal of as much water as possible, the biosolids shall be given adequate time to dry and consolidate to allow for equipment to operate in the lagoon bottom. Stirring and aerating the biosolids with equipment may be required to promote further dewatering and drying. Should odors become an issue during the dewatering and drying process, a sufficient amount of hydrated lime shall be added and mixed with the biosolids to prevent nuisance odor issues.

E. Biosolids Removal and Land Application

No removal of biosolids or land application will be required for the CMCC four-cell lagoon. Cell No. 2 had a PAN loading rate greater than the allowable maximum loading rate of 300 lbs./acre. Biosolids shall be removed from Cell No. 2 and spread evenly into Cell No. 3 and No. 4 to lower the loading rate of PAN in Cell No. 2. This equates to approximately 30.5 lbs./acre or a total of 198.86 lbs. of biosolids being removed from Cell No. 2. The Contractor will be responsible for reporting quantities moved between cells at the end of the project.

F. Treatment Equipment and Structure Demolition

The Contractor will be required to remove and dispose of multiple structures associated with the CMCC four-cell lagoon. A demolition plan (Sheet C-4) for the lagoon facility is provided in Appendix I.

The fence surrounding the CMCC Lagoon facility shall be removed and disposed of offsite. This includes all posts, wire, gates, and associated signage. The existing pump station, wet well, and well house shall be removed. All pump station equipment including but not limited to the pumps, piping, electrical equipment, and metal building shall be demoed and removed from the site. The electrical lines from the wet well and pump station shall be pulled back and disconnected at the power pole west of the lagoons and gravel access road. The underground conduits, if any, may be abandoned in-place and the power pole shall be left in-place for future use. Prior to demolition of the wet well, the contractor shall remove all waste and water in the wet well structure. The influent line into the wet well shall be cut and capped. To close the wet well, the contractor will have two options. First, the contractor can crack the bottom of the wet well structure to allow passage of water. Then the uppermost two (2) feet of the wet well below the proposed finished grade will be cut and allowed to drop into the structure. Then the contractor may utilize available clean soil fill, flowable cement fill or sand to fill in the rest of the voids up to the cut line of the structure (two (2) feet below the proposed ground surface elevation). The second option is the contractor can cut the uppermost two (2) feet of the wet well below the proposed finished graded and allow the material to drop into the structure. Then the structure's voids can be filled with flowable fill (cementitious slurry) up to the cut line of the structure (two (2) feet below the proposed

finished ground surface elevation). The proposed finished grades can be found on Sheet C-5 in Appendix I.

The electrical cabinets on the west berm of Lagoon Cell No. 1 shall be removed and electrical wire disconnected and removed from the power pole west of the lagoon. All underground conduits, if any, may be abandoned in-place. All manholes and sewer pipe onsite shall be removed and disposed of by the Contractor. The effluent outfall pipe for the lagoon facility shall be cut and capped south of the gravel access road running north of the lagoon cells. The Contractor is not responsible for removal of the effluent outfall pipe outside of the CMCC four-cell lagoon berm.

The sewer pipe running along the west side of the gravel access drive and within the Union Pacific Railroad right-of-way shall be removed by cutting and capping the pipe on each side of the right-of-way. After removing the sewer pipe within the right-of-way, the encasement pipe under the track area shall be filled with controlled low-strength material (CLSM). Design criteria for the CLSM can be found under the general notes on Demolition Sheet C-4. Prior to any work within the Union Pacific Railroad right-of-way, the Contractor must notify their field person, Lucas Eaton at (573) 681-6223.

The aerator platforms shall be removed and disposed of prior to final grading. Plan sheets showing original plans for the lagoon facility have been included in Appendix I to provide the Contractor additional information prior to demolition. The Contractor will be responsible for removal of items detailed in this report, on the plan sheets, and items not previously disclosed but encountered in the field during closing processes.

G. Berm Demolition, Biosolids Mixing, and Finish Grading and Seeding

The biosolids left in place in the CMCC four-cell lagoon shall be mixed with the demolished berm soil at a ratio of 1:1 biosolids to soil. The lagoon site shall be graded to a uniform slope to promote surface water drainage. A proposed final grade map of the CMCC four-cell lagoon is provided (Appendix I) and no additional fill is required. Verification of existing utilities shall be completed prior to demolition of berms and site grading. Following finish grading, the site shall be seeded and mulched and storm water best management practices (BMP's) shall be utilized as necessary to minimize pollution of nearby water ways. Upon establishment of vegetation, BMP's shall be removed and properly disposed of.

2.07 MVE Tire Recycling Facility Lagoon Closure Plan

A. General Information

The MVE Tire Recycling facility lagoon shall be closed in place. There is no active Missouri State Operating Permit for this facility.

B. Land Disturbance

The overall surface area of the MVE lagoon is approximately 1.17 acres. The Office of Administration shall conduct all land disturbance activities under the MDNR Land Disturbance Permit No. MOR100038. Storm water best management practices (BMP's), such as silt fence, diversionary berms, rock check dams, and straw bale checks, shall be utilized to minimize runoff and pollution of nearby streams. A Storm Water Pollution Prevention Plan shall be developed in accordance with the land disturbance permit requirements.

C. Residuals Analysis

The sludge analysis of the MVE Tire Recycling facility lagoon cell determined the regulated pollutants are below the low metal concentrations and ceiling concentration. In addition, the other trace substances are under the threshold for cumulative loading (lbs./ac). For the lagoon closure, the PAN loading is limited to 300 lbs./ac with a grass cover crop. The nonhazardous industrial waste pollutants were measured and reported, were under the acceptable reporting limits needed per EPA Part 257.

MVE Cell No. 1

The total volume of sludge in the lagoon cell is estimated at 15,271 cubic feet, which equates to approximately 25.3 dry tons of biosolids. The following is the calculation for PAN loading for the MVE Tire Recycling facility lagoon.

Plant Available Nitrogen (PAN) is calculated as follows:

(Nitrogen, Nitrate-Nitrite) + (Organic Nitrogen x 0.2) + (Ammonia Nitrogen x Volatilization Factor)
The volatilization factors are 0.7 for surface application and 1 for subsurface application.

Nitrogen, Ammonium = 5,569 mg/kg
Nitrogen, Total Kjeldahl = 5,570 mg/kg
Nitrogen, Nitrate-Nitrite = 0.1 mg/kg
Organic Nitrogen = 1.0 mg/kg

$$\text{PAN} = (0.100 \text{ mg/kg}) + (1.00 \text{ mg/kg} \times 0.2) + (5,569 \text{ mg/kg} \times 0.7) = 3898.60 \text{ mg/kg} \\ 7.80 \text{ lbs./dry ton}$$

Based on the estimate of 25.3 dry tons of biosolids in the lagoon cell, the total PAN is approximately 197.3 lbs. The overall area of the MVE lagoon cell is approximately 1.17 acres, which equate to a PAN loading of 168.67 lbs./acre.

D. Lagoon Dewatering and Biosolids Stabilization

The Contractor shall coordinate with the State of Missouri Office of Administration, Division of Facilities Management, Design and Construction and Department of Corrections to dewater the biosolids at the MVE Tire Recycling facility. The Contractor shall provide all utilities necessary for completion of the lagoon closures and related construction activities onsite.

The Contractor shall pump lagoon effluent into the existing sewer line on the west side of the gravel access road going down to the CMCC four-cell lagoon. The Contractor shall minimize solids discharging into the sewer system. Effluent pumped to the CMCC four-cell lagoon can be filtered using the following setup. Puncture a 50 gallon barrel drum or enclosed stock tank, wrap the barrel or tank in filter fabric, and place the suction hose inside the barrel or tank. The water will filter into the barrel or tank and then be pumped to the sewer line that will gravity flow into the CMCC four-cell lagoon. Upon pumping as much water as possible (less than 1 feet above settled biosolids), the Contractor may conduct a controlled berm breach with the previously described filter system to drain any remaining liquid.

The controlled berm breach will be conducted after the Contractor has installed a minimum of 3 silt filter fabric filtration fence systems and two rock check filter devices directly downhill of the berm breach to filter effluent as shown on the plan sheet in Appendix I. The Contractor may need to install additional rock check filters and silt fence to prevent any biosolids or

suspended solids in excess of permit requirements. The berm breach should occur in incremental cuts no greater than 1 foot of soil depth removed at a time. As the water level drops to the level of the breach cut, the Contractor may begin the next cut in the berm to release water. If the cut begins to erode or scour, the Contractor should be prepared to patch the berm to prevent biosolids from leaving the cell. The Contractor may need to add additional rock checks or straw bales further downstream of the berm breach to help with soil stabilization and filtration of the effluent.

The biosolids shall be given adequate time to dry and consolidate to allow for equipment to operate in the lagoon bottom. Stirring and aerating the biosolids with equipment may be required to promote further dewatering and drying. Should odors become an issue during the dewatering and drying process, a sufficient amount of hydrated lime shall be added and mixed with the biosolids to prevent nuisance odor issues.

E. Biosolids Removal and Land Application

No removal of biosolids or land application will be required for the MVE Tire Recycling facility lagoon. The PAN loading of 168.67 lbs./acre is below the allowable 300 lbs./acre threshold.

F. Treatment Equipment and Structure Demolition

No apparent structures or equipment will need to be demolished during the closure of the MVE Tire Recycling Facility lagoon. However, the Contractor will be responsible for demolition, removal, and disposal of items not previously disclosed but encountered in the field during closing processes. The pipe from the MVE Building was not located during the topographic survey. During the lagoon closure, if the pipe is located it will need to be capped and plugged with concrete or cement grout.

G. Berm Demolition, Biosolids Mixing, and Finish Grading and Seeding

The biosolids left in place in the MVE lagoon cell shall be mixed with the demolished berm soil at a ratio of 1:1 biosolids to soil. The lagoon site shall be graded to a uniform slope to promote surface water drainage. Import of clean soil will be required to fill the lagoon cell as proposed on the grading plan in Appendix I. Accompanying the lagoon proposed grading plan sheet is a borrow area grading plan sheet. The proposed borrow area is northwest of the MVE Tire Recycling Facility Lagoon Cell No. 1. Verification of existing utilities shall be completed prior to demolition of berms and site grading. Fences surrounding the lagoon cell may be removed for grading but replaced after finished grading and seeding. Following finish grading, the site shall be seeded and mulched and storm water best management practices (BMP's) shall be utilized as necessary to minimize pollution of nearby water ways. Upon establishment of vegetation, BMP's shall be removed and properly disposed of.

3.00 Drinking Water Treatment Facilities

3.01 CMCC Drinking Water Wells

Three existing wells are located on the CMCC property. Each well is contained in a cement block well house along with pumps, tanks, and electrical equipment. The well house structures, interior piping, and equipment will remain in place and their removal is not within the scope of this closure plan. The Power Plant Well (#1) was drilled in 1938 and is approximately 1,040 feet deep. The second well, referred to as the Entrance Well (#3) was

drilled in 1966 to a depth of 1,070 feet below the ground surface. The third was known as the Back Well (#4) is 1,165 feet deep and was constructed in 1981. Locations of each well can be found on the map provided in Appendix A. Well profiles and plugging specifications plan sheet is located in Appendix J. In addition, well logs, well/intake data, and environmental assessment documents were compiled and provided with this report (Appendix K).

3.02 CMCC Multiple Wells Plugging Requirements

Specifications are given on a case-by-case basis and plugging must be completed by a permitted Missouri well or pump installation contractor (Standards for Non-Community Public Water Supplies 1982, 3.5.10 and Minimum Design Standards for Missouri Community Water Systems, 3.5.2.13). The closure specifications (Appendix L) are provided by MDNR's Missouri Geological Survey (GLS). Forms (Appendix M) required for Prenotification of Work and Well Plugging Registration shall be completed by the Contractor. A summary of each well closure is detailed below.

1. Well #1, Power Plant: The 1040 feet deep well was drilled in September 1938 and contains 431 feet of 8 inch casing.
 - a. Pumping, pipes, debris and all other obstructions shall be removed prior to commencing plugging operations. If this cannot be accomplished, contact the Well Installation Section to obtain alternative plugging specifications.
 - b. The well is located in a structure and concrete pad and will need to be cut flush with the floor surface. Remove any additional concrete pad around the well casing that is raised above the floor surface of the well house.
 - c. The bottom 510 feet of the well shall be filled with disinfected pea gravel (1040 feet below ground surface to 530 feet below ground surface).
 - d. A grout plug of neat cement grout from 530 feet below ground surface to 330 feet below ground surface using either tremie or reverse tremie method. This grout plug must be a total of 200 feet. The cement grout shall be mixed at a ratio of not more than six gallons of water per 94-pound bag of cement.
 - e. Fill the well with washed, disinfected pea gravel from 330 feet below ground surface to 100 feet below ground surface.
 - f. A grout plug using neat cement grout from 100 feet below ground surface to the surface of the well building floor shall be completed using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must be a total of 100 feet.

Alternatively, the well can be plugged full length with neat cement grout using one of the tremie or reverse tremie methods. A well plugging registration record must be submitted to MDNR within 60 days after the plugging is completed.

2. Well #3, Entrance Gate: The 1070 feet deep well was drilled in 1966 and contains 320 feet of 10 inch casing. According to maintenance documents from March 1997, the well caved in at approximately 782 feet below the ground surface (Appendix I).
 - a. Pumping, pipes, debris and all other obstructions shall be removed prior to commencing plugging operations. If this cannot be accomplished, contact the Well Installation Section to obtain alternative plugging specifications.

- b. The well is located in a structure and concrete pad and will need to be cut flush with the floor surface. Remove any additional concrete pad around the well casing that is raised above the floor surface of the well house.
- c. The bottom 650 feet of the well shall be filled with disinfected pea gravel (1070 feet below ground surface to 420 feet below ground surface).
- d. A grout plug of neat cement grout from 420 feet below ground surface to 220 feet below ground surface using either tremie or reverse tremie method. This grout plug must be a total of 200 feet. The cement grout shall be mixed at a ratio of not more than six gallons of water per 94-pound bag of cement.
- e. Fill the well with washed, disinfected pea gravel from 220 feet below ground surface to 100 feet below ground surface.
- f. A grout plug using neat cement grout from 100 feet below ground surface to the surface of the well building floor shall be completed using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must be a total of 100 feet.

Alternatively, the well can be plugged full length with neat cement grout using one of the tremie or reverse tremie methods. A well plugging registration record must be submitted to MDNR within 60 days after the plugging is completed.

3. Well #4, Back Well: The 1165 feet deep well was drilled in 1981 and contains 400 feet of 10 inch casing.
 - a. Pumping, pipes, debris and all other obstructions shall be removed prior to commencing plugging operations. If this cannot be accomplished, contact the Well Installation Section to obtain alternative plugging specifications.
 - b. The well is located in a structure and concrete pad and will need to be cut flush with the floor surface. Remove any additional concrete pad around the well casing that is raised above the floor surface of the well house.
 - c. The bottom 665 feet of the well shall be filled with disinfected pea gravel (1165 feet below ground surface to 500 feet below ground surface).
 - d. A grout plug of neat cement grout from 500 feet below ground surface to 300 feet below ground surface using either tremie or reverse tremie method. This grout plug must be a total of 200 feet. The cement grout shall be mixed at a ratio of not more than six gallons of water per 94-pound bag of cement.
 - e. Fill the well with washed, disinfected pea gravel from 300 feet below ground surface to 100 feet below ground surface.
 - f. A grout plug using neat cement grout from 100 feet below ground surface to the surface of the well building floor shall be completed using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must be a total of 100 feet.

Alternatively, the well can be plugged full length with neat cement grout using one of the tremie or reverse tremie methods. A well plugging registration record must be submitted to MDNR within 60 days after the plugging is completed.

In addition to plugging the wells, multiple well houses contained partially filled barrels of chemicals. The Contractor shall coordinate with the Missouri Geological Survey and State of Missouri Office of Administration, Division of Facilities Management, Design and Construction to dispose of the chemicals properly. Access to these facilities shall be coordinated with the Missouri Department of Corrections.

4.00 Project Closeout, Provisions, & Timeline

4.01 Project Closeout

All documents pertaining to land application of biosolids shall be completed and submitted to the necessary permitting authority (MDNR and/or EPA). All documents pertaining to well plugging shall be completed and submitted to the necessary permitting authority (MGS). Following final construction, lagoon closure, and establishment of vegetation on the site, termination of the operating permit shall be submitted to MDNR.

4.02 Job Special Provisions

1. Contractor's Project Scope: The project scope includes lagoon dewatering, biosolids stabilization and mixing, removal and disposal of transfer piping, wet well pumps, well houses, aerator structures, well plugging, excavation, grading, seeding, mulching, and all incidentals and appurtenances. Payment for all materials and work shall be included in a lump sum bid.
2. Lump Sum Bid Items: Contractor, Engineer, and Owner may change Lump Sum amounts based on percentage of change per quantity of material (i.e. cut and fill).
3. General Requirements: The Contractor shall follow all requirements, procedures, testing, monitoring, reporting, etc. as outlined in the closure plan.
4. Lagoon Closures: Closures of lagoon cells shall be in accordance with all local, state, and federal regulations and requirements.
5. Well Plugging: Contractor shall be a permitted Missouri well or pump installation contractor (Standards for Non-Community Public Water Supplies 1982 3.5.10 and Minimum Design Standards for Missouri Community Water Systems, 3.5.2.13) due to the wells being public water supply wells. Plugging specifications detailed in the closure plan are given on a case-by-case basis provided by MDNR's MGS.
6. Access: The Contractor shall coordinate and give Advance Notice to Owner.
7. Utilities: The Contractor shall have all utilities located prior to construction.
8. Replacements: The Contractor shall repair all structures, sidewalks, utilities, etc. damaged and at no cost to the Owner.
9. Fill Sites: The Contractor should contact the Owner's representative for possible fill sites to dispose of excess soil and rock, if required, from the construction site. Loading, hauling, and disposal of excess materials shall be incidental.
10. Seeding and Mulching: The site shall be seeded with either a turf or pasture grass as selected by the Owner. Seeding shall not be attempted from June 1 to September 1 or from November 1 to March 15, unless authorized by the Owner and Engineer.
11. Forms: The Contractor, Engineer, and Owner shall cooperate to complete all land application reporting forms (Form S) and well plugging registration as required.

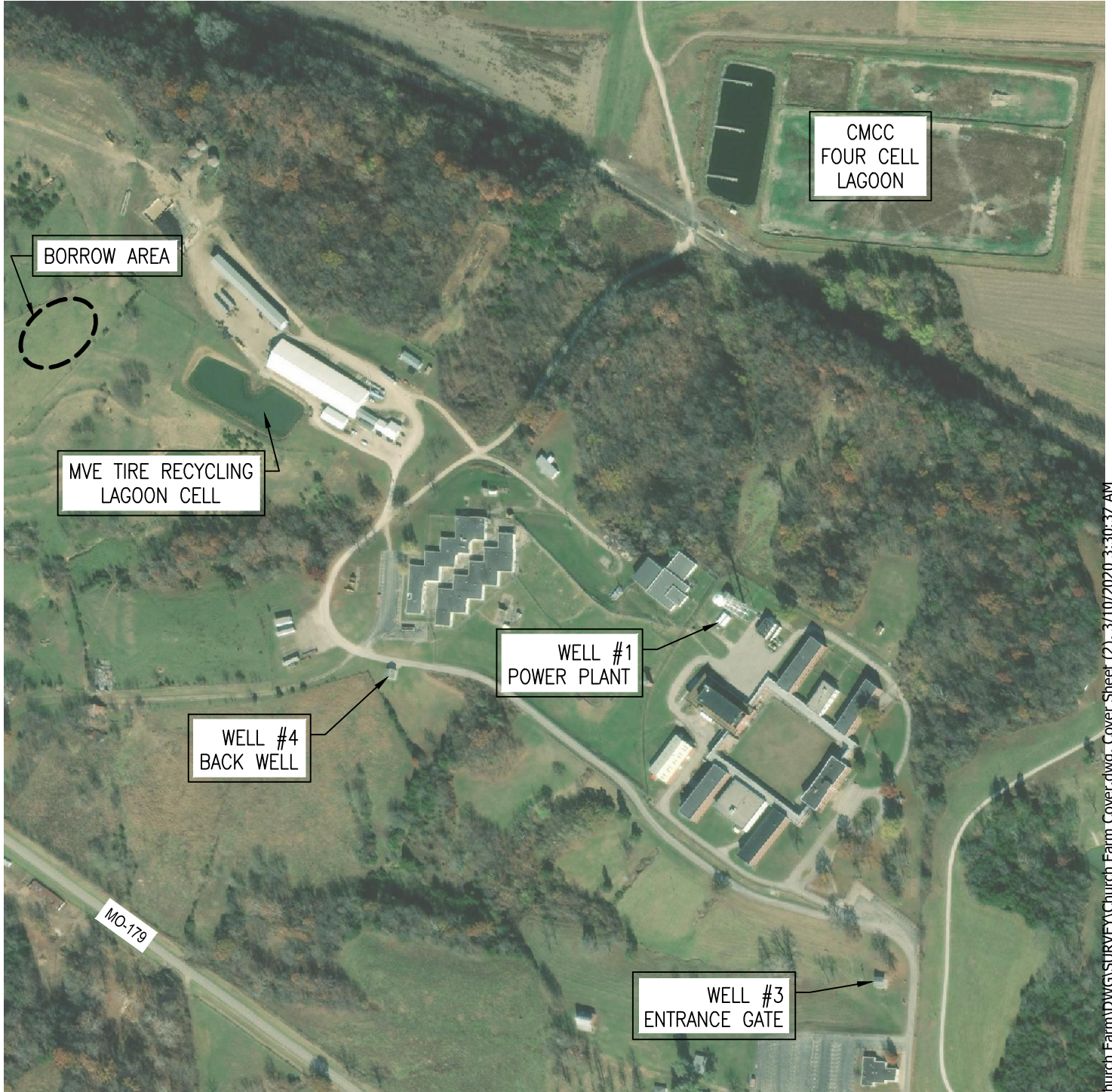
4.03 Project Timeline

The following project timeline is preliminary and will vary dependent upon review processes, bidding requirements set forth by the State of Missouri, and availability of funding. Total number of calendar days allowed for construction is 285.

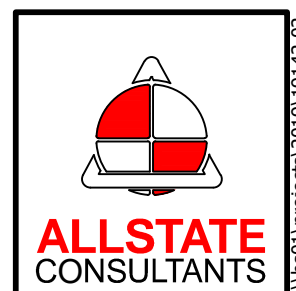
| | |
|---|------------|
| Submit Closure Plan to MDNR for Review | July 2020 |
| Advertise and Bid | TBD |
| Contractor Selection | TBD |
| Construction (Lagoon Closures) | TBD |
| Lagoon Dewatering and Biosolids Stabilization | Months 1-6 |
| Treatment Equipment and Structures Demolition | Months 1-6 |
| Berm Demolition and Biosolids Mixing | Months 3-9 |
| Finish Grading | Months 8-9 |
| Seeding and Mulching | Month 9 |
| Construction (Well Plugging) | Months 1-6 |
| Project Closeout | Month 9 |

Appendix A

Lagoons and Wells Facility Map



CMCC & MVE TIRE RECYCLING FACILITY SITE LOCATION MAP



Appendix B

**Missouri State Operating Permit
Central Missouri Correctional Facility Wastewater Treatment
Facility – Jefferson City, MO
Permit No. MO-0097659**

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-0097659

Owner: Office of Administration/Facilities Management, Design & Construction (OA/FMDC)
Address: 308 West Main, Jefferson City, MO 65101

Continuing Authority: Same as above
Address: Same as above

Facility Name: Central Missouri Correctional Facility Wastewater Treatment Facility
Facility Address: 0.6 miles NE of the intersection of Hwy 179 and Church Farm Rd.
Jefferson City, MO 65109

Legal Description: Sec. 18, T45N, R12W, Cole County
UTM Coordinates: X = 562907, Y = 4277831

Receiving Stream: Workman Creek (P) (823)
First Classified Stream and ID: Workman Creek (P) (823)
USGS Basin & Sub-watershed No.: (10300102-1302)

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

FACILITY DESCRIPTION

Outfall #001 – POTW


Four-cell lagoon / aerated primary cell / oil & water separator / sludge is retained in lagoon.
Design population equivalent is 60.
Design flow is 720 gallons per day.
Design sludge production is 22.5 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

October 1, 2019
Effective Date

September 30, 2024
Expiration Date


Edward B. Galbraith, Director, Division of Environmental Quality


Chris Wieberg, Director, Water Protection Program

| OUTFALL #001 | TABLE A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS | | | | | |
|--|--|----------------------------|-------------------|--------------------|--------------------------|--------------------|
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations in Table A shall become effective on October 1, 2019 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below: | | | | | | |
| EFFLUENT PARAMETER(S) | UNITS | FINAL EFFLUENT LIMITATIONS | | | MONITORING REQUIREMENTS | |
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| Limit Set: Q | | | | | | |
| Flow | MGD | * | | * | once/quarter*** | 24 hr. estimate |
| Biochemical Oxygen Demand ₅ | mg/L | | 65 | 45 | once/quarter*** | grab |
| Total Suspended Solids | mg/L | | 120 | 80 | once/quarter*** | grab |
| <i>E. coli</i> (Note 1) | #/100mL | | 1,030 | 206 | once/quarter*** | grab |
| Ammonia as N | mg/L | 39.2 | | 15.0 | once/quarter*** | grab |
| Oil & Grease | mg/L | 15 | | 10 | once/quarter*** | grab |
| EFFLUENT PARAMETER(S) | UNITS | MINIMUM | | MAXIMUM | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| pH – Units** | SU | 6.5 | | 9.0 | once/quarter*** | grab |
| MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2020</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS. | | | | | | |

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged.

*** See table below for quarterly sampling.

| Quarterly Minimum Sampling Requirements | | | | |
|---|--------------------------|--|--|--------------------------|
| Quarter | Months | <i>E. coli</i> | All Other Parameters | Report is Due |
| First | January, February, March | Not required to sample. | Sample at least once during any month of the quarter | April 28 th |
| Second | April, May, June | Sample at least once during any month of the quarter | Sample at least once during any month of the quarter | July 28 th |
| Third | July, August, September | Sample at least once during any month of the quarter | Sample at least once during any month of the quarter | October 28 th |
| Fourth | October | Sample once during <u>October</u> | Sample at least once during any month of the quarter | January 28 th |
| | November & December | Not required to sample. | | |

Note 1 – Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and August 1, 2019, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. Electronic Discharge Monitoring Report (eDMR) Submission System.
 - (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
 - (b) Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
 - (1) Collection System Maintenance Annual Reports; and
 - (2) Any additional report required by the permit excluding bypass reporting.After such a system has been made available by the Department, required data shall be directly input into the system by the next report due date.
 - (c) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
 - (1) Notices of Termination (NOTs); and
 - (2) Bypass reporting, See Special Condition #8 for 24-hr. bypass reporting requirements.
 - (d) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx>.
 - (e) Waivers from Electronic Reporting. The permittee must submit compliance monitoring data and reports electronically. The Department may grant a waiver to a permittee in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.
2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
 - (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) or 40 CFR 403.18(e), respectively.
3. All outfalls must be clearly marked in the field.
4. Report as no-discharge when a discharge does not occur during the report period.
5. Reporting of Non-Detects:
 - (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
 - (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
 - (c) The permittee shall provide the "Non-Detect" sample result using the less than sign and the minimum detection limit (e.g. <10).
 - (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
 - (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
 - (f) When calculating monthly averages, use one-half of the method detection limit (MDL) instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (c).

C. SPECIAL CONDITIONS (continued)

6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
7. The permittee shall develop and implement a program for maintenance and repair of the collection system. The recommended guidance is the US EPA's Guide for Evaluating Capacity, Management, Operation, And Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (Document number EPA 305-B-05-002) or the Department's CMOM Model located at <http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <http://dnr.mo.gov/pubs/pub2574.htm>.

The permittee shall also submit a report to the Northeast Regional Office via the Electronic Discharge Monitoring Report (eDMR) Submission System annually, by January 28th, for the previous calendar year. The report shall contain the following information:

- (a) A summary of the efforts to locate and eliminate specific sources of excessive infiltration and inflow into the collection system serving the facility for the previous year.
 - (b) A summary of the general maintenance and repairs to the collection system serving the facility for the previous year.
 - (c) A summary of any planned maintenance and repairs to the collection system serving the facility for the upcoming calendar year. This list shall include locations (GPS, 911 address, manhole number, etc.) and actions to be taken.
8. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Northeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/mogem/> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
 9. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
 10. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.
 11. An all-weather access road to the treatment facility shall be maintained.
 12. The outfall sewer shall be protected and maintained against the effects of floodwater, ice, or other hazards as to reasonably insure its structural stability, freedom from stoppage, and that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
 13. Sludge treatment, storage and disposal practices shall be conducted in accordance with Standard Conditions Part III. The permittee shall receive approval for any sludge treatment, storage, or disposal practices not identified in the facility description of the operating permit.
 14. The lagoon(s) shall be operated and maintained to ensure their structural integrity, which includes maintaining adequate freeboard and keeping the berms free of deep-rooted vegetation, animal dens, or other potential sources of damage.
 15. The facility shall ensure that adequate provisions are provided to prevent or minimize surface water intrusion into the lagoon and to divert stormwater runoff around the lagoon and protect embankments from erosion.
 16. **Stormwater Pollution Prevention Plan (SWPPP):** Through implementation of the SWPPP, the permittee shall minimize the release of pollutants in stormwater from the facility to the waters of the state. The SWPPP shall be developed in consultation with the concepts and methods described in the following document: **Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators**, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (USEPA) in June 2015.
 - (a) The SWPPP must identify any stormwater outfall from the facility and Best Management Practices (BMPs) used to prevent or reduce the discharge of contaminants in stormwater. The stormwater outfalls shall either be marked in the field or clearly marked on a map and maintained with the SWPPP.
 - (b) The SWPPP must include a schedule and procedures for a once per month routine site inspection.
 - (1) The monthly routine inspection shall be documented in a brief written report, which shall include:
 - i. The person(s) conducting the inspection.

C. SPECIAL CONDITIONS (continued)

- ii. The inspection date and time.
 - iii. Weather information for the day of the inspection.
 - iv. Precipitation information for the entire period since the last inspection.
 - v. Description of the discharges observed, including visual quality of the discharges (sheen, turbid, etc.).
 - vi. Condition of BMPs
 - vii. If BMPs were replaced or repaired.
 - viii. Observations and evaluations of BMP effectiveness.
 - (2) Any deficiency observed during the routine inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
 - (3) The routine inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
 - (4) The routine inspection reports shall be made available to Department personnel upon request.
 - (c) The SWPPP must include a schedule and procedures for a once per year comprehensive site inspection.
 - (1) The annual comprehensive inspection shall be documented in a written report, which shall include:
 - i. The person(s) conducting the inspection.
 - ii. The inspection date and time.
 - iii. Findings from the areas of your facility that were examined;
 - iv. All observations relating to the implementation of your control measures including:
 - 1. Previously unidentified discharges from the site,
 - 2. Previously unidentified pollutants in existing discharges,
 - 3. Evidence of, or the potential for, pollutants entering the drainage system;
 - 4. Evidence of pollutants discharging to receiving waters at all facility outfall(s), and the condition of and around the outfall, and
 - 5. Additional control measures needed to address any conditions requiring corrective action identified during the inspection.
 - v. Any required revisions to the SWPPP resulting from the inspection;
 - vi. Any incidence of noncompliance observed or a certification stating that the facility is in compliance with Special Condition C.16.
 - (2) Any deficiency observed during the comprehensive inspection must be corrected within seven (7) days and the actions taken to correct the deficiencies shall be included with the written report.
 - (3) The comprehensive inspection reports must be kept onsite with the SWPPP and maintained for a period of five (5) years.
 - (4) The comprehensive inspection reports shall be made available to Department personnel upon request.
 - (d) The SWPPP must be kept on-site and should not be sent to the Department unless specifically requested.
 - (e) The SWPPP must be reviewed and updated at a minimum once per permit cycle, as site conditions or control measures change.
17. The permittee shall select, install, use, operate, and maintain the Best Management Practices prescribed in the SWPPP.
- (a) Permittee shall adhere to the following minimum Best Management Practices (BMPs):
 - (1) Minimize the exposure of industrial material storage areas, loading and unloading areas, dumpsters and other disposal areas, maintenance activities, and fueling operations to rain, snow, snowmelt, and runoff, by locating industrial materials and activities inside or protecting them with storm resistant coverings, if warranted and practicable.
 - (2) Provide good housekeeping practices on the site to prevent potential pollution sources from coming into contact with stormwater and provide collection facilities and arrange for proper disposal of waste products, including sludge.
 - (3) Implement a maintenance program to ensure that the structural control measures and industrial equipment is kept in good operating condition and to prevent or minimize leaks and other releases of pollutants.
 - (4) Prevent or minimize the spillage or leaks of fluids, oil, grease, fuel, etc. from equipment and vehicle maintenance, equipment and vehicle cleaning, or activities.
 - (5) Provide sediment and erosion control sufficient to prevent or control sediment loss off of the property. This could include the use of straw bales, silt fences, or sediment basins, if needed.
 - (6) Provide stormwater runoff controls to divert, infiltrate, reuse, contain, or otherwise minimize pollutants in the stormwater discharge.
 - (7) Enclose or cover storage piles of salt or piles containing salt, used for deicing or other commercial or industrial purposes.
 - (8) Provide training to all employees who; work in areas where industrial materials or activities are exposed to stormwater, are responsible for stormwater inspections, are members of the Pollution Prevention Team. Training must cover the specific control measures and monitoring, inspection, planning, reporting and documentation requirements of this permit. Training is recommended annually for any applicable staff and whenever a new employee is hired who meets the description above.
 - (9) Eliminate and prevent unauthorized non-stormwater discharges at the facility.
 - (10) Minimize generation of dust and off-site tracking of raw, final, or waste materials by implementing appropriate control measures.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0097659
CENTRAL MISSOURI CORRECTIONAL FACILITY WASTEWATER TREATMENT FACILITY

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

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

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

This Factsheet is for a Minor facility.

Part I – Facility Information

Facility Type: POTW

Facility Description: Four-cell lagoon / aerated primary cell / oil & water separator / sludge is retained in lagoon.

Have any changes occurred at this facility or in the receiving water body that affects effluent limit derivation?

✓ No.

Application Date: 2/5/19
Expiration Date: 9/30/19

OUTFALL(S) TABLE:

| OUTFALL | DESIGN FLOW (CFS) | TREATMENT LEVEL | EFFLUENT TYPE |
|---------|-------------------|-----------------|---------------|
| #001 | 0.001 | Secondary | Domestic |

Facility Performance History:

This facility was last inspected on October 11, 2018. The inspection showed the following unsatisfactory features:

- Failed to provide a lockable gate.
- Failed to provide proper warning signs on all sides of the perimeter fence.
- Deep-rooted vegetation was discovered growing on the lagoon berms, in violation of Special Condition #16 of Missouri State Operating Permit #MO-0097659.
- Failed to develop and implement a Stormwater Pollution Prevention Plan, in accordance with Special Condition #10.

The facility returned to compliance on January 7, 2019.

A review of discharge monitoring data submitted by the permittee indicated that the facility has reported No Discharge since May 31, 2011.

Comments:

Changes in this permit include the addition of a maximum limit of 9.0 SU for pH, the recalculation of Ammonia as N, and the removal of Acute WET testing requirements, removal of BOD₅ and TSS percent removal and removal of monitoring for Aluminum, Cadmium, Iron, Lead and Zinc as the facility has not discharged since 2011 and all operations have ceased at the facility. See Part VI of the Fact Sheet for further information regarding the addition, revision, and removal of effluent parameters. Special conditions were updated to include bypass reporting requirements, the removal of general criteria as a special condition as the permit writer evaluated each narrative statement in Part VI – Effluent Limits Determination for reasonable potential to cause or contribute to an excursion of the criteria and established numeric effluent limitations where necessary and the removal of the changes in discharges of toxic substances as Standard Conditions Part II contains these requirements.

Part II – Operator Certification Requirements

✓ This facility is not required to have a certified operator.

Part III – Operational Control Testing Requirements

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publically owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publically owned treatment works and privately owned facilities regulated by the Public Service Commission has a Population Equivalent greater than two hundred (200).

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department's judgement of monitoring needs for process control at the specified facility.

✓ As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.

Part IV – Receiving Stream Information

RECEIVING STREAM(S) TABLE: OUTFALL #001

| WATER-BODY NAME | CLASS | WBID | DESIGNATED USES* | 12-DIGIT HUC | DISTANCE TO CLASSIFIED SEGMENT (MI) |
|-----------------|-------|------|--|---------------|-------------------------------------|
| Workman Creek | P | 823 | AQL, WBC-B, SCR, HHP, IRR, LWW | 10300102-1302 | 0.0 |
| Missouri River | P | 701 | AQL, WBC-B, SCR, HHP, IRR, LWW, DWS, IND | | 0.5 |

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:

AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: **WWH** = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); **EAH** = Ephemeral Aquatic Habitat; **MAH** = Modified Aquatic Habitat; **LAH** = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

WBC = Whole Body Contact recreation where the entire body is capable of being submerged;

WBC-A = Whole body contact recreation that supports swimming uses and has public access;

WBC-B = Whole body contact recreation that supports swimming;

SCR = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;

IRR = Irrigation for use on crops utilized for human or livestock consumption;

LWW = Livestock and wildlife watering (Current narrative use is defined as **LWP** = Livestock and Wildlife Protection);

DWS = Drinking Water Supply;

IND = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

WSA = Storm- and flood-water storage and attenuation; **WHP** = Habitat for resident and migratory wildlife species;

WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; **WHC** = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

RECEIVING STREAM(S) LOW-FLOW VALUES:

| RECEIVING STREAM | LOW-FLOW VALUES (CFS) | | |
|------------------|-----------------------|------|-------|
| | 1Q10 | 7Q10 | 30Q10 |
| Workman Creek | 0.1 | 0.1 | 1.0 |

MIXING CONSIDERATIONS TABLE:

| MIXING ZONE (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(a)] | | | ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(5)(A)4.B.(II)(b)] | | |
|---|-------|-------|--|--------|-------|
| 1Q10 | 7Q10 | 30Q10 | 1Q10 | 7Q10 | 30Q10 |
| 0.025 | 0.025 | 0.25 | 0.0025 | 0.0025 | N/A |

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

Receiving Water Body's Water Quality

Currently, the Department has not conducted a stream survey for this waterbody. When a stream survey is conducted, more information may be available about the receiving stream.

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

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

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

- ✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)], or is an existing facility.

ANTI-BACKSLIDING:

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

- ✓ Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
- ✓ Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.
 - **Sampling and Reporting Frequency.** The previous permit contained monthly sampling and reporting frequencies. This permit contains quarterly sampling and reporting frequencies due to the low design flow of the facility, consistency amongst effluent data, and compliance with effluent limits. The permit is still protective of water quality.
 - **Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) Percent Removal.** In accordance with 40 CFR Part 133.102(a)(3) & (b)(3), removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. While this facility is a Publicly Owned Treatment Works (POTW), influent monitoring is not being required to determine percent removal due to the small size of the facility and consistency among effluent data. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.
 - **Total Recoverable Aluminum, Cadmium, Iron, Lead and Zinc.** The previous permit contained monitoring requirements to determine whether reasonable potential to cause an excursion of the water quality standard existed. During the drafting of this permit, the permit writer has made a Reasonable Potential Determination that there has been no discharge since April 2011 and all facility operations have ceased. Therefore, the monitoring requirements for Total Recoverable Aluminum, Cadmium, Iron, Lead and Zinc have been removed from this permit. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.

- ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
- **General Criteria.** The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Part VI – Effluent Limits Determination for more information regarding the reasonable potential determinations for each general criterion related to this facility.

ANTIDEGRADATION:

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], for domestic wastewater discharge with new, altered, or expanding discharges, the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. In accordance with Missouri's water quality regulations for antidegradation [10 CSR 20-7.031(3)], degradation may be justified by documenting the socio-economic importance of a discharge after determining the necessity of the discharge. Facilities must submit the antidegradation review request to the Department prior to establishing, altering, or expanding discharges. See <http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm>

- ✓ No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

For stormwater discharges, the stormwater BMP chosen for the facility, through the antidegradation analysis performed by the facility, must be implemented and maintained at the facility. Failure to implement and maintain the chosen BMP alternative is a permit violation; see SWPPP.

- ✓ The facility must review and maintain stormwater BMPs as appropriate.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(2)(C)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, when a higher level authority is available, must submit information to the Department for review and approval, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ Permittee is not authorized to land apply biosolids. Sludge/biosolids are stored in the lagoon. The permittee must receive approval for any treatment, removal, and disposal of sludge or biosolids that not identified in the facility description of the operating permit.

COMPLIANCE AND ENFORCEMENT:

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

- ✓ The facility is not currently under Water Protection Program enforcement action.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are optional and found on the Department's website at the following locations:

Operational Monitoring Lagoon: <http://dnr.mo.gov/forms/780-2801-f.pdf>

Operational Monitoring Mechanical: <http://dnr.mo.gov/forms/780-2800-f.pdf>

I&I Report: <http://dnr.mo.gov/forms/780-2690-f.pdf>

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. Each facility must make a request. If a single entity owns or operates more than one facility, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

- ✓ The permittee/facility is currently using the eDMR data reporting system.

NUMERIC LAKE NUTRIENT CRITERIA

- ✓ This facility does not discharge into a lake watershed where numeric lake nutrient criteria are applicable.

PRETREATMENT PROGRAM:

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

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

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

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

- ✓ The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):

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

In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any given pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

- ✓ An RPA was not conducted for this facility. Ammonia is a constituent of domestic wastewater. A reasonable potential to violate water quality standards is assumed. Absent sufficient data, a default Coefficient of Variation of 0.6 was utilized per the Technical Support Documents for Water Quality-Based Toxics Control. Please see Derivation and Discussion of Limits.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

- ✓ Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur. The permit also contains requirements for permittees to develop and implement a program for maintenance and repair of the collection system. The permit requires that the permittee submit an annual report to the Department for the previous calendar year that contains a summary of efforts taken by the permittee to locate and eliminate sources of excess I & I, a summary of general maintenance and repairs to the collection system, and a summary of any planned maintenance and repairs to the collection system for the upcoming calendar year.

- ✓ At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002) or the Departments' CMOM Model located at <http://dnr.mo.gov/env/wpp/permits/docs/cmom-template.doc>. For additional information regarding the Departments' CMOM Model, see the CMOM Plan Model Guidance document at <http://dnr.mo.gov/pubs/pub2574.htm>. The CMOM identifies some of the criteria used to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.031(11), and 10 CSR 20-7.015(9), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study that may result in site-specific criteria or alternative effluent limits. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

✓ This permit does not contain an SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:

In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See <http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm>.

✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

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

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (<http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf>).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs that are reasonable and cost effective. The AA evaluation should include practices that are designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why “no discharge” or “no exposure” is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure* (AIP), Section II.B.

If parameter-specific numeric exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at:

<http://dnr.mo.gov/forms/index.html>.

- ✓ A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

VARIANCE:

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

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

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010(86)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

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

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

Where C = downstream concentration C_e = effluent concentration
Cs = upstream concentration Q_e = effluent flow
Q_s = upstream flow

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

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

Number of Samples “n”:

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of “n” for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for “n” must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is “n = 4” at a minimum. For Total Ammonia as Nitrogen, “n = 30” is used.

WLA MODELING:

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

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

WHOLE EFFLUENT TOXICITY (WET) TEST:

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

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

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

✓ The permittee is required to conduct WET test for this facility.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

✓ This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

✓ This facility does not discharge to a 303(d) listed stream.

Part VI – Effluent Limits Determination

CATEGORIES OF WATERS OF THE STATE:

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

- | | |
|--|---|
| <input checked="" type="checkbox"/> Missouri or Mississippi River [10 CSR 20-7.015(2)] | <input type="checkbox"/> Special Streams [10 CSR 20-7.015(6)] |
| <input type="checkbox"/> Lakes or Reservoirs [10 CSR 20-7.015(3)] | <input type="checkbox"/> Subsurface Waters [10 CSR 20-7.015(7)] |
| <input type="checkbox"/> Losing Streams [10 CSR 20-7.015(4)] | <input checked="" type="checkbox"/> All Other Waters [10 CSR 20-7.015(8)] |
| <input type="checkbox"/> Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)] | |

OUTFALL #001 – MAIN FACILITY OUTFALL

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

| PARAMETER | Unit | Basis for Limits | Daily Maximum | Weekly Average | Monthly Average | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type **** |
|----------------------------|---------|------------------|---------------|----------------|-----------------|-----------------------|--------------------|---------------------|---------------------|
| Flow | MGD | 1 | * | | * | */ | 1/quarter | quarterly | E |
| BOD ₅ | mg/L | 1 | | 65 | 45 | 65/45 | 1/quarter | quarterly | G |
| TSS | mg/L | 1 | | 120 | 80 | 120/80 | 1/quarter | quarterly | G |
| <i>Escherichia coli</i> ** | #/100mL | 1, 3 | | 1,030 | 206 | 1,030/206 | 1/quarter | quarterly | G |
| Ammonia as N | mg/L | 2, 3 | 39.2 | | 15.0 | */ | 1/quarter | quarterly | G |
| Oil & Grease | mg/L | 1, 3 | 15 | | 10 | 15/10 | 1/quarter | quarterly | G |
| PARAMETER | Unit | Basis for Limits | Minimum | | Maximum | Previous Permit Limit | Sampling Frequency | Reporting Frequency | Sample Type |
| pH | SU | 1 | 6.5 | | 9.0 | ≥ 6.5 | 1/quarter | quarterly | G |

* - Monitoring requirement only.

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

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

**** - C = 24-hour composite

G = Grab

T = 24-hr. total

E = 24-hr. estimate

M = Measured/calculated

Basics for Limitations Codes:

- | | | |
|--|-----------------------------------|---|
| 1. State or Federal Regulation/Law | 5. Antidegradation Policy | 9. WET Test Policy |
| 2. Water Quality Standard (includes RPA) | 6. Water Quality Model | 10. Multiple Discharger Variance |
| 3. Water Quality Based Effluent Limits | 7. Best Professional Judgment | 11. Nutrient Criteria Implementation Plan |
| 4. Antidegradation Review | 8. TMDL or Permit in lieu of TMDL | |

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- Biochemical Oxygen Demand (BOD₅).** Operating permit retains 65 mg/L as a Weekly Average and 45 mg/L as a Monthly Average from the previous permit. Please see the **CATEGORIZATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination**.
- Total Suspended Solids (TSS).** Operating permit retains 120 mg/L as a Weekly Average and 80 mg/L as a Monthly Average from the previous permit. Please see the **CATEGORIZATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination**.

Please note that the final effluent limits for BOD and TSS contained in the permit are Equivalent to Secondary limits as per 10 CSR 20-7.015. Any changes made to the lagoon system that modifies it such that it no longer functions as a typical lagoon will result in the facility no longer qualifying for Equivalent to Secondary limitations. The facility may be required to also follow the Missouri Antidegradation Rule and Implementation Procedure if the discharge is expanded.

- **Escherichia coli (E. coli).** Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1,030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5th root of (1)(4)(6)(10)(5) = 5th root of 1,200 = 4.1 #/100mL.
- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L.

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

Summer: April 1 – September 30

Chronic WLA: $C_e = ((0.001 + 0.25)1.5 - (0.25 * 0.01))/0.001$
 $C_e = 335.3 \text{ mg/L}$

Acute WLA: $C_e = ((0.001 + 0.0025)12.1 - (0.0025 * 0.01))/0.001$
 $C_e = 39.18 \text{ mg/L}$

$LTA_c = 335.3 \text{ mg/L (0.780)} = 261.62 \text{ mg/L}$ [CV = 0.6, 99th Percentile, 30 day avg.]
 $LTA_a = 39.18 \text{ mg/L (0.321)} = 12.58 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 12.58 mg/L (3.11) = **39.2** mg/L [CV = 0.6, 99th Percentile]
 AML = 12.58 mg/L (1.19) = **15.0** mg/L [CV = 0.6, 95th Percentile, n=30]

Winter: October 1 – March 31

Chronic WLA: $C_e = ((0.001 + 0.25)3.1 - (0.25 * 0.01))/0.001$
 $C_e = 695.30 \text{ mg/L}$

Acute WLA: $C_e = ((0.001 + 0.0025)12.1 - (0.0025 * 0.01))/0.001$
 $C_e = 39.18 \text{ mg/L}$

$LTA_c = 695.30 \text{ mg/L (0.780)} = 542.55 \text{ mg/L}$ [CV = 0.6, 99th Percentile, 30 day avg.]
 $LTA_a = 39.18 \text{ mg/L (0.321)} = 12.58 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 12.58 mg/L (3.11) = **39.2** mg/L [CV = 0.6, 99th Percentile]
 AML = 12.58 mg/L (1.19) = **15.0** mg/L [CV = 0.6, 95th Percentile, n=30]

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **pH.** 6.5-9.0 SU. pH limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the in-stream Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. 10 CSR 20-7.015 allows pH for lagoons to be maintained above 6.0 SU. Due to the classification of the receiving stream, the Department has determined that there is no assimilative capacity during critical low flow periods, therefore the water quality standard must be met at the outfall.

Parameters Removed.

- **Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) Percent Removal.** In accordance with 40 CFR Part 133.102(a)(3) & (b)(3), removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. While this facility is a Publicly Owned Treatment Works (POTW), influent monitoring is not being required to determine percent removal due to the small size of the facility and consistency among effluent data. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.

- **Total Recoverable Aluminum, Cadmium, Iron, Lead and Zinc.** The previous permit contained monitoring requirements to determine whether reasonable potential to cause an excursion of the water quality standard existed. During the drafting of this permit, the permit writer has made a Reasonable Potential Determination that there has been no discharge since April 2011 and all facility operations have ceased. Therefore, the monitoring requirements for Total Recoverable Aluminum, Cadmium, Iron, Lead and Zinc have been removed from this permit. The permit is still protective of water quality and this determination will be reassessed at the time of renewal.

Sampling Frequency Justification: Sampling and Reporting Frequency was reduced from once per month to once per quarter. Sampling for *E. coli* is set at quarterly per 10 CSR 20-7.015(9)(D)7.C.

Sampling Type Justification: As per 10 CSR 20-7.015, BOD₅ and TSS collected for lagoons may be grab samples. Grab samples must be collected for pH, *E. coli* and Oil & Grease in accordance with recommended analytical methods. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from this facility is made up of treated domestic wastewater. Based upon review of the recent Report of Compliance Inspection for the inspection conducted on October 11, 2018, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes equivalent to secondary treatment technology and is currently in compliance with the equivalent to secondary treatment technology based effluent limits established in this permit and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
- (E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
- (F) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.

- (J) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part VII – 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 required to determine “findings of affordability” because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3.

- ✓ The Department is not required to make a “finding of affordability”. Per Section 644.145.3, a “finding of affordability” is a statement as to whether or not an individual or household would be required to make unreasonable sacrifices in order to make the projected monthly payments for sewer services. While this facility is a publically-owned treatment works, the permittee accomplishes capital improvements through an established budget for operation and maintenance and not through the issuance of utility bills to customers for sewer services. Because of this, the Department cannot determine the “affordability” of the new permit requirements.

Part VIII – Administrative Requirements

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

WATER QUALITY STANDARD REVISION:

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

- ✓ This operating permit does not contain requirements for a water quality standard that has changed twenty-five percent or more since the previous operating permit.

PERMIT SYNCHRONIZATION:

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 3rd Quarter of calendar year 2024.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from August 9, 2019 through September 9, 2019. No responses received.

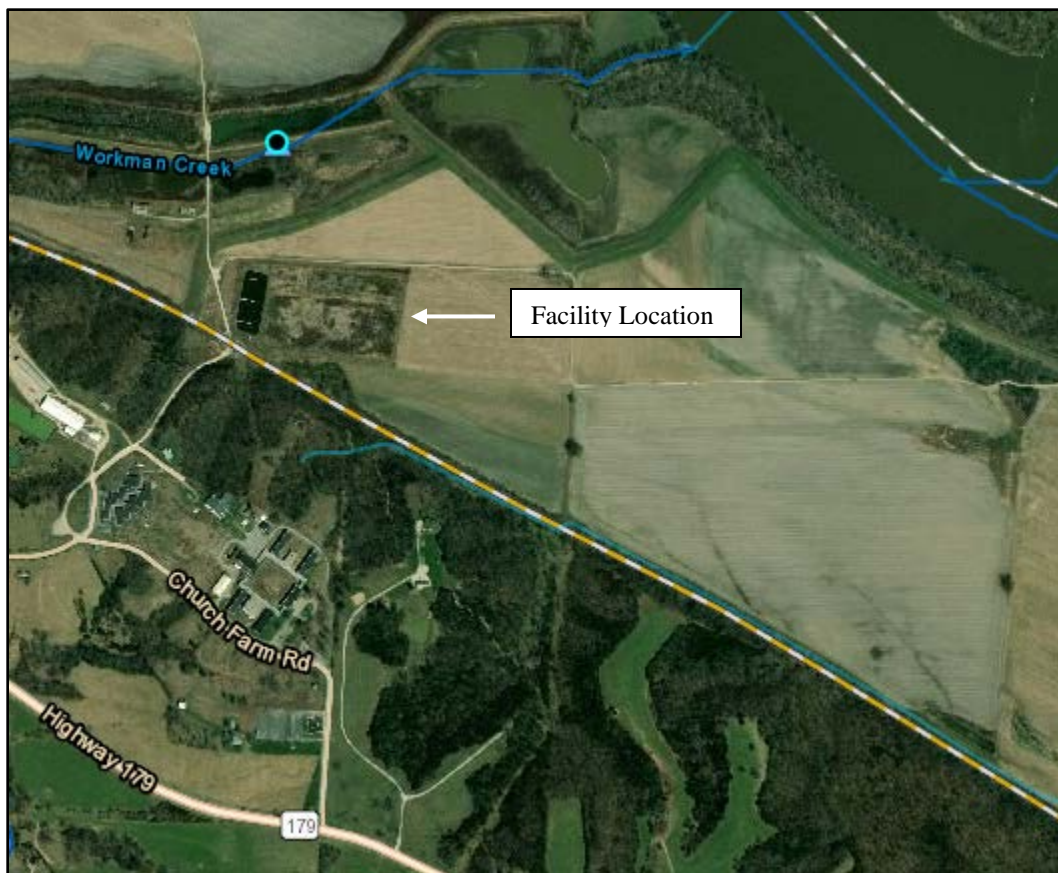
DATE OF FACT SHEET: JUNE 26, 2019

COMPLETED BY:

**DANIELLE SKOUBY, ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
(573) 526-1503
Danielle.Skouby@dnr.mo.gov**

Appendices

APPENDIX – FACILITY OUTFALL #001:





STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
 - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
 - b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
2. **Monitoring Requirements.**
 - a. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
 - b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee’s sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
 - a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
 - b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
 - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - iii. The alteration or addition results in a significant change in the permittee’s sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
 - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.
2. **Non-compliance Reporting.**
 - a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
 - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - ii. Any upset which exceeds any effluent limitation in the permit.
 - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
 - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
 4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
 5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
 6. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
 7. **Discharge Monitoring Reports.**
 - a. Monitoring results shall be reported at the intervals specified in the permit.
 - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
 - c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.
- b. Notice.
 - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
 - c. Prohibition of bypass.
 - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
 1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 3. The permittee submitted notices as required under paragraph 2. b. of this section.
 - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.
3. **Upset Requirements.**
 - a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
 - b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
 - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
 - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section C – Bypass/Upset Requirements

1. **Definitions.**
 - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
 - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
 - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
 - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
 - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
 - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement



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- imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.
- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
- d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- c. A permittee with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
- i. Violations of any terms or conditions of this permit or the law;
- ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
- iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
7. **Permit Transfer.**
- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



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10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
12. **Closure of Treatment Facilities.**
 - a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
 - b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.
13. **Signatory Requirement.**
 - a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
 - b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
 - c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.



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REVISED
MAY 1, 2013

PART II - SPECIAL CONDITIONS – PUBLICLY OWNED
TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
 - i. the quality and quantity of effluent introduced into the POTW, and
 - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
August 1, 2019

PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
 - a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
 - b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
 - c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
 - a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
 - b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
 - a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
 - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limited to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
14. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – BIOSOLIDS OR SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR BY CONTRACT HAULER

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or, if the ash is determined to be hazardous, with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or sludge must be removed to maintain adequate storage capacity in the facility.
 - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
 - b. Permittee shall close the lagoon in accordance with Section I.

SECTION G – LAND APPLICATION OF BIOSOLIDS

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes “Class A” or “Class B” biosolids derived from domestic wastewater to be land applied onto grass land, crop land, timber, or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
 - a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
 - b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
 - c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
 - d. Animal grazing shall not be allowed for 30 days after application of biosolids.
 - e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
 - f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
 - g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
 - h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.
5. Pollutant limits
 - a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
 - b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to achieve pollutant concentration below those identified in Table 1, below.
 - c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

TABLE 1

| Biosolids ceiling concentration | |
|---------------------------------|------------------------------------|
| Pollutant | Milligrams per kilogram dry weight |
| Arsenic | 75 |
| Cadmium | 85 |
| Copper | 4,300 |
| Lead | 840 |
| Mercury | 57 |
| Molybdenum | 75 |
| Nickel | 420 |
| Selenium | 100 |
| Zinc | 7,500 |

- d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track pollutant loading onto application sites for parameters that have exceeded the low metal concentration limits.

TABLE 2

| Biosolids Low Metal Concentration | |
|-----------------------------------|------------------------------------|
| Pollutant | Milligrams per kilogram dry weight |
| Arsenic | 41 |
| Cadmium | 39 |
| Copper | 1,500 |
| Lead | 300 |
| Mercury | 17 |
| Nickel | 420 |
| Selenium | 100 |
| Zinc | 2,800 |

- e. Annual pollutant loading rate.

Table 3

| Biosolids Annual Loading Rate | |
|-------------------------------|--------------------------|
| Pollutant | Kg/ha (lbs./ac) per year |
| Arsenic | 2.0 (1.79) |
| Cadmium | 1.9 (1.70) |
| Copper | 75 (66.94) |
| Lead | 15 (13.39) |
| Mercury | 0.85 (0.76) |
| Nickel | 21 (18.74) |
| Selenium | 5.0 (4.46) |
| Zinc | 140 (124.96) |

- f. Cumulative pollutant loading rates.

Table 4

| Biosolids Cumulative Pollutant Loading Rate | |
|---|-----------------|
| Pollutant | Kg/ha (lbs./ac) |
| Arsenic | 41 (37) |
| Cadmium | 39 (35) |
| Copper | 1500 (1339) |
| Lead | 300 (268) |
| Mercury | 17 (15) |
| Nickel | 420 (375) |
| Selenium | 100 (89) |
| Zinc | 2800 (2499) |

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
- Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
 - Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
 - The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

- i. PAN can be determined as follows:
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor¹).
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
- ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.
- iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.
- d. Buffer zones are as follows:
 - i. 300 feet of a water supply well, sinkhole, water supply reservoir or water supply intake in a stream;
 - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
 - iii. 150 feet of dwellings or public use areas;
 - iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);
 - v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.
 - vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.
- e. Slope limitation for application sites are as follows:
 - i. For slopes less than or equal to 6 percent, no rate limitation;
 - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels;
 - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
 - iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.
- f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:
 - i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - iii. Other best management practices approved by the Department.

SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all sludges and/or biosolids. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6.010 and 10 CSR 20 – 6.015.
3. Biosolids or sludge that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
 - a. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
 - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
 - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre. Alternative, site-specific application rates may be included in the closure plan for department consideration.
 - i. PAN can be determined as follows:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are “similar treatment works” under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. Under the septage category, residuals may be left in place as follows:
 - a. Testing for metals or fecal coliform is not required.
 - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
 - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, the lagoon berm shall be demolished, and the site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.
7. When closing a mechanical wastewater plant, all biosolids or sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
 - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate

- surface water drainage without creating erosion.
- b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
 - c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.
8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

| Biosolids or Sludge produced and disposed (Dry Tons per Year) | Monitoring Frequency (See Notes 1, and 2) | | |
|---|--|---|----------------------------------|
| | Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium | Nitrogen TKN, Nitrogen PAN ¹ | Priority Pollutants ² |
| 319 or less | 1/year | 1 per month | 1/year |
| 320 to 1650 | 4/year | 1 per month | 1/year |
| 1651 to 16,500 | 6/year | 1 per month | 1/year |
| 16,501+ | 12/year | 1 per month | 1/year |

¹ Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

² Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
 - a. By February 19th of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
 - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:
Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the
permit (see cover letter of permit)
ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: <https://cdx.epa.gov/> Additional information is available at: <https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws>

5. Annual report contents. The annual report shall include the following:
 - a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
 - b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/or disposed.
 - c. Gallons and % solids data used to calculate the dry ton amounts.
 - d. Description of any unusual operating conditions.
 - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
 - i. This must include the name and address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
 - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
 - f. Contract Hauler Activities:

If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.
 - g. Land Application Sites:
 - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
 - ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
 - iii. Report the method used for compliance with pathogen and vector attraction requirements.
 - iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.

31717

RECEIVED

FEB 05 2019


**MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM**
**FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT
RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS
THAN OR EQUAL TO 100,000 GALLONS PER DAY**
FOR AGENCY USE ONLY

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

2-579

4

READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**1. THIS APPLICATION IS FOR:**

- ☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
(Include completed antidegradation review or request for antidegradation review, see instructions)
- ☐ A new site-specific operating permit formerly general permit #MOG _____
- ☒ A site-specific operating permit renewal: Permit #MO- MO-0097659 Expiration Date 9/30/2019
- ☐ A site-specific operating permit modification: Permit #MO- _____ Reason: _____
- ☐ General permit (MOGD – Non POTWs discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):
Permit #MO- _____ Expiration Date _____

 1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☒ NO
2. FACILITY

NAME central missouri correctional Facility Waste Water Treatment Facility. TELEPHONE NUMBER WITH AREA CODE (573) 680-5662

ADDRESS (PHYSICAL) 2600 Highway 179 CITY Jefferson City STATE mo ZIP CODE 65102

2.1 Legal description: NE ¼, SW ¼, SE ¼, Sec. 18, T 45, R 12W County COLE

 2.2 UTM Coordinates Easting (X): 562906 Northing (Y): 4277831
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Workman Creek

2.4 Number of outfalls: 1 Wastewater outfalls: Stormwater outfalls: Instream monitoring sites:

3. OWNER

NAME Office of Administration/Facilities Management, Design&Const EMAIL ADDRESS mark.rhodes@oa.mo.gov TELEPHONE NUMBER WITH AREA CODE (573) 680-5662

ADDRESS 308 West Main CITY Jefferson City STATE Mo ZIP CODE 65101

 3.1 Request review of draft permit prior to public notice? ☒ YES ☐ NO

 3.2 Are you a publicly owned treatment works? ☒ YES ☐ NO

 If yes, is the Financial Questionnaire attached? ☐ YES ☒ NO

 3.3 Are you a privately owned treatment works? ☐ YES ☒ NO

 3.4 Are you a privately owned treatment facility regulated by the Public Service Commission? ☐ YES ☒ NO
4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME Office of Administration/Facilities Management, Design&Const EMAIL ADDRESS mark.rhodes@oa.mo.gov TELEPHONE NUMBER WITH AREA CODE (573) 680-5662

ADDRESS 308 West Main CITY Jefferson City STATE Mo ZIP CODE 65101

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME Mark Rhodes TITLE PPS1 CERTIFICATE NUMBER N/A

EMAIL ADDRESS mark.rhodes@oa.mo.gov TELEPHONE NUMBER WITH AREA CODE (573) 680-5662

6. FACILITY CONTACT

NAME Mark Rhodes TITLE PPS1

EMAIL ADDRESS mark.rhodes@oa.mo.gov TELEPHONE NUMBER WITH AREA CODE (573) 680-5662

ADDRESS 308 West Main CITY Jefferson City STATE Mo ZIP CODE 65101

7. DESCRIPTION OF FACILITY

7.1 Process Flow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.

Attach sheets as necessary.

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

8. ADDITIONAL FACILITY INFORMATION8.1 Facility SIC code: 9223 Discharge SIC code: 49528.2 Number of people presently connected or population equivalent (P.E.) 0 Design P.E. 60

8.3 Connections to the facility:

Number of units presently connected:

Homes 0 Trailers 0 Apartments 0 Other (including industrial) 0Number of commercial establishments: 18.4 Design flow: 720Actual flow: 3608.5 Will discharge be continuous through the year? ☐ Yes ☒ No

Discharge will occur during the following months:

How many days of the week will discharge occur?

8.6 Is industrial wastewater discharged to the facility? ☐ Yes ☒ No

If yes, attach a list of the industries that discharge to your facility

8.7 Does the facility accept or process leachate from landfills? ☐ Yes ☒ No8.8 Is wastewater land applied? ☐ Yes ☒ NoIf yes, is Form I attached? ☐ Yes ☒ No8.9 Does the facility discharge to a losing stream or sinkhole? ☐ Yes ☒ No8.10 Has a wasteload allocation study been completed for this facility? ☐ Yes ☒ No**9. LABORATORY CONTROL INFORMATION**

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant. ☐ Yes ☒ NoPush-button or visual methods for simple test such as pH, settleable solids. ☐ Yes ☒ NoAdditional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content. ☐ Yes ☒ NoMore advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc. ☐ Yes ☒ NoHighly sophisticated instrumentation, such as atomic absorption and gas chromatograph. ☐ Yes ☒ No**10. COLLECTION SYSTEM**10.1 Length of pipe in the sewer collection system? 6000 Feet, or _____ Miles (either unit is appropriate)10.2 Does significant infiltration occur in the collection system? ☐ Yes ☒ No

If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

11. BYPASSINGDoes any bypassing occur in the collection system or at the treatment facility? ☐ Yes ☒ No

If yes, explain:

12. SLUDGE HANDLING, USE AND DISPOSAL

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25? ☐ Yes ☒ No

12.2 Sludge production, including sludge received from others: 22.5 Design dry tons/year 0 Actual dry tons/year

12.3 Capacity of sludge holding structures:

Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge;

☐ No sludge storage is provided. ☐ Sludge is stored in lagoon.

12.4 Type of Storage: ☐ Holding tank ☐ Building
☐ Basin ☒ Lagoon
☐ Concrete Pad ☐ Other (Describe) _____

12.5 Sludge Treatment:
☐ Anaerobic Digester ☒ Lagoon ☐ Composting
☐ Storage Tank ☐ Aerobic Digester ☐ Other (Attach description)
☐ Lime Stabilization ☐ Air or Heat Drying

12.6 Sludge Use or Disposal:

☒ Land Application ☐ Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)
☐ Contract Hauler ☐ Hauled to Another treatment facility
☐ Incineration ☐ Sludge Retained in Wastewater treatment lagoon
☐ Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:

☒ By applicant ☐ By others (complete below)

| | | | |
|----------------|---------------------------------|-------------------|----------|
| NAME | | EMAIL ADDRESS | |
| ADDRESS | CITY | STATE | ZIP CODE |
| CONTACT PERSON | TELEPHONE NUMBER WITH AREA CODE | PERMIT NO. MO- | |

12.8 Sludge use or disposal facility

☒ By applicant ☐ By others (Complete below.)

| | | | |
|----------------|---------------------------------|-------------------|----------|
| NAME | | EMAIL ADDRESS | |
| ADDRESS | CITY | STATE | ZIP CODE |
| CONTACT PERSON | TELEPHONE NUMBER WITH AREA CODE | PERMIT NO. MO- | |

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?

☐ Yes ☐ No (Explain)

13. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit <http://dnr.mo.gov/env/wpp/edmr.htm> to access the Facility Participation Package.

- ☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.
- ☒ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.
- ☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

14. CERTIFICATION

I certify that I am familiar with the information contained in the application, that 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 the Missouri Clean Water Law.

| | | |
|------------------------------------|----------------|---------------------------------|
| NAME (TYPE OR PRINT) | OFFICIAL TITLE | TELEPHONE NUMBER WITH AREA CODE |
| MARK A. RHODES | PPS 1 | 573-680-5662 |
| SIGNATURE <i>Mark A. Rhodes</i> | | DATE SIGNED 2-4-19 |

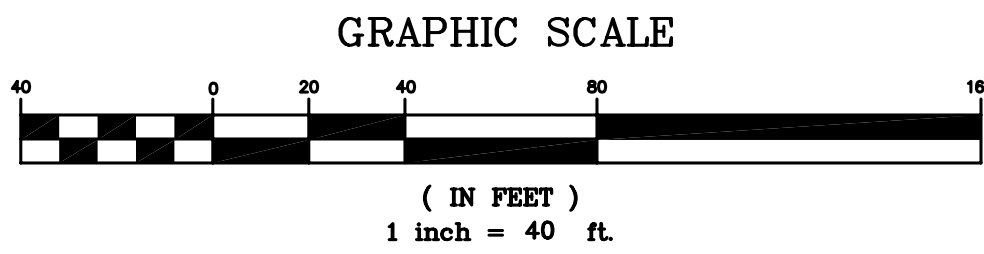
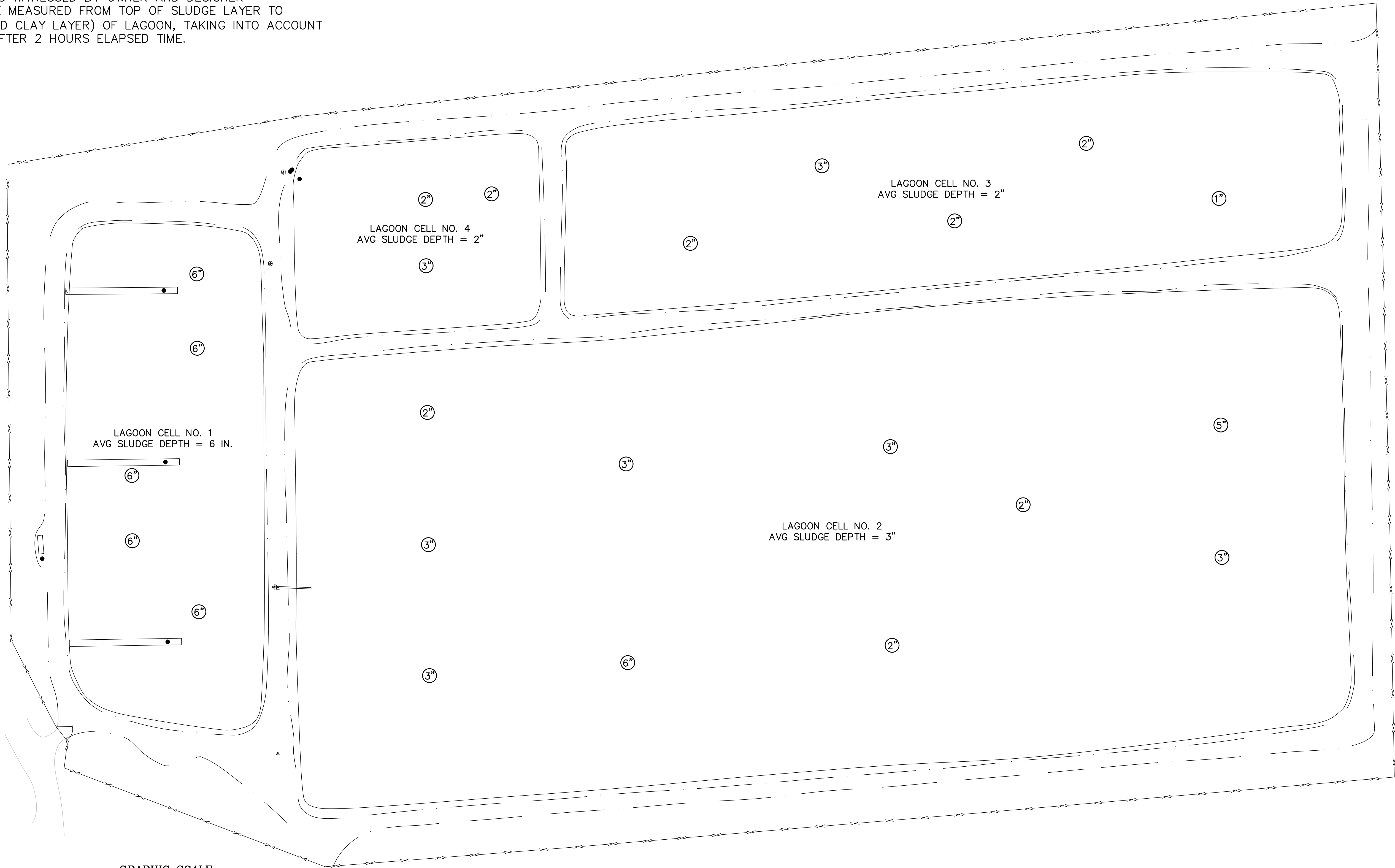
Appendix C

Taliaferro and Browne, Inc. Consulting Engineers
—
Surveyors Sludge Depth Measurements Plan Sheet

FINAL SLUDGE DEPTHS WERE OBTAINED ON NOVEMBER 8, 2006

NOTE:
CONTRACTOR FIELD MEASURED FINAL SLUDGE DEPTHS FOLLOWING COMPLETION OF
SLUDGE REMOVAL OPERATIONS, AS WITNESSED BY OWNER AND DESIGNER
REPRESENTATIVES. DEPTHS WERE MEASURED FROM TOP OF SLUDGE LAYER TO
APPARENT BOTTOM (CONSOLIDATED CLAY LAYER) OF LAGOON, TAKING INTO ACCOUNT
SETTLEMENT OF SLUDGE LAYER AFTER 2 HOURS ELAPSED TIME.

⑥" FINAL DEPTH OF SLUDGE



K:\19-1070\SURVEY\CMCC-FINAL.DWG 11-09-2006

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Central Missouri Correctional Center (CMCC) Four-Cell Lagoon Partial Closure Plan

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Barr Engineering

Central Missouri Correctional Center (CMCC) Four-Cell Lagoon Partial Closure Plan

MSOP MO-0097659

Prepared for
Missouri Department of Corrections and
Office of Administration, Facilities Management Design &
Construction

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Certifications

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Missouri.



Robert K Morrison
PE #: 24194

October 22, 2014

Date



1.0 Background

1.1 Site Description

The Central Missouri Correctional Center (CMCC) and Missouri Vocational Enterprises (MVE) Tire Recycling Center facility are located in the NE ¼, NW ¼, Sec 18, T45N, R12W, Cole County, approximately 2.5 miles northwest of Jefferson City, Missouri on State Highway 179.

Domestic wastewater from the former correctional facility, wash down water from the MVE tire recycling operation, and domestic wastewater from the surplus property facility are collected and treated at the facility by the former four-cell lagoon that served the former correctional center. The design capacity of this four-cell lagoon system has been identified by previous operating permits as 260,000 gallons per day, while the actual flow to the lagoon was identified in a recent draft operating permit as 720 gallons per day.

As mentioned previously, MVE also operates a facility that collects, stores and shreds a variety of types of tires (primary SIC code 5014) including passenger car and truck tires, large industrial equipment tires and agricultural machinery tires. MVE's tire recycling operation stores whole and shredded tire chips, whole inner tubes and rims onsite prior to and after processing and shipping offsite. Shredding operations at the facility include a primary and secondary shredding operation that produces tire chips that are approximately 2 inches by 2 inches. Steel material from the shredding operation is collected and stored in containers prior to recycling offsite. MVE operates this facility under Missouri State Operating Master General Permit MOR23D, which expires on February 3, 2016.

1.2 Project Description

The Missouri Department of Natural Resources (MDNR), due to continued non-discharging conditions from the four-cell lagoon, has requested that CMCC evaluate treatment options to more appropriately handle the current flows from the facility. The MDNR also requested that, as part of the evaluation process, CMCC complete closure of the lagoons as necessary and develop detailed plans to construct an alternate treatment system.

CMCC requested Barr Engineering Co. (Barr) to assist in the planning, assessment, and execution of an alternative treatment system. This included the assessment, removal, and disposal of sludge from the lagoons. An initial sampling plan to assess the volume and composition of the sludge in the lagoons was developed and is included as Appendix A. The lagoons were divided into grids with depth measurements collected/recorded along with samples of the sludge at six locations for the northwest lagoon (Lagoon #4), seven locations for the northeast lagoon (Lagoon #3), and eleven locations for the south lagoon (Lagoon #2). The sample aliquots of the sludge were combined into a composite sample for each lagoon and analyzed for the parameters identified in 40 CFR Part 503 and in the University of Missouri Extension (MU Extension) publication WQ425 (1994). The results of the analytical sampling of the sludge and sludge depth measurements are contained in Appendix B.

Barr has developed this closure plan for the lagoons, which CMCC is planning to execute during the conversion of the second lagoon cell into a gravity infiltration bed. Disposition of the sludge will be described in more detail later in this plan. This closure plan report summarizes the results of the laboratory tests and gives a general work plan for the planned sludge removal/disposal activities.

The plan also determines the minimum land acreage needed to dispose of the sludge in place. This acreage was calculated from the available data for both nutrients and metals parameters using the most conservative of either the nutrient or metals parameters for both the soil and underlying soils.

1.3 Soils Description

The United States Department of Agriculture Web Soil Survey (USDA WSS) (2014) was used to determine the general soil types of the area where the sludge is to remain. The soils in the area surrounding the lagoons are primarily Blenco silty clay loam with slopes that vary from zero to two percent and Peers silty clay loam with slopes that also range from zero to two percent. The hydrologic soil group of these soils is C/D. The complete soils report is included in Appendix C.

Barr also logged three test pits of the underlying soils within the footprint of the lagoon of the existing second lagoon cell and collected soil samples of the underlying soils for each of the three cells to be closed. The soil will be classified by a Missouri registered geologist, and this information will help determine the sizing for the leach field that will replace the lagoon system.

Soil sample aliquots were collected for each of the three cells of the lagoon to be closed and composited into one sample for analysis for each cell. The soil samples were taken to the MU Extension Service Soils Laboratory in Columbia, Missouri and each sample analyzed for total phosphorus, total nitrate, total Kjeldahl nitrogen, ammonium-n, Bray-1 phosphorus, pH, and cation exchange capacity (CEC). The results of the underlying soil samples are included in Appendix F.

2.0 Sludge Characterization and Volume

Sludge was sampled and measured by Barr in September 2014. Each of the three lagoons were sampled separately and analyzed for total metals (arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc), total Kjeldahl nitrogen/total N, ammonia or NH_3N , nitrate, total phosphorus, phosphate, total potassium, percent solids/moisture, benzene, toluene, ethylbenzene, and xylene (aka BTEX). The results of the analysis are presented in Appendix B.

Total solids of the sludge were found to be 71 percent solids for Lagoon #2, 71.2 percent solids for Lagoon #3, and 72.9 percent solids for Lagoon #4. Total phosphorus concentrations in Lagoon #2 were 14.1 mg/kg, 109 mg/kg in Lagoon #3, and 61.1 mg/kg for Lagoon #4. For total Kjeldahl nitrogen, the South Lagoon had a lower concentration at 2,200 parts per million, while the North Lagoon had a concentration of 4,000 parts per million.

Measurements of the sludge depth were also performed by Barr on the same date for the purpose of determining the total volume of the sludge. Each of the lagoons was subdivided into a grid with sampling/measurement locations on each transect. Based upon the measurements and the dimensions of the lagoons, the total volume of sludge in Lagoon #2 was calculated to be 1,169 cubic yards, the total volume of sludge in Lagoon #3 was calculated to be 121 cubic yards, and the total volume of sludge in Lagoon #4 was 159 cubic yards.

3.0 Land Application Rates/Disposition of Sludge

3.1 Metals

Metals concentrations (dry weight basis) for the sludge in each lagoon were determined from samples collected. The metals parameters included in the analysis were arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. The MU Extension WQ425 documents (1994), which identifies appropriate application rates for metals parameters based on the CEC of the soil, was used to identify acceptable loading rates for the sludge remaining in the lagoons. The information from that document is summarized in Table 1 below.

Table 3-1 WQ425 Sludge Metal Concentrations and Loading Rates

| Pollutant | CEC 15+ | | CEC 5 to 15 | | CEC 0 to 5 | | Low Metals Conc. |
|------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|------------------|
| | Annual (lbs/acre) | Total (lbs/acre) | Annual (lbs/acre) | Total (lbs/acre) | Annual (lbs/acre) | Total (lbs/acre) | mg/kg |
| Arsenic | 1.8 | 36.0 | 1.8 | 36.0 | 1.8 | 36.0 | 41 |
| Cadmium | 1.7 | 35.0 | 0.9 | 9.0 | 0.4 | 4.5 | 39 |
| Chromium | 133.0 | 2,670.0 | 100.0 | 1,000.0 | 50.0 | 500.0 | 1,200 |
| Copper | 66.0 | 1,335.0 | 25.0 | 250.0 | 12.0 | 125.0 | 1,500 |
| Lead | 13.0 | 267.0 | 13.0 | 267.0 | 13.0 | 133.0 | 300 |
| Mercury | 0.7 | 15.0 | 0.7 | 15.0 | 0.7 | 15.0 | 17 |
| Molybdenum | 0.8 | 16.0 | 0.8 | 8.0 | 0.8 | 8.0 | 18 |
| Nickel | 19.0 | 347.0 | 19.0 | 250.0 | 12.0 | 125.0 | 420 |
| Selenium | 4.5 | 89.0 | 4.5 | 44.0 | 1.6 | 16.0 | 36 |
| Zinc | 124.0 | 2,492.0 | 50.0 | 500.0 | 25.0 | 250.0 | 2,800 |

The results of the sampling of the sludge remaining in each lagoon are summarized below in Table 2. The locations of aliquot sample locations are shown on Figure 1.

Table 3-2 Metals Concentrations from Analytical Sampling of the Sludge in the Lagoons

| Pollutant | Lagoon #2 Avg. Concentration (mg/kg) | Lagoon #3 Avg. Concentration (mg/kg) | Lagoon #4 Avg. Concentration (mg/kg) | Low Metals Conc. (mg/kg) |
|------------------|---|---|---|---------------------------------|
| Arsenic | 3.9 | 3.8 | 5.0 | 41 |
| Cadmium | ND (<0.64) | ND (<0.62) | 0.69 | 39 |
| Chromium | 19.0 | 17.7 | 21.7 | 1,200 |
| Copper | 69.7 | 59.6 | 106 | 1,500 |
| Lead | 15.4 | 14.9 | 25.1 | 300 |
| Mercury | ND (<0.047) | ND (<0.053) | 0.17 | 17 |
| Molybdenum | ND (<2.5) | ND (<2.5) | ND (<2.0) | 18 |
| Nickel | 18.1 | 16.8 | 18.7 | 420 |
| Selenium | ND (<1.9) | ND (<1.8) | ND (<1.5) | 36 |
| Zinc | 112 | 126 | 270 | 2800 |

The results from the sampling of the lagoons indicate that all the metals concentrations are below the threshold concentration and loading criteria for the low metals concentration/loading rates. Additional calculations are included in Appendix G. Therefore, on a metals basis, it appears to be a feasible approach for the sludge remaining in the lagoons to be closed in place and incorporated with the surrounding/underlying native soil at a proposed ratio of 1 to 1.

3.2 Nitrogen

Using the Plant Available Nitrogen (PAN) calculator available on the MU Extension website (2009), and the data acquired from the sludge analyses and underlying soil, the minimum land area required for sludge application (i.e., sludge to remain in the lagoons) with the limiting parameter being nitrogen is a total of 24.6 acres for all the lagoons. The calculated size of Lagoon #2 is 6.04 acres, Lagoon #3 is 1.88 acres, and Lagoon #4 is 0.58 acre. The total area of the three lagoons is 8.5 acres. Calculations can be found in Appendix D as well as the PAN calculator form. Specifically, for the Lagoon #2 cell, the suggested application rate for 200 lb/acre was 42.1 tons per acre, which requires a land area of 21.6 acres; for the Lagoon #3, the suggested application rate was 68.1 tons per acre, which would require a land area of 1.4 acres; and for Lagoon #4, the suggest application rate was 81.7 tons per acre, which would require a land area of 1.6 acres.

These results indicate that the sludge in Lagoon #2 and Lagoon #4, from a nitrogen perspective, are above agronomic rates that would be applicable if the sludge were to be applied directly to the surface of the field. However, since fill material is required to achieve the final grade, the amount of soil that will need to be brought in to complete the final grade for the closed lagoons will be several times the amount of sludge that will be left in the lagoons. For example, to fill in Lagoon #2 with just 1 foot of fill material would amount to 9,745 cubic yards. That amount of fill material is 8 times the amount of sludge that

would be left in place in the lagoon. This addition of soil will have the effect of diluting the nitrogen loading in the lagoons to an amount acceptable to leave in place.

3.3 Phosphorus

A Phosphorus Index calculator provided by the MU Extension (2007) was used to determine the potential for phosphorus-contaminated runoff from land where sludge would be incorporated into land underlying the existing lagoons. This analysis was performed using phosphorus measurements from the soil samples collected by Barr and analyzed by the MU Extension soils lab; soils data gathered from the USDA Soil Survey; field observations of the characteristics of the application fields; and calculations of the Universal Soil Loss Equation. The Phosphorus Index calculator requested a RUSLE2 value for the calculations; therefore, a RUSLE2 value of 2 tons/acre was used as an appropriate factor for the underlying low slope soil.

Phosphorus Index ratings were provided by the calculator along with the phosphorus values. These ratings are scaled as "low", "medium", "high", and "very high". A "low" and "medium" rating indicates that nitrogen-based nutrient management can be used in lieu of phosphorus-based nutrient management, while a "high" rating indicates that it cannot, and the "very high" rating indicates that no land application of phosphorus-containing material should be performed.

The soils underlying and surrounding the lagoon cells were all found to have Phosphorus Index ratings of "medium", which indicates the maximum application rates and required land areas for nitrogen supersedes those for phosphorus. Detailed information on the Phosphorus Index is included in Appendix E. Discussion of the nitrogen-based application rates and required land areas can be found in Section 3.2.

4.0 Description of Closure Activities for Lagoon Cells

Based upon the results of the soil and sludge sampling, there is sufficient land available within the footprint of the remaining three cells of the lagoon to retain and incorporate the sludge into the underlying soils of the remaining three lagoons. Barr is anticipating that this work will be completed at the same time as the construction of the infiltration field needed to convert a small portion of the second lagoon cell to a gravity infiltration bed. The final elevations of the regraded lagoons and surrounding land are shown on Figure 2, while Figure 1 depicts the existing conditions. The following is a description of the activities that will comprise the closure of the three cells of the lagoons.

1. Drain and remove any standing water in the remaining three cells. Field observations have revealed that there is no standing water in the three cells to be closed. However, any water that is remaining in the three cells (note: the primary cell will remain part of the treatment system) is to be pumped back to the existing primary cell. Also, the primary cell outlet is to be temporarily plugged at this time in order to prevent the discharge of water into the work area. It should also be noted that the primary cell has at least 250,000 gallons of freeboard, which is more than sufficient to complete the project given the existing design flow of 720 gallons per day.
2. Remove the manholes and piping of the existing three cells. This activity will consist of field identification of the manholes and piping between cells and removal of these structures. Once removed, these structures are to be taken to a permitted sanitary or demolition landfill.
3. Level the berms, bring in native fill material from the surrounding fields and regrade the former lagoons to match the surrounding elevations. The berms of the lagoon will be leveled and incorporated with material from the surrounding farmland to match surrounding contours and provide positive drainage of surface water off the former lagoon area. It is noted that the State of Missouri owns several acres surrounding the lagoons and any borrow material needed will be taken from those areas. Detailed cut/fill information will be provided to the contractor on the plan drawings, which will be a part of the construction permit application and construction bid package. Attached are Figures 2 and 3, which identify the existing contours before closure and final contours of the site after closure.
4. Plow and disk after final grading is complete. Once final grading is complete, the graded area will be plowed and disked to ensure that any sludge on the surface has been thoroughly incorporated into the underlying soil.
5. Establish a temporary cover crop after final grading. The area will be seeded with a temporary cover crop of either rye grass or winter wheat depending upon the time of year of the completion of the project. It is anticipated that the former lagoon areas will return to agricultural production along with the surrounding farmland. The details of the seeding for the temporary cover crop will be included in the plans and specifications that are a part of the construction permit application.

5.0 References

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Figures

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 FAX: 816-481-2001
 WWW.BARR-ENGINEERING.COM

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

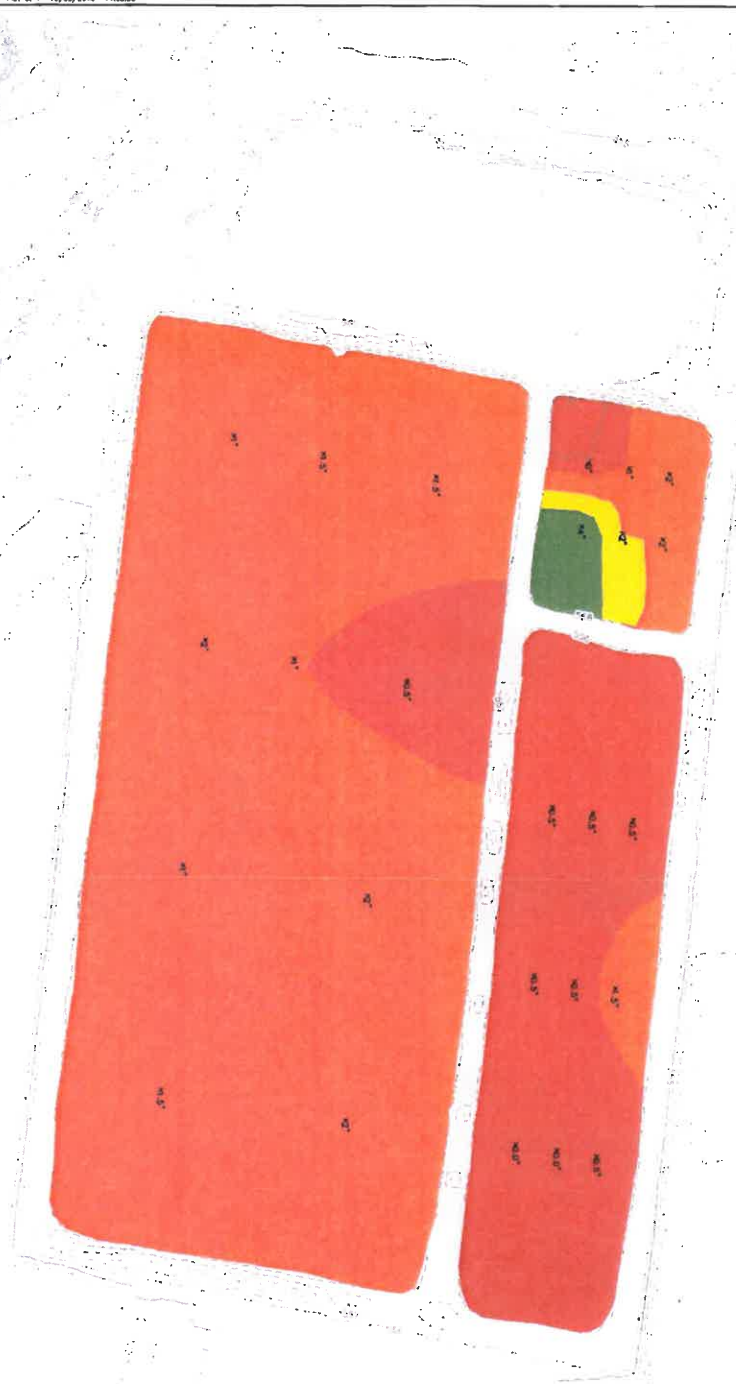
FIGURE 2

CMCC/WVE
 LAGOON CLOSURE
 SLUDGE THICKNESS

PRELIMINARY, NOT FOR CONSTRUCTION, REVISIONS ON REVISIONS

LEGEND:
 * 0.5' SLUDGE SAMPLING LOCATION AND DEPTH

| Sludge Thickness | Number | Minimum Thickness | Maximum Thickness | Color |
|------------------|--------|-------------------|-------------------|-------|
| 1 | 0" | 1" | | |
| 2 | 1" | 2" | | |
| 3 | 2" | 3" | | |
| 4 | 3" | 4" | | |



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| FIGURE 3 | - |

Appendix A

Sludge Sampling Plan

CMCC Phase II Sampling Plan

Scope of Work

The CMCC facility has a wastewater treatment system that includes four lagoons. The current treatment system was initially designed for a larger capacity that is no longer needed to service the current facility needs. Barr Engineering is proposing to submit a closure plan for three of the current lagoons and to design a more appropriate treatment system for the facility. Before a closure plan or design can be developed, the wastewater quality, wastewater flow rate, sludge volume, and sludge quality must be determined.

Barr Engineering is proposing the sampling of sludge at three wastewater treatment ponds and the sampling of the wastewater inflow for the purpose of determining the appropriate closure plan for the lagoons.

Barr is also proposing the sampling of native soil under the south lagoon to determine the design requirements for the underground injection treatment system. An analysis of the inflow wastewater is also proposed. This will include sampling by Barr personnel and lab work. The proposed work is scheduled for two field days.

Wastewater Sampling

The first task is to determine the water quality of the wastewater from the primary lagoon. The water quality is needed to submit the Underground Injection Control (UIC) permit application. The lagoon water will be observed and analyzed with an YSI meter and the following field parameters will be recorded; temperature, pH, ORP, specific conductance, and observed turbidity and color.

A grab sample will then be collected of the discharge and analyzed for the following parameters; total metals (aluminum, barium, iron, magnesium, manganese, antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc), nitrate/nitrite, oil and grease, total Kjeldhal Nitrogen /total N, total phosphorous, sulfate, sulfite, total sulfide, and BTEX (benzene, toluene, ethyl benzene, and xylenes).

The sample will be delivered to Pace Analytical Services within the appropriate hold times. The methods of analysis for the samples will be those outlined in 40 CFR Part 136. The flow of the inflow pipe will be determined either by manual methods or by installing a flow meter in the pipe.

The estimated cost for sampling, including labor and expenses, is estimated to remain under \$200. With three samples, the cost of laboratory analyses is estimated to remain under \$600. No shipping costs will occur, as the Barr personnel responsible for the sampling will drop the samples off at the lab while returning to the Barr Engineering branch office in Jefferson City.

Sludge Sampling

The second task is to determine the depth and chemical makeup of the sludge in the three lagoons. The aliquot locations will be based on evenly spaced, predetermined locations. The southern lagoon has

individual sampling locations at closer intervals near the inflow to focus sampling in the area most likely to have a larger volume of sludge.

The locations will be dug with a hand trowel or shovel and the depth and thickness of sludge will be recorded at each aliquot location. If sludge is observed at the location, an aliquot will be collected. All the aliquots for the sludge will be combined in a bucket and mixed together to achieve a representative sample of the entire lagoon. A composite sample will be collected from each of the 3 lagoons. The sample will be submitted to Pace Analytical Services within the appropriate hold times.

The sample will be analyzed for the following parameters; total metals (arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc), total Kjeldhal Nitrogen /total N, ammonia or NH_3N , nitrate, total phosphorus, phosphate, total potassium, percent solids/moisture, and BTEX. All values will be reported on a dry weight basis in mg/kg units. The methods of analysis for the samples will be those outlined in 40 CFR Part 136.

The estimated cost for sampling, including labor and expenses, is estimated to remain under \$200. With three samples, the cost of laboratory analyses is estimated to remain under \$600. No shipping costs will occur, as the Barr personnel responsible for the sampling will drop the samples off at the lab while returning to the Barr Engineering branch office in Jefferson City.

Native Soil Sampling/Test Pits

Soil samples from the underlying native soil will be collected to determine soil type. The soil type will determine its suitability as an appropriate medium for gravity infiltration beds (leach field). The facility will supply an excavator to dig at least two test pits in the location of the proposed leach field. The test pits will be dug to the limits of the excavator, refusal, or as determined by Barr based on field observations. Barr will have a Missouri registered geologist classify the soil in the test pits. Soil samples will be collected from intervals determined by Barr.

An additional task is to determine the chemical makeup of the native soil underlying the sludge in the three lagoons. The aliquot locations will be determined in the field.

The locations will be dug with a hand trowel or shovel until native soil is encountered, no sludge will be included in the sample. If sludge is observed at the location, an aliquot will be collected. All the aliquots for the native soil will be combined in a bucket and mixed together to achieve a representative sample of the entire lagoon. A composite sample will be collected from each of the 3 lagoons. The sample will be submitted to MU Extension Soil Testing Laboratory within the appropriate hold times.

The sample will be analyzed for the following parameters; Total Phosphorous; Total Nitrate; Total Kjeldhal Nitrogen; Ammonium -N; Bray-I Phosphorous; pH; and Cation Exchange Capacity.

The estimated cost for sampling, including labor and expenses, is estimated to remain under \$300. With three samples, the cost of laboratory analyses is estimated to remain under \$300. No shipping costs will occur, as the Barr personnel responsible for the sampling will drop the samples off at the lab while returning to the Barr Engineering branch office in Jefferson City.

Barr proposes to conduct the field work the week of September 8, 2014.

Appendix B

Sludge Analytical Lab Report

Lagoon Sample Thicknesses

| Location | ID | Thickness (feet) | Thickness (inches) |
|-----------|-----|---------------------|-----------------------|
| Lagoon #3 | A1 | 0.167 | 2 |
| Lagoon #3 | A2 | 0.083 | 1 |
| Lagoon #3 | A3 | 0.000 | 0 |
| Lagoon #3 | A4 | 0.167 | 2 |
| Lagoon #3 | A5 | 0.167 | 2 |
| Lagoon #3 | A6 | 0.333 | 4 |
| Lagoon #4 | B1 | 0.042 | 0.5 |
| Lagoon #4 | B2 | 0.042 | 0.5 |
| Lagoon #4 | B3 | 0.042 | 0.5 |
| Lagoon #4 | B4 | 0.125 | 1.5 |
| Lagoon #4 | B5 | 0.042 | 0.5 |
| Lagoon #4 | B6 | 0.042 | 0.5 |
| Lagoon #4 | B7 | 0.042 | 0.5 |
| Lagoon #2 | C1 | 0.125 | 1.5 |
| Lagoon #2 | C2 | 0.125 | 1.5 |
| Lagoon #2 | C3 | 0.083 | 1 |
| Lagoon #2 | C4 | 0.042 | 0.5 |
| Lagoon #2 | C5 | 0.083 | 1 |
| Lagoon #2 | C6 | 0.167 | 2 |
| Lagoon #2 | C7 | 0.167 | 2 |
| Lagoon #2 | C8 | 0.083 | 1 |
| Lagoon #2 | C9 | 0.167 | 2 |
| Lagoon #2 | C10 | 0.125 | 1.5 |
| Lagoon #2 | C11 | 0.250 | 3 |



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September 26, 2014

Andrea Straatman
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109

RE: Project: CMCC-MVE 2527
Pace Project No.: 60177841

Dear Andrea Straatman:

Enclosed are the analytical results for sample(s) received by the laboratory on September 12, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angie Brown
Angie.Brown@pacelabs.com
Project Manager

Enclosures

cc: Margaret Treanor, Barr Engineering Company



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CERTIFICATIONS

Project: CMCC-MVE 2527
Pace Project No.: 60177841

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

Dallas Certification IDs:

400 West Bethany Dr Suite 190 75013 Allen TX 75013
Texas Certification #: T104704232-13-5
Kansas Certification #: E-10388

Arkansas Certification #: 88-0647
Oklahoma Certification #: 2012-080
Louisiana Certification #: 02007

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SAMPLE SUMMARY

Project: CMCC-MVE 2527
Pace Project No.: 60177841

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|-------------|-----------|--------|----------------|----------------|
| 60177841001 | LAGOON A | Solid | 09/11/14 12:00 | 09/12/14 07:00 |
| 60177841002 | LAGOON B | Solid | 09/11/14 17:30 | 09/12/14 07:00 |
| 60177841003 | LAGOON C | Solid | 09/11/14 14:40 | 09/12/14 07:00 |

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SAMPLE ANALYTE COUNT

Project: CMCC-MVE 2527
Pace Project No.: 60177841

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|-------------|-----------|-------------|----------|-------------------|------------|
| 60177841001 | LAGOON A | EPA 6010 | NDJ | 10 | PASI-K |
| | | EPA 7471 | ZBM | 1 | PASI-K |
| | | EPA 8260 | JTK | 7 | PASI-K |
| | | ASTM D2974 | JML | 1 | PASI-K |
| | | SM 2540G | JML | 1 | PASI-K |
| | | SM 2710B | AJM | 1 | PASI-K |
| | | EPA 350.1 | AJM | 1 | PASI-K |
| | | EPA 351.2 | AJM | 1 | PASI-K |
| | | EPA 353.2 | AJM | 2 | PASI-K |
| | | SM 4500-P E | BAF | 2 | PASI-D |
| 60177841002 | LAGOON B | EPA 6010 | NDJ | 10 | PASI-K |
| | | EPA 7471 | ZBM | 1 | PASI-K |
| | | EPA 8260 | JTK | 7 | PASI-K |
| | | ASTM D2974 | JML | 1 | PASI-K |
| | | SM 2540G | JML | 1 | PASI-K |
| | | SM 2710B | AJM | 1 | PASI-K |
| | | EPA 350.1 | AJM | 1 | PASI-K |
| | | EPA 351.2 | AJM | 1 | PASI-K |
| | | EPA 353.2 | AJM | 2 | PASI-K |
| | | SM 4500-P E | BAF | 2 | PASI-D |
| 60177841003 | LAGOON C | EPA 6010 | NDJ | 10 | PASI-K |
| | | EPA 7471 | ZBM | 1 | PASI-K |
| | | EPA 8260 | JTK | 7 | PASI-K |
| | | ASTM D2974 | JML | 1 | PASI-K |
| | | SM 2540G | JML | 1 | PASI-K |
| | | SM 2710B | AJM | 1 | PASI-K |
| | | EPA 350.1 | AJM | 1 | PASI-K |
| | | EPA 351.2 | AJM | 1 | PASI-K |
| | | EPA 353.2 | AJM | 2 | PASI-K |
| | | SM 4500-P E | BAF | 2 | PASI-D |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON A Lab ID: 60177841001 Collected: 09/11/14 12:00 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---------------------------------------|------------|--|--------------|----|----------------|----------------|------------|-------|
| 6010 MET ICP Red. Interference | | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | |
| Arsenic | 3.9 mg/kg | | 1.3 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-38-2 | |
| Cadmium | ND mg/kg | | 0.64 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-43-9 | |
| Chromium | 19.0 mg/kg | | 0.64 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-47-3 | |
| Copper | 69.7 mg/kg | | 1.3 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-50-8 | |
| Lead | 15.4 mg/kg | | 1.3 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7439-92-1 | |
| Molybdenum | ND mg/kg | | 2.5 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7439-98-7 | |
| Nickel | 18.1 mg/kg | | 0.64 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-02-0 | |
| Potassium | 3840 mg/kg | | 63.5 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-09-7 | |
| Selenium | ND mg/kg | | 1.9 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7782-49-2 | |
| Zinc | 112 mg/kg | | 12.7 | 1 | 09/21/14 12:55 | 09/22/14 16:29 | 7440-66-6 | |
| 7471 Mercury | | Analytical Method: EPA 7471 Preparation Method: EPA 7471 | | | | | | |
| Mercury | ND mg/kg | | 0.047 | 1 | 09/17/14 12:30 | 09/18/14 14:42 | 7439-97-6 | |
| 8260 MSV UST 5030 Med Level | | Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B | | | | | | |
| Benzene | ND ug/kg | | 68.4 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 71-43-2 | |
| Ethylbenzene | ND ug/kg | | 68.4 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 100-41-4 | |
| Toluene | ND ug/kg | | 137 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 108-88-3 | |
| Xylene (Total) | ND ug/kg | | 342 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 1330-20-7 | |
| Surrogates | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 96 % | | 75-129 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 17060-07-0 | |
| 4-Bromofluorobenzene (S) | 101 % | | 76-123 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 460-00-4 | |
| Toluene-d8 (S) | 98 % | | 80-120 | 1 | 09/17/14 10:20 | 09/22/14 15:39 | 2037-26-5 | |
| Percent Moisture | | Analytical Method: ASTM D2974 | | | | | | |
| Percent Moisture | 27.1 % | | 0.50 | 1 | | 09/16/14 13:10 | | |
| 2540G Total Percent Solids | | Analytical Method: SM 2540G | | | | | | |
| Total Solids | 72.9 % | | 0.10 | 1 | | 09/16/14 13:10 | | |
| Total Nitrogen Calculation | | Analytical Method: SM 2710B | | | | | | |
| Nitrogen | 4280 mg/kg | | 20.0 | 1 | | 09/22/14 11:49 | 7727-37-9 | |
| 350.1 Ammonia | | Analytical Method: EPA 350.1 | | | | | | |
| Nitrogen, Ammonia | ND mg/kg | | 1.4 | 1 | | 09/14/14 13:20 | 7664-41-7 | |
| 351.2 Total Kjeldahl Nitrogen | | Analytical Method: EPA 351.2 | | | | | | |
| Nitrogen, Kjeldahl, Total | 4260 mg/kg | | 367 | 5 | | 09/13/14 19:49 | 7727-37-9 | |
| 353.2 Nitrogen, NO2/NO3 | | Analytical Method: EPA 353.2 | | | | | | |
| Nitrogen, Nitrate | 16.5 mg/kg | | 1.4 | 1 | | 09/18/14 09:06 | | N2 |
| Nitrogen, Nitrite | ND mg/kg | | 1.4 | 1 | | 09/18/14 09:06 | | M1,N2 |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON A Lab ID: 60177841001 Collected: 09/11/14 12:00 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|--------------------------------|------------|---|--------------|----|----------------|----------------|-----------|------|
| SM4500 Total Phosphorus | | Analytical Method: SM 4500-P E Preparation Method: SM4500-P B | | | | | | |
| Phosphate as P ₀₄ | 187 mg/kg | | 42.1 | 1 | 09/22/14 15:03 | 09/22/14 15:16 | | |
| Phosphorus | 61.1 mg/kg | | 13.7 | 1 | 09/22/14 15:03 | 09/22/14 15:16 | 7723-14-0 | |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON B Lab ID: 60177841002 Collected: 09/11/14 17:30 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---------------------------------------|---------|--|--------------|----|----------------|----------------|------------|------|
| 6010 MET ICP Red. Interference | | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | |
| Arsenic | 3.8 | mg/kg | 1.2 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-38-2 | |
| Cadmium | ND | mg/kg | 0.62 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-43-9 | |
| Chromium | 17.7 | mg/kg | 0.62 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-47-3 | |
| Copper | 59.6 | mg/kg | 1.2 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-50-8 | |
| Lead | 14.9 | mg/kg | 1.2 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7439-92-1 | |
| Molybdenum | ND | mg/kg | 2.5 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7439-98-7 | |
| Nickel | 16.8 | mg/kg | 0.62 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-02-0 | |
| Potassium | 3930 | mg/kg | 61.6 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-09-7 | |
| Selenium | ND | mg/kg | 1.8 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7782-49-2 | |
| Zinc | 126 | mg/kg | 12.3 | 1 | 09/21/14 12:55 | 09/22/14 16:32 | 7440-66-6 | |
| 7471 Mercury | | Analytical Method: EPA 7471 Preparation Method: EPA 7471 | | | | | | |
| Mercury | ND | mg/kg | 0.053 | 1 | 09/17/14 12:30 | 09/18/14 14:44 | 7439-97-6 | |
| 8260 MSV UST 5030 Med Level | | Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B | | | | | | |
| Benzene | ND | ug/kg | 70.3 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 71-43-2 | |
| Ethylbenzene | ND | ug/kg | 70.3 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 100-41-4 | |
| Toluene | ND | ug/kg | 141 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 108-88-3 | |
| Xylene (Total) | ND | ug/kg | 351 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 1330-20-7 | |
| Surrogates | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 100 | % | 75-129 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 17060-07-0 | |
| 4-Bromofluorobenzene (S) | 102 | % | 76-123 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 460-00-4 | |
| Toluene-d8 (S) | 97 | % | 80-120 | 1 | 09/17/14 10:20 | 09/22/14 15:54 | 2037-26-5 | |
| Percent Moisture | | Analytical Method: ASTM D2974 | | | | | | |
| Percent Moisture | 28.8 | % | 0.50 | 1 | | 09/16/14 13:10 | | |
| 2540G Total Percent Solids | | Analytical Method: SM 2540G | | | | | | |
| Total Solids | 71.2 | % | 0.10 | 1 | | 09/16/14 13:10 | | |
| Total Nitrogen Calculation | | Analytical Method: SM 2710B | | | | | | |
| Nitrogen | 5250 | mg/kg | 20.0 | 1 | | 09/22/14 11:49 | 7727-37-9 | |
| 350.1 Ammonia | | Analytical Method: EPA 350.1 | | | | | | |
| Nitrogen, Ammonia | ND | mg/kg | 1.4 | 1 | | 09/14/14 13:23 | 7664-41-7 | |
| 351.2 Total Kjeldahl Nitrogen | | Analytical Method: EPA 351.2 | | | | | | |
| Nitrogen, Kjeldahl, Total | 5220 | mg/kg | 378 | 5 | | 09/13/14 19:50 | 7727-37-9 | |
| 353.2 Nitrogen, NO2/NO3 | | Analytical Method: EPA 353.2 | | | | | | |
| Nitrogen, Nitrate | 25.2 | mg/kg | 1.4 | 1 | | 09/18/14 09:08 | | N2 |
| Nitrogen, Nitrite | ND | mg/kg | 1.4 | 1 | | 09/18/14 09:08 | | N2 |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON B Lab ID: 60177841002 Collected: 09/11/14 17:30 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|--------------------------------|---------|---|--------------|----|----------------|----------------|-----------|------|
| SM4500 Total Phosphorus | | Analytical Method: SM 4500-P E Preparation Method: SM4500-P B | | | | | | |
| Phosphate as P ₀₄ | 334 | mg/kg | 43.1 | 1 | 09/22/14 15:03 | 09/22/14 15:16 | | |
| Phosphorus | 109 | mg/kg | 14.1 | 1 | 09/22/14 15:03 | 09/22/14 15:16 | 7723-14-0 | |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON C Lab ID: 60177841003 Collected: 09/11/14 14:40 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|------------|-------|--------------|----|----------------|----------------|------------|------|
| 6010 MET ICP Red. Interference Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Arsenic | 5.0 mg/kg | | 1.0 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-38-2 | |
| Cadmium | 0.69 mg/kg | | 0.51 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-43-9 | |
| Chromium | 21.2 mg/kg | | 0.51 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-47-3 | |
| Copper | 106 mg/kg | | 1.0 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-50-8 | |
| Lead | 25.1 mg/kg | | 1.0 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7439-92-1 | |
| Molybdenum | ND mg/kg | | 2.0 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7439-98-7 | |
| Nickel | 18.7 mg/kg | | 0.51 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-02-0 | |
| Potassium | 3630 mg/kg | | 51.0 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-09-7 | |
| Selenium | ND mg/kg | | 1.5 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7782-49-2 | |
| Zinc | 270 mg/kg | | 10.2 | 1 | 09/21/14 12:55 | 09/22/14 16:36 | 7440-66-6 | |
| 7471 Mercury Analytical Method: EPA 7471 Preparation Method: EPA 7471 | | | | | | | | |
| Mercury | 0.17 mg/kg | | 0.056 | 1 | 09/17/14 12:30 | 09/18/14 14:47 | 7439-97-6 | |
| 8260 MSV UST 5030 Med Level Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B | | | | | | | | |
| Benzene | ND ug/kg | | 69.9 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 71-43-2 | |
| Ethylbenzene | ND ug/kg | | 69.9 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 100-41-4 | |
| Toluene | ND ug/kg | | 140 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 108-88-3 | |
| Xylene (Total) | ND ug/kg | | 349 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 1330-20-7 | |
| Surrogates | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 100 % | | 75-129 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 17060-07-0 | |
| 4-Bromofluorobenzene (S) | 98 % | | 76-123 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 460-00-4 | |
| Toluene-d8 (S) | 97 % | | 80-120 | 1 | 09/17/14 10:20 | 09/22/14 16:09 | 2037-26-5 | |
| Percent Moisture Analytical Method: ASTM D2974 | | | | | | | | |
| Percent Moisture | 29.0 % | | 0.50 | 1 | | 09/16/14 13:10 | | |
| 2540G Total Percent Solids Analytical Method: SM 2540G | | | | | | | | |
| Total Solids | 71.0 % | | 0.10 | 1 | | 09/16/14 13:10 | | |
| Total Nitrogen Calculation Analytical Method: SM 2710B | | | | | | | | |
| Nitrogen | 8300 mg/kg | | 20.0 | 1 | | 09/22/14 11:49 | 7727-37-9 | |
| 350.1 Ammonia Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND mg/kg | | 1.4 | 1 | | 09/14/14 13:24 | 7664-41-7 | |
| 351.2 Total Kjeldahl Nitrogen Analytical Method: EPA 351.2 | | | | | | | | |
| Nitrogen, Kjeldahl, Total | 8270 mg/kg | | 377 | 5 | | 09/13/14 19:52 | 7727-37-9 | |
| 353.2 Nitrogen, NO2/NO3 Analytical Method: EPA 353.2 | | | | | | | | |
| Nitrogen, Nitrate | 28.5 mg/kg | | 1.4 | 1 | | 09/18/14 09:10 | | N2 |
| Nitrogen, Nitrite | ND mg/kg | | 1.4 | 1 | | 09/18/14 09:10 | | N2 |

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ANALYTICAL RESULTS

Project: CMCC-MVE 2527

Pace Project No.: 60177841

Sample: LAGOON C Lab ID: 60177841003 Collected: 09/11/14 14:40 Received: 09/12/14 07:00 Matrix: Solid

Results reported on a "dry-weight" basis

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|--------------------------------|----------|---|--------------|----|----------------|----------------|-----------|------|
| SM4500 Total Phosphorus | | Analytical Method: SM 4500-P E Preparation Method: SM4500-P B | | | | | | |
| Phosphate as P04 | ND mg/kg | | 43.2 | 1 | 09/22/14 15:03 | 09/22/14 15:17 | | |
| Phosphorus | ND mg/kg | | 14.1 | 1 | 09/22/14 15:03 | 09/22/14 15:17 | 7723-14-0 | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527
Pace Project No.: 60177841

QC Batch: MERP/8809 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1444038 Matrix: Solid
Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-----------|-------|--------------|-----------------|----------------|------------|
| Mercury | mg/kg | ND | 0.050 | 09/18/14 14:27 | |

LABORATORY CONTROL SAMPLE: 1444039

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-----------|-------|-------------|------------|-----------|--------------|------------|
| Mercury | mg/kg | .5 | 0.44 | 87 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1444040 1444041

| Parameter | Units | 10281486001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|-----------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|-----------|
| Mercury | mg/kg | ND | .54 | .45 | 0.71 | 0.46 | 128 | 96 | 75-125 | 44 | 20 | H1,M1, R1 |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

QC Batch: MPRP/28979

Analysis Method: EPA 6010

QC Batch Method: EPA 3050

Analysis Description: 6010 MET

Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1445765

Matrix: Solid

Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|------------|-------|--------------|-----------------|----------------|------------|
| Arsenic | mg/kg | ND | 1.0 | 09/22/14 16:12 | |
| Cadmium | mg/kg | ND | 0.50 | 09/22/14 16:12 | |
| Chromium | mg/kg | ND | 0.50 | 09/22/14 16:12 | |
| Copper | mg/kg | ND | 1.0 | 09/22/14 16:12 | |
| Lead | mg/kg | ND | 1.0 | 09/22/14 16:12 | |
| Molybdenum | mg/kg | ND | 2.0 | 09/22/14 16:12 | |
| Nickel | mg/kg | ND | 0.50 | 09/22/14 16:12 | |
| Potassium | mg/kg | ND | 50.0 | 09/22/14 16:12 | |
| Selenium | mg/kg | ND | 1.5 | 09/22/14 16:12 | |
| Zinc | mg/kg | ND | 10.0 | 09/22/14 16:12 | |

LABORATORY CONTROL SAMPLE: 1445766

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|------------|-------|-------------|------------|-----------|--------------|------------|
| Arsenic | mg/kg | 100 | 95.6 | 96 | 80-120 | |
| Cadmium | mg/kg | 100 | 97.2 | 97 | 80-120 | |
| Chromium | mg/kg | 100 | 101 | 101 | 80-120 | |
| Copper | mg/kg | 100 | 99.6 | 100 | 80-120 | |
| Lead | mg/kg | 100 | 100 | 100 | 80-120 | |
| Molybdenum | mg/kg | 100 | 107 | 107 | 80-120 | |
| Nickel | mg/kg | 100 | 102 | 102 | 80-120 | |
| Potassium | mg/kg | 1000 | 999 | 100 | 80-120 | |
| Selenium | mg/kg | 100 | 94.6 | 95 | 80-120 | |
| Zinc | mg/kg | 100 | 99.9 | 100 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1445767 1445768

| Parameter | Units | 60178093001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | Max RPD | Qual |
|------------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|---------|-------|
| Arsenic | mg/kg | 18.8 | 334 | 328 | 267 | 293 | 74 | 84 | 75-125 | 9 | 20 M1 |
| Cadmium | mg/kg | ND | 334 | 328 | 303 | 331 | 91 | 101 | 75-125 | 9 | 20 |
| Chromium | mg/kg | 11300 | 334 | 328 | 11000 | 11900 | -84 | 181 | 75-125 | 8 | 20 M1 |
| Copper | mg/kg | 198 | 334 | 328 | 491 | 523 | 88 | 99 | 75-125 | 6 | 20 |
| Lead | mg/kg | 4.1 | 334 | 328 | 293 | 320 | 86 | 96 | 75-125 | 9 | 20 |
| Molybdenum | mg/kg | 14.1 | 334 | 328 | 335 | 365 | 96 | 107 | 75-125 | 9 | 20 |
| Nickel | mg/kg | 55.8 | 334 | 328 | 354 | 381 | 89 | 99 | 75-125 | 7 | 20 |
| Potassium | mg/kg | 263 | 3340 | 3280 | 3310 | 3630 | 91 | 102 | 75-125 | 9 | 20 |
| Selenium | mg/kg | ND | 334 | 328 | 297 | 324 | 89 | 99 | 75-125 | 9 | 20 |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

| MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1445767 1445768 | | | | | | | | | | | |
|--|-------|-----------------------|----------------------|-----------------------|--------------|---------------|-------------|--------------|-----------------|------------|------|
| Parameter | Units | 60178093001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | Max RPD | Qual |
| Zinc | mg/kg | 67.3 | 334 | 328 | 350 | 379 | 85 | 95 | 75-125 | 8 20 | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

QC Batch: MSV/64457

Analysis Method: EPA 8260

QC Batch Method: EPA 5035/5030B

Analysis Description: 8260 MSV 5030 Med

Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1444163

Matrix: Solid

Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---------------------------|-------|--------------|-----------------|----------------|------------|
| Benzene | ug/kg | ND | 50.0 | 09/22/14 15:24 | |
| Ethylbenzene | ug/kg | ND | 50.0 | 09/22/14 15:24 | |
| Toluene | ug/kg | ND | 100 | 09/22/14 15:24 | |
| Xylene (Total) | ug/kg | ND | 250 | 09/22/14 15:24 | |
| 1,2-Dichloroethane-d4 (S) | % | 100 | 75-129 | 09/22/14 15:24 | |
| 4-Bromofluorobenzene (S) | % | 102 | 76-123 | 09/22/14 15:24 | |
| Toluene-d8 (S) | % | 97 | 80-120 | 09/22/14 15:24 | |

LABORATORY CONTROL SAMPLE: 1444164

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---------------------------|-------|-------------|------------|-----------|--------------|------------|
| Benzene | ug/kg | 2000 | 2000 | 100 | 80-120 | |
| Ethylbenzene | ug/kg | 2000 | 1980 | 99 | 80-120 | |
| Toluene | ug/kg | 2000 | 1970 | 98 | 79-120 | |
| Xylene (Total) | ug/kg | 6000 | 5960 | 99 | 79-120 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 100 | 75-129 | |
| 4-Bromofluorobenzene (S) | % | | | 98 | 76-123 | |
| Toluene-d8 (S) | % | | | 97 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1444165 1444166

| Parameter | Units | 60177841003 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | Max RPD | Qual |
|---------------------------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|---------|------|
| Benzene | ug/kg | ND | 2790 | 2790 | 2730 | 2920 | 97 | 104 | 22-144 | 7 | 38 |
| Ethylbenzene | ug/kg | ND | 2790 | 2790 | 2960 | 2810 | 106 | 100 | 10-154 | 5 | 42 |
| Toluene | ug/kg | ND | 2790 | 2790 | 2860 | 2750 | 102 | 98 | 11-150 | 4 | 40 |
| Xylene (Total) | ug/kg | ND | 8380 | 8380 | 8830 | 8280 | 105 | 99 | 10-154 | 6 | 41 |
| 1,2-Dichloroethane-d4 (S) | % | | | | | | 89 | 99 | 75-129 | | |
| 4-Bromofluorobenzene (S) | % | | | | | | 98 | 100 | 76-123 | | |
| Toluene-d8 (S) | % | | | | | | 102 | 95 | 80-120 | | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527
Pace Project No.: 60177841

QC Batch: PMST/10025 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60177841001, 60177841002, 60177841003

SAMPLE DUPLICATE: 1443726

| Parameter | Units | 60177693001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|------------------|-------|-----------------------|---------------|-----|------------|------------|
| Percent Moisture | % | 99.4 | 76.5 | 26 | 20 | D6 |

SAMPLE DUPLICATE: 1443727

| Parameter | Units | 60177841001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|------------------|-------|-----------------------|---------------|-----|------------|------------|
| Percent Moisture | % | 27.1 | 27.3 | 1 | 20 | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

QC Batch: WET/50305

Analysis Method: SM 2540G

QC Batch Method: SM 2540G

Analysis Description: 2540G Total Solids

Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1443699

Matrix: Solid

Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|--------------|-------|--------------|-----------------|----------------|------------|
| Total Solids | % | ND | 0.10 | 09/16/14 13:10 | |

SAMPLE DUPLICATE: 1443700

| Parameter | Units | 60178023001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|--------------|-------|--------------------|------------|-----|---------|------------|
| Total Solids | % | 23.0 | 23.5 | 2 | 8 | |

SAMPLE DUPLICATE: 1443701

| Parameter | Units | 60177841001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|--------------|-------|--------------------|------------|-----|---------|------------|
| Total Solids | % | 72.9 | 72.7 | 0 | 8 | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527
Pace Project No.: 60177841

QC Batch: WETA/31003 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1442834 Matrix: Solid
Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-------------------|-------|--------------|-----------------|----------------|------------|
| Nitrogen, Ammonia | mg/kg | ND | 1.0 | 09/14/14 12:50 | |

LABORATORY CONTROL SAMPLE: 1442835

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------|-------|-------------|------------|-----------|--------------|------------|
| Nitrogen, Ammonia | mg/kg | 20 | 20.0 | 100 | 90-110 | |

MATRIX SPIKE SAMPLE: 1442836

| Parameter | Units | 60177539001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|-------------------|-------|--------------------|-------------|-----------|----------|--------------|------------|
| Nitrogen, Ammonia | mg/kg | 2980 | 1530 | 3890 | 60 | 80-120 | M1 |

SAMPLE DUPLICATE: 1442837

| Parameter | Units | 60177693001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|-------------------|-------|--------------------|------------|-----|---------|------------|
| Nitrogen, Ammonia | mg/kg | 11900 | 11700 | 1 | 20 | |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

QC Batch: WETA/30998

Analysis Method: EPA 351.2

QC Batch Method: EPA 351.2

Analysis Description: 351.2 TKN

Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1442625

Matrix: Solid

Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---------------------------|-------|--------------|-----------------|----------------|------------|
| Nitrogen, Kjeldahl, Total | mg/kg | ND | 50.0 | 09/13/14 17:35 | |

LABORATORY CONTROL SAMPLE: 1442626

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---------------------------|-------|-------------|------------|-----------|--------------|------------|
| Nitrogen, Kjeldahl, Total | mg/kg | 500 | 492 | 98 | 90-110 | |

MATRIX SPIKE SAMPLE: 1442627

| Parameter | Units | 60177491008 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---------------------------|-------|--------------------|-------------|-----------|----------|--------------|------------|
| Nitrogen, Kjeldahl, Total | mg/kg | 21800 | 13800 | 39700 | 130 | 90-110 | M1 |

SAMPLE DUPLICATE: 1442628

| Parameter | Units | 60177539001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---------------------------|-------|--------------------|------------|-----|---------|------------|
| Nitrogen, Kjeldahl, Total | mg/kg | 55900 | 62600 | 11 | 10 | D6 |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527
Pace Project No.: 60177841

QC Batch: WETA/31051 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite
Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 1444759 Matrix: Solid
Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-------------------|-------|--------------|-----------------|----------------|------------|
| Nitrogen, Nitrate | mg/kg | ND | 1.0 | 09/18/14 09:05 | N2 |
| Nitrogen, Nitrite | mg/kg | ND | 1.0 | 09/18/14 09:05 | N2 |

LABORATORY CONTROL SAMPLE: 1444760

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|-------------------|-------|-------------|------------|-----------|--------------|------------|
| Nitrogen, Nitrate | mg/kg | 16 | 15.4 | 96 | 85-115 | N2 |
| Nitrogen, Nitrite | mg/kg | 4 | 4.3 | 106 | 90-110 | N2 |

MATRIX SPIKE SAMPLE: 1444761

| Parameter | Units | 60177841001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|-------------------|-------|--------------------|-------------|-----------|----------|--------------|------------|
| Nitrogen, Nitrate | mg/kg | 16.5 | 22 | 37.5 | 96 | 85-115 | N2 |
| Nitrogen, Nitrite | mg/kg | ND | 5.5 | 6.5 | 118 | 90-110 | M1,N2 |

SAMPLE DUPLICATE: 1444762

| Parameter | Units | 60177841002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|-------------------|-------|--------------------|------------|-----|---------|------------|
| Nitrogen, Nitrate | mg/kg | 25.2 | 25.2 | 0 | 20 | N2 |
| Nitrogen, Nitrite | mg/kg | ND | .49J | | 20 | N2 |

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QUALITY CONTROL DATA

Project: CMCC-MVE 2527

Pace Project No.: 60177841

QC Batch: WETA/6040

Analysis Method: SM 4500-P E

QC Batch Method: SM4500-P B

Analysis Description: SM4500-PE Total Phosphorus

Associated Lab Samples: 60177841001, 60177841002, 60177841003

METHOD BLANK: 97297

Matrix: Solid

Associated Lab Samples: 60177841001, 60177841002, 60177841003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|------------------|-------|--------------|-----------------|----------------|------------|
| Phosphate as P04 | mg/kg | ND | 30.7 | 09/22/14 15:13 | |
| Phosphorus | mg/kg | ND | 10.0 | 09/22/14 15:13 | |

LABORATORY CONTROL SAMPLE: 97298

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|------------------|-------|-------------|------------|-----------|--------------|------------|
| Phosphate as P04 | mg/kg | 1530 | 1460 | 95 | 80-120 | |
| Phosphorus | mg/kg | 500 | 477 | 95 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 97299

97300

| Parameter | Units | 60177841001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|------------------|-------|--------------------|----------------|-----------------|-----------|------------|----------|-----------|--------------|-----|---------|------|
| Phosphate as P04 | mg/kg | 187 | 2100 | 2100 | 2170 | 2200 | 94 | 96 | 80-120 | 1 | 20 | |
| Phosphorus | mg/kg | 61.1 | 686 | 686 | 709 | 717 | 94 | 96 | 80-120 | 1 | 20 | |

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QUALIFIERS

Project: CMCC-MVE 2527
Pace Project No.: 60177841

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-D Pace Analytical Services - Dallas
PASI-K Pace Analytical Services - Kansas City

SAMPLE QUALIFIERS

Sample: 60177841001

[1] The samples were received outside of required temperature range. Analysis was completed upon client approval.

Sample: 60177841002

[1] The samples were received outside of required temperature range. Analysis was completed upon client approval.

Sample: 60177841003

[1] The samples were received outside of required temperature range. Analysis was completed upon client approval.

ANALYTE QUALIFIERS

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
H1 Analysis conducted outside the EPA method holding time.
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2 The lab does not hold TNI accreditation for this parameter.
R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CMCC-MVE 2527
Pace Project No.: 60177841

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|-------------|-----------|-----------------|------------|-------------------|------------------|
| 60177841001 | LAGOON A | EPA 3050 | MPRP/28979 | EPA 6010 | ICP/21852 |
| 60177841002 | LAGOON B | EPA 3050 | MPRP/28979 | EPA 6010 | ICP/21852 |
| 60177841003 | LAGOON C | EPA 3050 | MPRP/28979 | EPA 6010 | ICP/21852 |
| 60177841001 | LAGOON A | EPA 7471 | MERP/8809 | EPA 7471 | MERC/8764 |
| 60177841002 | LAGOON B | EPA 7471 | MERP/8809 | EPA 7471 | MERC/8764 |
| 60177841003 | LAGOON C | EPA 7471 | MERP/8809 | EPA 7471 | MERC/8764 |
| 60177841001 | LAGOON A | EPA 5035/5030B | MSV/64457 | EPA 8260 | MSV/64469 |
| 60177841002 | LAGOON B | EPA 5035/5030B | MSV/64457 | EPA 8260 | MSV/64469 |
| 60177841003 | LAGOON C | EPA 5035/5030B | MSV/64457 | EPA 8260 | MSV/64469 |
| 60177841001 | LAGOON A | ASTM D2974 | PMST/10025 | | |
| 60177841002 | LAGOON B | ASTM D2974 | PMST/10025 | | |
| 60177841003 | LAGOON C | ASTM D2974 | PMST/10025 | | |
| 60177841001 | LAGOON A | SM 2540G | WET/50305 | | |
| 60177841002 | LAGOON B | SM 2540G | WET/50305 | | |
| 60177841003 | LAGOON C | SM 2540G | WET/50305 | | |
| 60177841001 | LAGOON A | SM 2710B | WET/50419 | | |
| 60177841002 | LAGOON B | SM 2710B | WET/50419 | | |
| 60177841003 | LAGOON C | SM 2710B | WET/50419 | | |
| 60177841001 | LAGOON A | EPA 350.1 | WETA/31003 | | |
| 60177841002 | LAGOON B | EPA 350.1 | WETA/31003 | | |
| 60177841003 | LAGOON C | EPA 350.1 | WETA/31003 | | |
| 60177841001 | LAGOON A | EPA 351.2 | WETA/30998 | | |
| 60177841002 | LAGOON B | EPA 351.2 | WETA/30998 | | |
| 60177841003 | LAGOON C | EPA 351.2 | WETA/30998 | | |
| 60177841001 | LAGOON A | EPA 353.2 | WETA/31051 | | |
| 60177841002 | LAGOON B | EPA 353.2 | WETA/31051 | | |
| 60177841003 | LAGOON C | EPA 353.2 | WETA/31051 | | |
| 60177841001 | LAGOON A | SM4500-P B | WETA/6040 | SM 4500-P E | WETA/6041 |
| 60177841002 | LAGOON B | SM4500-P B | WETA/6040 | SM 4500-P E | WETA/6041 |
| 60177841003 | LAGOON C | SM4500-P B | WETA/6040 | SM 4500-P E | WETA/6041 |

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60177841

Client Name: BorrCourier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐Tracking #: 904372601591Pace Shipping Label Used? Yes ☐ No ☒Custody Seal on Cooler/Box Present: Yes ☐ No ☒ Seals intact: Yes ☒ No ☐Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☒ 2PKThermometer Used: T-235 / T-194Type of Ice: ☒ Yes ☐ Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)Cooler Temperature: 11.2Date and initials of person examining contents: 11/12/14

Temperature should be above freezing to 6°C

| | | |
|--|--|--|
| Chain of Custody present: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 1. |
| Chain of Custody filled out: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 2. |
| Chain of Custody relinquished: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 3. <u>TEMP - 11.2</u> |
| Sampler name & signature on COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 4. <u>Insufficient ice with samples.</u> |
| Samples arrived within holding time: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 5. |
| Short Hold Time analyses (<72hr): | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 6. |
| Rush Turn Around Time requested: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 7. |
| Sufficient volume: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 8. |
| Correct containers used: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 9. |
| Pace containers used: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 10. |
| Containers intact: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 11. |
| Unpreserved 5035A soils frozen w/in 48hrs? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 12. |
| Filtered volume received for dissolved tests? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 13. |
| Sample labels match COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 14. |
| Includes date/time/ID/analyses | Matrix: <u>SL</u> | 15. |
| All containers needing preservation have been checked. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 16. |
| All containers needing preservation are found to be in compliance with EPA recommendation. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 17. |
| Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Initial when completed |
| Trip Blank present: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Lot # of added preservative |
| Pace Trip Blank lot # (if purchased): | | 18. |
| Headspace in VOA vials (>6mm): | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 19. |
| Project sampled in USDA Regulated Area: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 20. List State: <u>MO</u> |

Client Notification/ Resolution:

Copy COC to Client? Y / NField Data Required? Y / NPerson Contacted: Andrew

Date/Time: _____

Comments/ Resolution: THANProject Manager Review: [Signature]Date: 11/12/14



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section C

Section B
Revised Unit Information:

Section A
Required Client Information[illegible][illegible]

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days

FALL-Q-020 rev.08, 12-Oct-2007

Chain of Custody

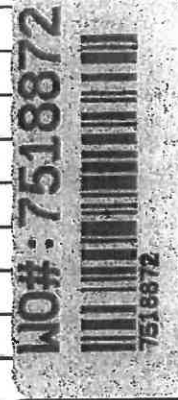


Workorder: 60177841 Workorder Name: CMCC-MVE 2527 Owner Received Date: 9/12/2014 Results Requested By: 9/26/2014

Angle Brown
 Pace Analytical Services, Inc.
 9608 Loliet Blvd.
 Lenexa, KS 66219
 Phone (913)599-5665
 Fax (913)599-1759

Pace Analytical Dallas
 400 West Bethany Drive
 Suite 180
 Allen, TX 75013
 Phone (972)727-1123

| Sample Information | | | Collection Information | | | Analysis Information | | | Preserved Containers | | | Analysis Information | | |
|--------------------|-----------|-------------|------------------------|-------------|--------|----------------------|-------------------------------|--------------------------|----------------------|--|--|----------------------|--|--|
| Item | Sample ID | Sample Type | Collect Date/Time | Lab ID | Matrix | None | Total Phosphate SM 4500-P B&E | Total Phosphorus EPA 365 | | | | | | |
| 1 | LAGOON A | PS | 9/11/2014 12:00 | 60177841001 | Solid | 1 | X | X | | | | | | |
| 2 | LAGOON B | PS | 9/11/2014 17:30 | 60177841002 | Solid | 1 | X | X | | | | | | |
| 3 | LAGOON C | PS | 9/11/2014 14:40 | 60177841003 | Solid | 1 | X | X | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



LAB USE ONLY

| Transfers | Released By | Date/Time | Received By | Date/Time |
|-----------|--------------------|---------------|--------------------|---------------|
| 1 | <i>[Signature]</i> | 9/11/14 17:30 | <i>[Signature]</i> | 9/16/14 08:55 |
| 2 | | | | |
| 3 | | | | |

Cooler Temperature on Receipt 14 °C Custody Seal For N Received on Ice For N Samples Intact For N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.



Sample Condition Upon Receipt
Dallas

Client Name: Face-Kansas

Project Work order: 7518872

Courier: FedEX ☒ UPS ☐ USPS ☐ Client ☐ Courier ☐ LSO ☐ PACE ☐ Other: _____
Tracking#: 6113 8280 1340
Custody Seal on Cooler/Box: Yes ☒ No ☐ Seals Intact: Yes ☒ No ☐ NA ☐
Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☐
Thermometer Used: IR-01 Type of Ice: Wet ☒ Blue ☐ None ☐ Sample Received on ice, cooling process has begun ☒
Cooler Temp: 1.40°C (Temp should be above freezing to 6°C)

| | | |
|---|---|--|
| Chain of Custody Present | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 1 |
| Chain of Custody filled out | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 2 |
| Chain of Custody relinquished | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 3 |
| Sampler name & signature on COC | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/> | 4 |
| Sample received within HT | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 5 |
| Short HT analyses (<72 hrs) | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/> | 6 |
| Rush TAT requested | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/> | 7 |
| Sufficient Volume received | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 8 |
| Correct Container used | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 9 |
| Pace Container used | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | |
| Container Intact | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 10 |
| Unpreserved 5035A soil frozen within 48 hrs | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 11 |
| Filtered volume received for Dissolved tests | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 12 |
| Sample labels match COC | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> | 13 |
| Include date/time/ID/analyses | Matrix: <u>Solid</u> | |
| All containers needing preservation have been checked | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 14a. Lot# of pH strip: _____ pH checked Yes <input type="checkbox"/> No <input type="checkbox"/> pH<2 <input type="checkbox"/> pH>9 <input type="checkbox"/> pH>12 <input type="checkbox"/> Lot# of Iodine strip: _____ Lot# of Lead Acetate strip: _____ |
| Do containers require preservation at the lab | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 14b. Preservation: _____ Lot#: _____ |
| All containers needing preservation are found to be in Compliance with EPA recommendation | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 14c. _____ |
| Exception: VOA, coliform, O&G | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | |
| Trip Blank present | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 15 |
| Trip Blank Custody Seals Intact | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | |
| Pace Trip Blank Lot# (if purchased): | | |
| Headspace in VOA (>6mm) | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 16 |
| Project sampled in USDA Regulated Area: | Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/> | 17. List State _____ |

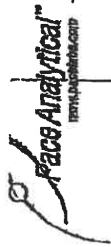
Client Notification/Resolution/Comments:

Person Contacted: _____ Date: _____

Comments/Resolution: _____

Person Examining Contents: TD Date: 9-16-14

Sample Container Count



COC PAGE 1 of 1
COC ID#

Pace Project # 7519872

| Sample Line Item | BP2N | AG1U | VG9U | VG9H | BP2S | BP1U | BP2U | BG1H | AG1S | BP20 | SP5T | WG6U | WGKU | WG2U | Comments |
|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| 1 | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |

Container Codes

| | | | | | | | |
|-------|--------------------------------|------|----------------------------------|------|------------------------------|------|-----------------------------|
| DG9H | 40mL HCL amber vial | AF | Air Filter | BP1N | 1 liter HNO3 plastic | DG9P | 40mL TSP amber vial |
| AG1U | 1liter unpreserved amber glass | AG1H | 1 liter HCL amber glass | BP1S | 1 liter H2SO4 plastic | DG9S | 40mL H2SO4 amber vial |
| WG9U | 4oz clear soil jar | AG1S | 1 liter H2SO4 amber glass | BP1U | 1 liter unpreserved plastic | DG9T | 40mL Na Thio amber vial |
| R | terra core kit | AG1T | 1 liter Na Thiosulfate amber gl | BP1Z | 1 liter NaOH, Zn, Ac | DG9U | 40mL unpreserved amber vial |
| BP2N | 500mL HNO3 plastic | AG2N | 500mL HNO3 amber glass | BP2A | 500mL NaOH, Asc Acid plastic | I | Wipe/Swab |
| BP2U | 500mL unpreserved plastic | AG2S | 500mL H2SO4 amber glass | BP2O | 500mL NaOH plastic | JGFU | 4oz unpreserved amber wide |
| BP2S | 500mL H2SO4 plastic | AG2U | 500mL unpreserved amber gla | BP2Z | 500mL NaOH, Zn Ac | U | Summa Can |
| BP3N | 250mL HNO3 plastic | AG3U | 250mL unpreserved amber gla | BP3A | 250mL NaOH, Asc Acid plastic | VG9H | 40mL HCL clear vial |
| BP3U | 250mL unpreserved plastic | BG1H | 1 liter HCL clear glass | BP3C | 250mL NaOH plastic | VG9T | 40mL Na Thio. clear vial |
| BP3S | 250mL H2SO4 plastic | BG1S | 1 liter H2SO4 clear glass | BP3Z | 250mL NaOH, Zn Ac plastic | VG9U | 40mL unpreserved clear vial |
| AG3S | 250mL H2SO4 glass amber | BG1T | 1 liter Na Thiosulfate clear gla | C | Air Cassettes | VSG | Headspace septa vial & HCL |
| AG1S | 1 liter H2SO4 amber glass | BG1U | 1 liter unpreserved glass | DG9B | 40mL Na Bisulfate amber vial | WGFU | 4oz wide jar w/hexane wipe |
| BP1U | 1 liter unpreserved plastic | BP1A | 1 liter NaOH, Asc Acid plastic | DG9M | 40mL MeOH clear vial | ZPLC | Ziploc Bag |
| WGKU | 8oz wide jar unpreserved | SP5T | 120mL Coliform Na Thiosulfate | SP5U | 120mL Coliform unpreserved | GN | General unpreserved |
| Other | | | | | | | |

Appendix C

USDA Soils Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Cole County, Missouri**



September 15, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

Custom Soil Resource Report

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

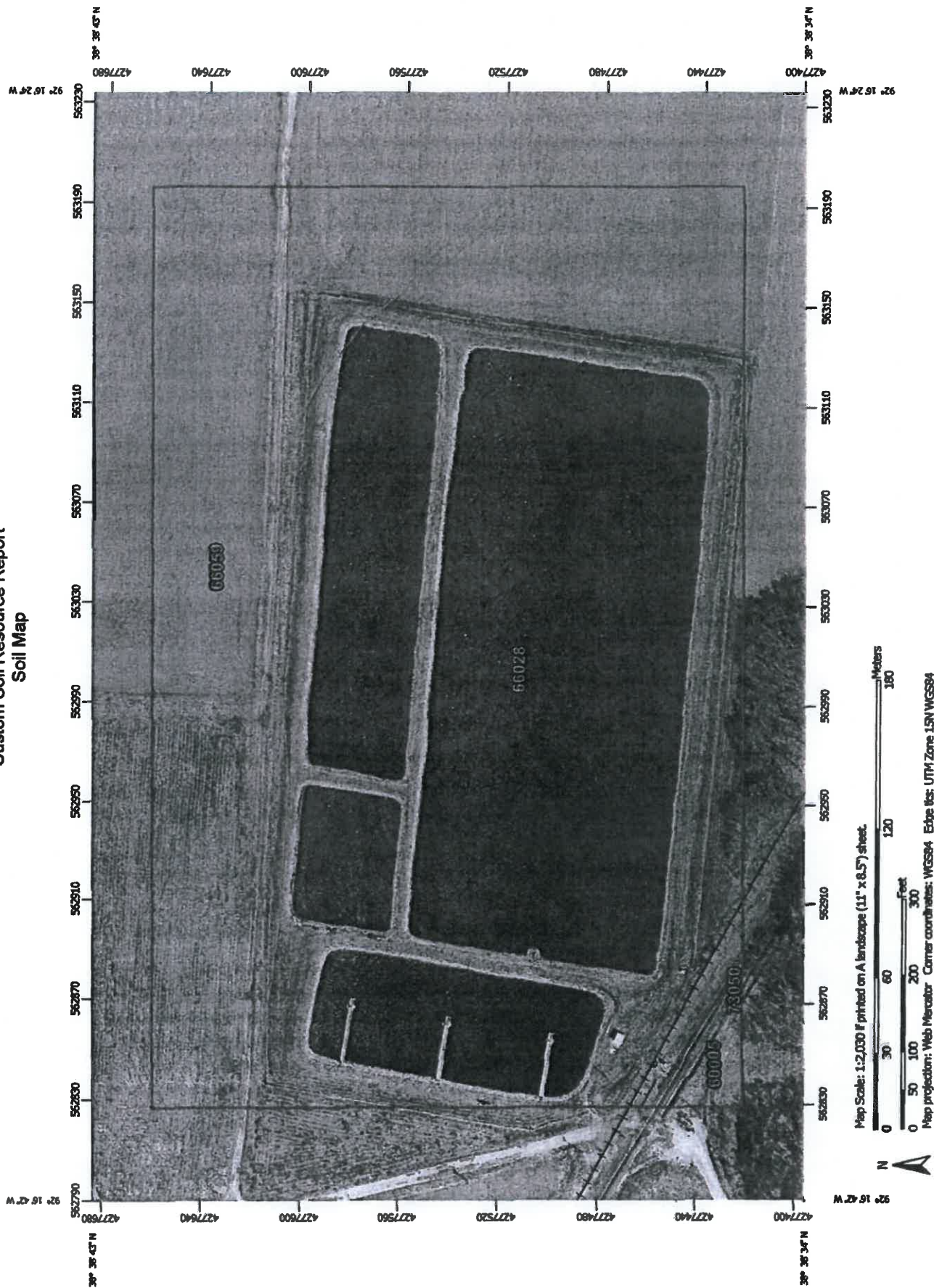
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

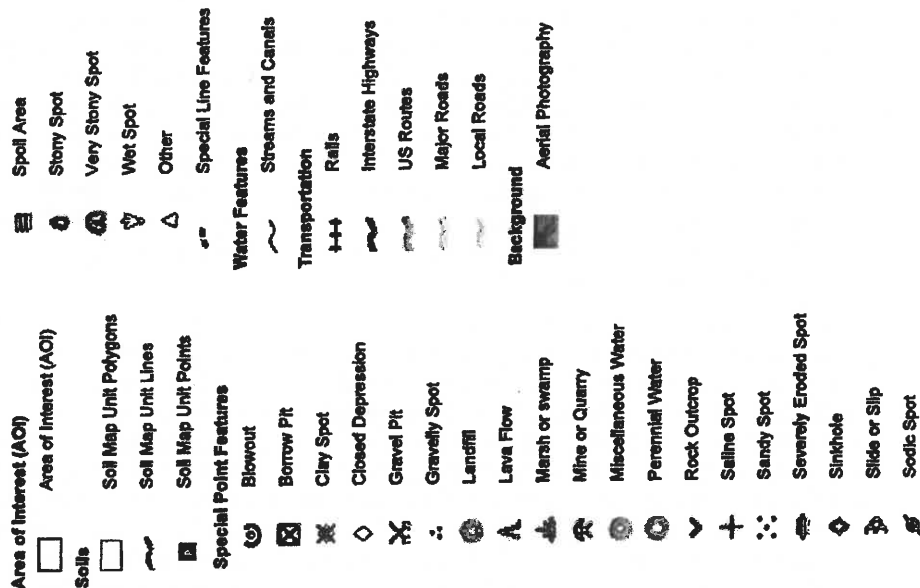
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cole County, Missouri
Survey Area Data: Version 13, Dec 12, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 5, 2011--Aug 25, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map-unit boundaries may be evident.



Map Unit Legend

| Cole County, Missouri (MO051) | | | |
|-------------------------------|--|--------------|----------------|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 60005 | Menfro silt loam, 20 to 45 percent slopes | 0.2 | 0.9% |
| 66028 | Blencoe silty clay loam, 0 to 2 percent slopes, occasionally flooded | 15.9 | 72.5% |
| 66059 | Peers silty clay loam, 0 to 2 percent slopes, occasionally flooded | 5.8 | 26.5% |
| 73050 | Rock outcrop-Bardley complex, 35 to 99 percent slopes, extremely stony | 0.0 | 0.1% |
| Totals for Area of Interest | | 21.9 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cole County, Missouri

60005—Menfro silt loam, 20 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2tbqs
Elevation: 400 to 4,000 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 172 to 232 days
Farmland classification: Not prime farmland

Map Unit Composition

Menfro and similar soils: 89 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Menfro

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 3 inches: silt loam
Bt1 - 3 to 45 inches: silty clay loam
Bt2 - 45 to 79 inches: silt loam

Properties and qualities

Slope: 20 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Quercus rubra-quercus alba/asimina triloba/laportea canadensis-erigenia bulbosa (F115BY003MO), Quercus alba-quercus velutina/rhus aromatica/elymus virginicus-solidago ulmifolia (F115BY043MO)
Other vegetative classification: Trees/Timber (Woody Vegetation)

Custom Soil Resource Report

Minor Components

Goss

Percent of map unit: 10 percent

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Crest

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: Quercus alba-quercus velutina/rhus aromatica/solidago ulmifolia-schizachyrium scoparium (F116AY011MO)

Other vegetative classification: Trees/Timber (Woody Vegetation)

Rock outcrop

Percent of map unit: 1 percent

Landform: Interfluves

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

66028—Blencoe silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2qp8r

Elevation: 340 to 1,200 feet

Mean annual precipitation: 37 to 47 inches

Mean annual air temperature: 52 to 57 degrees F

Frost-free period: 184 to 228 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Blencoe and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blencoe

Setting

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey alluvium over loamy alluvium

Typical profile

Ap - 0 to 9 inches: silty clay loam

A - 9 to 14 inches: silty clay

Bw - 14 to 22 inches: silty clay

2C - 22 to 80 inches: stratified very fine sandy loam to loam to silt loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Natural drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 12 to 36 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Calcium carbonate, maximum in profile: 2 percent

Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C/D

Ecological site: Quercus palustris-acer saccharinum/forestiera acuminata/carex-pilea pumila (F115BY041MO)

Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)

Minor Components

Peers

Percent of map unit: 5 percent

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Ulmus americana-celtis occidentalis/vitis-staphylea trifolia/carex-laporteana canadensis (F115BY031MO)

Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Sansdessein

Percent of map unit: 5 percent

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: Quercus palustris-acer saccharinum/forestiera acuminata/carex-pilea pumila (F115BY041MO)

Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

66059—Peers silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2qp93

Elevation: 340 to 1,200 feet

Mean annual precipitation: 37 to 47 inches

Mean annual air temperature: 52 to 57 degrees F

Custom Soil Resource Report

Frost-free period: 184 to 228 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Peers and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peers

Setting

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

Ap - 0 to 15 inches: silty clay loam

A - 15 to 22 inches: silty clay loam

Bw - 22 to 50 inches: silt loam

Cg - 50 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: About 20 to 30 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Calcium carbonate, maximum in profile: 10 percent

Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very high (about 12.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C/D

Ecological site: Ulmus americana-celtis occidentalis/vitis-staphylea trifolia/carex-laporteana canadensis (F115BY053MO)

Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Minor Components

Sandsessein

Percent of map unit: 10 percent

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: Quercus palustris-acer saccharinum/forestiera acuminata/carex-pumila (F115BY041MO)

Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

Lowmo

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Flood-plain steps

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: *Ulmus americana-celtis occidentalis/vitis-staphylea trifolia/carex-laporteana canadensis* (F115BY031MO)

Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)

73050—Rock outcrop-Bardley complex, 35 to 99 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2qpg7

Elevation: 900 to 1,200 feet

Mean annual precipitation: 39 to 49 inches

Mean annual air temperature: 54 to 59 degrees F

Frost-free period: 172 to 232 days

Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 55 percent

Bardley and similar soils: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Typical profile

R - 0 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 35 to 99 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Description of Bardley

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Slope alluvium over residuum weathered from dolomite over dolomite

Custom Soil Resource Report

Typical profile

A - 0 to 4 inches: very gravelly silt loam
E - 4 to 8 inches: extremely gravelly silt loam
2Bt - 8 to 27 inches: clay
3R - 27 to 80 inches: bedrock

Properties and qualities

Slope: 35 to 99 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Limestone/dolomite protected cliff (R116AY014MO), Limestone/dolomite exposed cliff (R116AY017MO)
Other vegetative classification: Trees/Timber (Woody Vegetation)

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Custom Soil Resource Report

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Appendix D

Plant Available Nitrogen Calculations

Results

Plant Available Nitrogen Calculator

Results Report

10/8/2014

Ver. 0.6



Operation Information

Operation Name: CMCC Lagoon #2

Manure Storage ID:

Planner Name:

Planner email:

Converted Manure Test Results - As-is Basis

Total Nitrogen: 12.1 lbs/Ton

Organic Nitrogen: 12.1 lbs/Ton

Ammonium Nitrogen: 0.0 lbs/Ton

Nitrate Nitrogen: 0.0 lbs/Ton

Phosphate: 0.0 lbs/Ton

Potash: 6.5 lbs/Ton

Moisture Content: 27.1 %

Manure Application Information

Other Solid Manure, no bedding

Manure Application Equipment: Solid spreader

Days to Incorporation: 1 to 3 days

Plant Available Nitrogen (PAN)

PAN: 4.7 lbs/Ton

Residual Nitrogen Fertilizer Value (RNFV): 2.8 lbs/Ton

Availability factors used:

k11, organic N, year 1: 0.39

k12, organic N, year 2: 0.23

k2, ammonium N: 0.50

Nitrate N: 1.0

Recommended Manure Application Rate

Target Fertilizer N Rate: 200 lbs/acre

Manure Application Rate: 42.1 Ton/acre

Phosphate Applied: 1 lbs/acre

Potash Applied: 272 lbs/acre

Year 2 residual fertilizer N value: 116.9 lbs/acre

If you have questions about this report contact John Lory. These calculations are based on MU Guide G9186, *Calculating Plant-Available Nitrogen and Residual Nitrogen Fertilizer Value in Manure*.

Plant Available Nitrogen Calculator Results Report

10/8/2014
Ver. 0.6



Operation Information

Operation Name: CMCC Lagoon #3
Manure Storage ID:
Planner Name:
Planner email:

Converted Manure Test Results - As-is Basis

Total Nitrogen: 7.5 lbs/Ton
Organic Nitrogen: 7.4 lbs/Ton
Ammonium Nitrogen: 0.0 lbs/Ton
Nitrate Nitrogen: 0.0 lbs/Ton
Phosphate: 0.4 lbs/Ton
Potash: 6.8 lbs/Ton
Moisture Content: 28.8 %

Manure Application Information

Other Solid Manure, no bedding
Manure Application Equipment: Solid spreader
Days to Incorporation: 1 to 3 days

Plant Available Nitrogen (PAN)

PAN: 2.9 lbs/Ton
Residual Nitrogen Fertilizer Value (RNFV): 1.7 lbs/Ton
Availability factors used:
 k11, organic N, year 1: 0.39
 k12, organic N, year 2: 0.23
 k2, ammonium N: 0.50
 Nitrate N: 1.0

Recommended Manure Application Rate

Target Fertilizer N Rate: 200 lbs/acre
Manure Application Rate: 68.1 Ton/acre
Phosphate Applied: 24 lbs/acre
Potash Applied: 465 lbs/acre
Year 2 residual fertilizer N value: 116.5 lbs/acre

If you have questions about this report contact John Lory. These calculations are based on MU Guide G9186, Calculating Plant-Available Nitrogen and Residual Nitrogen Fertilizer Value in Manure.

Results

Plant Available Nitrogen Calculator

Results Report

10/8/2014

Ver. 0.6



Operation Information

Operation Name: CMCC Lagoon #4

Manure Storage ID:

Planner Name:

Planner email:

Converted Manure Test Results - As-is Basis

Total Nitrogen: 6.2 lbs/Ton

Organic Nitrogen: 6.2 lbs/Ton

Ammonium Nitrogen: 0.0 lbs/Ton

Nitrate Nitrogen: 0.0 lbs/Ton

Phosphate: 0.2 lbs/Ton

Potash: 6.8 lbs/Ton

Moisture Content: 27.1 %

Manure Application Information

Other Solid Manure, no bedding

Manure Application Equipment: Solid spreader

Days to Incorporation: 1 to 3 days

Plant Available Nitrogen (PAN)

PAN: 2.4 lbs/Ton

Residual Nitrogen Fertilizer Value (RNFV): 1.4 lbs/Ton

Availability factors used:

k11, organic N, year 1: 0.39

k12, organic N, year 2: 0.23

k2, ammonium N: 0.50

Nitrate N: 1.0

Recommended Manure Application Rate

Target Fertilizer N Rate: 200 lbs/acre

Manure Application Rate: 81.7 Ton/acre

Phosphate Applied: 17 lbs/acre

Potash Applied: 558 lbs/acre

Year 2 residual fertilizer N value: 116.8 lbs/acre

If you have questions about this report contact John Lory. These calculations are based on MU Guide G9186, Calculating Plant-Available Nitrogen and Residual Nitrogen Fertilizer Value in Manure.

Appendix E

Phosphorus Index Worksheet

Phosphorus Index Worksheet
Version 0.2 April 20, 2005

| County | Lagoon #4 Northwest Lagoon | | | Lagoon #3 Northeast Lagoon | | | Lagoon #2 South Lagoon | | |
|---|-------------------------------|--|--|-------------------------------|--|--|------------------------------|--|--|
| | Cde | | | Cde | | | Cde | | |
| Soil test P level | 91 | | | 61 | | | 63 | | |
| Units | ppm | | | ppm | | | ppm | | |
| Extraction Procedure | Bray-I | | | Bray-I | | | Bray-I | | |
| Sampling depth | 3 inches | | | 3 inches | | | 3 inches | | |
| Tillage | Notill or Forage | | | Notill or Forage | | | Notill or Forage | | |
| RUSLE value - average annual (tons/ac) | 2 | | | 2 | | | 2 | | |
| Land cover | Brush/weed grass | | | Brush/weed grass | | | Brush/weed grass | | |
| Hydrologic soil group | C | | | C | | | C | | |
| Hydrologic condition | Fair | | | Fair | | | Fair | | |
| Distance from center of field to water feature | 850 | | | 900 | | | 1110 | | |
| Particulate P value | 2.4 | | | 2.1 | | | 2.1 | | |
| Soluble P value | 2.4 | | | 1.6 | | | 1.7 | | |
| Total P value | 4.8 | | | 3.7 | | | 3.7 | | |
| P index rating | MEDIUM | | | MEDIUM | | | MEDIUM | | |
| Agronomic P rating (Opt = 45 lbs/a) | Non-agronomic sampling depth | | | Non-agronomic sampling depth | | | Non-agronomic sampling depth | | |
| Sensitivity value | 1.8 | | | 1.8 | | | 1.8 | | |

Phosphorus Index Worksheet
Version 0.2 April 20, 2005

| County | Lagoon #4 Northwest Lagoon | Lagoon #3 Northeast Lagoon | Lagoon #2 South Lagoon |
|--|-------------------------------|-------------------------------|---------------------------|
| Soil test P level | Cole | Cole | Cole |
| Units | 91 ppm | 61 ppm | 63 ppm |
| Extraction Procedure | Bray-I | Bray-I | Bray-I |
| Sampling depth | 3 inches | 3 inches | 3 inches |
| Tillage | Notill or Forage | Notill or Forage | Notill or Forage |
| RUSLE value - average annual (tons/ac) | 2 | 2 | 2 |
| Land cover | Brush/weed grass | Brush/weed grass | Brush/weed grass |
| Hydrologic soil group | C | C | C |
| Hydrologic condition | Fair | Fair | Fair |
| Distance from center of field to water feature | 850 | 900 | 1110 |

| | | | |
|---------------------|-----|-----|-----|
| Particulate P value | 2.4 | 2.1 | 2.1 |
| Soluble P value | 2.4 | 1.6 | 1.7 |
| Total P value | 4.8 | 3.7 | 3.7 |

| | | | |
|--------------------------------------|------------------------------|------------------------------|------------------------------|
| P index rating | MEDIUM | MEDIUM | MEDIUM |
| Agronomic P rating (Opt. = 45 lbs/a) | Non-agronomic sampling depth | Non-agronomic sampling depth | Non-agronomic sampling depth |
| Sensitivity value | 1.8 | 1.8 | 1.8 |

Appendix F

Soils Analytical Lab Results



University of Missouri Soil Testing Laboratory
23 Mumford Hall
Columbia, MO. 65211
573-882-0623

Report for:

Barr Engineering
1001 Diamond Ridge, Ste. 1100
Jefferson City, MO 65109

| Lab Number | Sample Identification | pHs | N.A. meq/100g | Bray I P mg/kg | CEC meq/100g | TN % | TP % | NO ₃ -N mg/kg | NH ₄ -N mg/kg |
|---------------|--------------------------|-----|------------------|-------------------|-----------------|---------|---------|-----------------------------|-----------------------------|
| C1415698 | NW POND | 6.4 | 1.5 | 91 | 20.4 | 0.079 | 0.111 | 21.1 | 5.6 |
| C1415699 | S POND | 6.8 | 0.5 | 61 | 19.6 | 0.060 | 0.090 | 28.4 | 4.9 |
| C1415700 | NE POND | 6.9 | 0 | 63 | 19.4 | 0.053 | 0.095 | 25.2 | 3.8 |

Appendix G

Metals Calculations

| Lagoon #2 (South Lagoon - C) Land Requirements for Metals | | | | | | |
|--|--|--------------------------|--|--|--|---|
| Parameter | Lagoon #2 (South Lagoon) (mg/kg) | Total Pounds (lbs) | Cumulative Peak Loading Rate - WQ425 (lbs/acre; CEC over 15) | Annual Peak Loading Rates - WQ425 (lbs/acre; CEC over 15) | Area Required for Total (acres) | Area Required for Annual (acres) |
| Arsenic | 5.0 | 9.07 | 36.0 | 1.8 | 0.25 | 5.04 |
| Cadmium | 0.69 | 1.25 | 35 | 1.7 | 0.04 | 0.74 |
| Chromium | 21.2 | 38.48 | 2670 | 133 | 0.01 | 0.29 |
| Copper | 106 | 192.39 | 1335 | 66 | 0.14 | 2.91 |
| Lead | 25.1 | 45.56 | 267 | 13 | 0.17 | 3.50 |
| Molybdenum | <2.0 | 3.63 | 16 | 0.8 | 0.23 | 4.54 |
| Nickel | 18.7 | 33.94 | 347 | 19 | 0.10 | 1.79 |
| Selenium | <1.5 | 1.81 | 89 | 4.5 | 0.02 | 0.40 |
| Zinc | 270 | 490.05 | 2492 | 124 | 0.20 | 3.95 |
| Mercury | 0.17 | 0.31 | 15 | 0.7 | 0.02 | 0.44 |
| Total Required: | | | | | | 5.04 |

| Lagoon #2 (South Lagoon - C) Land Requirements for Nitrogen | |
|--|-----------|
| Manure Application Rate (T/acre) | 42.1 |
| Volume of Dry Sludge (CF) | 22,410 |
| Weight of Sludge (lbs) | 1,814,986 |
| Total Area Required (acres) | 21.6 |

| Lagoon #3 (Northeast Lagoon - B) Land Requirements for Metals | | | | | | |
|--|---------------------------------|--------------------------|--|--|--|---|
| Parameter | Lagoon #3 (Northwest Lagoon) | Total Pounds (lbs) | Cumulative Peak Loading Rate - WQ425 (lbs/acre; CEC over 15) | Annual Peak Loading Rates - WQ425 (lbs/acre; CEC over 15) | Area Required for Total (acres) | Area Required for Annual (acres) |
| Arsenic | 3.8 | 0.55 | 36.0 | 1.8 | 0.0153 | 0.306 |
| Cadmium | <0.62 | 0.09 | 35 | 1.7 | 0.0026 | 0.053 |
| Chromium | 17.7 | 2.57 | 2670 | 133 | 0.0010 | 0.019 |
| Copper | 59.6 | 8.64 | 1335 | 66 | 0.0065 | 0.131 |
| Lead | 14.9 | 2.16 | 267 | 13 | 0.0081 | 0.166 |
| Molybdenum | <2.5 | 0.36 | 16 | 0.8 | 0.0227 | 0.453 |
| Nickel | 16.8 | 2.44 | 347 | 19 | 0.0070 | 0.128 |
| Selenium | <1.8 | 0.26 | 89 | 4.5 | 0.0029 | 0.058 |
| Zinc | 126 | 18.27 | 2492 | 124 | 0.0073 | 0.147 |
| Mercury | <0.053 | 0.01 | 15 | 0.7 | 0.0005 | 0.011 |
| | | | | | Total Required: | 0.45 |

Lagoon #3 (Northeast Lagoon - B) Land Requirements for Nitrogen

| | |
|----------------------------------|---------|
| Manure Application Rate (T/acre) | 68.1 |
| Volume of Dry Sludge (CF) | 2327 |
| Weight of Sludge (lbs) | 144,997 |
| Total Area Required (acres) | 1.4 |

| Lagoon #4 (Northwest Lagoon - A) Land Requirements for Metals | | | | | | |
|--|------------------------------------|--------------------------|--|--|--|---|
| Parameter | Lagoon #4 (Northeast Lagoon) | Total Pounds (lbs) | Cumulative Peak Loading Rate - WQ425 (lbs/acre; CEC over 15) | Annual Peak Loading Rates - WQ425 (lbs/acre; CEC over 15) | Area Required for Total (acres) | Area Required for Annual (acres) |
| Arsenic | 3.9 | 0.76 | 36.0 | 1.8 | 0.0211 | 0.422 |
| Cadmium | <0.64 | 0.12 | 35 | 1.7 | 0.0036 | 0.073 |
| Chromium | 19 | 3.70 | 2670 | 133 | 0.0014 | 0.028 |
| Copper | 69.7 | 13.59 | 1335 | 66 | 0.0102 | 0.206 |
| Lead | 15.4 | 3.00 | 267 | 13 | 0.0112 | 0.231 |
| Molybdenum | <2.5 | 0.49 | 16 | 0.8 | 0.0305 | 0.609 |
| Nickel | 18.1 | 3.53 | 347 | 19 | 0.0102 | 0.186 |
| Selenium | <1.9 | 0.37 | 89 | 4.5 | 0.0042 | 0.082 |
| Zinc | 112 | 21.83 | 2492 | 124 | 0.0088 | 0.176 |
| Mercury | <0.047 | 0.01 | 15 | 0.7 | 0.0006 | 0.013 |
| | | | | | Total Required: | 0.61 |

Lagoon #4 (Northwest Lagoon - A) Land Requirements for Nitrogen

| | |
|----------------------------------|---------|
| Manure Application Rate (T/acre) | 81.7 |
| Volume of Dry Sludge (CF) | 3,129 |
| Weight of Sludge (lbs) | 194,955 |
| Total Area Required (acres) | 1.6 |

Metals Calculations

Calculations for the total amount of arsenic present in the lagoon is shown below:

$$\text{Arsenic in Lagoon \#2 (South Lagoon)} = 1,814,986 \text{ lbs of dry sludge} * 0.000005 \left(\frac{\text{lb arsenic}}{\text{lb sludge}} \right) = 9.07 \text{ lbs arsenic}$$

$$\text{Arsenic in Lagoon \#3 (Northeast Lagoon)} = 247,538 \text{ lbs of dry sludge} * 0.0000038 \left(\frac{\text{lb arsenic}}{\text{lb sludge}} \right) = 0.94 \text{ lbs arsenic}$$

$$\text{Arsenic in Lagoon \#4 (Northwest Lagoon)} = 192,837 \text{ lbs of dry sludge} * 0.0000039 \left(\frac{\text{lb arsenic}}{\text{lb sludge}} \right) = 0.75 \text{ lbs arsenic}$$

The methods of calculating the total amounts of other metals is the same as calculating the total amount of arsenic, as shown above.

Calculations for the acreage required for land applying the sludge, using the limiting constituent arsenic in the Lagoon #2 (South Lagoon), are shown below:

$$\text{Land Application Area Required for EPA Cumulative Loading} = \frac{9.07 \text{ lbs arsenic}}{36 \frac{\text{lbs}}{\text{acre}}} = 0.25 \text{ acres}$$

$$\text{Land Application Area Required for EPA Annual Loading} = \frac{9.07 \text{ lbs arsenic}}{1.8 \frac{\text{lbs}}{\text{acre}}} = 5.0 \text{ acres}$$

Nutrient/Nitrogen Calculation

A sample calculation for land application area required for sludge from the Lagoon #2 (South Lagoon) with nitrogen being the limiting factor is shown below:

Land Requirements

=cubic feet dry sludge * unit weight water * specific gravity of sludge (assumed 1.3)

$$= 22,410 \text{ ft}^3 \text{ of dry sludge} * 62.3 \frac{\text{lb}}{\text{ft}^3} * 1.3$$

$$= 1,814,986 \text{ lbs of dry sludge}$$

$$= 907.5 \text{ tons of dry sludge}$$

$$\text{Recommended Manure Application Rate (200 lb/acre)} = 42.1 \text{ tons/acre}$$

$$\text{Land Requirements} = 907.5 \text{ tons of dry sludge} \div 42.1 \text{ tons/acre}$$

$$= 21.6 \text{ acres}$$

The manure application rates were found using the MU Extension online PAN calculator.

Appendix E

Inovatia Laboratories, LLC Analysis Reports

10/3/2019

Page Number: 1 of 4

Allstate Consultants
3312 Lemone Industrial Blvd
Columbia, MO 65201
Brent Elliott

Project Name/Number: CMCC Lagoon Closure / 19142.02
Chain of Custody Number: 19-1026

Date Received: September 17, 2019
Time Received: 14:23
Relinquished by: Brent Elliott
Sampler: N/A

Enclosed please find analytical results for sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

Thank you for your interest in working with Inovatia Laboratories.

Sincerely,



Jennifer Vandelicht
Quality Assurance

Enclosures: Chain of Custody Record(s)



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Fayette, MO 65248-0030

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Fax: (660) 248-1921
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ANALYSIS REPORT

Chain of Custody Number: 19-1026

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193631

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|---------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 52.0 | mg/Kg | 52.0 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Total Kjeldahl | 26100 | mg/Kg | 11800 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Nitrate-Nitrite | < 10.0 | mg/Kg | < 10.0 | EPA 353.2 | 9/25/2019 - SET |
| pH (Solid) | 6.9 | SU | N/A | EPA 9045 | 9/26/2019 - SET |
| Percent Solids | 0.764 | % | 0.01 | SM 2540 G | 9/24/2019 - SET |
| Organic Nitrogen | 21700 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Phosphate P2O5 | 6900 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Potash K2O | 7400 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Sodium, Total | 8840 | mg/Kg | 1300 | EPA 6010 | 9/24/2019 - SET |
| Magnesium, Total | 10600 | mg/Kg | 260 | EPA 6010 | 9/24/2019 - SET |
| Phosphorus, Total | 2250 | mg/Kg | 650 | EPA 6010 | 9/24/2019 - SET |
| Sulfur, Total | 4660 | mg/Kg | 1300 | EPA 6010 | 9/24/2019 - SET |
| Potassium, Total | < 48.5 | mg/Kg | 48.5 | EPA 6010 | 9/24/2019 - SET |
| Calcium, Total | 35000 | mg/Kg | 650 | EPA 6010 | 9/24/2019 - SET |
| Chromium, Total | < 0.497 | mg/Kg | 0.497 | EPA 6010 | 9/24/2019 - SET |
| Manganese, Total | 434 | mg/Kg | 65.0 | EPA 6010 | 9/24/2019 - SET |
| Iron, Total | 20200 | mg/Kg | 650 | EPA 6010 | 9/24/2019 - SET |
| Nickel, Total | < 0.497 | mg/Kg | 0.497 | EPA 6010 | 9/24/2019 - SET |
| Copper, Total | 461 | mg/Kg | 208 | EPA 6010 | 9/24/2019 - SET |
| Zinc, Total | 915 | mg/Kg | 65.0 | EPA 6010 | 9/24/2019 - SET |
| Arsenic, Total | < 0.497 | mg/Kg | 0.497 | EPA 6020 | 9/24/2019 - SET |
| Selenium, Total | < 0.497 | mg/Kg | 0.497 | EPA 6020 | 9/24/2019 - SET |
| Molybdenum, Total | < 0.497 | mg/Kg | 0.497 | EPA 6010 | 9/24/2019 - SET |
| Silver, Total | < 0.497 | mg/Kg | 0.497 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/03/19

Page Number: 2 of 4

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ANALYSIS REPORT

Chain of Custody Number: 19-1026

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193631

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|---------|-------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.99 | mg/Kg | 0.099 | EPA 6010 | 9/24/2019 - SET |
| Barium, Total | 330 | mg/Kg | 130 | EPA 6010 | 9/24/2019 - SET |
| Mercury, Total | < 0.20 | mg/Kg | 0.20 | EPA 7471 | 9/24/2019 - SET |
| Lead, Total | < 0.497 | mg/Kg | 0.497 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/03/19

Page Number: 3 of 4

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ANALYSIS REPORT

Chain of Custody Number: 19-1026

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: 11:21

Sample Number: Fecal Coliform

Lab Number: 193632

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | < 2.0 | MPN/g | 2.0 | SM 9221 E | 9/18/2019 - MWL |
| Percent Solids | 3.88 | % | 0.01 | SM 2540 G | 9/19/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/03/19

Page Number: 4 of 4

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10/1/2019

Page Number: 1 of 7

Allstate Consultants
3312 Lemone Industrial Blvd
Columbia, MO 65201
Brent Elliott

Project Name/Number: CMCC Lagoon Closure / 19142.02
Chain of Custody Number: 19-1024

Date Received: September 17, 2019
Time Received: 14:23
Relinquished by: Brent Elliott
Sampler: N/A

Enclosed please find analytical results for sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

Thank you for your interest in working with Inovatia Laboratories.

Sincerely,



Jennifer Vandelicht
Quality Assurance

Enclosures: Chain of Custody Record(s)



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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503

Lab Number: 193625

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 68.9 | mg/Kg | 68.9 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Total Kjeldahl | 3160 | mg/Kg | 129 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Nitrate-Nitrite | 17.5 | mg/Kg | 13.8 | EPA 9056 | 9/25/2019 - SET |
| pH (Solid) | 6.9 | SU | N/A | EPA 9045 | 9/26/2019 - SET |
| Percent Solids | 73 | % | 0.01 | SM 2540 B | 9/24/2019 - SET |
| Organic Nitrogen | 3160 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Phosphate P2O5 | 13000 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Potash K2O | 3100 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Sodium, Total | 386 | mg/Kg | 63.2 | EPA 6010 | 9/26/2019 - SET |
| Magnesium, Total | 3980 | mg/Kg | 12.6 | EPA 6010 | 9/24/2019 - SET |
| Phosphorus, Total | 4320 | mg/Kg | 316 | EPA 6010 | 9/25/2019 - SET |
| Sulfur, Total | 980 | mg/Kg | 63.2 | EPA 6010 | 9/24/2019 - SET |
| Potassium, Total | 2540 | mg/Kg | 66.2 | EPA 6010 | 9/30/2019 - SET |
| Calcium, Total | 15600 | mg/Kg | 316 | EPA 6010 | 9/25/2019 - SET |
| Chromium, Total | 14.8 | mg/Kg | 3.16 | EPA 6010 | 9/24/2019 - SET |
| Manganese, Total | 253 | mg/Kg | 3.16 | EPA 6010 | 9/26/2019 - SET |
| Iron, Total | 19400 | mg/Kg | 126 | EPA 6010 | 9/25/2019 - SET |
| Nickel, Total | 15.0 | mg/Kg | 3.16 | EPA 6010 | 9/24/2019 - SET |
| Copper, Total | 40.0 | mg/Kg | 10.1 | EPA 6010 | 9/24/2019 - SET |
| Zinc, Total | 122 | mg/Kg | 3.16 | EPA 6010 | 9/24/2019 - SET |
| Arsenic, Total | < 3.16 | mg/Kg | 3.16 | EPA 6020 | 9/24/2019 - SET |
| Selenium, Total | < 3.16 | mg/Kg | 3.16 | EPA 6020 | 9/24/2019 - SET |
| Molybdenum, Total | < 3.16 | mg/Kg | 3.16 | EPA 6010 | 9/26/2019 - SET |
| Silver, Total | < 3.16 | mg/Kg | 3.16 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 2 of 7

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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503

Lab Number: 193625

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|---------|-------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.632 | mg/Kg | 0.632 | EPA 6010 | 9/24/2019 - SET |
| Barium, Total | 148 | mg/Kg | 6.32 | EPA 6010 | 9/24/2019 - SET |
| Mercury, Total | < 0.250 | mg/Kg | 0.250 | EPA 7471 | 9/24/2019 - SET |
| Lead, Total | 12.3 | mg/Kg | 3.16 | EPA 6010 | 9/24/2019 - SET |

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Results on a Dry Weight Basis

Report Date: 10/01/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Fecal Coliform 1

Lab Number: 193626

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | < 2 | MPN/g | 2 | SM 9221 E | 9/19/2019 - MWL |
| Percent Solids | 76.0 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Soil

Lab Number: 193627

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 10.0 | mg/Kg | 10.0 | SM 4500-NH3C | 9/25/2019 - MWL |
| Nitrogen, Total Kjeldahl | 1540 | mg/Kg | 100 | PAI-DK 01 | 9/25/2019 - MWL |
| Nitrogen, Nitrate-Nitrite | 1.9 | mg/Kg | 0.8 | EPA 353.2 | 9/25/2019 - MWL |
| pH (Solid) | 7.1 | SU | N/A | EPA 9045 | 9/20/2019 - MWL |
| Percent Solids | 83.8 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |
| Organic Nitrogen | 1540 | mg/Kg | 0.01 | By Calculation | 9/25/2019 - MWL |
| Calculated Phosphate P2O5 | 1350 | mg/Kg | 0.01 | By Calculation | 9/23/2019 - MWL |
| Calculated Potash K2O | 3340 | mg/Kg | 0.01 | By Calculation | 9/23/2019 - MWL |
| Sodium, Total | 105 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Magnesium, Total | 6308 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Phosphorus, Total | 588 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Sulfur, Total | 265 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Potassium, Total | 2777 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Calcium, Total | 7234 | mg/Kg | 20.0 | EPA 6010 | 9/24/2019 - MWL |
| Chromium, Total | 21.1 | mg/Kg | 1.00 | EPA 6010 | 9/24/2019 - MWL |
| Manganese, Total | 463 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Iron, Total | 18110 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Nickel, Total | 20.4 | mg/Kg | 1.0 | EPA 6010 | 9/24/2019 - MWL |
| Copper, Total | 15.4 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Zinc, Total | 66.5 | mg/Kg | 2.0 | EPA 6010 | 9/20/2019 - MWL |
| Arsenic, Total | 7.52 | mg/Kg | 0.50 | EPA 6020 | 9/25/2019 - MWL |
| Selenium, Total | < 1.0 | mg/Kg | 1.0 | EPA 6020 | 9/26/2019 - MWL |
| Molybdenum, Total | < 1.0 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Silver, Total | 1.3 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 5 of 7

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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Soil

Lab Number: 193627

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|--------------------------|---------|----------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.50 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Barium, Total | 199 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Mercury, Total | < 0.050 | mg/Kg | 0.050 | EPA 7471 | 9/24/2019 - MWL |
| Lead, Total | 13.4 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Cation Exchange Capacity | 17.5 | meq/100g | 0.1 | EPA 9081 | 9/27/2019 - MWL |

Notes:

Results on a Dry Weight Basis

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Page Number: 6 of 7

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ANALYSIS REPORT

Chain of Custody Number: 19-1024

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Fecal Coliform 2

Lab Number: 193628

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | < 2 | MPN/g | 2 | SM 9221 E | 9/19/2019 - MWL |
| Percent Solids | 63.1 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 7 of 7

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Columbia, MO 65201
Brent Elliott

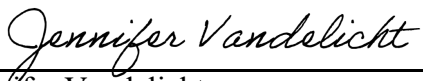
Project Name/Number: CMCC Lagoon Closure / 19142.02
Chain of Custody Number: 19-1027

Date Received: September 17, 2019
Time Received: 14:23
Relinquished by: Brent Elliott
Sampler: N/A

Enclosed please find analytical results for sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

Thank you for your interest in working with Inovatia Laboratories.

Sincerely,



Jennifer Vandelicht
Quality Assurance

Enclosures: Chain of Custody Record(s)



120 East Davis Street
P.O. Box 30
Fayette, MO 65248-0030

Phone: (660) 248-1911
Fax: (660) 248-1921
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ANALYSIS REPORT

Chain of Custody Number: 19-1027

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193633

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 69.3 | mg/Kg | 69.3 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Total Kjeldahl | 4120 | mg/Kg | 132 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Nitrate-Nitrite | 12.1 | mg/Kg | 6.93 | EPA 9056 | 9/25/2019 - SET |
| pH (Solid) | 6.9 | SU | N/A | EPA 9045 | 9/26/2019 - SET |
| Percent Solids | 72.2 | % | 0.01 | SM 2540 G | 9/24/2019 - SET |
| Organic Nitrogen | 4120 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Phosphate P2O5 | 12400 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Calculated Potash K2O | 2700 | mg/Kg | 1.0 | By Calculation | 9/30/2019 - SET |
| Sodium, Total | 369 | mg/Kg | 68.6 | EPA 6010 | 9/26/2019 - SET |
| Magnesium, Total | 3550 | mg/Kg | 13.2 | EPA 6010 | 9/24/2019 - SET |
| Phosphorus, Total | 4040 | mg/Kg | 343 | EPA 6010 | 9/25/2019 - SET |
| Sulfur, Total | 961 | mg/Kg | 66.0 | EPA 6010 | 9/24/2019 - SET |
| Potassium, Total | 2260 | mg/Kg | 68.6 | EPA 6010 | 9/30/2019 - SET |
| Calcium, Total | 13000 | mg/Kg | 343 | EPA 6010 | 9/25/2019 - SET |
| Chromium, Total | 13.8 | mg/Kg | 3.30 | EPA 6010 | 9/24/2019 - SET |
| Manganese, Total | 252 | mg/Kg | 3.30 | EPA 6010 | 9/26/2019 - SET |
| Iron, Total | 16300 | mg/Kg | 137 | EPA 6010 | 9/25/2019 - SET |
| Nickel, Total | 11.9 | mg/Kg | 3.30 | EPA 6010 | 9/24/2019 - SET |
| Copper, Total | 36.6 | mg/Kg | 10.6 | EPA 6010 | 9/24/2019 - SET |
| Zinc, Total | 122 | mg/Kg | 3.30 | EPA 6010 | 9/24/2019 - SET |
| Arsenic, Total | < 3.30 | mg/Kg | 3.30 | EPA 6020 | 9/24/2019 - SET |
| Selenium, Total | < 3.30 | mg/Kg | 3.30 | EPA 6020 | 9/24/2019 - SET |
| Molybdenum, Total | < 3.30 | mg/Kg | 3.30 | EPA 6010 | 9/26/2019 - SET |
| Silver, Total | < 3.30 | mg/Kg | 3.30 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 2 of 6

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ANALYSIS REPORT

Chain of Custody Number: 19-1027

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193633

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|---------|-------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.660 | mg/Kg | 0.660 | EPA 6010 | 9/24/2019 - SET |
| Barium, Total | 148 | mg/Kg | 6.60 | EPA 6010 | 9/24/2019 - SET |
| Mercury, Total | < 0.26 | mg/Kg | 0.26 | EPA 7471 | 9/24/2019 - SET |
| Lead, Total | 12.3 | mg/Kg | 3.30 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 3 of 6

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ANALYSIS REPORT

Chain of Custody Number: 19-1027

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: 12:35

Sample Number: Fecal Coliform

Lab Number: 193634

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | 3 | MPN/g | 2 | SM 9221 E | 9/18/2019 - MWL |
| Percent Solids | 67.5 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 4 of 6

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ANALYSIS REPORT

Chain of Custody Number: 19-1027

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Soil

Lab Number: 193635

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 2 | mg/Kg | 2 | SM 4500-NH3D | 9/23/2019 - MWL |
| Nitrogen, Total Kjeldahl | 1470 | mg/Kg | 100 | PAI-DK 01 | 9/25/2019 - MWL |
| Nitrogen, Nitrate-Nitrite | 3.5 | mg/Kg | 0.8 | EPA 353.2 | 9/25/2019 - MWL |
| pH (Solid) | 6.9 | SU | 0.1 | EPA 9045 | 9/20/2019 - MWL |
| Percent Solids | 79.6 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |
| Organic Nitrogen | 1470 | mg/Kg | 0.01 | By Calculation | 9/25/2019 - MWL |
| Calculated Phosphate P2O5 | 1320 | mg/Kg | 10 | By Calculation | 9/23/2019 - MWL |
| Calculated Potash K2O | 3420 | mg/Kg | 10 | By Calculation | 9/23/2019 - MWL |
| Sodium, Total | 132 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Magnesium, Total | 5060 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Phosphorus, Total | 578 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Sulfur, Total | 230 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Potassium, Total | 2832 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Calcium, Total | 5853 | mg/Kg | 20.0 | EPA 6010 | 9/24/2019 - MWL |
| Chromium, Total | 17.8 | mg/Kg | 1.0 | EPA 6010 | 9/24/2019 - MWL |
| Manganese, Total | 337 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Iron, Total | 16220 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Nickel, Total | 16.7 | mg/Kg | 1.0 | EPA 6010 | 9/24/2019 - MWL |
| Copper, Total | 13.3 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Zinc, Total | 53.8 | mg/Kg | 2.0 | EPA 6010 | 9/20/2019 - MWL |
| Arsenic, Total | 6.19 | mg/Kg | 0.50 | EPA 6020 | 9/25/2019 - MWL |
| Selenium, Total | < 0.50 | mg/Kg | 0.50 | EPA 6020 | 9/25/2019 - MWL |
| Molybdenum, Total | < 1.0 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Silver, Total | < 1.0 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 5 of 6

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ANALYSIS REPORT

Chain of Custody Number: 19-1027

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: Soil

Lab Number: 193635

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|--------------------------|--------|----------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.50 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Barium, Total | 197 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Mercury, Total | < 0.05 | mg/Kg | 0.05 | EPA 7471 | 9/24/2019 - MWL |
| Lead, Total | 11.2 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Cation Exchange Capacity | 17.0 | meq/100g | 0.1 | EPA 9081 | 9/27/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 6 of 6

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CHAIN OF CUSTODY RECORD

INOVATIA LABORATORIES, LLC
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FAYETTE, MO 65248-0030

PHONE: (660) 248-1911
FAX: (660) 248-1921
IL_CustServ@inovatia.com

FOR OFFICE USE ONLY: CHAIN NUMBER: 19-1027
DATE REPORTED: 10/1/2019
INVOICE NUMBER: 23834

Contact Name: Brent Elliott Phone Number: 573-875-8799 Project Due Date: _____
Company Name: Allstate Fax Number: _____ Comments: _____
Address: _____ Project Name / Number: CMCC Lagoon Closure 19K2.02
City, State, Zip: _____ Quote Number: _____ Sampler's Name: _____
E-Mail: _____ Purchase Order Number: _____ Sampler's Signature: _____

DISPOSITION INFORMATION

- ☐ STORE WITHIN HOLD TIME
☐ STORE LONG TERM
☐ RETURN AT CUSTOMER EXPENSE
☐ DISPOSE OF SAMPLE AT INOVATIA
☐ OTHER
NOTES: _____

| DELIVERY METHOD: <u>Hand</u> | | | | | G=grab / C=composite | No. of Containers | REQUESTED ANALYSES | | | | | | | | | | |
|---|------------------------|----------------|----------------|--|----------------------|-------------------|-------------------------|--------------------------------|-----|--------|--------|-----|------|---------|-----------|-----|--|
| CUSTODY SEALS: <input checked="" type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN | | | | | | | Method Number → | | | | | | | | | | |
| COOLANT: <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACK <input type="checkbox"/> NONE | | | | | | | NUMBER PER PRESERVATIVE | | | | | | | | | | |
| PACKAGE TYPE: <u>Cooler</u> | | | | | HCl | HNO ₃ | NaOH | H ₂ SO ₄ | TSP | Other: | Other: | 503 | 1681 | EPA Pkg | EPA Fecal | CEC | |
| ARRIVAL TEMPERATURE: <u>22.6</u> °C | | | | | | | | | | | | | | | | | |
| MEASURED BY: <input type="checkbox"/> TEMPERATURE BLANK <input checked="" type="checkbox"/> SAMPLE <input type="checkbox"/> COOLER / CONTAINER | | | | | | | | | | | | | | | | | |
| LAB NUMBER | Customer Sample Number | Date Collected | Time Collected | Matrix Soil / Water / Sludge / Other | | | | | | | | | | | | | |
| 1 | 193633 EPA 503 Pkg | 9/17/19 | | Sludge | C | 1 | | | | | | | | | | | |
| 2 | 193634 Fecal Coliform | 9/17/19 | 12:35pm | Sludge | G | 1 | | | | | | | | | X | | |
| 3 | 193635 Soil * | 9/17/19 | | Soil | G | 1 | | | | | | | | | X | | |
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Please include any information that may be useful in the analysis of the sample, such as: **expected concentrations**, **required detection limits**, and **method of collection**.

Comments:

Facility Treatment
System Cell No. 3
*labeled Site 1

| | | | | | |
|---------------------------------------|----------------------|-------------------|----------------------------------|----------------------|-------------------|
| Relinquished By: <u>Brent Elliott</u> | Date: <u>9/17/19</u> | Time: <u>2:30</u> | Received By: <u>G. Vardolich</u> | Date: <u>9/17/19</u> | Time: <u>1423</u> |
| Relinquished By: | Date: | Time: | Received By: | Date: | Time: |

Unless otherwise governed under separate contract, by signing this form, the client accepts Inovatia's standard terms and conditions for service, pricing, and payment as published on the reverse side of this form. Prior, written notification of regulatory compliance requirements (GLP/cGMP) is mandatory and may result in additional fees.

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10/1/2019

Page Number: 1 of 4

Allstate Consultants
3312 Lemone Industrial Blvd
Columbia, MO 65201
Brent Elliott

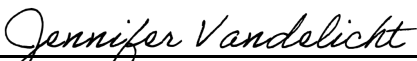
Project Name/Number: CMCC Lagoon Closure / 19142.02
Chain of Custody Number: 19-1025

Date Received: September 17, 2019
Time Received: 14:23
Relinquished by: Brent Elliott
Sampler: N/A

Enclosed please find analytical results for sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

Thank you for your interest in working with Inovatia Laboratories.

Sincerely,



Jennifer Vandelicht
Quality Assurance

Enclosures: Chain of Custody Record(s)



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ANALYSIS REPORT

Chain of Custody Number: 19-1025

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193629

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 70.4 | mg/Kg | 70.4 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Total Kjeldahl | 3850 | mg/Kg | 114 | SM 4500-NH3D | 9/27/2019 - SET |
| Nitrogen, Nitrate-Nitrite | 29.5 | mg/Kg | 13.0 | EPA 9056 | 9/25/2019 - SET |
| pH (Solid) | 6.8 | SU | N/A | EPA 9045 | 9/26/2019 - SET |
| Percent Solids | 76.7 | % | 0.01 | SM 2540 B | 9/24/2019 - SET |
| Organic Nitrogen | 3850 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Calculated Phosphate P2O5 | 17000 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Calculated Potash K2O | 2700 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Sodium, Total | 416 | mg/Kg | 63.9 | EPA 6010 | 9/24/2019 - SET |
| Magnesium, Total | 3150 | mg/Kg | 12.8 | EPA 6010 | 9/24/2019 - SET |
| Phosphorus, Total | 5620 | mg/Kg | 320 | EPA 6010 | 9/24/2019 - SET |
| Sulfur, Total | 762 | mg/Kg | 63.9 | EPA 6010 | 9/24/2019 - SET |
| Potassium, Total | 2270 | mg/Kg | 64.5 | EPA 6010 | 9/24/2019 - SET |
| Calcium, Total | 15000 | mg/Kg | 320 | EPA 6010 | 9/24/2019 - SET |
| Chromium, Total | 11.9 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |
| Manganese, Total | 237 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |
| Iron, Total | 17900 | mg/Kg | 128 | EPA 6010 | 9/24/2019 - SET |
| Nickel, Total | 11.9 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |
| Copper, Total | 25.5 | mg/Kg | 10.2 | EPA 6010 | 9/24/2019 - SET |
| Zinc, Total | 73.0 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |
| Arsenic, Total | < 3.20 | mg/Kg | 3.20 | EPA 6020 | 9/24/2019 - SET |
| Selenium, Total | < 3.20 | mg/Kg | 3.20 | EPA 6020 | 9/24/2019 - SET |
| Molybdenum, Total | < 3.20 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |
| Silver, Total | < 3.20 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 2 of 4

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ANALYSIS REPORT

Chain of Custody Number: 19-1025

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193629

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|---------|-------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.639 | mg/Kg | 0.639 | EPA 6010 | 9/24/2019 - SET |
| Barium, Total | 159 | mg/Kg | 6.39 | EPA 6010 | 9/24/2019 - SET |
| Mercury, Total | < 0.24 | mg/Kg | 0.24 | EPA 7471 | 9/24/2019 - SET |
| Lead, Total | 9.67 | mg/Kg | 3.20 | EPA 6010 | 9/24/2019 - SET |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 3 of 4

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ANALYSIS REPORT

Chain of Custody Number: 19-1025

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: 12:45

Sample Number: Fecal Coliform

Lab Number: 193630

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | 170 | MPN/g | 2 | SM 9221 E | 9/18/2019 - MWL |
| Percent Solids | 76.6 | % | 0.01 | SM 2540 G | 9/19/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/01/19

Page Number: 4 of 4

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CHAIN OF CUSTODY RECORD

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FAYETTE, MO 65248-0030

PHONE: (660) 248-1911
FAX: (660) 248-1921
IL_CustServ@inovatia.com

FOR OFFICE USE ONLY:

CHAIN NUMBER: 19-1025
DATE REPORTED: 10/1/2019
INVOICE NUMBER: 2333A

Contact Name: Brent Elliott Phone Number: 573-875-8799 Project Due Date: _____
Company Name: Allstate Consultants Fax Number: _____ Comments: _____
Address: 3312 Lemore Industrial Blvd Project Name / Number: CMCA Lagoon Closure 19142.02
City, State, Zip: Columbia, MO 65201 Quote Number: _____ Sampler's Name: _____
E-Mail: _____ Purchase Order Number: _____ Sampler's Signature: _____

DISPOSITION INFORMATION

- ☐ STORE WITHIN HOLD TIME
☐ STORE LONG TERM
☐ RETURN AT CUSTOMER EXPENSE
☐ DISPOSE OF SAMPLE AT INOVATIA
☐ OTHER
NOTES: _____

DELIVERY METHOD: Hand
CUSTODY SEALS: ☐ YES ☒ NO ☐ INTACT ☐ BROKEN
COOLANT: ☒ ICE ☐ ICE PACK ☐ NONE
PACKAGE TYPE: Cooler
ARRIVAL TEMPERATURE: 72.6 °C
MEASURED BY: ☐ TEMPERATURE BLANK ☒ SAMPLE ☐ COOLER / CONTAINER

| LAB NUMBER | Customer Sample Number | Date Collected | Time Collected | Matrix Soil / Water / Sludge / Other |
|------------|------------------------|----------------|----------------|--------------------------------------|
| 1 | 193629 EPA 503 Pkg | 9/17/19 | | Sludge |
| 2 | 193630 Fecal Coliform | 9/17/19 | 12:45 | Sludge |
| 3 | | | | |
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| G=grab / C=composite No. of Containers | | REQUESTED ANALYSES | | | | | | | | | |
|---|--|-------------------------|------------------|------|--------------------------------|-----|--------|--------|---------|-----------|--|
| | | Method Number → | | | | | | | | | |
| | | NUMBER PER PRESERVATIVE | | | | | | | | | |
| | | HCl | HNO ₃ | NaOH | H ₂ SO ₄ | TSP | Other: | Other: | EPA Pkg | EPA Fecal | |
| | | | | | | | | | X | X | |
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Please include any information that may be useful in the analysis of the sample, such as: **expected concentrations, required detection limits, and method of collection.**

Comments:

Facility Treatment System Cell No. 4

| | | | | | |
|--------------------------------|---------------|------------|---------------------------|---------------|------------|
| Relinquished By: Brent Elliott | Date: 9/17/19 | Time: 2:31 | Received By: J. L. Linder | Date: 9/17/19 | Time: 1423 |
| Relinquished By: | Date: | Time: | Received By: | Date: | Time: |

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10/10/2019

Page Number: 1 of 12

Allstate Consultants
3312 Lemone Industrial Blvd
Columbia, MO 65201
Brent Elliott

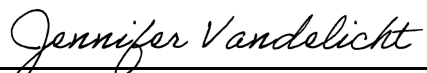
Project Name/Number: CMCC Lagoon Closure / 19142.02
Chain of Custody Number: 19-1028

Date Received: September 17, 2019
Time Received: 14:23
Relinquished by: Brent Elliott
Sampler: N/A

Enclosed please find analytical results for sample(s) received as described above. The values reported are in conformance with internal and method quality control guidelines, unless otherwise noted. If you have questions or need more information, please contact us.

Thank you for your interest in working with Inovatia Laboratories.

Sincerely,



Jennifer Vandelicht
Quality Assurance

Enclosures: Chain of Custody Record(s)



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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193636

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|---------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 5.00 | mg/Kg | 5.00 | SM 4500-NH3 D | 9/27/2019 - SET |
| Nitrogen, Total Kjeldahl | 5570 | mg/Kg | 4560 | SM 4500-NH3 D | 9/27/2019 - SET |
| Nitrogen, Nitrate-Nitrite | < 0.100 | mg/Kg | 0.100 | EPA 9056 | 9/25/2019 - SET |
| pH (Solid) | 6.5 | SU | N/A | EPA 9045 | 9/26/2019 - SET |
| Percent Solids | 2.12 | % | 0.01 | SM 2540 B | 9/24/2019 - SET |
| Organic Nitrogen | 4130 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Calculated Phosphate P2O5 | 6200 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Calculated Potash K2O | 3300 | mg/Kg | 1.00 | By Calculation | 9/30/2019 - SET |
| Sodium, Total | 12200 | mg/Kg | 2270 | EPA 6010 | 9/26/2019 - SET |
| Magnesium, Total | 10200 | mg/Kg | 94 | EPA 6010 | 9/26/2019 - SET |
| Phosphorus, Total | 1070 | mg/Kg | 236 | EPA 6010 | 9/26/2019 - SET |
| Sulfur, Total | 1810 | mg/Kg | 472 | EPA 6010 | 9/26/2019 - SET |
| Potassium, Total | 5120 | mg/Kg | 2270 | EPA 6010 | 9/26/2019 - SET |
| Calcium, Total | 18500 | mg/Kg | 236 | EPA 6010 | 9/26/2019 - SET |
| Chromium, Total | 41.1 | mg/Kg | 23.6 | EPA 6010 | 9/26/2019 - SET |
| Manganese, Total | 950 | mg/Kg | 23.6 | EPA 6010 | 9/26/2019 - SET |
| Iron, Total | 39700 | mg/Kg | 75.5 | EPA 6010 | 9/26/2019 - SET |
| Nickel, Total | 35.9 | mg/Kg | 23.6 | EPA 6010 | 9/26/2019 - SET |
| Copper, Total | 193 | mg/Kg | 45.5 | EPA 6010 | 9/26/2019 - SET |
| Zinc, Total | 1100 | mg/Kg | 23.6 | EPA 6010 | 9/26/2019 - SET |
| Arsenic, Total | < 0.05 | mg/Kg | 0.05 | EPA 6010 | 9/26/2019 - SET |
| Selenium, Total | < 0.05 | mg/Kg | 0.05 | EPA 6010 | 9/26/2019 - SET |
| Molybdenum, Total | < 0.05 | mg/Kg | 0.05 | EPA 6010 | 9/26/2019 - SET |
| Silver, Total | < 0.05 | mg/Kg | 0.05 | EPA 6010 | 9/26/2019 - SET |

Notes:

Results on Dry Weight Basis

Report Date: 10/10/19

Page Number: 2 of 12

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 503 Pkg

Lab Number: 193636

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|---------|-------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.024 | mg/Kg | 0.024 | EPA 6010 | 9/26/2019 - SET |
| Barium, Total | 394 | mg/Kg | 47.2 | EPA 6010 | 9/26/2019 - SET |
| Mercury, Total | < 0.019 | mg/Kg | 0.019 | EPA 7471 | 9/24/2019 - SET |
| Lead, Total | 64.7 | mg/Kg | 23.6 | EPA 6010 | 9/26/2019 - SET |

Notes:

Results on Dry Weight Basis

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: EPA 257 Pkg

Lab Number: 193637

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------------|---------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Nitrate | < 1.0 | mg/Kg | 1.0 | EPA 9056 | 9/25/2019 - SET |
| Fluoride | < 1.0 | mg/Kg | 1.0 | EPA 9056 | 9/25/2019 - SET |
| Chromium, Hexavalent | < 1.20 | mg/Kg | 1.20 | SM 3500 Cr B | 9/27/2019 - SET |
| MCPA | < 11.8 | mg/Kg | 11.8 | EPA 8151 | 10/9/2019 - SET |
| MCPP (Mecoprop) | < 11.8 | mg/Kg | 11.8 | EPA 8151 | 10/9/2019 - SET |
| 2,4,5-TP (Silvex) | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| 2,4-D | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| 2,4-DB | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| Dalapon | < 0.354 | mg/Kg | 0.354 | EPA 8151 | 10/9/2019 - SET |
| Dicamba (Banvel) | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| Dichlorprop | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| Dinoseb | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| 2,4,5-T | < 0.117 | mg/Kg | 0.117 | EPA 8151 | 10/9/2019 - SET |
| 4,4'-DDE | < .051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| 4,4' DDD | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| 4,4'-DDT | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| 4,4'-Methoxychlor | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Aldrin | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Dieldren | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Endosulfan I | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Endosulfan II | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Endosulfan sulfate | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |

Notes:

Results on Dry Weight Basis

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 9/17

Time Collected: N/A

Sample Number: EPA 257 Pkg

Lab Number: 193637

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------|---------|-------|-----------------|-----------------|-----------------|
| Endrin | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Endrin aldehyde | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Endrin ketone | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Heptachlor | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Heptachlor epoxide | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| Toxaphene | < 1.01 | mg/Kg | 1.01 | EPA 8081A | 10/3/2019 - SET |
| Chlordane, Total | < 0.505 | mg/Kg | 0.505 | EPA 8081A | 10/3/2019 - SET |
| alpha-BHC | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| beta-BHC | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| delta-BHC | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |
| gamma-BHC (Lindane) | < 0.051 | mg/Kg | 0.051 | EPA 8081A | 10/3/2019 - SET |

Notes:

Results on Dry Weight Basis

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 257 Pkg

Lab Number: 193637

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|--------------------------|---------|-------|-----------------|-----------------|-----------------|
| Bromomethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Chloroform | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Chloromethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1-Dichloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1-Dichloroethene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1,1-Trichloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Vinyl chloride | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Benzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Bromodichloromethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Carbon tetrachloride | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Chloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| cis-1,2-Dichloroethene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| trans-1,2-Dichloroethene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2-Dichloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2-Dichloropropane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Toluene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1,2-Trichloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Trichloroethene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Bromoform | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Chlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Ethylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 2-Chlorotoluene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 4-Chlorotoluene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |

Notes:

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 257 Pkg

Lab Number: 193637

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|---------|-------|-----------------|-----------------|-----------------|
| Styrene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1,2,2-Tetrachloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1,1,2-Tetrachloroethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Tetrachloroethene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Total Xylene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Methylene Chloride | < 0.025 | mg/Kg | 0.025 | EPA 8260B | 9/24/2019 - SET |
| 1,4-Dichlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Bromochloromethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Dichlorodifluoromethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 2,2-Dichloropropane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Trichlorofluoromethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Dibromomethane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,3-Dichloropropane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,1 Dichloropropene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2-Dibromoethane (EDB) | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Isopropylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2,3-Trichloropropane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Bromobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| sec-Butylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| tert-Butylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| n-Butylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |

Notes:

Report Date: 10/10/19
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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: EPA 257 Pkg

Lab Number: 193637

Sample Matrix: Sludge

Sample Type: Composite

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|-----------------------------|------------|-------|-----------------|-----------------|-----------------|
| 1,2-Dibromo-3-chloropropane | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2-Dichlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,3-Dichlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Hexachlorobutadiene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 4-Isopropyltoluene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| Naphthalene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| n-Propylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2,4-Trichlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2,3-Trichlorobenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,3,5-Trimethylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 1,2,4-Trimethylbenzene | < 0.005 | mg/Kg | 0.005 | EPA 8260B | 9/24/2019 - SET |
| 2,3,7,8-TCDD (Dioxin) | < 0.000002 | mg/Kg | 0.000002 | EPA 1613 | 10/2/2019 - SET |

Notes:

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: 10:03

Sample Number: Fecal Coliform 1

Lab Number: 193638

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | < 2 | MPN/g | 2 | SM 9221 E | 9/19/2019 - MWL |
| Percent Solids | 7.52 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: Soil

Lab Number: 193639

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|---------------------------|--------|-------|-----------------|-----------------|-----------------|
| Nitrogen, Ammoniacal | < 10.0 | mg/Kg | 10.0 | SM 4500-NH3C | 9/23/2019 - MWL |
| Nitrogen, Total Kjeldahl | 812 | mg/Kg | 100 | PAI-DK 01 | 9/25/2019 - MWL |
| Nitrogen, Nitrate-Nitrite | 2.0 | mg/Kg | 0.8 | EPA 353.2 | 9/25/2019 - MWL |
| pH (Solid) | 6.3 | SU | 0.1 | EPA 9045 | 9/20/2019 - MWL |
| Percent Solids | 81.9 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |
| Organic Nitrogen | 812 | mg/Kg | 0.01 | By Calculation | 9/25/2019 - MWL |
| Calculated Phosphate P2O5 | 1190 | mg/Kg | 10 | By Calculation | 9/23/2019 - MWL |
| Calculated Potash K2O | 2700 | mg/Kg | 10 | By Calculation | 9/23/2019 - MWL |
| Sodium, Total | 70.4 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Magnesium, Total | 4998 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Phosphorus, Total | 520 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Sulfur, Total | 148 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Potassium, Total | 2239 | mg/Kg | 10.0 | EPA 6010 | 9/20/2019 - MWL |
| Calcium, Total | 2904 | mg/Kg | 20.0 | EPA 6010 | 9/24/2019 - MWL |
| Chromium, Total | 26.6 | mg/Kg | 1.0 | EPA 6010 | 9/24/2019 - MWL |
| Manganese, Total | 803 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Iron, Total | 28000 | mg/Kg | 5.0 | EPA 6010 | 9/24/2019 - MWL |
| Nickel, Total | 25.3 | mg/Kg | 1.0 | EPA 6010 | 9/24/2019 - MWL |
| Copper, Total | 18.3 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Zinc, Total | 71.1 | mg/Kg | 2.0 | EPA 6010 | 9/20/2019 - MWL |
| Arsenic, Total | 11.4 | mg/Kg | 0.50 | EPA 6020 | 9/25/2019 - MWL |
| Selenium, Total | < 1.0 | mg/Kg | 1.0 | EPA 6020 | 9/22/2019 - MWL |
| Molybdenum, Total | < 1.0 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |
| Silver, Total | 2.1 | mg/Kg | 1.0 | EPA 6010 | 9/20/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: Soil

Lab Number: 193639

Sample Matrix: Soil

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|--------------------------|--------|----------|-----------------|-----------------|-----------------|
| Cadmium, Total | < 0.50 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Barium, Total | 239 | mg/Kg | 0.50 | EPA 6010 | 9/20/2019 - MWL |
| Mercury, Total | < 0.05 | mg/Kg | 0.05 | EPA 7471 | 9/24/2019 - MWL |
| Lead, Total | 19.5 | mg/Kg | 5.0 | EPA 6010 | 9/20/2019 - MWL |
| Cation exchange capacity | 21.5 | meq/100g | 0.1 | EPA 9081 | 9/27/2019 - MWL |

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Results on a Dry Weight Basis

Report Date: 10/10/19

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ANALYSIS REPORT

Chain of Custody Number: 19-1028

Project Name / Number: CMCC Lagoon Closure / 19142.02

Date Collected: 09/17/19

Time Collected: N/A

Sample Number: Fecal Coliform 2

Lab Number: 193640

Sample Matrix: Sludge

Sample Type: Grab

| Analysis | Result | Units | Reporting Limit | Analysis Method | Date - Analyst |
|----------------|--------|-------|-----------------|-----------------|-----------------|
| Fecal Coliform | 223 | MPN/g | 2 | SM 9221 E | 9/19/2019 - MWL |
| Percent Solids | 6.28 | % | 0.01 | SM 2540 G | 9/23/2019 - MWL |

Notes:

Results on a Dry Weight Basis

Report Date: 10/10/19

Page Number: 12 of 12

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Appendix F

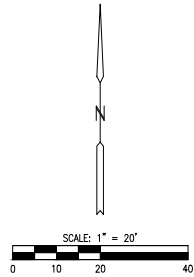
Topographic Survey and Biosolids Measurements

-

CMCC Four-Cell Lagoon

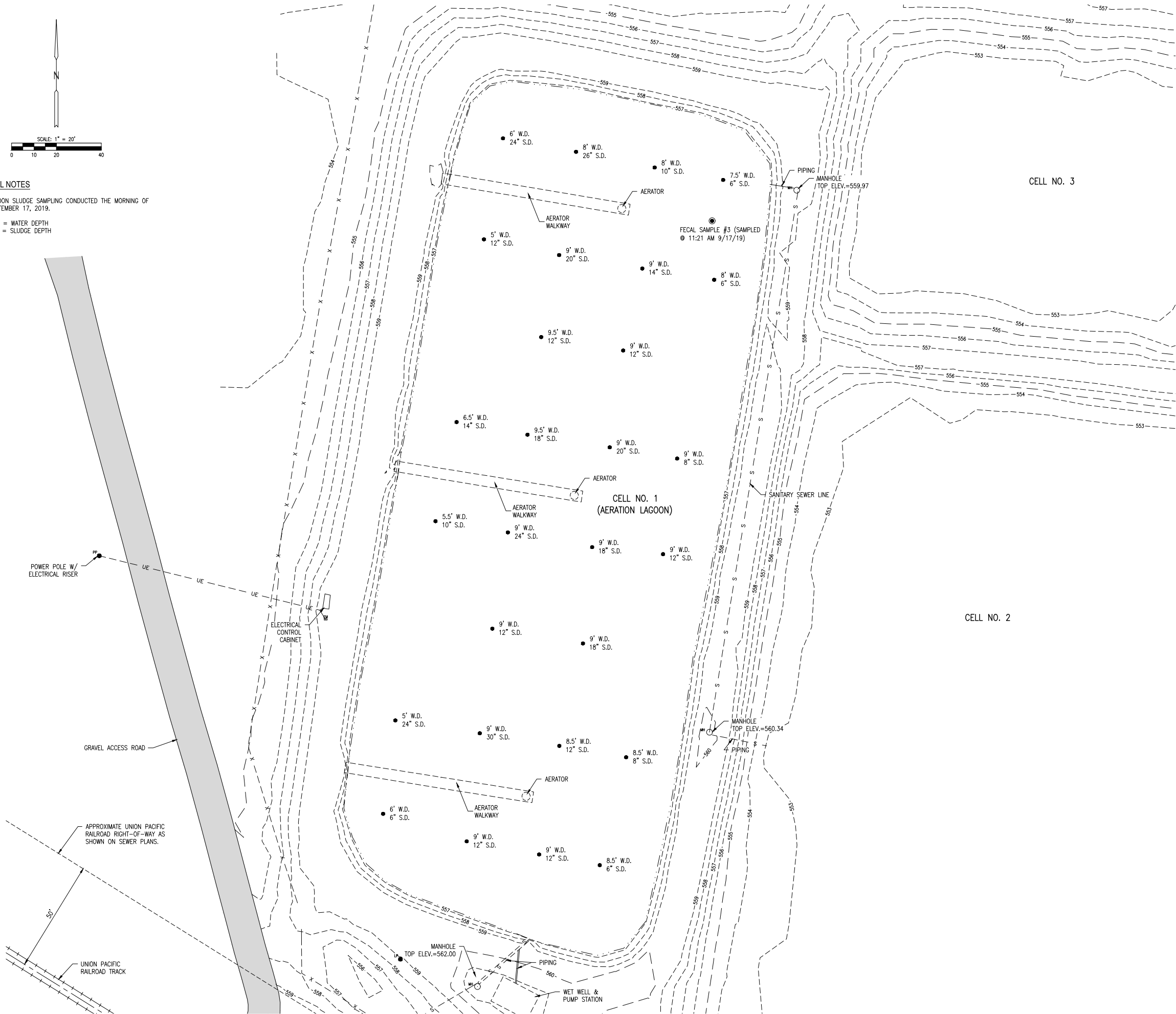
&

MVE Tire Recycling Facility Lagoon Cell



GENERAL NOTES

- LAGOON SLUDGE SAMPLING CONDUCTED THE MORNING OF SEPTEMBER 17, 2019.
- W.D. = WATER DEPTH
S.D. = SLUDGE DEPTH



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



STEPHEN LIN, P.E.
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MISSOURI STATE CERTIFICATE
OF AUTHORITY #2007004004

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
CORRECTIONS

CLOSURE OF
MULTIPLE LAGOONS
AND WELLS

CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
SITE # CMCC
FACILITY # FOUR-CELL LAGOON

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

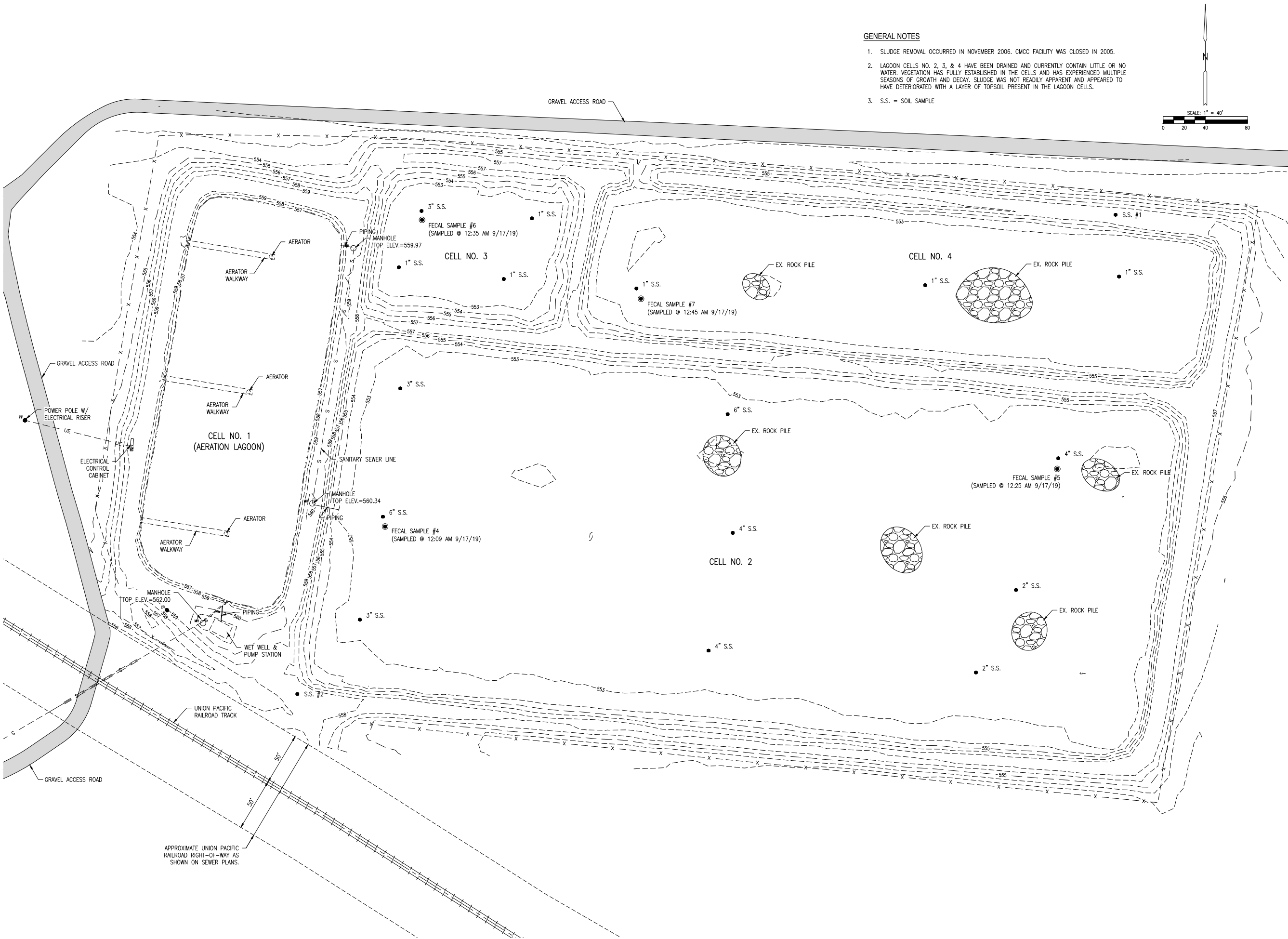
CAD DWG FILE:SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:
TOPOGRAPHIC SURVEY
BIOSOLIDS SAMPLING
RESULTS CELL NO. 1

SHEET NUMBER:

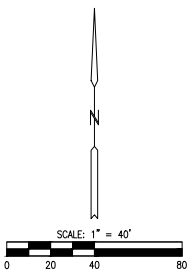
C-2

SHEET 2 OF 13
07/10/2020



GENERAL NOTES

1. SLUDGE REMOVAL OCCURRED IN NOVEMBER 2006. CMCC FACILITY WAS CLOSED IN 2005.
2. LAGOON CELLS NO. 2, 3, & 4 HAVE BEEN DRAINED AND CURRENTLY CONTAIN LITTLE OR NO WATER. VEGETATION HAS FULLY ESTABLISHED IN THE CELLS AND HAS EXPERIENCED MULTIPLE SEASONS OF GROWTH AND DECAY. SLUDGE WAS NOT READILY APPARENT AND APPEARED TO HAVE DETERIORATED WITH A LAYER OF TOPSOIL PRESENT IN THE LAGOON CELLS.
3. S.S. = SOIL SAMPLE



STATE OF MISSOURI
MICHAEL L. PARSON,
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CLOSURE OF
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2580 MO-179
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PROJECT # C1919-01
SITE # CMCC
FACILITY # FOUR-CELL LAGOON

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

CAD DWG FILE:SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

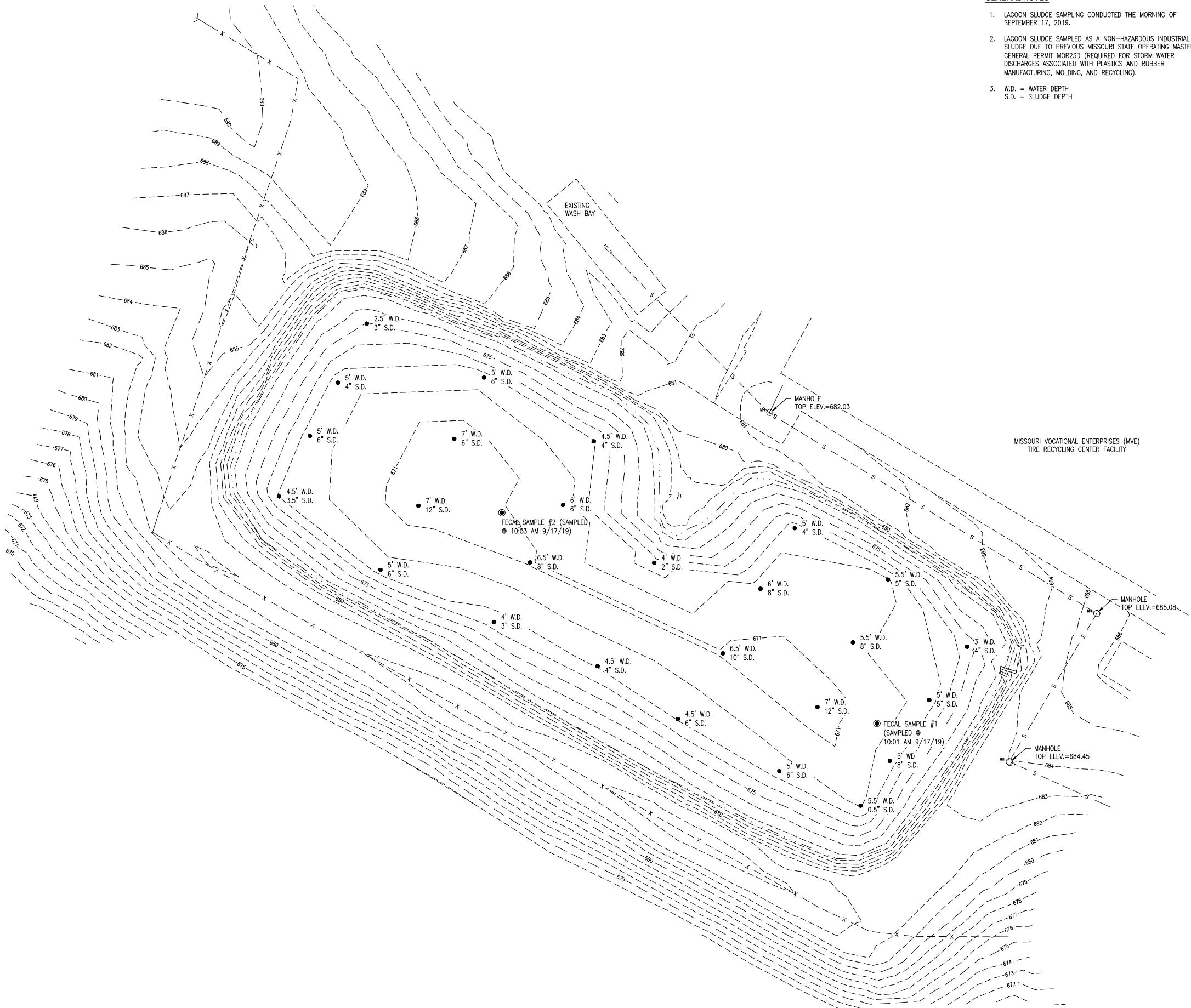
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TOPOGRAPHIC SURVEY
& BIOSOLIDS SAMPLING
RESULTS - CELL NO. 2, 3 & 4

SHEET NUMBER:

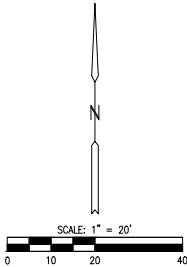
C-3

SHEET 3 OF 13
07/10/2020



GENERAL NOTES

- LAGOON SLUDGE SAMPLING CONDUCTED THE MORNING OF SEPTEMBER 17, 2019.
- LAGOON SLUDGE SAMPLED AS A NON-HAZARDOUS INDUSTRIAL SLUDGE DUE TO PREVIOUS MISSOURI STATE OPERATING MASTER GENERAL PERMIT MOR23D (REQUIRED FOR STORM WATER DISCHARGES ASSOCIATED WITH PLASTICS AND RUBBER MANUFACTURING, MOLDING, AND RECYCLING).
- W.D. = WATER DEPTH
S.D. = SLUDGE DEPTH



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**DEPARTMENT OF
CORRECTIONS**

**CLOSURE OF
MULTIPLE LAGOONS
AND WELLS**

**CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO**

**PROJECT # C1919-01
SITE # MVE TIRE RECYCLING CENTER
FACILITY # LAGOON CELL**

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

CAD DWG FILE:SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:

**TOPOGRAPHIC
SURVEY & BIOSOLIDS
SAMPLING RESULTS**

SHEET NUMBER:

C-6

SHEET 6 OF 13
07/10/2020

Appendix G

Water Quality Guides

By

The University of Missouri, University Extension

State and EPA Regulations for Domestic Wastewater Sludge and Biosolids

This publication addresses state and federal regulations for use and disposal of domestic wastewater sludge and biosolids. Sludge use and disposal operations include landfill and incineration. Sludge that is suitable for beneficial use is called biosolids. Examples of beneficial use are biosolids used as fertilizer or soil amendment.

Industrial sludge is covered by a separate set of requirements and is not discussed in this publication.

Missouri Clean Water Law

In simple terms, the Missouri Clean Water Law (Missouri Revised Statutes Sections 644.006.1-599) states that “it is a violation to allow the discharge of a pollutant or contaminant to waters of the state” without a permit.

For practical purposes, sludge, biosolids and stormwater runoff from use or disposal sites are considered pollutants.

The law authorizes the Missouri Clean Water Commission and the Missouri Department of Natural Resources (DNR) to issue regulations, policies and guidelines to protect the quality of Missouri waters.

The agencies issue permits and treatment standards to enforce the requirements. The law authorizes the state to adopt and enforce any requirements of the federal Clean Water Act.

Federal Clean Water Act

The federal Clean Water Act requires the U.S. Environmental Protection Agency (EPA) to establish minimum national standards for wastewater discharge and for sludge use and disposal. The EPA may directly administer and enforce the requirements or it can delegate this power to the state.

The law requires the EPA to review and update standards every two years to include new scientific information. The EPA is charged with developing risk assessments on any additional pollutants that may be determined to pose a potential risk.

Compliance dates

Compliance dates are established in the federal law. Extensions can only be made by congressional action to revise the Clean Water Act.

Compliance with EPA monitoring, reporting and operational standards has been in effect since Feb. 19, 1994. This mandate includes any construction of treatment facilities that may be required to comply with the standards. The determination is based on whether an application for state construction permit has been submitted to DNR.

Sludge standards for use or disposal

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge.

Persons who generate, use or dispose of sludge are required by regulation to follow these minimum standards. EPA calls this a “self-implementing” rule because the standards are directly enforceable.

You must meet the deadlines in the law, even though the requirements are not included in the National Pollutant Discharge Elimination System (NPDES) permit.

The regulations authorize the permit authority to be more restrictive on a case-by-case basis in order to address local environmental conditions.

State and federal jurisdiction in Missouri

The Missouri DNR is the main contact for questions about state and federal sludge requirements.

A Missouri sludge program began in 1979. State regulations, guidelines and permit requirements for sludge use and disposal are under the authority of the Missouri Clean Water Law.

State regulations incorporate the EPA rules. This allows the DNR to directly enforce all applicable requirements through state authority.

If you comply with Missouri requirements, you meet EPA sludge standards. However, EPA still has the primary authority for issuing federal sludge permits until the state receives formal delegation from the EPA.

Table 1. Persons who need a permit for sludge use or disposal.

| Who needs a sludge permit? | Yes | No |
|---|-----|----|
| Owner of a multi-family wastewater treatment facility generating sludge | ✓ | |
| Septic tank pumper who land applies or disposes of septage | ✓ | |
| Contract hauler who is responsible for ultimate sludge use or disposal | ✓ | |
| Owner of a wastewater treatment lagoon with sludge removed during the year | ✓ | |
| Owner of an inactive wastewater treatment lagoon that still contains sludge | ✓ | |
| Person handling or receiving sludge from out-of-state source | ✓ | |
| Person composting or otherwise processing sludge | ✓ | |
| Person surface disposing or landfilling of sludge | ✓ | |
| Person incinerating sludge | ✓ | |
| Owner of a single-family, residential septic tank | | ✓ |
| Contract hauler transporting to a permitted sludge disposal facility | | ✓ |
| Owner of an active wastewater treatment lagoon with no sludge removal | | ✓ |
| Landowner receiving sludge from a permitted facility | | ✓ |

When a state has been delegated by the EPA, the state will provide one-stop shopping for compliance with sludge requirements under clean water laws. Until then, Missouri and the EPA will operate under interim agreements to reduce duplicating efforts.

Who is responsible for complying with sludge requirements?

From production through disposal, the generator of the sludge is responsible for complying with all sludge standards and permit requirements.

The generator is considered the person owning the wastewater treatment facility producing the sludge. An exception is the single-family, residential septic tank. In this case, the septage hauler is the responsible party, rather than the homeowner.

The generator remains responsible for final sludge disposal unless the sludge is hauled to another permitted sludge use or disposal facility.

A contract hauler is considered an agent of the generator. The use of a contract hauler does not relieve the generator of responsibility under the EPA regulations, unless the contract hauler obtains a separate sludge permit (Table 1).

Pre-treatment requirements

Since the mid-1980s, Missouri requires cities to have a state-approved pre-treatment program when certain industries are connected to municipal sewers. This pre-treatment program is intended to require industries to meet numeric limits on the concentrations of toxics that discharge into city sewers.

Limits protect the stream receiving the treated wastewater discharge and reduce the quantity of pollutants in the municipal sludge.

Construction permits

A state construction permit is required for anyone who builds, erects, alters or replaces facilities for sludge or biosolids storage, treatment or disposal. A permit fee is required for each construction application based on the size of the facility.

Each construction permit application must include engineering plans and specifications. Plans must be developed according to design regulations published in the Missouri Code of State Regulations (CSR) under 10 CSR 20 Chapter 8.

The DNR reviews the application. A public notice of the proposed permit action is then issued for a 30-day comment period. After resolving the public comments, DNR issues a construction permit. The sludge management system must be built according to the approved design. An engineer must certify the completed construction.

Operating permits

Missouri enforces sludge regulations under state authority by adding sludge requirements to the state Water Pollution Control (WPC) operating permit. A state WPC operating permit is required for all persons who operate, use or maintain facilities for the storage, treatment or disposal of sludge or biosolids.

If you are a sludge generator, the sludge requirements are included in the wastewater discharge (NPDES) permit. If you are not a generator, but you operate a sludge use or disposal facility, a sludge-only permit is required. An example of a sludge-only permit is a contract hauler who provides additional sludge storage and treatment to produce biosolids for land application.

An annual fee is required for each WPC operating permit based on the size of the facility. For new facilities, the operating permit application must include certification

by an engineer that the facility was built according to the construction permit.

For an existing facility built without a construction permit, the application must include as-built engineering plans and specifications. The facility must go through the same public notice procedure as a new construction project.

Operating permits are issued for a maximum of five years. Application for renewal must be submitted at least 180 days before the renewal date. Prior to receiving a permit renewal, a new public notice is required for each operating location.

General permit

A general permit is a WPC operating permit for categories of facilities with similar characteristics. Examples are septage haulers or wastewater treatment facilities serving less than 150 people. For each general permit, a standard set of permit conditions are developed by the DNR. One public notice is issued for the entire state to authorize these standard conditions. A public notice is not required for specific facility locations.

Qualified persons are issued the same general permit in their name. A flat permit fee is required. Applications are processed in about two weeks. A general permit is required for each operating location.

Sludge disposal requirements

Sludge that is not used as biosolids must be disposed in a permitted sludge disposal facility. There are two types of disposal — surface disposal and incineration.

Surface disposing sludge requires a solid waste disposal permit under the Missouri Solid Waste Management Law and regulations, 10 CSR 80-3. This applies to sanitary landfills, sludge monofills, sludge disposal lagoons and any other type of sludge disposal on land. Sludge disposal lagoons include any sludge-only lagoon that has more than two years accumulation of sludge, unless an alternate storage and clean-out plan has been approved by the DNR and EPA.

Incinerating sludge must comply with air emission standards. The ash must comply with all other sludge use or disposal standards. Incinerating the sludge concentrates the metals and other inorganic pollutants in the ash but does not reduce the environmental risks from these pollutants. Ash disposal must meet the same surface disposal requirements as other sludges.

Septage requirements

Septage pumped from residential septic tanks and similar treatment works is also considered a sludge.

However, septage has fewer requirements for treatment and monitoring than do other types of sludge. A general permit covers requirements for land application of septage.

Contract haulers for septage are responsible for complying with sludge standards and must obtain permits if they store, treat, land apply or dispose of septage. Septage may also be mixed with other sludges. The more stringent set of sludge standards would apply to the mixture.

Biosolids as fertilizer or soil amendments

Biosolids are sludge that has met the sludge standards for use as a fertilizer or soil conditioner. These standards include meeting metals limitations, pathogen reduction, vector requirements and best management practices.

Best management practices include nutrient management, soil conservation practices, site restrictions and other factors to ensure biosolids are used properly.

You may store sludge in lagoons for up to two years as part of a biosolids use plan. Sludge stored for more than two years is considered sludge disposal.

Record keeping and reporting

Keep detailed reports on file for at least five years. The records must be made available for inspection by the DNR.

Annually summarize and submit records in a calendar year report due Jan. 28. Report forms are provided by the DNR and are approved for use by the EPA. This means Missouri permit holders may use the same form for reporting to both the DNR and the EPA.

Resources

Missouri Code of State Regulations (CSR), Title 10 — Department of Natural Resources (10 CSR 20 Chapter 8), <http://sos.mo.gov/adrules/csr/current/10csr/10csr>
Missouri Revised Statutes. Clean Water Act, Sections 644.006.1-599, <http://moga.mo.gov/mostatutes/chapters/chapText644.html>
National Pollutant Discharge Elimination System (NPDES), <https://epa.gov/npdes>
U.S. Environmental Protection Agency, *A Plain English Guide to the EPA Part 503 Biosolids Rule*, <https://epa.gov/biosolids/plain-english-guide-epa-part-503-biosolids-rule>

This guide was previously named WQ421 *State and EPA Regulations for Domestic Wastewater Sludge and Biosolids*. The original authors are Ken Arnold, Chief of Land Application, Missouri Department of Natural Resources; John H. Dunn, Environmental Engineer, United States Environmental Protection Agency Region VII; and Charles D. Fullhage, University of Missouri Department of Agricultural Engineering.

ALSO FROM MU EXTENSION PUBLICATIONS

EQ679 *Reducing the Risk of Groundwater Contamination by Improving Hazardous Waste Management*

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Land Application of Septage

Septage is the material pumped from residential septic tanks and similar treatment works.

The standards for biosolids from septage differs from other sludges. This publication addresses state and federal regulations and standards.

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. The standards include limiting biosolids applications to land, including septage.

Biosolids land application

Biosolids are domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. These standards for septage include pathogen reduction, vector requirements and best management practices.

Applying biosolids to the land uses the available nitrogen, phosphorus and potash as fertilizer for growing crops. It is an environmentally sound practice sanctioned by the U.S. Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (DNR).

Reusing biosolids on crops, pastures and timberland reduces pollution of the waters of the state. It eliminates the environmental risks and costs associated with sludge disposal options, benefiting all Missouri citizens.

Contract hauler

Under state and federal regulations, the contract hauler is responsible for complying with all sludge regulations for septage pumping, including final disposal. The contract hauler must meet all requirements.

Haulers who land apply septage (biosolids) must obtain a state permit. Haulers who transport to another permitted treatment facility are not required to have a permit. Homeowners are not responsible for sludge removed by contract haulers.

Compliance dates

Since Feb. 19, 1994, contract haulers that apply septage must comply with the new EPA sludge standards. They

must register with EPA or apply for state permits. A general permit is available from the DNR.

Best management practices

Septage biosolids that meet the standards for pathogens and vectors are safe to apply when following best management practices.

Best management practices include agronomic loading rates, soil conservation practices and other site restrictions.

Metals standards

Monitoring and limitations for metals are not required because of the relatively low concentration of metals found in residential septage (Table 1).

Table 1. Typical concentrations of pollutants in residential septage. (Domestic Septage Regulatory Guidance, EPA-832-B-92-005, September 1993. U.S. Environmental Protection Agency.)

| Pollutant | Average concentration of dry weight (milligrams per kilogram) ¹ |
|-------------------------|--|
| Arsenic | 4 |
| Cadmium | 4 |
| Chromium | 14 |
| Copper | 140 |
| Lead | 35 |
| Mercury | 0.15 |
| Molybdenum ² | Less than 4 |
| Nickel | 15 |
| Selenium | 2 |
| Zinc | 290 |
| Nitrogen | 2 percent |
| Phosphorus | Less than 1 percent |
| Total solids | 3.4 percent |
| pH | 6 to 7 pH units |

¹Other units as noted.

²Estimate based on relative ratio of data in the 1988 National Sewage Sludge Survey (NSSS), U.S. Environmental Protection Agency (EPA), October 1989.

Septage values are in the lower 10 percent of NSSS data. Unpublished statistical comparison by Missouri Department of Natural Resources using an EPA computer file of the NSSS data base.

Revised by
Bob Broz, Extension Water Quality State Specialist, Division of Food Systems and Bioengineering

Pathogen and vector requirements

Residential septic tanks are designed to retain sludge for one to three years before pumping. This long retention time provides a larger reduction in pathogens and vectors in the tank, as compared to other mechanical-type treatment facilities.

Therefore, federal regulations provide a special category for lime stabilization of septage.

Lime stabilization

Lime stabilization of septage is recommended to meet pathogen and vector requirements for biosolids applied to crops, pastures or timberland. To meet Class B sludge requirements, maintain the septage at 12 pH for at least 30 minutes before land application.

Add 50 pounds of hydrated lime to each 1,000 gallons of septage. Use an auxiliary vacuum line to pump the dry lime into the tank truck as the septage is pumped into the tank, and uniformly mix the materials in the tank.

Do not add the lime to the septic tank, as this will harm the beneficial bacteria needed in the septic tank.

Land application rates

Do not apply more than 30,000 gallons of septage per acre per year. This rate is suitable for all agricultural crops, pastures or timberland in Missouri. Since this is a conservative rate, nitrogen testing of the septage is not required. (Table 1.)

Record keeping

Keep detailed reports on file for at least five years showing the number of acres, location, ownership and application dates for each land-application field. The records must be available for inspection by the DNR.

Annually summarize and submit the records in a calendar year report due Jan. 28. An annual report form (Form S) is provided by the DNR and has been approved for use by the EPA.

Similar treatment works

The EPA defines septage in 40 CFR 503.9 (F). It includes pumping from septic tanks, cesspools, portable toilets, Type III marine sanitation devices and similar treatment works that receive only domestic sewage.

Sludge from domestic wastewater treatment facilities serving less than 150 people is considered equivalent to septage by DNR. Therefore, these similar treatment works may follow the requirements for septage in this publication.

Resources

Missouri Code of State Regulations (CSR), Title 10 — Department of Natural Resources (10 CSR 20 Chapter 8), <http://sos.mo.gov/adrules/csr/current/10csr/10csr>

Missouri Revised Statutes. Clean Water Act, Sections 644.006.1-599, <http://moga.mo.gov/mostatutes/chapters/chapText644.html>

National Pollutant Discharge Elimination System (NPDES), <https://epa.gov/npdes>

Environmental Protection Agency, *A Plain English Guide to the EPA Part 503 Biosolids Rule*, <https://epa.gov/biosolids/plain-english-guide-epa-part-503-biosolids-rule>

This guide was previously named WQ422 *Land Application of Septage*. The original authors are Ken Arnold, Chief of Land Application, Missouri Department of Natural Resources; John H. Dunn, Environmental Engineer, United States Environmental Protection Agency Region VII; and Charles D. Fulhage, University of Missouri Department of Agricultural Engineering.

ALSO FROM MU EXTENSION PUBLICATIONS

EQ424 *Biosolids Standards for Pathogens and Vectors*

EQ426 *Best Management Practices for Biosolids Land Application*

extension.missouri.edu | 800-292-0969

Monitoring Requirements for Biosolids Land Application

Ken Arnold

Chief of Land Application, Missouri Department of Natural Resources

John H. Dunn

Environmental Engineer, Environmental Protection Agency Region VII

Dennis Sievers

Department of Agricultural Engineering

Biosolids is a term for domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. Biosolids standards include limitations for metals and other compounds, pathogen reduction, vector requirements and best management practices.

This publication outlines biosolids land application monitoring requirements.

Applying biosolids to land uses the available nitrogen, phosphorus and potash to fertilize growing crops. This is an environmentally sound practice sanctioned by the U.S. Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (DNR).

Reusing biosolids on crops, pastures and timberland reduces pollution of the waters of the state. It eliminates the environmental risks and costs associated with sludge disposal options, benefiting all citizens of Missouri.

Background

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. These standards include limitations for the land application of biosolids.

The DNR has incorporated the EPA standards into the state requirements under the Missouri Clean Water Law and regulations. The state rules include additional requirements that are not covered in the EPA standards. Complying with state regulations automatically meets the EPA sludge standards.

Recommended minimum monitoring frequency

Monitor the biosolids to determine the quality for regulated pollutants listed in the biosolids standards. Base the number of samples on the quantity of sludge produced by the facility.

Another sampling plan may be approved for an equal number of samples per year. For example, you sample quarterly, but apply biosolids during July only. You may collect all four samples during the land application period (Table 1).

Table 1

Recommended monitoring frequency

| Design sludge production (dry tons per year) | Monitoring frequency (See notes 1 and 2.) | | | |
|---|---|------------------------------|------------------------------|---|
| | Metals, pathogens and vectors | Nitrogen TKN ¹ | Nitrogen PAN ² | Priority pollutants and TCLP ³ |
| 0 to 100 | 1 per year | 1 per year | 1 per month | 1 per year |
| 101 to 200 | biannual | biannual | 1 per month | 1 per year |
| 201 to 1,000 | quarterly | quarterly | 1 per month | 1 per year |
| 1,001 to 10,000 | 1 per month | 1 per month | 1 per week | -- ⁴ |
| 10,001+ | 1 per week | 1 per week | 1 per day | -- ⁴ |

¹Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less. ²Calculate plant available nitrogen, if biosolids application is more than 2 dry tons per acre per year.

³Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

⁴One sample for each 1,000 dry tons of sludge.

Note 1

Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2

Total phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.

Optional sampling for lagoons

If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed.

Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year or left within the lagoon at closing. Composite samples must represent various areas at one-foot depth.

Sample type

Collect composite samples for all monitoring under this section. Each composite sample must consist of at least seven to 20 grab samples. Collect the samples during the same week from various locations in the sludge.

Data from individual grab samples may vary by as much as 50 percent from mean values. A composite sample made up of 20 grab samples will be 90 percent to 95 percent accurate.

Dry weight basis

Report all sample results on a dry weight basis unless otherwise specified. If the laboratory report does not specify dry weight, consider the data in a wet weight basis. The permit holder must convert the measurements to a dry weight basis. Use the following formula:

| | |
|--|--------------------------|
| Wet weight in ppm or milligrams per kilogram ÷ | Percent total solids/100 |
|--|--------------------------|

An example for 100 ppm at 2 percent total solids:

| | | | |
|-----------|-------|--------------|------------------------|
| 100 ppm ÷ | 2/100 | = 100 ÷ 0.02 | = 5,000 ppm dry weight |
|-----------|-------|--------------|------------------------|

Soil testing

Test soils for soil pH, cation exchange capacity and available phosphorus once every four or five years, if biosolids are applied during that period. Base available phosphorus on Bray's P-1 test.

Recommended soil testing methods must be in accordance with *Recommended Chemical Soil Test Procedures for the North Central Region* (North Dakota Agricultural Experiment Bulletin 499-Revised).

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Biosolids Standards for Pathogens and Vectors

Ken Arnold

Chief of Land Application, Missouri Department of Natural Resources

John H. Dunn

Environmental Engineer, Environmental Protection Agency Region VII

Dennis Sievers

Department of Agricultural Engineering

Biosolids is domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. Biosolids standards include limitations for metal and other compounds, pathogen reduction, vector requirements and best management practices.

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. These standards include limitations for the land application of biosolids. This publication outlines biosolids standards for pathogens and vectors.

Pathogen limitations for Class A biosolids

Class A biosolids are required for application onto public-use sites and certain food crops. This includes residential areas, road banks, parks, golf courses, schools and other similar areas.

Class A is also required for applying biosolids to turf, vegetable crops, root crops or home gardens.

Alternatives for Class A pathogen treatment

Class A biosolids must meet one of the following bacteria limitations and one of the process treatment alternatives:

Bacterial limitations

Biosolids must comply with one of the following:

- Fecal coliform is less than 1,000 Most Probable Number (MPN) per gram of total solids (dry weight).
- Salmonella sp. bacteria density is less than 3 MPN per 4 grams total solids (dry weight).

Class A Process treatment alternatives

Biosolids must also meet one of the following:

- Maintain the sludge at the time, temperature and percent solids determined by using the formula in [(EPA Class A alternative 1, per 503.32(a)(3)].
- Maintain the temperature of the sludge above 52 degrees Celsius for 72 hours. The sludge must be above pH 12. Air dry the sludge to 50 percent solids or higher, (EPA Class A alternative 2, per 503.32(a)(4).
- Use other treatment process to achieve the following:
 - Enteric virus density must be less than 1 Plaque Forming Unit (PFU) per 4 grams of total dry weight solids.
 - Viable helminth ova density must be less than 1 per 4 grams of total dry weight solids, [EPA Class A alternatives 3 or 4, per 503.32(a)(5) and (6)].
- Use a Process to Further Reduce Pathogens (PFRP) or equivalent treatment process approved by the permitting authority, [EPA Class A Alternative 5 or 6, per 503.32(a)(7) and (8)] (Table 1).

Table 1

Processes to Further Reduce Pathogens (PFRP)

- Compost, using the within-vessel method or the static aerated pile method. This maintains the temperature at 55 degrees Celsius or higher for three days.
- Maintain the temperature of windrow compost at 55 degrees Celsius or higher for 15 days or longer. Turn the windrow at least five times when the compost temperature is above 55 degrees Celsius.
- Heat drying with hot gases reduces the moisture content to 10 percent or lower. The temperature of the sludge exceeds 80 degrees Celsius.
- Heat treat liquid sludge to a temperature of 180 degrees Celsius or higher for 30 minutes.
- Thermophilic aerobic digest sludge for at least 10 days at a temperature between 55 to 60 degrees Celsius.
- Beta ray irradiate sludge with an electron accelerator at dosages of at least 1.0 megarad at 20 degrees Celsius.
- Gamma ray irradiate waste with certain isotopes, such as Cobalt 60 and Cesium 137 at dosages of at least 1.0 megarad at 20 degrees Celsius.
- Pasteurize sludge. Maintain the temperature at 70 degrees Celsius or higher for 30 minutes or longer.
- Use an equivalent treatment process approved by the permitting authority.

Pathogen limitations for Class B biosolids

Apply Class B biosolids on grain and forage crops, pastures, grassland, fallowland and timberland.

The alternatives for Class B biosolids consist of either a treatment process, such as a Process to Significantly Reduce Pathogens (PSRP) or a bacteria limitation, based on fecal coliform.

Fecal coliform testing is recommended for all treatment processes for at least two years of operation in order to verify PSRP performance. Conduct tests during seasons of the year when biosolids will be applied. Equivalent PSRP processes must be approved by the permitting authority.

Alternatives for Class B pathogen treatment

- Fecal coliform test the biosolids. The geometric mean of the density of fecal coliform must be less than 2,000,000 Colony Forming Units (CFU) or 2,000,000 Most Probable Number (MPN), per gram of total dry weight solids. Collect seven grab samples of sludge within one day.
- Use PSRP or an equivalent treatment method approved by the permitting authority (Table 2).

Table 2

Processes to Significantly Reduce Pathogens (PSRP)

- Aerobic digestion between 40 days at 20 degrees Celsius and 60 days at 15 degrees Celsius.
- Anaerobic digestion between 15 days at 35 to 55 degrees Celsius and 60 days at 20 degrees Celsius.
- Air dry for at least three months. Two of the months must have average daily temperature above freezing.
- Compost with temperatures greater than 40 degrees Celsius for five days. The temperature must be greater than 55 degrees Celsius for four hours during the five days.
- Lime stabilization to a pH greater than 12 for two hours. If the sludge is domestic, lime (alkali) stabilize to a pH greater than 12 for 30 minutes.
- Use an equivalent process approved by the permitting authority (Table 3).

Table 3

Processes approved by EPA as equivalent to PSRP. (Control of Pathogens and Vector Attraction in Sewage Sludge, EPA/625/R-92/013, Dec. 1992.)

- Use a combination oxidation ditch, aerated storage and drying process. Treat sewage sludge in oxidation ditch for at least 26 days and then store it in an aerated holding tank for up to a week. Following dewatering to 18 percent solids, dry the sewage sludge on a paved surface to a depth of two feet. Turn the sewage sludge over during drying. After drying to 30 percent solids, stockpile the sludge before land application. To ensure that PSRP requirements are met, the stockpiling period must include one full summer season. Together, the drying and stockpiling steps take about a year.
- Use cement or lime kiln dust (instead of lime) to treat sewage sludge by raising sewage sludge to at least 12 pH for 2 hours.
- Use anaerobic digestion for sewage sludge in a lagoon. In one example of this method, suspended solids had accumulated in a 30-acre aerated lagoon previously used to aerate wastewater. The solids were detained up to 15 years in the lagoon, resulting in a level of treatment exceeding that provided by conventional anaerobic digestion.

- Use oxidation ditch treatment and storage combination. Process sewage sludge in aeration basins, then store it in aerated sludge holding tanks. The total sewage sludge aeration time is greater than the aerobic digestion operating conditions (specified in the Part 503 regulation) of 40 days at 68 degrees Fahrenheit to 60 days at 59 degrees Fahrenheit. Next, store the oxidation ditch sludge in batches for at least 45 days in an un-aerated condition or 30 days in an aerated condition.
- Use aerobic digestion for 20 days at 86 degrees Fahrenheit or 15 days at 95 degrees Fahrenheit.

Alternatives for vector attraction treatment

All biosolids (Class A and Class B) must meet one of the following alternatives for vector attraction reduction:

- Reduce volatile sludge solids to 38 percent.
- Alternate sludge testing for volatile solids:
 - Digest sludge samples in laboratory (30 days for aerobic sludge and 40 days for anaerobic sludge). The resulting volatile solids reduction during the testing must be less than 15 percent for aerobic sludge and less than 17 percent for anaerobic sludge.
- SOUR (Specific Oxygen Uptake Rate) is less than 1.5 milligrams oxygen per hour per gram of total dry weight solids at 20 degrees Celsius. For anaerobic sludge, the sample must be aerated in the lab until dissolved oxygen saturation is reached before testing.
- Aerobic sludge digester at an average temperature of greater than 45 degrees Celsius for more than 14 days and at least 40 degrees Celsius.
- The pH must be greater than 12 for two hours and greater than 11.5 for at least 22 hours.
- Dry sludge to less than 25 percent moisture for stabilized sludge or less than 10 percent for primary sludge.
- Subsurface inject the sludge.
- Incorporate the sludge into the soil within six hours after surface spreading.
- If the sludge is domestic septage only, the pH must be greater than 12 for 30 minutes.
- Use an equivalent method approved by the permitting authority.

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Biosolids Standards for Metals and Other Trace Substances

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Chief of Land Application, Missouri Department of Natural Resources

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Environmental Engineer, Environmental Protection Agency Region VII

Dennis Sievers
Department of Agricultural Engineering

Biosolids is domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. Biosolids standards include limitations for metal and other trace substances, pathogen reduction, vector requirements and best management practices. This publication outlines requirements for metals and other trace substances.

Applying biosolids to land uses the available nitrogen, phosphorus and potash as fertilizer for growing crops. It is an environmentally sound practice sanctioned by the U.S. Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (DNR).

Background

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. The standards include limitations for the land application of biosolids.

The DNR incorporated the EPA standards into the state requirements under the Missouri Clean Water Law and regulations. The state rules also include additional requirements that are not covered in the EPA standards. Complying with state regulations automatically meets the EPA standards.

Standards for biosolids land application

The amount of metals and other pollutants in the biosolids determines the acceptability for land application and the appropriate loading rates to protect crops, soils and the environment.

Limitations consist of concentration-based limits and pounds per acre limits. State guidelines for trace compounds also apply when an EPA standard has not been published for a specific pollutant.

Ceiling concentration

You may apply biosolids on land if the ceiling concentrations are not exceeded (Table 1). When necessary, it is permissible to mix the material with lower concentration biosolids or other suitable materials, such as sawdust, to meet the concentration limits.

Table 1

Concentration-based limits (40 CFR 503 and Missouri Department of Natural Resources, Permit Standard Conditions Part IV, June 1993.)

| Biosolids ceiling concentration ¹ | |
|--|------------------------------------|
| Pollutant | Milligrams per kilogram dry weight |
| Arsenic | 75 |
| Cadmium | 85 |
| Chromium | 3,000 |
| Copper | 4,300 |
| Lead | 840 |
| Mercury | 57 |
| Molybdenum | 75 |
| Nickel | 420 |
| Selenium | 100 |
| Zinc | 7,500 |

¹Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants.

Low metals concentration

The low metal concentration biosolids has reduced requirements because of its higher quality (Table 2). You may safely apply these biosolids for 100 years or longer at typical agronomic loading rates. Records are required for each application site. Concentration limits for unrestricted use (non-tracking of sites) is established on a case-by-case basis by DNR.

Table 2

Biosolids low metal concentration.¹ (40 CFR 503 and Missouri Department of Natural Resources, Permit Standard Conditions Part IV, June 1993.)

| Pollutant | Milligrams per kilogram dry weight |
|-----------|------------------------------------|
| Arsenic | 41 |
| Cadmium | 39 |

| | |
|------------|-------|
| Chromium | 1,200 |
| Copper | 1,500 |
| Lead | 300 |
| Mercury | 17 |
| Molybdenum | 18 |
| Nickel | 420 |
| Selenium | 36 |
| Zinc | 2,800 |

¹You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

Pounds per acre limits

Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories. See Table 4 for pollutants that do not have a published EPA standard.

Table 3

Pounds per acre limits by soil Cation Exchange Capacity (CEC). (Missouri Department of Natural Resources, Permit Standard Conditions Part IV, June 1993)

| Pollutant | CEC 15+ | | CEC 5 to 15 | | CEC 0 to 5 | |
|------------|---------|--------------------|-------------|--------------------|------------|-------|
| | Annual | Total ¹ | Annual | Total ¹ | Annual | Total |
| Arsenic | 1.8 | 36.0 | 1.8 | 36.0 | 1.8 | 36.0 |
| Cadmium | 1.7 | 35.0 | 0.9 | 9.0 | 0.4 | 4.5 |
| Chromium | 133.0 | 2,670.0 | 100.0 | 1,000.0 | 50.0 | 500.0 |
| Copper | 66.0 | 1,335.0 | 25.0 | 250.0 | 12.0 | 125.0 |
| Lead | 13.0 | 267.0 | 13.0 | 267.0 | 13.0 | 133.0 |
| Mercury | 0.7 | 15.0 | 0.7 | 15.0 | 0.7 | 15.0 |
| Molybdenum | 0.8 | 16.0 | 0.8 | 8.0 | 0.8 | 8.0 |
| Nickel | 19.0 | 347.0 | 19.0 | 250.0 | 12.0 | 125.0 |
| Selenium | 4.5 | 89.0 | 4.5 | 44.0 | 1.6 | 16.0 |
| Zinc | 124.0 | 2,492.0 | 50.0 | 500.0 | 25.0 | 250.0 |

¹Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt-based test).

Table 4Guidelines for land application of other trace substances.¹

| Cumulative loading | |
|--------------------|-------------------------------|
| Pollutant | Pounds per acre |
| Aluminum | 4,000 ² |
| Beryllium | 100 |
| Cobalt | 50 |
| Fluoride | 800 |
| Manganese | 500 |
| Silver | 200 |
| Tin | 1,000 |
| Dioxin | (10 ppt in soil) ³ |
| Other substance | 4 |

¹Design of Land Treatment Systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA, 1981.)

²This applies for a soil with a pH between 6.0 and 7.0. Case-by- case review is required for higher pH soils. Leachable aluminum in biosolids mixture must not exceed 0.2 milligram per liter based on ASTM method D-3987.

³Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1991.

⁴Case-by-case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, October 1989.

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Best Management Practices for Biosolids Land Application

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John Dunn

Environmental Engineer, Environmental Protection Agency Region VII

Jerry D. Carpenter

Department of Agricultural Engineering

Biosolids is domestic wastewater sludge that meets standards for use as a fertilizer or soil conditioner. These standards include monitoring requirements, metal limitations, pathogen reduction, vector requirements and best management practices.

Applying biosolids to land uses the available nitrogen, phosphorus and potash as fertilizer for growing crops. It is an environmentally sound practice sanctioned by the U.S. Environmental Protection Agency (EPA) and the Missouri Department of Natural Resources (DNR). Reusing biosolids on crops, pastures and timberland reduces water pollution. It eliminates the environmental risks and costs associated with sludge disposal options, benefiting all Missourians.

Background

EPA regulations, under Title 40 Code of Federal Regulations Part 503 (40 CFR 503), establish the minimum national standards for the use and disposal of domestic sludge. These standards include limitations for the land application of biosolids.

DNR incorporated the EPA standards into the state requirements under the Missouri Clean Water Law and regulations. The state rules include additional requirements that are not covered in the EPA standards. Complying with state regulations automatically meets the EPA sludge standards.

Pollutant standards for land application

Testing for metal, pathogens and other pollutants is required to determine the representative quality of the biosolids. Treat biosolids to reduce pathogens and vectors before application. The concentration of metal and other pollutants in the biosolids determines the acceptability for land application and the appropriate loading rates to protect crops, soils and the environment.

Best management practices

Biosolids that meet the standards for metal, pathogens, vectors and other pollutants are safe to apply when following the best management practices.

Best management practices, or "good farming practices," include agronomic load rates, buffer zones, depth to groundwater, wetlands protection, harvest and grazing deferments, threatened and endangered species protection, field slope limitations, restrictions for frozen or saturated soils, requirements for public-use sites, soil conservation practices and other site restrictions.

The following list of practices is based on the regulations and standard permit conditions:

1. No discharge

Biosolids must not discharge from the application site, except during catastrophic or chronic precipitation exceeding the 1-in-10 year rainfall level.

2. Public contact sites and public-use or distribution of biosolids

- Class A biosolids applied to public-use sites, distributed for general public use or used on vegetable crops, root crops or home gardens must comply with 40 CFR 503 Subpart B.
- A biosolids management plan or engineering report for Class A biosolids used on public sites must be approved by the DNR before use or distribution.
- Do not apply Class B biosolids to public contact areas, residential lawns or turf farms unless the biosolids are incorporated. Restrict public access for 12 months. You must gain approval from the permitting authority.

3. Crop restrictions

Do not apply Class B biosolids to root crops, home gardens or vegetable crops whose edible parts will come in contact with applied biosolids, unless the crops are not used for direct human consumption.

4. Harvest and grazing restrictions

Do not apply biosolids to land within 30 days of harvest or grazing by cattle. Applicators are also subject to requirements of the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.

5. Threatened or endangered species

Applying biosolids must not adversely affect a threatened or endangered species or its designated critical habitat. This is in accordance with section 4 of the Endangered Species Act.

6. Nitrogen limitations

Do not apply more than the agronomic rate of nitrogen needed.

- The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil and crop removals, unless the following conditions are met:
 - Nitrogen content of the biosolids does not exceed 50,000 milligrams per kilogram of total nitrogen on a dry weight basis; and

- Biosolids application rate is less than two dry tons per acre per year.
- Report nitrogen compounds as nitrogen in the PAN calculations. Calculate PAN as follows:

$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor})$

The volatilization factors are 0.7 for surface application and 1 for subsurface injection.

- You may use alternate PAN calculations if documented by site-specific data and prior approval is obtained from the DNR.
- If you use the University soil test laboratory, the soil test report will provide the net nitrogen to apply for a specific crop and yield goal. If you use a private soil test laboratory, the available nitrogen in the soil must be determined and subtracted from the nitrogen application requirements.

7. Buffer zones

Do not apply biosolids within:

- 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
- 300 feet of a losing stream, no-discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
- 150 feet of dwellings;
- 100 feet of wetlands or permanent flowing streams;
- 50 feet of a property line or other waters of the state, including intermittent flowing streams.

8. Slope limitations for application sites

- On slopes of 0 to 6 percent, there is no rate limitation
- On 7 to 12 percent slopes, you may apply biosolids when soil conservation practices are used to meet minimum erosion (T) levels in accordance with U.S. Soil Conservation service recommendations.
- For slopes of 12 percent or more, apply biosolids only when the site is maintained in grass vegetation with at least 80 percent ground cover. Do not apply more than two dry tons per acre per year.

9. Storm water runoff

- Do not place biosolids in a location where it is reasonably certain that pollutants will be transported into waters of the state during stormwater runoff.
- Subsurface inject the biosolids, incorporate after application, use soil conservation practices, adhere to slope restrictions, create buffer areas and follow other approved methods, as necessary.
- Soil conservation practices for application must be approved by the U.S. Soil Conservation Service or MU Extension.

10. Frozen, snow-covered or saturated soil conditions

Do not apply biosolids when the ground is frozen, snow covered or when the soil is saturated, unless site restrictions or other controls are provided to prevent pollutants from being discharged during snowmelt or storm water runoff. If land application is necessary during inclement weather, use sites which meet the following:

- A maximum field slope of 6 percent and a minimum 300 feet grass buffer between the application site and waters of the state.
- A maximum field slope of 2 percent and 100 feet grass buffer between the application site and waters of the state.
- Other best management practices approved by the DNR.

11. Biosolids storage

- Provide adequate sludge and biosolids storage as needed to match the application windows for crop planting, harvesting and inclement weather conditions. Operate storage basins so there is no discharge to waters of the state.
- Recommended biosolids storage for grassland sites ranges from 60 to 120 days as follows: 60 days south of Highway 60; 75 days between Highway 60 and Highway 50; 90 days between Highway 50 and Highway 36; and 120 days north of Highway 36.
- Storage should be increased for tilled cropland application sites depending on the crop rotations and ratio of tilled land to grassland. Recommended storage is 180 to 365 days if all sites are tilled crop land.
- Any storage area located off-site of the sludge or biosolids generating facility must have a separate individual permit for the storage site, except for temporary stockpiles.
- Use temporary stockpiles for solid or semi-solid materials (no free liquids) only. Limit the stockpile to two weeks per year at any one application field. Locate stockpiles at least 300 feet from drainage ways or they must have runoff collection berms at least 6 inches high around the pile.

12. Application rates

Evenly spread the biosolids over the entire application site. Do not dump the material in batches or spread a pile using a blade, disc or similar equipment.

13. Application equipment

Properly operate and maintain application equipment. Visually check the equipment each day during operation. Apply biosolids during daylight hours only, unless approval is obtained from the permitting authority.

14. Soil pH limitations

Do not apply biosolids to sites with a soil pH less than 6.0 or greater than 7.5 (based on the salt solution test, which is preferred) or less than 6.5 or greater than 8.0 (based on the water solution test).

Application of biosolids to higher pH soils may be considered on a case-by-case basis. Submit a site-specific permit application and supporting document, addressing crop and groundwater protection, to DNR. Tracking of aluminum loading rates will be required. See Table 4 in MU publication [WQ425, Biosolids Standards for Metals and Other Trace Substances](#).

15. Soil phosphorus limitations

Do not apply biosolids to soils that contain more than 800 pounds of available phosphorus, based on the Bray P-1 test, unless approval is obtained from the permitting authority DNR.

16. Soil depth

Do not apply biosolids to sites that have less than 5 feet of soil above bedrock or a groundwater aquifer, unless authorized in a site-specific permit for the application site.

17. Record keeping

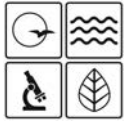
Sludge applicators must keep detailed records for at least five years on each location and amounts of biosolids applied.

Landowners are not required to keep records. However, it is highly recommended that biosolids application records be incorporated into your total nutrient management plan.

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Appendix H

MDNR Permit Termination Form H



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
REQUEST FOR TERMINATION OF OPERATING PERMIT
(REPLACES TERMINATION FORMS H AND J)

FOR OFFICE USE ONLY

DATE RECEIVED

IF A FACILITY OR SITE HAS BEEN SOLD, BUT PERMITTED ACTIVITIES HAVE NOT CEASED, A TRANSFER OF OWNERSHIP FORM (MO 780-1517) MUST BE COMPLETED RATHER THAN A TERMINATION FORM.

ALL APPLICABLE SECTIONS OF THIS FORM MUST BE COMPLETED.

1. FACILITY INFORMATION

| | | | |
|-----------------------|-----------------------------------|------------------------|-------------------|
| PERMIT NUMBER | | COUNTY | |
| NAME OF FACILITY | | | |
| PHYSICAL ADDRESS | | CITY | STATE ZIP CODE |
| FACILITY CONTACT NAME | FACILITY CONTACT TELEPHONE NUMBER | FACILITY CONTACT EMAIL | |

2. OWNER

| | | | |
|---------|--|---------------------------------|-------------------|
| NAME | | TELEPHONE NUMBER WITH AREA CODE | |
| ADDRESS | | CITY | STATE ZIP CODE |
| EMAIL | | | |

3. CONTINUING AUTHORITY

| | | | |
|---------|--|---------------------------------|-------------------|
| NAME | | TELEPHONE NUMBER WITH AREA CODE | |
| ADDRESS | | CITY | STATE ZIP CODE |
| EMAIL | | | |

4. REASON FOR TERMINATION REQUEST (CHECK ONE)

- ☐ Permitted activities have ceased, or facility is closed (must select facility type in section five and attach photographs or any other supporting documents as required).
- ☐ General Permit MO-G _____ or MO-R _____ has been issued and covers all regulated activities.
- ☐ Site specific permit MO- _____ has been issued and covers all regulated activities.
- ☐ Facility has obtained a "No Exposure" certification, MO-NX _____.
- ☐ Industrial activity (SIC Code # _____) is not regulated.
- ☐ For CAFOs, facility size is unregulated (Class II and smaller operations only).
- ☐ Other (Specify).

5. FACILITY TYPE (CHECK ONE FACILITY TYPE, COMPLETE ONLY IF PERMITTED ACTIVITY HAS CEASED OR FACILITY HAS CLOSED)

- ☐ For land disturbance sites, the area is stabilized; perennial vegetation, pavement, buildings or other permanent structures cover all areas that have been disturbed; no further land disturbance activities are planned; all building construction (commercial or residential) is completed; temporary best management practices are removed, and construction equipment is removed. With respect to areas that have been vegetated, vegetation cover shall be at least 70 percent over 100 percent of the site not covered in impervious material. Attach photographs showing stabilized areas.
- ☐ For wastewater treatment plants, the treatment plant is removed and sludge was removed and properly disposed of, and a closure plan in accordance with [10 CSR 20-6.010\(12\)](#) or [10 CSR 20-6.015\(5\)](#) was approved and implemented. Attach documentation required by the approved closure plan and photographs of the closed area. See the *Water Treatment Plant Closure* -PUB2568 fact sheet at dnr.mo.gov/pubs/pub2568.htm for more information on closure requirements for wastewater treatment plants.
- ☐ For industrial facilities, regulated activities have ceased, no "significant materials" remain on-site and disturbed areas are properly stabilized or vegetated. The area is stabilized when perennial vegetation, pavement, buildings or structures using permanent materials cover all areas that have been disturbed. Vegetation cover shall be at least 70 percent over 100 percent of the site not covered in impervious material. Attach applicable closure documents and photographs of the closed area that demonstrate no permitted activities or materials remain.
- ☐ For quarries or sand and gravel operations, submit documentation of release from the department's Land Reclamation Program.
- ☐ For landfills, official closure has been received from department's Solid Waste Management Program (SWMP); cap is vegetated as required by SWMP; and any additional industrial activities are permitted appropriately (i.e., transfer stations, mulching operations, land disturbance, etc.). Attach the official SWMP closure letter and permit numbers of any continuing active industrial or land disturbance activities.
- ☐ For CAFOs
- ☐ Class I CAFOs must properly close lagoons and waste storage structures per a closure plan in accordance with [10 CSR 20-6.300\(6\)](#) and approved by the department. Attach photographs of closed lagoons. Also attach any additional information that supports closure of the facility.
- ☐ Class II CAFOs must close waste storage structures in accordance with [10 CSR 20-6.300\(6\)\(B\)](#), or shall continue to maintain all storage structures so there is no discharge to waters of the state. Attach photographs of closed or re-purposed lagoons, or an explanation of "no discharge" methods. Also attach any additional information that supports closure of the facility.

6. 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 submitted 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.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)

TELEPHONE NUMBER WITH AREA CODE

SIGNATURE

DATE SIGNED

7. MAIL COMPLETED COPY TO:

For Site Specific (MO-), Abandoned Mine And Land Reclamation (MO-G05), Land Disturbance By County Or City (MO-R100), Pesticide Application (MO-G87), Sewer Extension Construction (MO-GC) and CAFO (MO-G01, MO-GS1) Permit Terminations:

Missouri Department of Natural Resources
Water Protection Program
Water Pollution Control Branch
Attn: Operating Permits Section
P.O. Box 176
Jefferson City, MO 65102-0176

For General Permit Terminations (MO-G or MO-R):

Send to the appropriate regional office.
Regional office is determined based on the county where the facility is physically located.

To determine the correct regional office for the permitted facility, see **dnr.mo.gov/regions**.

Appendix I

Lagoon Closure Plan Sheets

-

CMCC Four-Cell Lagoon

&

MVE Tire Recycling Facility Lagoon Cell



ALLSTATE
CONSULTANTS
3312 LEMONE INDUSTRIAL BLVD.
COLUMBIA, MO 65201
(573) 875-8799
allstateconsultants.net

MISSOURI STATE CERTIFICATE
OF AUTHORITY #2007004004

**OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION**

DEPARTMENT OF
CORRECTIONS

CLOSURE OF MULTIPLE LAGOONS AND WELLS

CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
SITE # CMCC
FACILITY # FOUR-CELL LAGOON

REVISION: MDNR REVIEW NO. 1
DATE: 8/21/2020
REVISION: ALLSTATE
DATE: 10/12/2022
REVISION: _____
DATE: _____
ISSUE DATE: 07/10/2020

CAD DWG FILE: SURVEY-BASE CHURCH FARM
DRAWN BY: MJF
CHECKED BY: RCS
DESIGNED BY: CDS & SL

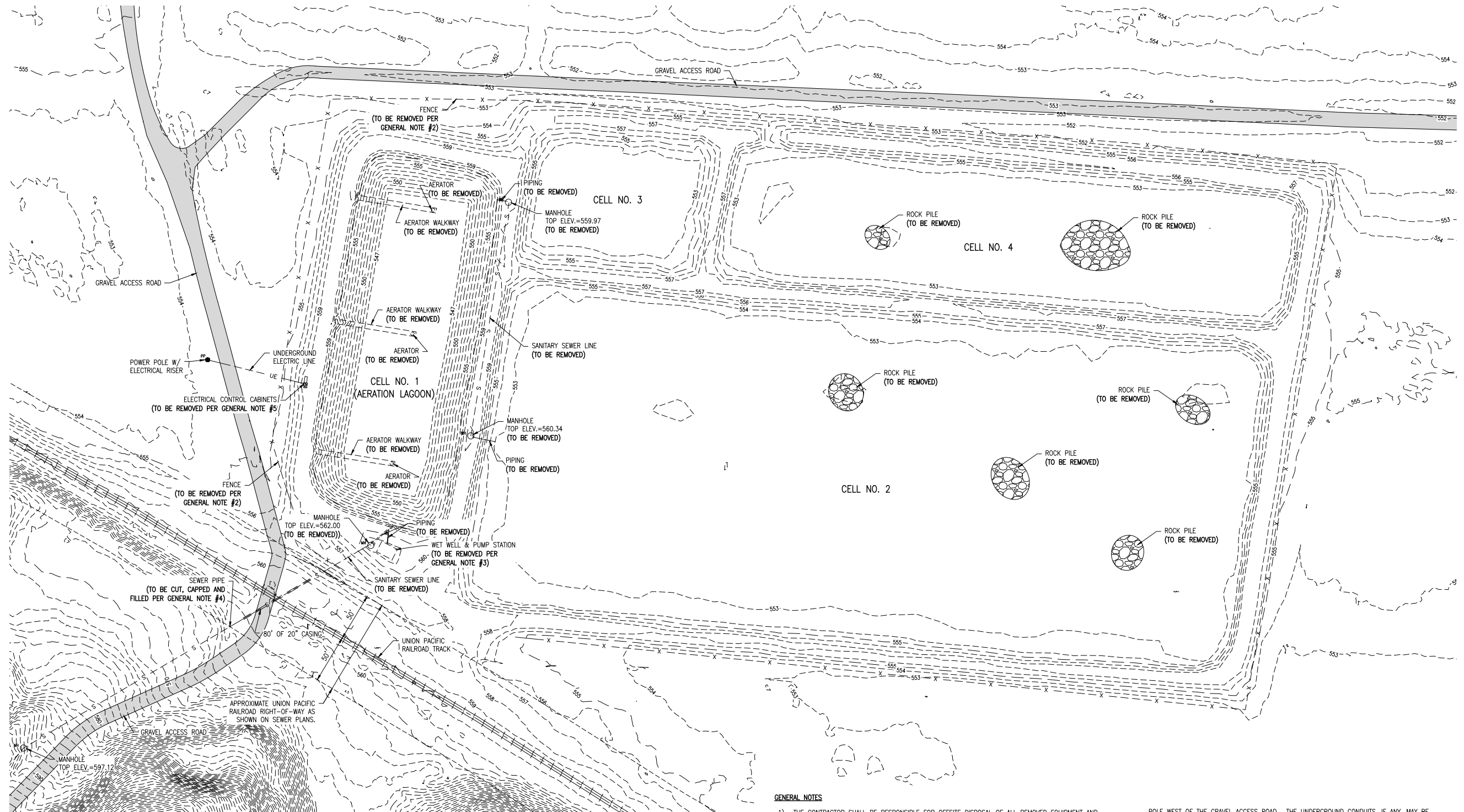
SHEET TITLE:

DEMOLITION PLAN

SHEET NUMBER:

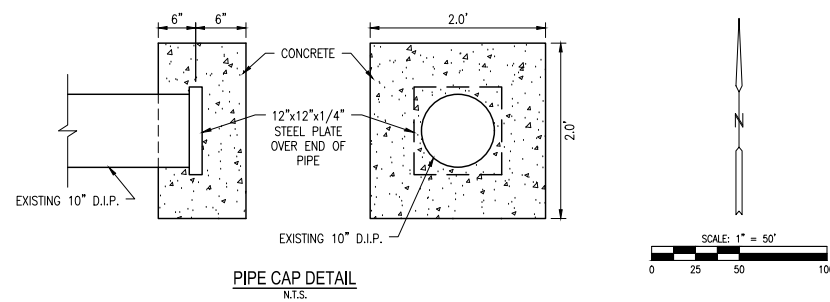
C-4

SHEET 4 OF 13
07/10/2020



GENERAL NOTES

- 1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OFFSITE DISPOSAL OF ALL REMOVED EQUIPMENT AND MATERIALS FROM DEMOLITION OF THE CMCC FOUR-CELL LAGOON.
- 2) THE CONTRACTOR SHALL PROVIDE ALL UTILITIES NECESSARY FOR COMPLETION OF CLOSURE AND CONSTRUCTION ACTIVITIES ONSITE.
- 3) FENCE REMOVAL WILL INCLUDE ALL POSTS, WIRE, GATES, AND ASSOCIATED SIGNAGE.
- 4) WET WELL AND PUMP STATION DEMOLITION
- A) THE CONTRACTOR SHALL REMOVE ALL PUMP STATION EQUIPMENT INCLUDING BUT NOT LIMITED TO THE PUMPS, PIPING, ELECTRICAL EQUIPMENT, AND METAL BUILDING. THE CONCRETE SLAB THE BUILDING SITS ON SHALL BE REMOVED ALONG WITH ANY SUBSURFACE PIPING AND ELECTRICAL.
- B) THE CONTRACTOR SHALL REMOVE ALL EXTERNAL EQUIPMENT AND ELECTRICAL WIRES FROM THE WET WELL PRIOR TO DEMOLITION. THE CONTRACTOR SHALL REMOVE ALL WASTE AND WATER FROM THE WET WELL STRUCTURE. THE EFFLUENT LINE TO THE WET WELL SHALL BE CUT AND CAPPED. TO CLOSE THE WET WELL THE CONTRACTOR WILL HAVE TWO OPTIONS. FIRST, THE CONTRACTOR CAN CRACK THE BOTTOM OF THE WET WELL STRUCTURE TO ALLOW PASSAGE OF WATER. THEN THE UPPERMOST TWO (2) FEET OF THE WET WELL BELOW THE PROPOSED FINISHED GRADE WILL BE CUT AND ALLOWED TO DROP INTO THE STRUCTURE. THEN THE CONTRACTOR MAY UTILIZE AVAILABLE CLEAN SOIL FILL, FLOWABLE CEMENT FILL OR SAND TO FILL IN THE REST OF THE VOIDS UP TO THE CUT LINE OF THE STRUCTURE (TWO (2) FEET BELOW THE PROPOSED FINISHED GRADE). THE SECOND OPTION IS THE CONTRACTOR CAN CUT THE UPPERMOST TWO (2) FEET OF THE WET WELL BELOW THE PROPOSED FINISHED GRADE AND ALLOW THE MATERIAL TO DROP INTO THE STRUCTURE. THEN THE STRUCTURE'S VOIDS CAN BE FILLED WITH FLOWABLE FILL (CEMENTITIOUS SLURRY) UP TO THE CUT LINE OF THE STRUCTURE (TWO (2) FEET BELOW THE PROPOSED FINISHED GRADE).
- C) THE ELECTRIC WIRING FOR THE WET WELL AND PUMP STATION SHALL BE DISCONNECTED AND COMPLETELY REMOVED FROM THESE STRUCTURES TO THE DISCONNECT LOCATED ON A POWER
- 5) A. PRIOR TO ANY WORK WITHIN THE UNION PACIFIC RAILROAD RIGHT-OF-WAY, THE CONTRACTOR MUST NOTIFY THEIR FIELD PERSON, LUCAS EATON AT 573-681-6223.
- B. THE SEWER PIPE RUNNING WITHIN THE UNION PACIFIC RAILROAD RIGHT-OF-WAY SHALL BE REMOVED BY CUTTING AND CAPPING THE PIPE ON EACH SIDE OF THE RIGHT-OF-WAY. AFTER REMOVING THE SEWER PIPE WITHIN THE RIGHT-OF-WAY, THE ENCASEMENT PIPE UNDER THE TRACK AREA (THE ORIGINAL PLAN SHOWS 80 L.F. OF 20" CASING WITH 10" D.I.P. IN THE RIGHT-OF-WAY AREA) SHALL BE FILLED WITH CLSM (CONTROLLED LOW-STRENGTH MATERIAL).
- C. CLSM DESIGN
- i. THE CLSM MATERIAL SHALL HAVE AN UNCONFINED COMPRESSIVE STRENGTH OF 300 PSI.
- ii. THE MIXTURE SHALL CONSIST OF WATER, PORTLAND CEMENT, FLAY ASH, AND SOME FINE OR COURSE AGGREGATE OR BOTH.
- iii. THE MIX DESIGN SHALL ALLOW FLOWABILITY WITHOUT SEGREGATION OF AGGREGATES.
- iv. HARDENING TIME IS OF PRIME IMPORTANCE AND CLSM SHOULD DEVELOP 50 PSI IN ABOUT ONE HOUR.
- v. CONTRACTOR SHOULD VERIFY NO VOIDS AFTER FILLING THE ENCASEMENT PIPE.
- 6) THE ELECTRIC WIRING FOR THE ELECTRICAL CONTROL CABINETS AND PUMP STATION SHALL BE DISCONNECTED AND COMPLETELY REMOVED FROM THE STRUCTURES TO THE DISCONNECT LOCATED ON A POWER POLE WEST OF THE GRAVEL ACCESS ROAD. THE UNDERGROUND CONDUITS, IF ANY, MAY BE ABANDONED IN-PLACE. THE POWER POLE IS TO REMAIN FOR FUTURE USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF THE ELECTRICAL CONTROL CABINETS OFFSITE.
- 7) THE EFFLUENT OUTFALL PIPE SHALL BE CUT AND CAPPED IN THE NORTHERN LAGOON BERM SOUTH OF THE GRAVEL ACCESS ROAD. THE CONTRACTOR SHALL UTILIZE THE PILE CAP LOCATED ON SHEET C-4. THE CONTRACTOR IS NOT RESPONSIBLE FOR REMOVAL OF THE EFFLUENT OUTFALL PIPE OUTSIDE OF THE FOUR-CELL LAGOON BERM.





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OF AUTHORITY #2007004004

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
CORRECTIONS

CLOSURE OF
MULTIPLE LAGOONS
AND WELLS

CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
SITE # CMCC
FACILITY # FOUR-CELL LAGOON

REVISION: MDNR REVIEW NO. 1
DATE: 8/21/2020
REVISION: ALLSTATE
DATE: 10/12/2022
REVISION:
DATE:
ISSUE DATE: 07/10/2020

CAD DWG FILE: SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:

GRADING & LAGOON
CLOSURE DETAILS

SHEET NUMBER:

C-5

SHEET 5 OF 13
07/10/2020

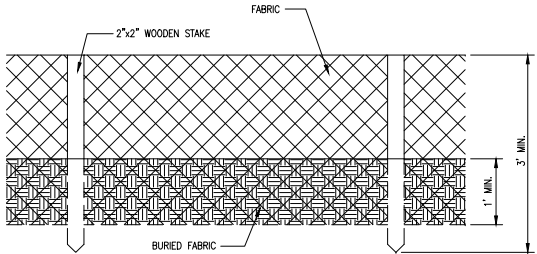
LAGOON CLOSURE PLAN NOTES:

LAGOON CLOSURE PROCEDURE

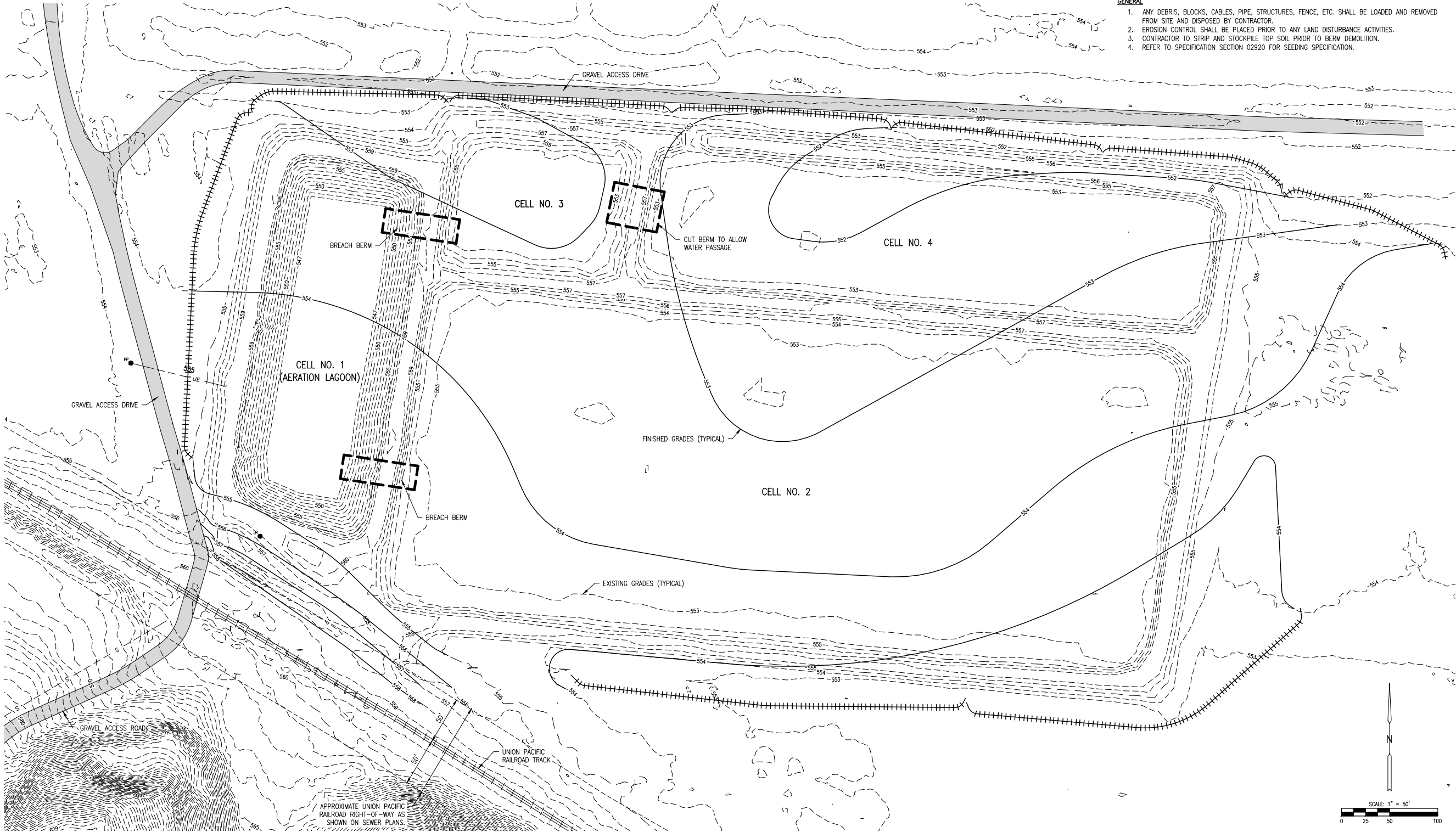
1. MVE TIRE RECYCLING FACILITY LAGOON CELL EFFLUENT WILL BE PUMPED TO CMCC LAGOON CELL NO. 1.
2. FOUR-CELL LAGOON CELLS NO. 2, NO. 3, AND NO. 4 WILL BE UTILIZED FOR DEWATERING OF LAGOON CELL NO. 1. THE CONTRACTOR MAY CONDUCT CONTROLLED INTERNAL BERM BREACHES OR ALTERNATIVELY, THE CONTRACTOR MAY PUMP WATER TO EVENLY DISPERSE WASTEWATER FROM CELL NO. 1 TO THE THREE DRAINED CELLS.
3. THE CONTRACTOR MAY DISCHARGE EFFLUENT INTO OUTFALL #001 PER THE CENTRAL MISSOURI CORRECTIONAL FACILITY WASTEWATER TREATMENT FACILITY OPERATING PERMIT MO-0097659 VIA A PUMP. THE EFFLUENT MUST BE MONITORED DURING DISCHARGE PER REQUIREMENTS DETAILED IN TABLE A (PAGE 2) OF THE OPERATING PERMIT. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.
4. THE CONTRACTOR SHALL VERIFY THE OUTFALL PIPE AND ASSOCIATED STRUCTURES ARE STILL IN PLACE AND WORKING ORDER PRIOR TO UTILIZING FOR DEWATERING OF CMCC LAGOON CELL NO. 1.
5. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING DISCHARGE GRAB SAMPLES OF EFFLUENT AND MAINTAINING AND SUBMITTING RECORDS OF SAMPLING TO MDNR.
6. VEGETATION AND SIX (6) ROCK PILES SHALL BE REMOVED PRIOR TO SOIL AND SLUDGE MIXING.
7. AFTER SOIL SLUDGE MIXING IS COMPLETE, CELLS SHALL BE GRADED TO DRAIN WITH NO SLOPES STEEPER THAN 3H:1V.

GENERAL

1. ANY DEBRIS, BLOCKS, CABLES, PIPE, STRUCTURES, FENCE, ETC. SHALL BE LOADED AND REMOVED FROM SITE AND DISPOSED BY CONTRACTOR.
2. EROSION CONTROL SHALL BE PLACED PRIOR TO ANY LAND DISTURBANCE ACTIVITIES.
3. CONTRACTOR TO STRIP AND STOCKPILE TOP SOIL PRIOR TO BERM DEMOLITION.
4. REFER TO SPECIFICATION SECTION 02920 FOR SEEDING SPECIFICATION.



SILT FENCE INSTALLATION
N.T.S.





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**DEPARTMENT OF
CORRECTIONS**

**CLOSURE OF
MULTIPLE LAGOONS
AND WELLS**

**CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO**

**PROJECT # C1919-01
SITE # MVE TIRE RECYCLING CENTER
FACILITY # LAGOON CELL**

REVISION:MDNR REVIEW NO. 1
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DATE:10/12/2022
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DATE:
ISSUE DATE:07/10/2020

CAD DWG FILE:SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:

**GRADING & LAGOON
CLOSURE DETAILS**

SHEET NUMBER:

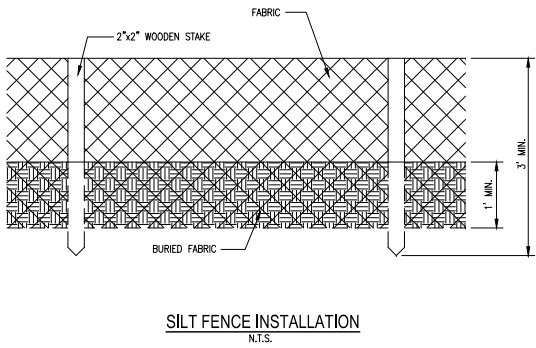
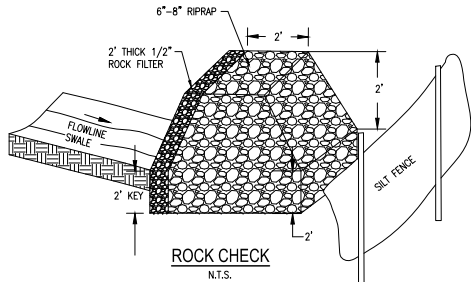
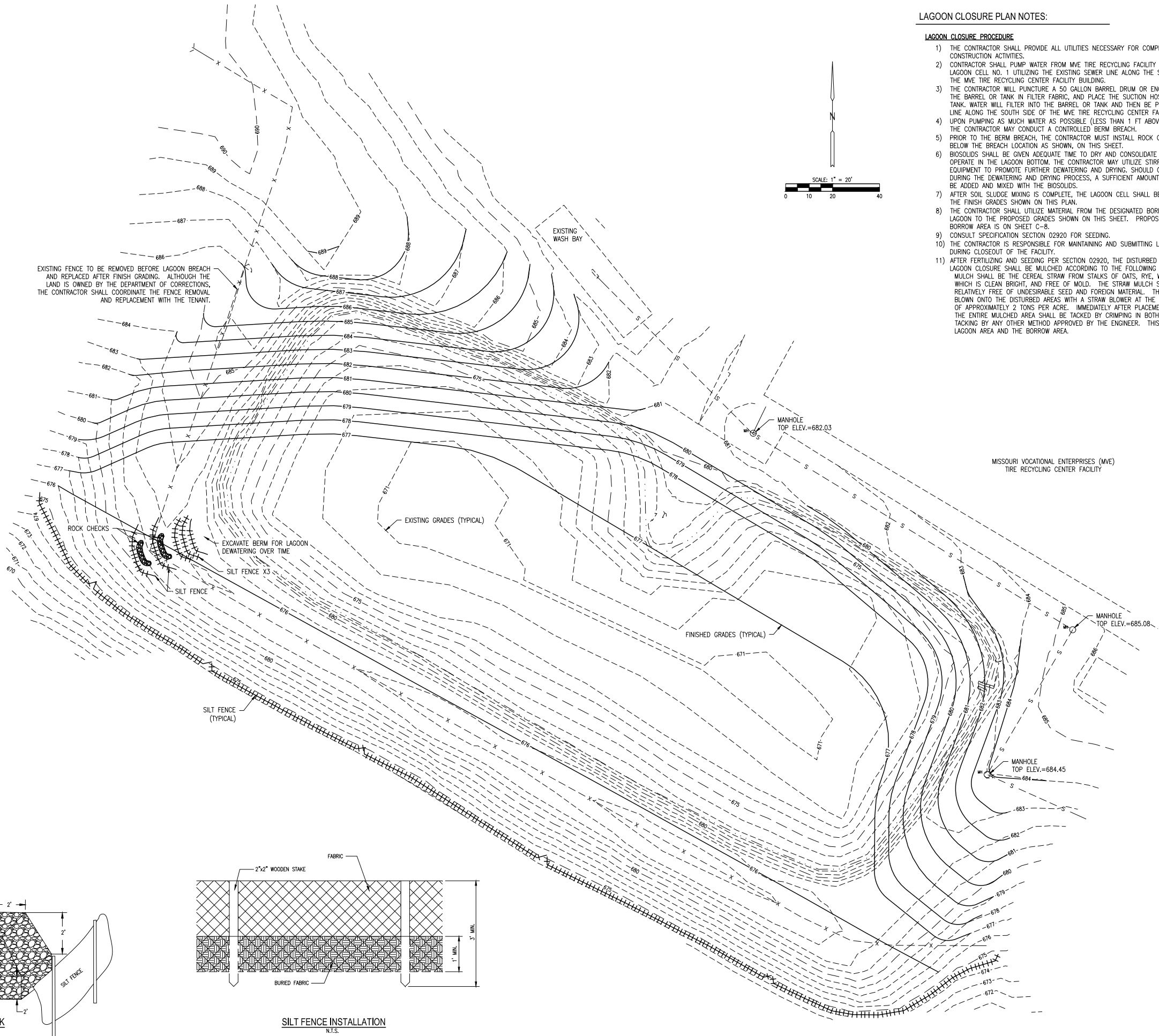
C-7

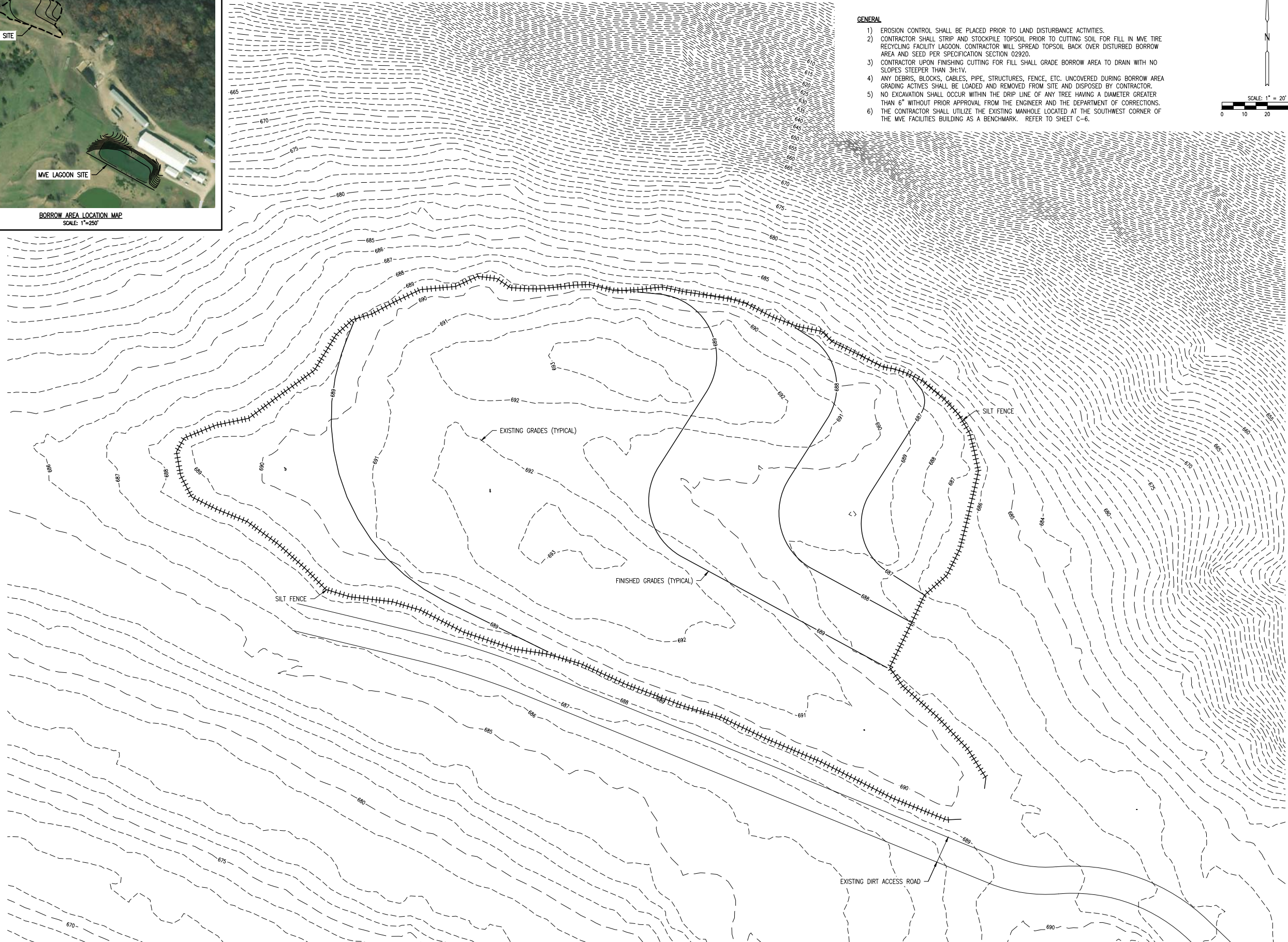
SHEET 7 OF 13
07/10/2020

LAGOON CLOSURE PLAN NOTES:

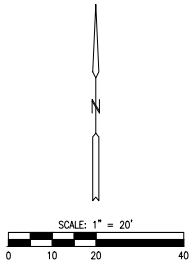
LAGOON CLOSURE PROCEDURE

- 1) THE CONTRACTOR SHALL PROVIDE ALL UTILITIES NECESSARY FOR COMPLETION OF CLOSURE AND CONSTRUCTION ACTIVITIES.
- 2) CONTRACTOR SHALL PUMP WATER FROM MVE TIRE RECYCLING FACILITY TO THE CMCC FOUR-CELL LAGOON CELL NO. 1 UTILIZING THE EXISTING SEWER LINE ALONG THE SOUTH AND EAST SIDE OF THE MVE TIRE RECYCLING CENTER FACILITY BUILDING.
- 3) THE CONTRACTOR WILL PUNCTURE A 50 GALLON BARREL DRUM OR ENCLOSED STOCK TANK, WRAP THE BARREL OR TANK IN FILTER FABRIC, AND PLACE THE SUCTION HOSE INSIDE THE BARREL OR TANK. WATER WILL FILTER INTO THE BARREL OR TANK AND THEN BE PUMPED TO THE SEWER LINE ALONG THE SOUTH SIDE OF THE MVE TIRE RECYCLING CENTER FACILITY BUILDING.
- 4) UPON PUMPING AS MUCH WATER AS POSSIBLE (LESS THAN 1 FT ABOVE SETTLED BIOSOLIDS), THE CONTRACTOR MAY CONDUCT A CONTROLLED BERM BREACH.
- 5) PRIOR TO THE BERM BREACH, THE CONTRACTOR MUST INSTALL ROCK CHECKS AND SILT FENCE BELOW THE BREACH LOCATION AS SHOWN, ON THIS SHEET.
- 6) BIOSOLIDS SHALL BE GIVEN ADEQUATE TIME TO DRY AND CONSOLIDATE TO ALLOW EQUIPMENT TO OPERATE IN THE LAGOON BOTTOM. THE CONTRACTOR MAY UTILIZE STIRRING AND AERATING EQUIPMENT TO PROMOTE FURTHER DEWATERING AND DRYING. SHOULD ODOR BECOME AN ISSUE DURING THE DEWATERING AND DRYING PROCESS, A SUFFICIENT AMOUNT OF HYDRATED LIME SHALL BE ADDED AND MIXED WITH THE BIOSOLIDS.
- 7) AFTER SOIL SLUDGE MIXING IS COMPLETE, THE LAGOON CELL SHALL BE GRADED TO DRAIN PER THE FINISH GRADES SHOWN ON THIS PLAN.
- 8) THE CONTRACTOR SHALL UTILIZE MATERIAL FROM THE DESIGNATED BORROW AREA TO FILL THE LAGOON TO THE PROPOSED GRADES SHOWN ON THIS SHEET. PROPOSED GRADING FOR THE BORROW AREA IS ON SHEET C-8.
- 9) CONSULT SPECIFICATION SECTION 02920 FOR SEEDING.
- 10) THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND SUBMITTING LAND APPLICATION RECORDS DURING CLOSEOUT OF THE FACILITY.
- 11) AFTER FERTILIZING AND SEEDING PER SECTION 02920, THE DISTURBED AREA FOR THE MVE LAGOON CLOSURE SHALL BE MULCHED ACCORDING TO THE FOLLOWING SPECIFICATION: MULCH SHALL BE THE CEREAL STRAW FROM STALKS OF OATS, RYE, WHEAT OR BARLEY, WHICH IS CLEAN, BRIGHT, AND FREE OF MOLD. THE STRAW MULCH SHALL BE DRY AND RELATIVELY FREE OF UNDESIRABLE SEED AND FOREIGN MATERIAL. THE MULCH SHALL BE BLOWN ONTO THE DISTURBED AREAS WITH A STRAW BLOWER AT THE APPLICATION RATE OF APPROXIMATELY 2 TONS PER ACRE. IMMEDIATELY AFTER PLACEMENT OF THE MULCH, THE ENTIRE MULCHED AREA SHALL BE TACKED BY CRIMPING IN BOTH DIRECTIONS OR TACKING BY ANY OTHER METHOD APPROVED BY THE ENGINEER. THIS APPLIES TO THE LAGOON AREA AND THE BORROW AREA.





- GENERAL**
- 1) EROSION CONTROL SHALL BE PLACED PRIOR TO LAND DISTURBANCE ACTIVITIES.
 - 2) CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL PRIOR TO CUTTING SOIL FOR FILL IN MVE TIRE RECYCLING FACILITY LAAGON. CONTRACTOR WILL SPREAD TOPSOIL BACK OVER DISTURBED BORROW AREA AND SEED PER SPECIFICATION SECTION 02920.
 - 3) CONTRACTOR UPON FINISHING CUTTING FOR FILL SHALL GRADE BORROW AREA TO DRAIN WITH NO SLOPES STEEPER THAN 3H:1V.
 - 4) ANY DEBRIS, BLOCKS, CABLES, PIPE, STRUCTURES, FENCE, ETC. UNCOVERED DURING BORROW AREA GRADING ACTIVITIES SHALL BE LOADED AND REMOVED FROM SITE AND DISPOSED BY CONTRACTOR.
 - 5) NO EXCAVATION SHALL OCCUR WITHIN THE DRIP LINE OF ANY TREE HAVING A DIAMETER GREATER THAN 6" WITHOUT PRIOR APPROVAL FROM THE ENGINEER AND THE DEPARTMENT OF CORRECTIONS.
 - 6) THE CONTRACTOR SHALL UTILIZE THE EXISTING MANHOLE LOCATED AT THE SOUTHWEST CORNER OF THE MVE FACILITIES BUILDING AS A BENCHMARK. REFER TO SHEET C-6.



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DEPARTMENT OF
CORRECTIONS

CLOSURE OF MULTIPLE LAGOONS AND WELLS

CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
SITE # MVE TIRE RECYCLING CENTER
FACILITY # LAGOON CELL

REVISION: MDNR REVIEW NO. 1
DATE: 8/21/2020
REVISION: ALLSTATE
DATE: 10/12/2022
REVISION:
DATE:
ISSUE DATE: 07/10/2020

CAD DWG FILE: SURVEY-BASE CHURCH FARM
 DRAWN BY: MJF
 CHECKED BY: RCS
 DESIGNED BY: CDS & SL

SHEET TITLE

BORROW AREA
GRADING PLAN

SHEET NUMBER:

C-8

SHEET 8 OF 13
07/10/2020



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DATE: 10/12/2022
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ISSUE DATE: 07/10/2020

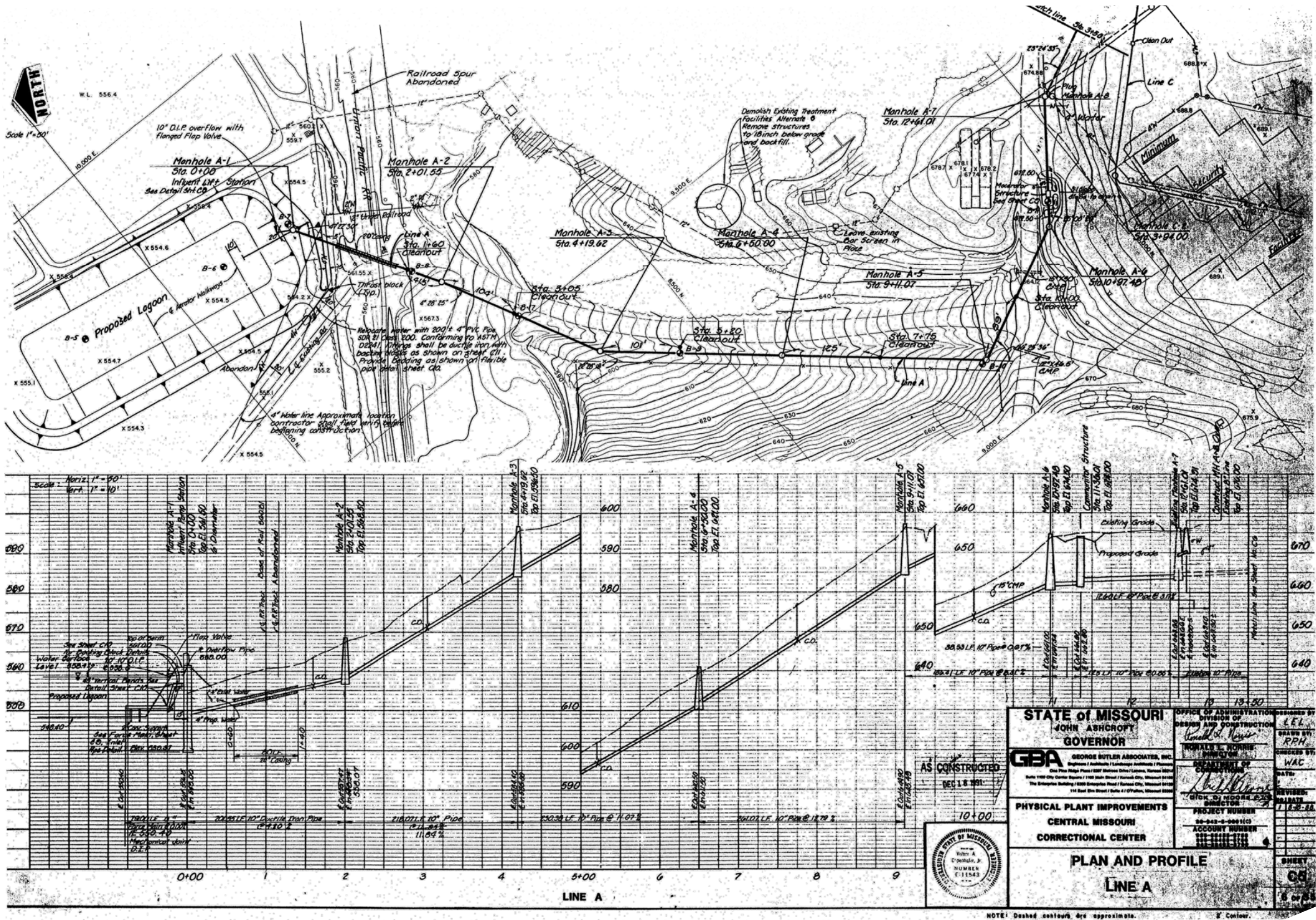
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DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:
RECORD SANITARY
SEWER LINE A
PLAN & PROFILE

SHEET NUMBER:

C-9

SHEET 9 OF 13
07/10/2020



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CLOSURE OF
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AND WELLS

CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
SITE # MVE TIRE RECYCLING CENTER
FACILITY # LAGOON CELL

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

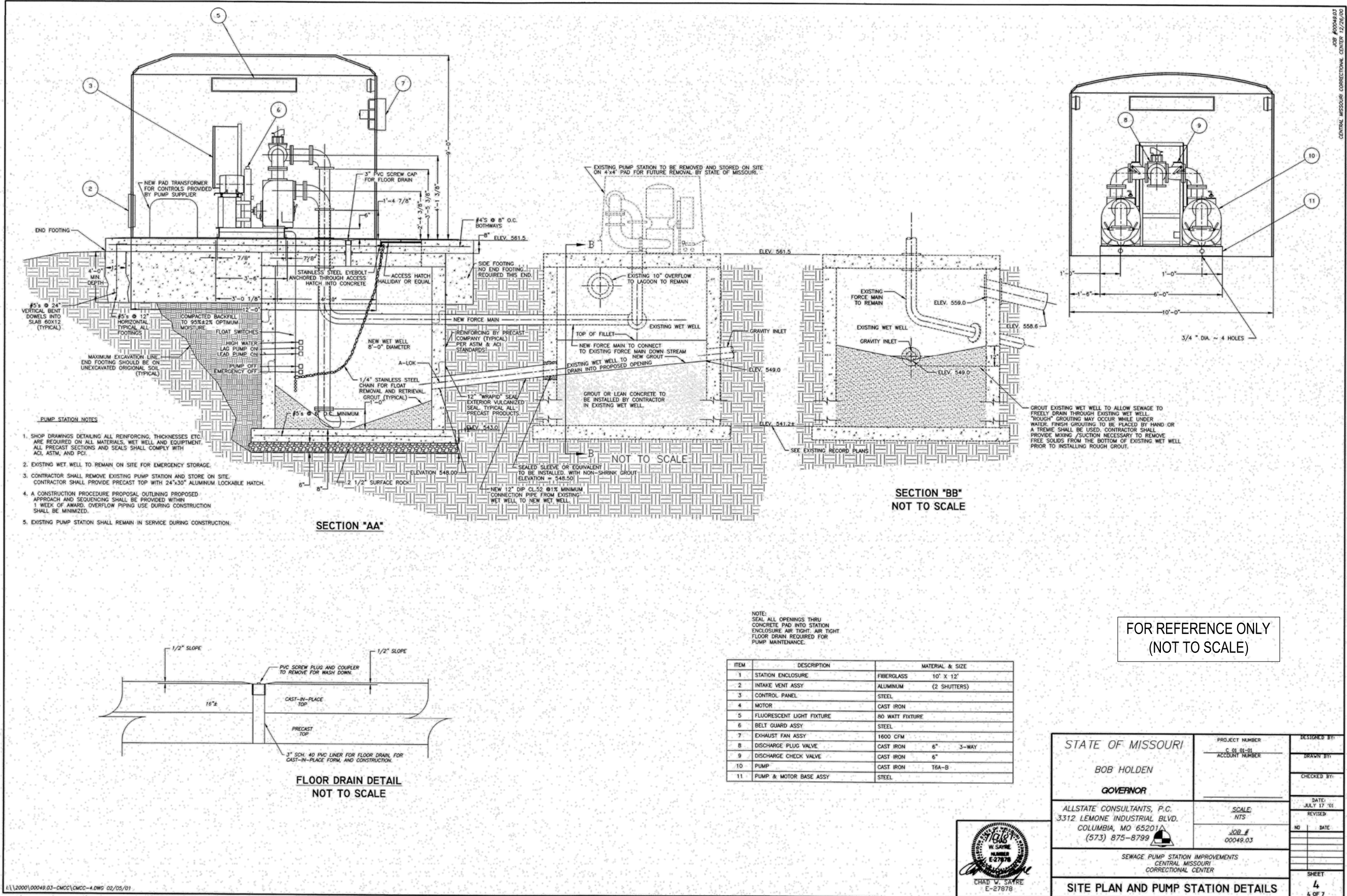
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DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:
RECORD PUMP STATION
SITE PLAN AND DETAILS

SHEET NUMBER:

C-10

SHEET 10 OF 13
07/10/2020





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2580 MO-179
JEFFERSON CITY, MO

PROJECT # C1919-01
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FACILITY # LAGOON CELL

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

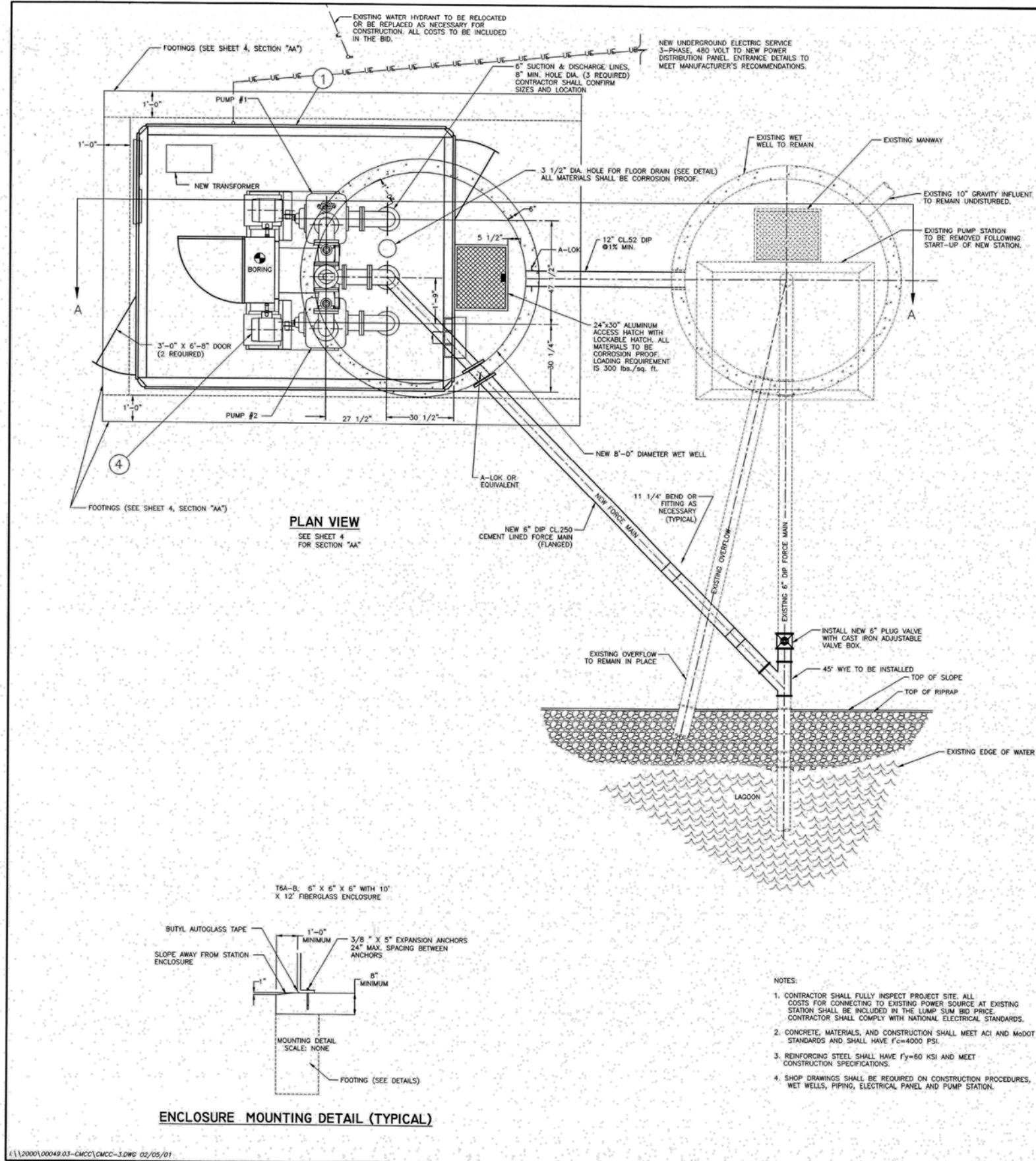
CAD DWG FILE:SURVEY-BASE CHURCH FARM
DRAWN BY: MJP
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:
RECORD PUMP STATION
SITE PLAN AND DETAILS

SHEET NUMBER:

C-11

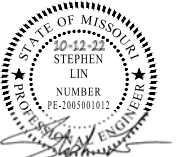
SHEET 11 OF 13
07/10/2020



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| | | |
|--|------------------------------|----------------------|
| STATE OF MISSOURI | PROJECT NUMBER C 01 01-01 | DESIGNED BY: |
| BOB HOLDEN | ACCOUNT NUMBER | DRAWN BY: |
| GOVERNOR | | CHECKED BY: |
| ALLSTATE CONSULTANTS, P.C. 3312 LEMONE INDUSTRIAL BLVD. COLUMBIA, MO 65201 (573) 875-8799 | SCALE NTS | DATE: JULY 17 '01 |
| SEWAGE PUMP STATION IMPROVEMENTS CENTRAL MISSOURI CORRECTIONAL CENTER | JOB # 00049.03 | REVISOR |
| SITE PLAN AND PUMP STATION DETAILS | | NO. DATE |
| | | SHEET 3 3 OF 7 |



STEPHEN LIN, P.E.
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2580 MO-179
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CAD DWG FILE: SURVEY-BASE CHURCH FARM
DRAWN BY: MIF
CHECKED BY: RCS
DESIGNED BY: CDS & SL

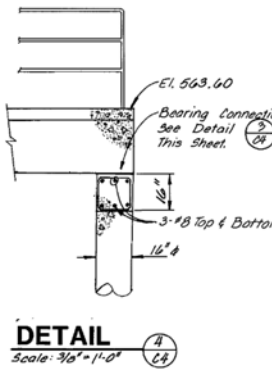
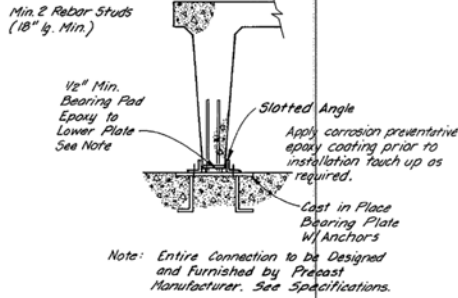
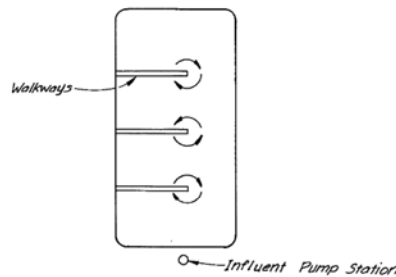
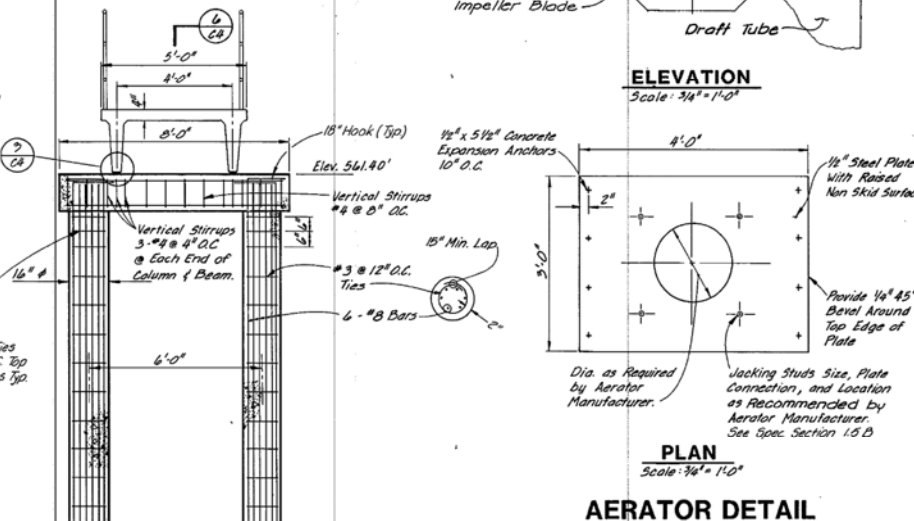
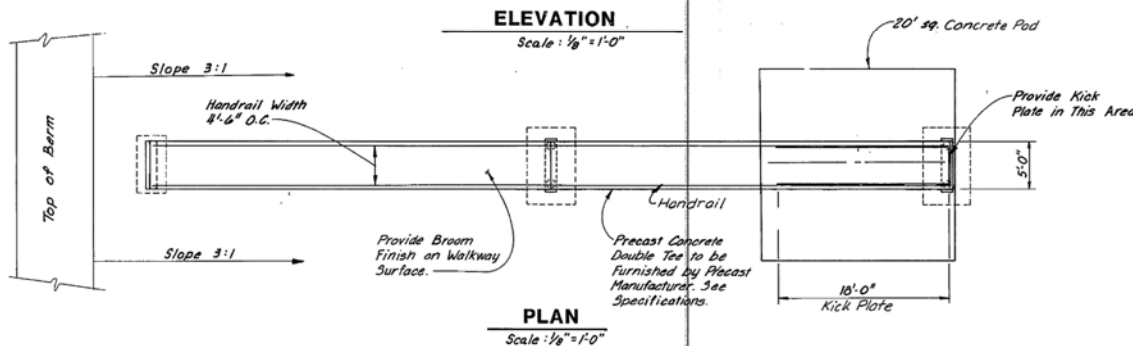
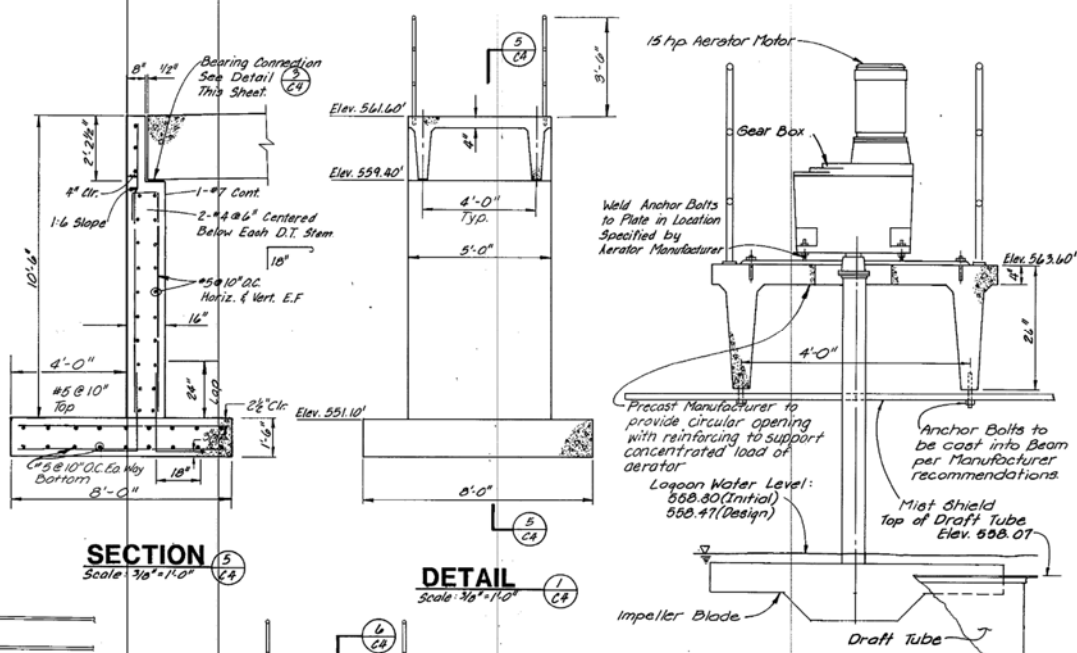
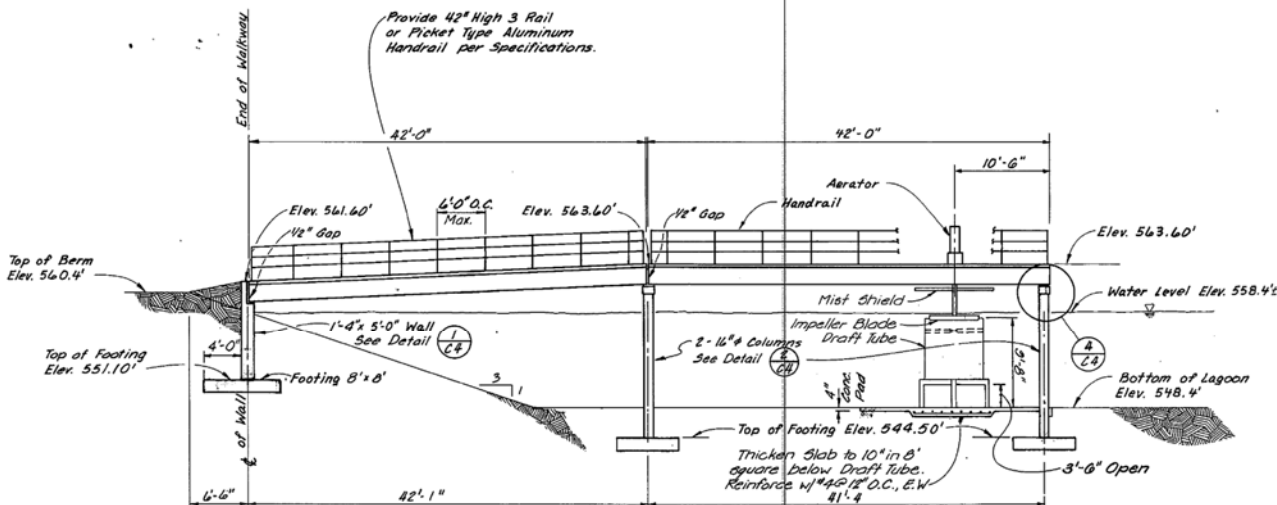
SHEET TITLE:

RECORD LAGOON DETAILS

SHEET NUMBER:

C-12

SHEET 12 OF 13
07/10/2020



AS CONSTRUCTED
DEC 18 1991

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|--|--|---|--|-------------------------------|--|
| STATE OF MISSOURI JOHN ASHCROFT GOVERNOR | | OFFICE OF ADMINISTRATION DIVISION OF DESIGN AND CONSTRUCTION RONALD L. MORRIS DIRECTOR | | DESIGNED BY: L.E.L. | |
| GBA GEORGE BUTLER ASSOCIATES, INC. Engineers / Architects / Landscape Architects / Planners One First Ridge Plaza / 15001 Main Street / Kansas City, Missouri 64114 Suite 1100 City Center Square / 1100 Main Street / Kansas City, Missouri 64109 The Enterprise Building / 6300 Enterprise Road / Kansas City, Missouri 64120 114 East Elm Street / Suite 410 / Kansas City, Missouri 64108 | | DEPARTMENT OF CORRECTIONS DICK D. MOORE DIRECTOR | | DRAWN BY: T.O. | |
| PHYSICAL PLANT IMPROVEMENTS CENTRAL MISSOURI CORRECTIONAL CENTER | | PROJECT NUMBER 30-042-S-0001(C) | | CHECKED BY: WAC | |
| | | ACCOUNT NUMBER 830-00455-0753 830-00455-0754 830-00455-0755 | | DATE: 7/8/28 | |
| | | REVISION: NO DATE | | REVISION: NO DATE | |
| | | SHEET C4 | | 5 of 35 | |

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2301-26027-1991-1218-C004

Appendix J

**Well Closure Plans
&
Profiles**



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**DEPARTMENT OF
CORRECTIONS**

**CLOSURE OF
MULTIPLE LAGOONS
AND WELLS**

**CENTRAL MISSOURI
CORRECTIONAL CENTER
2580 MO-179
JEFFERSON CITY, MO**

**PROJECT # C1919-01
SITE # CMCC
FACILITY # WELL #1
WELL #3 & WELL #4**

REVISION:MDNR REVIEW NO. 1
DATE:8/21/2020
REVISION:ALLSTATE
DATE:10/12/2022
REVISION:
DATE:
ISSUE DATE:07/10/2020

CAD DWG FILE:19142.02 WELL CLOSURE PLAN
DRAWN BY: MIF
CHECKED BY: RCS
DESIGNED BY: CDS & SL

SHEET TITLE:

**WELL CLOSURE
PLANS AND PROFILES**

SHEET NUMBER:

C-13

SHEET 13 OF 13
07/10/2020

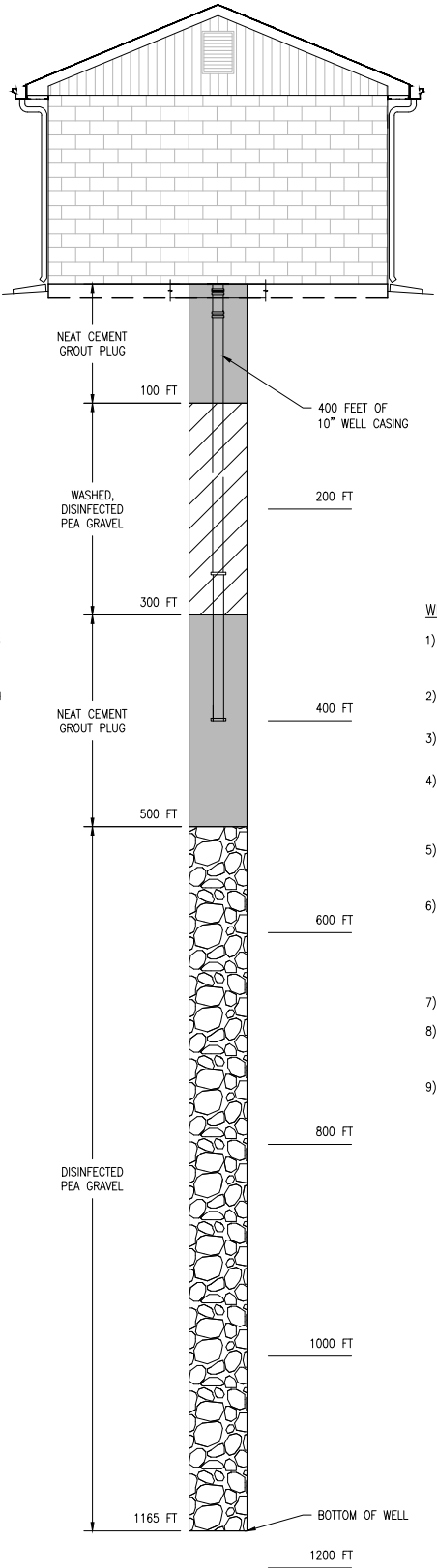
GENERAL NOTES:

- 1) PLUGGING MUST BE COMPLETED BY A PERMITTED MISSOURI WELL OR PUMP INSTALLATION CONTRACTOR (STANDARDS FOR NON-COMMUNITY PUBLIC WATER SUPPLIES 1982, 3.5.10 AND MINIMUM DESIGN STANDARDS FOR MISSOURI COMMUNITY WATER SYSTEMS, 3.5.2.13).
- 2) THE CONTRACTOR SHALL FOLLOW MDNR REGULATIONS FOR WELL CLOSURE AND PROVIDE A CONTACT NUMBER FOR WELLHEAD PROTECTION IN ADVANCE OF PLUGGING THE WELL.
- 3) THE CONTRACTOR SHALL SUBMIT THEIR CLOSURE PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER AND MDNR.
- 4) THE CONTRACTOR SHALL SUBMIT A WELL PLUGGING REGISTRATION RECORD FOR EACH WELL WITHIN 60 DAYS FOLLOWING PLUGGING COMPLETION.
- 5) THE NEAT CEMENT GROUT PLUG SHALL BE MIXED AT A RATIO OF NOT MORE THAN SIX GALLONS OF WATER PER 94-POUND BAG OF CEMENT.
- 6) THE CONTRACTOR SHALL COORDINATE WITH THE OFFICE OF ADMINISTRATION FACILITIES MANAGEMENT, DESIGN & CONSTRUCTION TO PROPERLY DISPOSE OF REMAINING BARRELS OF CHEMICALS IN THE WELL HOUSES.

LEGEND:

| | |
|--------------------------------|--|
| NEAT CEMENT GROUT PLUG | |
| WASHED, DISINFECTED PEA GRAVEL | |
| DISINFECTED PEA GRAVEL | |

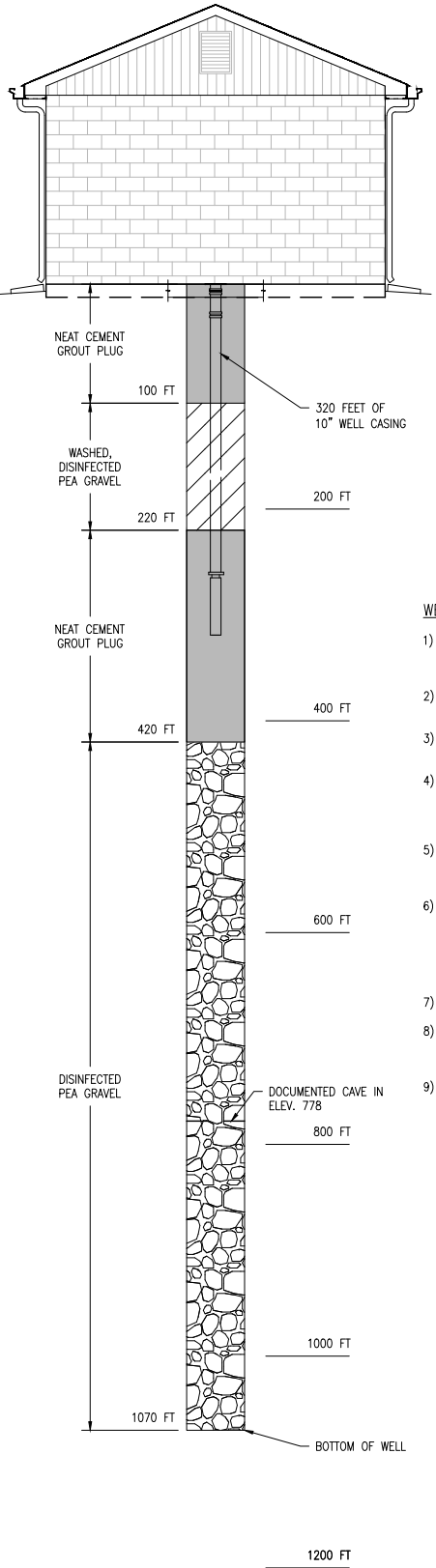
WELL #4 (BACK WELL)
DRILLED IN 1981



WELL #4 (BACK WELL) NOTES:

- 1) REMOVE ALL MATERIALS (INCLUDING PUMPS AND PIPES), DEBRIS AND OBSTRUCTIONS THAT MAY INTERFERE WITH PLUGGING OPERATIONS FROM WELL.
- 2) REMOVE THE CONCRETE PAD AND CUT THE WELL CASING FLUSH WITH THE CONCRETE FLOOR OF THE BUILDING.
- 3) FILL THE WELL WITH DISINFECTED PEA GRAVEL FROM THE BOTTOM OF THE WELL TO 500 FEET BELOW GROUND SURFACE.
- 4) PLACE A GROUT PLUG USING NEAT CEMENT GROUT FROM 500 FEET BELOW GROUND SURFACE TO 300 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. THE GROUT PLUG MUST TOTAL 200 FEET.
- 5) FILL THE WELL WITH WASHED, DISINFECTED PEA GRAVEL FROM 300 FEET BELOW GROUND SURFACE TO 100 FEET BELOW GROUND SURFACE.
- 6) PLACE A SECOND GROUT PLUG USING NEAT CEMENT GROUT FROM 100 FEET BELOW GROUND SURFACE TO 2 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. IF THERE IS NO WATER IN THE CASING IN THIS INTERVAL, THE GRAVITY METHOD CAN BE USED. THE GROUT PLUG MUST TOTAL 100 FEET.
- 7) FILL THE REMAINING AREA WITH NEAT CEMENT OR CONCRETE.
- 8) ALTERNATIVELY, THE WELL CAN BE PLUGGED FULL LENGTH WITH NEAT CEMENT GROUT USING ON ONE OF THE TREMIE OR REVERSE TREMIE METHODS.
- 9) SUBMIT A WELL PLUGGING REGISTRATION RECORD WITHIN 60 DAYS AFTER THE PLUGGING IS COMPLETED.

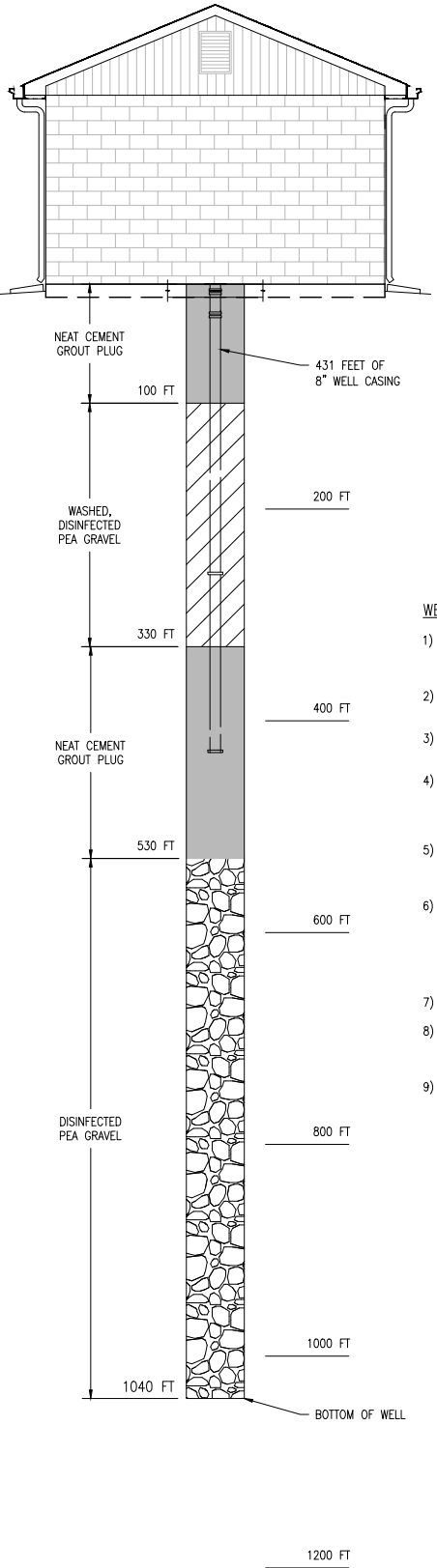
WELL #3 (ENTRANCE GATE)
DRILLED IN 1966



WELL #3 (ENTRANCE GATE) NOTES:

- 1) REMOVE ALL MATERIALS (INCLUDING PUMPS AND PIPES), DEBRIS AND OBSTRUCTIONS THAT MAY INTERFERE WITH PLUGGING OPERATIONS FROM WELL.
- 2) REMOVE THE CONCRETE PAD AND CUT THE WELL CASING FLUSH WITH THE CONCRETE FLOOR OF THE BUILDING.
- 3) FILL THE WELL WITH DISINFECTED PEA GRAVEL FROM THE BOTTOM OF THE WELL TO 420 FEET BELOW GROUND SURFACE.
- 4) PLACE A GROUT PLUG USING NEAT CEMENT GROUT FROM 420 FEET BELOW GROUND SURFACE TO 220 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. THE GROUT PLUG MUST TOTAL 200 FEET.
- 5) FILL THE WELL WITH WASHED, DISINFECTED PEA GRAVEL FROM 220 FEET BELOW GROUND SURFACE TO 100 FEET BELOW GROUND SURFACE.
- 6) PLACE A SECOND GROUT PLUG USING NEAT CEMENT GROUT FROM 100 FEET BELOW GROUND SURFACE TO 2 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. IF THERE IS NO WATER IN THE CASING IN THIS INTERVAL, THE GRAVITY METHOD CAN BE USED. THE GROUT PLUG MUST TOTAL 100 FEET.
- 7) FILL THE REMAINING AREA WITH NEAT CEMENT OR CONCRETE.
- 8) ALTERNATIVELY, THE WELL CAN BE PLUGGED FULL LENGTH WITH NEAT CEMENT GROUT USING ON ONE OF THE TREMIE OR REVERSE TREMIE METHODS.
- 9) SUBMIT A WELL PLUGGING REGISTRATION RECORD WITHIN 60 DAYS AFTER THE PLUGGING IS COMPLETED.

WELL #1 (POWER PLANT)
DRILLED IN 1938



WELL #1 (POWER PLANT) NOTES:

- 1) REMOVE ALL MATERIALS (INCLUDING PUMPS AND PIPES), DEBRIS AND OBSTRUCTIONS THAT MAY INTERFERE WITH PLUGGING OPERATIONS FROM WELL.
- 2) REMOVE THE CONCRETE PAD AND CUT THE WELL CASING FLUSH WITH THE CONCRETE FLOOR OF THE BUILDING.
- 3) FILL THE WELL WITH DISINFECTED PEA GRAVEL FROM THE BOTTOM OF THE WELL TO 530 FEET BELOW GROUND SURFACE.
- 4) PLACE A GROUT PLUG USING NEAT CEMENT GROUT FROM 530 FEET BELOW GROUND SURFACE TO 330 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. THE GROUT PLUG MUST TOTAL 200 FEET.
- 5) FILL THE WELL WITH WASHED, DISINFECTED PEA GRAVEL FROM 330 FEET BELOW GROUND SURFACE TO 100 FEET BELOW GROUND SURFACE.
- 6) PLACE A SECOND GROUT PLUG USING NEAT CEMENT GROUT FROM 100 FEET BELOW GROUND SURFACE TO 2 FEET BELOW GROUND SURFACE USING ONE OF THE TREMIE OR REVERSE TREMIE METHODS. IF THERE IS NO WATER IN THE CASING IN THIS INTERVAL, THE GRAVITY METHOD CAN BE USED. THE GROUT PLUG MUST TOTAL 100 FEET.
- 7) FILL THE REMAINING AREA WITH NEAT CEMENT OR CONCRETE.
- 8) ALTERNATIVELY, THE WELL CAN BE PLUGGED FULL LENGTH WITH NEAT CEMENT GROUT USING ON ONE OF THE TREMIE OR REVERSE TREMIE METHODS.
- 9) SUBMIT A WELL PLUGGING REGISTRATION RECORD WITHIN 60 DAYS AFTER THE PLUGGING IS COMPLETED.

Appendix K

**Well Logs, Well/Intake Data,
&
Environmental Assessment Documents
—
CMCC Multiple Wells**

Central MO Correctional Center

Overview Map (Aerial)

PWSS No. 3069008 - 1 Well, Cole County

Map Prepared: Sep 13, 2019

Data Release: Aug 6, 2019



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



Groundwater System

● System Well

Source Water Protection Boundary

○ 20-Year Time of Travel

○ Half-Mile Buffer



0 1800 3600



Feet

SWAP - Source Water Assessment Plan -

<http://dnr.missouri.gov/swap>

Aerial Photos: Bing Maps, Microsoft, Sep 13, 2019.

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Central MO Correctional Center

Overview Map (Topo)

PWSS No. 3069008 - 1 Well, Cole County

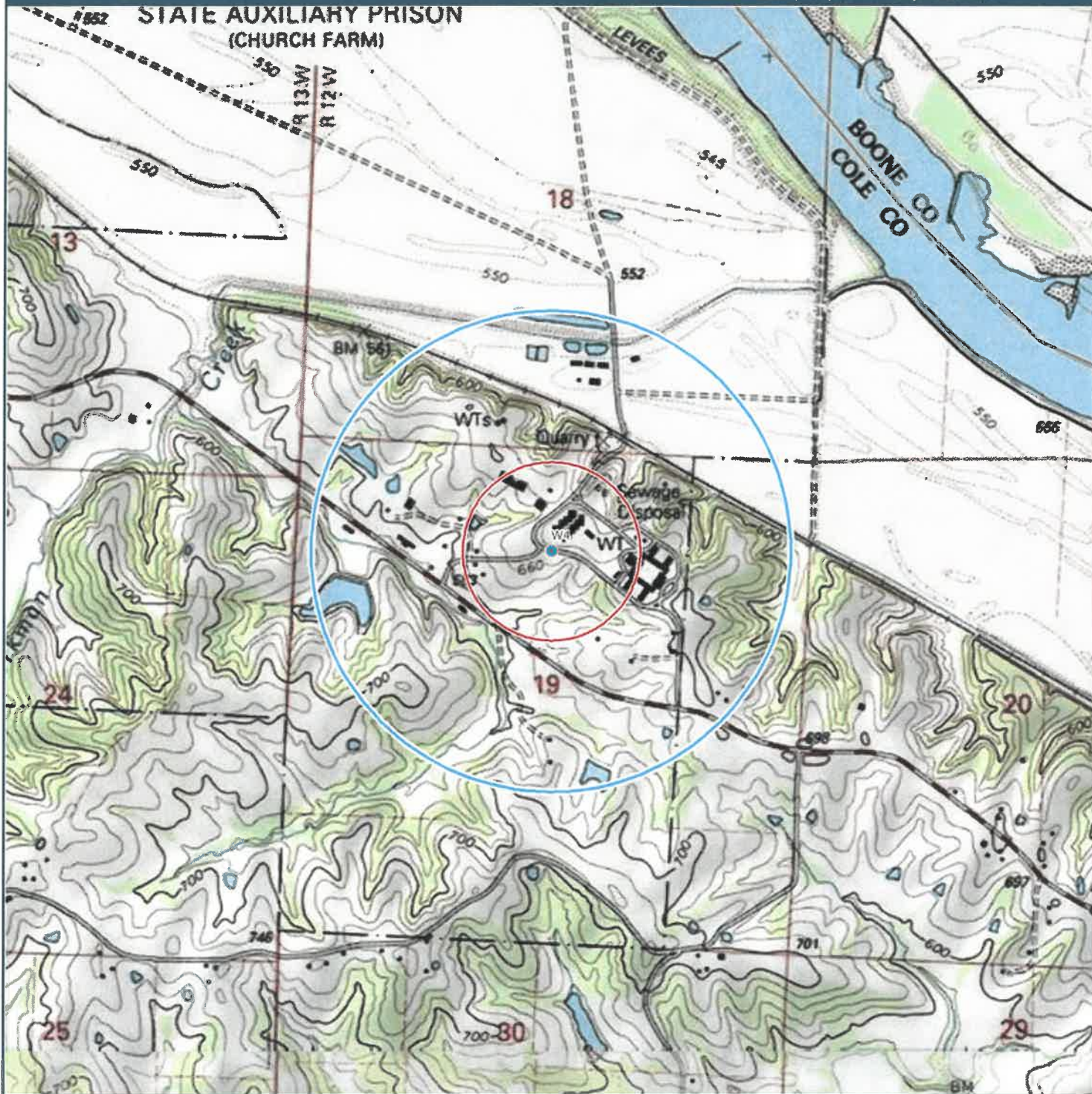
Map Prepared: Sep 13, 2019

Data Release: Aug 6, 2019



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension



Groundwater System

- System Well

Source Water Protection Boundary

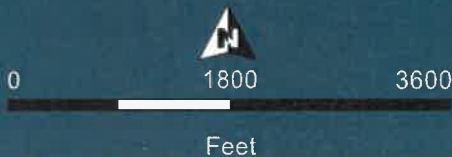
- 20-Year Time of Travel
- Half-Mile Buffer

SWAP - Source Water Assessment Plan -

<http://dnr.mo.gov/swap/swap.html>

For basemap symbols, see the U.S. Geological Survey

(USGS) publication: <http://pubs.usgs.gov/of/2005/of05-109/>



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Central MO Correctional Center

Well/Intake Data - PWSS No. 3069008
Cole County, Sheet 1 of 1

Sheet Prepared: Sep 13, 2019



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

| | |
|--|--------------------------------|
| Well Number | W4 |
| Local Well Name | Well #4, Back Well |
| Well ID # | 13312 |
| DGLS ID # | 0028486 |
| Status | Active |
| Latitude | 38.640070 |
| Longitude | -92.280990 |
| 8-Digit Hydrologic Unit | 10300102 |
| County | Cole |
| MoDNR Region | Central |
| Groundwater Province ¹ | Salem Plateau Groundwater Prov |
| Source Aquifer(s) ² | Ozark aquifer |
| Confined/Unconfined ³ | Unconfined |
| Regional Drilling Area ⁴ | Area 1 |
| Total Dissolved Solids Code ⁵ | TDS8 |
| Date Drilled (year) | 1981 |
| Material (C/U) | Consolidated |
| Casing Base Formation | Gasconade |
| Total Depth Formation | Elvins |
| Total Depth | 1200 |
| Ground Elevation (ft) | 671 |
| Casing Depth (ft) | 400 |
| Casing Size (in) | 10 |
| Casing Type | Steel |
| Screen Length (ft) | _____ |
| Screen Size (in) | _____ |
| Static Water Level (ft) | 200 |
| Well Yield (gpm) | 200 |
| Head (ft) | 400 |
| Draw Down (ft) | 50 |
| Pump Test Date (year) | _____ |
| Pump Type | Line Shaft |
| Pump Manufacturer | _____ |
| Pump Depth (ft) | 600 |
| Pump Capacity (gpm) | 300 |
| Pump Meter (Y/N) | _____ |
| GWUDISW (Y/N) | N |
| Surface Drainage | _____ |
| State Approved (Y/N) | Y |
| Liquefaction Risk | Low |
| Landslide Risk | Low |
| Collapse Risk | Low |
| Flood Risk | Low |
| Surface Contamination Risk | Moderate |
| Conduit Flow Risk ⁶ | K1 |

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Central MO Correctional Center

Contaminant Summary

PWSS No. 3069008

Sheet Prepared: Sep 13, 2019



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

3 potential contaminant sources in the listed databases (multiple databases may list the same contaminant source):

| Database | Database |
|---|---|
| ACRES (Assessment, Cleanup And Redevelopment Exchange System) | MN-TEMPO (Minnesota - Permitting, Compliance, & Enforcement) |
| AIR (Integrated Compliance Information System-Air) | ✓ MO-DNR (Missouri Department Of Natural Resources) |
| AIRS/AFS (Air Facility System) | NCDB (National Compliance Database) |
| AIRS/AQS (Air Quality System) | ✓ NPDES (National Pollutant Discharge Elimination System) |
| BR (Biennial Reporters) | OTAQREG (Office Of Transportation And Air Quality Fuels Registration) |
| BRAC (Base Realignment And Closure) | RADINFO (Radiation Information System) |
| CAMDBS (Clean Air Markets Division Business Systems) | RBLC (Rac/Bact/Laer Clearinghouse) |
| CEDRI (Compliance And Emissions Data Reporting Interface) | RCRAINFO (Resource Conservation And Recovery Act Information System) |
| ECRM (Enforcement Criminal Records Management) | RFS (Renewable Fuel Standard) |
| E-GGRT (Electronic Greenhouse Gas Reporting Tool) | RMP (Risk Management Plan) |
| EGRID (Emissions & Generation Resource Integrated Database) | SEMS (Superfund Enterprise Management System) |
| EIA-860 (Energy Information Administration-860 Database) | SFDW (Safe Drinking Water Information System) |
| EIS (Emission Inventory System) | SSTS (Section Seven Tracking System) |
| FFDOCKET (Federal Facility Hazardous Waste Compliance Docket) | STATE (State Systems) |
| ICIS (Integrated Compliance Information System) | TRIS (Toxics Release Inventory System) |
| LMOP (Landfill Methane Outreach Program) | TSCA (Toxic Substances Control Act) |
| LUST-ARRA (Leaking Underground Storage Tank - American Recovery And Reinvestment Act) | ✓ SWIP (Source Water Inventory Project Field Inventory - see below) |

6 potential contaminant sources in the SWIP Field Inventory:

| Count | Site Type | Count | Site Type |
|-------|------------------------------------|-------|------------------------------------|
| 0 | Airport or abandoned airfield | 0 | Laundromat |
| 0 | Animal feedlot | 0 | Livestock auction |
| 0 | Apartments and condominiums | 0 | Machine or metalworking shop |
| 0 | Asphalt plant | 0 | Manufacturing (general) |
| 0 | Auto repair shop | 0 | Material stockpile (industrial) |
| 0 | Automotive dealership | 0 | Medical institution |
| 0 | Barber and beauty shop | 0 | Metal production facility |
| 0 | Boat yard and marina | 0 | Mining operation |
| 0 | CAFO | 0 | Other |
| 0 | Campground | 0 | Paint store |
| 0 | Car wash | 0 | Park land |
| 0 | Cement Plant | 0 | Parking lot |
| 0 | Cemetery | 0 | Petroleum production or storage |
| 0 | Communication equipment mfg | 0 | Pharmacies |
| 0 | Country club | 0 | Photography shop or processing lab |
| 0 | Dry cleaner | 0 | Pit toilet |
| 0 | Dumping and/or burning site | 0 | Plastic material and synthetic mfg |
| 0 | Electric equipment mfg or storage | 0 | Print shop |
| 0 | Electric substation | 0 | Railroad yard |
| 0 | Farm machinery storage | 0 | Recycling/reduction facility |
| 0 | Feed/Fertilizer/Co-op | 0 | Research lab |
| 0 | Fire station | 0 | Restaurant |
| 0 | Funeral service and crematory | 0 | Sawdust pile |
| 0 | Furniture manufacturer | 0 | School |
| 0 | Furniture repair or finishing shop | 0 | Sports and hobby shop |
| 0 | Garden and/or nursery | 0 | Swimming pool |
| 0 | Garden, nursery, and/or florist | 0 | Tailing pond |
| 0 | Gasoline service station | 3 | Tank (above-ground fuel) |
| 0 | Golf courses | 0 | Tank (other) |
| 0 | Government office | 0 | Tank (pesticide) |
| 0 | Grain bin | 0 | Tank (underground fuel) |
| 0 | Hardware and lumber store | 0 | Trucking terminal |
| 0 | Hazardous waste (Federal facility) | 0 | Veterinary service |
| 0 | Highway maintenance facility | 0 | Wastewater treatment facility |
| 0 | Jewelry or metal plating shop | 0 | Well (abandoned) |
| 0 | Junk yard or salvage yard | 0 | Well (domestic) |
| 1 | Lagoon (commercial) | 0 | Well (irrigation) |
| 0 | Lagoon (industrial) | 0 | Well (livestock) |
| 0 | Lagoon (municipal) | 0 | Well (monitoring) |
| 2 | Lagoon (residential) | 0 | Well (public water supply) |
| 0 | Landfill (municipal) | 0 | Well (unknown) |

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Central MO Correctional Center

Susceptibility Determination
PWSS No. 3069008

Sheet Prepared: Sep 13, 2019



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

The Missouri Department of Natural Resources (MoDNR) has assembled this information to assess the susceptibility of drinking water sources to contamination. There are many unforeseen and unpredictable factors that may cause a source to be contaminated. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source to chemical contamination. For more information, call 1-800-361-4827.

Dots containing numeric values correspond to the number of individual wells or surface water intakes.

Minimally
Susceptible
Moderately
Susceptible
Highly
Susceptible
Undetermined

GROUND WATER

Geological and Hydrogeological Assessment Criteria

Are any system wells deemed by the Public Drinking Water Branch to be under the direct influence of surface water?

Are any system wells potentially prone to karst conditions or solution flow?

Do any system wells draw water from a source with high total dissolved solids (TDS)?

Are any system wells located proximal to known subsurface or groundwater contamination?

Do any system wells draw water from an unconfined aquifer?

Based on known stratigraphic relationships for each well, the risk of contamination from surface sources is:

Well Construction and Maintenance Assessment Criteria

Are all system wells state-approved?

Do any system wells exhibit structural defects, construction deficiencies, or other conditions that might allow contamination to enter the well at the wellhead?

Are security measures in place to prevent unauthorized tampering with all system wells?

Does the system have back-up, emergency power available?

Monitoring Assessment Criteria

Have any system wells exhibited consistent detections for any of the following parameters in raw water?

Volatile Organic Chemicals (VOC):

Synthetic Organic Chemicals (SOC):

Inorganic Compounds (IOC):

Nitrates/Nitrites:

Radionuclides:

Bacteria/Viruses/Microbial Pathogens:

Natural Hazard Assessment Criteria

The number of system wells located in a region prone to flooding.

The number of system wells located in a region that may experience the following conditions in the event of a large-scale earthquake.

Potential liquefaction risk:

Potential landslide risk:

Potential subsurface collapse/instability risk:

Are any system wells prone to declining water levels during a prolonged drought?

Do all system wells have lightning surge protection?

Potential Contaminant Inventory Assessment Criteria

Potential sources of contamination exist within the source water protection area:

A system well is located in an area with a high density of transportation corridors:

A system well is located in an area that may have improperly maintained or faulty on-site septic systems:

Additional Assessment Criteria

Does the system have a wellhead/source water protection plan endorsed by the Department of Natural Resources?

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Central MO Correctional Center

Notes

PWSS No. 3069008

Map Prepared: Sep 13, 2019

Data Release: Aug 6, 2019



MISSOURI
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NATURAL RESOURCES

Prepared by CARES, University of Missouri Extension

- 1 For additional information about Missouri's regional groundwater provinces, please visit the [Missouri Department of Natural Resources' Water Resources Center Web page](#) or contact the [Missouri Geological Survey](#).
- 2 Source aquifers are determined from well log information, where available, and on general water quality characteristics for the regional groundwater province within which each well is located. Source aquifers for wells with little or no well log information are inferred based on best available information.

Additional Source Aquifer Notes:
 - Water sources labeled "Cincinnatian, Pennsylvanian, or Devonian/Silurian" are not regionally extensive aquifer systems in Missouri. These represent isolated, localized water-bearing formations. Broad water quality descriptions are Not currently available for these sources. "Precambrian" water sources exhibit water quality characteristics similar to the St. Francois aquifer.
 - The Springfield Plateau aquifer is regionally extensive only in southwest and west-central Missouri. Aquifers labeled "Mississippian" or "Springfield Plateau (equivalent)" refer to wells that draw water from the same geological formations that comprise the Springfield Plateau aquifer, but are located in areas of the state not hydraulically connected to the regional aquifer system. Broad water quality generalizations are not available for these isolated, localized water-bearing units.
- 3 Unconfined aquifers are generally more vulnerable to surface or shallow subsurface contamination and warrant additional protections around the wellhead. Confined aquifers are not as vulnerable to surface or shallow subsurface contamination, but may exhibit naturally elevated levels of dissolved minerals, radionuclides, or variations in other water quality parameters such as dissolved oxygen and pH.
- 4 Please refer to 10 CSR 23-3.090 and 10 CSR 23-3.100 for additional information about well construction standards for Missouri's regional well drilling areas.
- 5 TDS8 The Ozark aquifer is considered to be fresh water in the region of this well.
- 6 K1 This well is not likely influenced by conduit or solution flow.

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MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY NO 5012

COUNTY COLE

T 45 R 12 W

OWNER Central Mo Corrections Center
Outgoing Prison Farm

FARM CHURCH FARM

WELL NO 1

DRILLER Layne Western

DATE September 1938

ELEVATION 694 (PA)

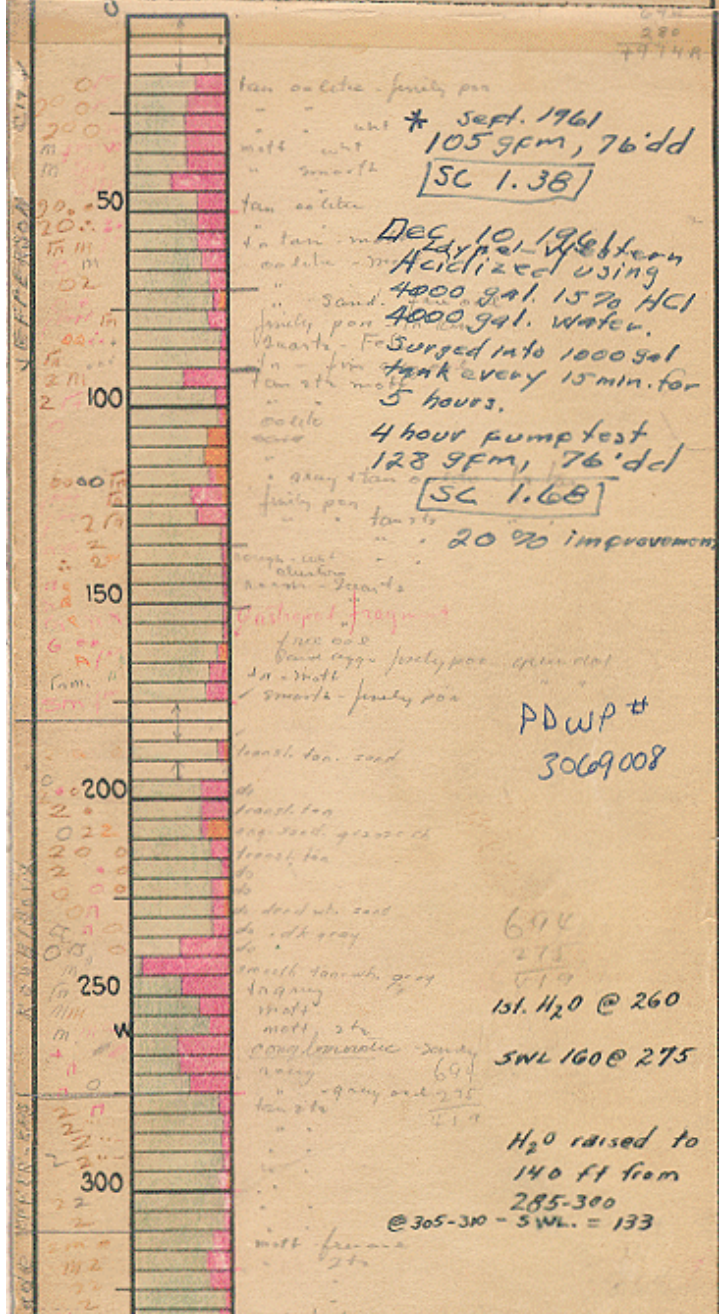
PRODUCTION 24 hr. test 235 gpm. 171 ft. D.D.

SAMPLES STUDIED 32. 1.37 J Grohskopf

E McCracken

REMARKS 431 ft of 8 in w.i. Pipe
Released in '64 @ 431 ft. by L. W.
Sept. 1961 - 192' SWL 87

SAMPLES SAVED



MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO.

MO SURVEY NO 5012

COUNTY Cole

T 45 R 12 W

OWNER Outgoing Prison Farm

FARM Fee

WELL NO 1

DRILLER Layne Western Co.

DATE September 1938

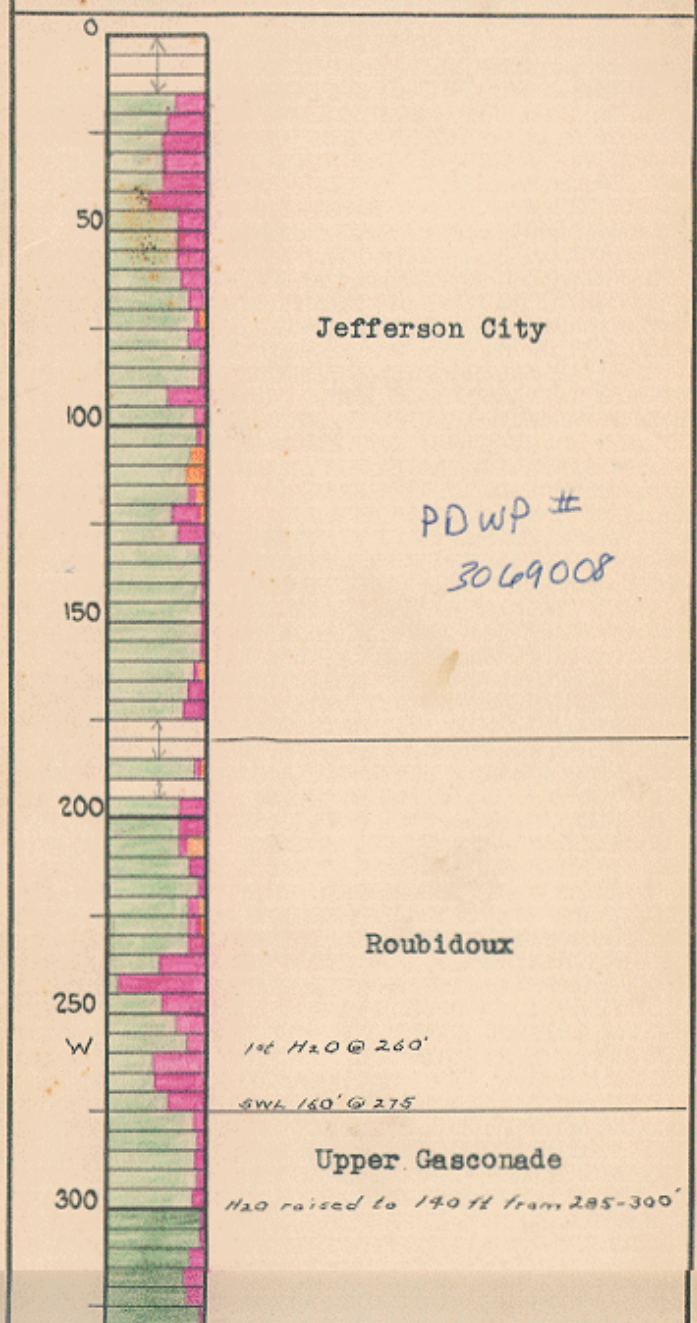
ELEVATION 694

PRODUCTION 24 Hr. 235 G.P.M. (Test)

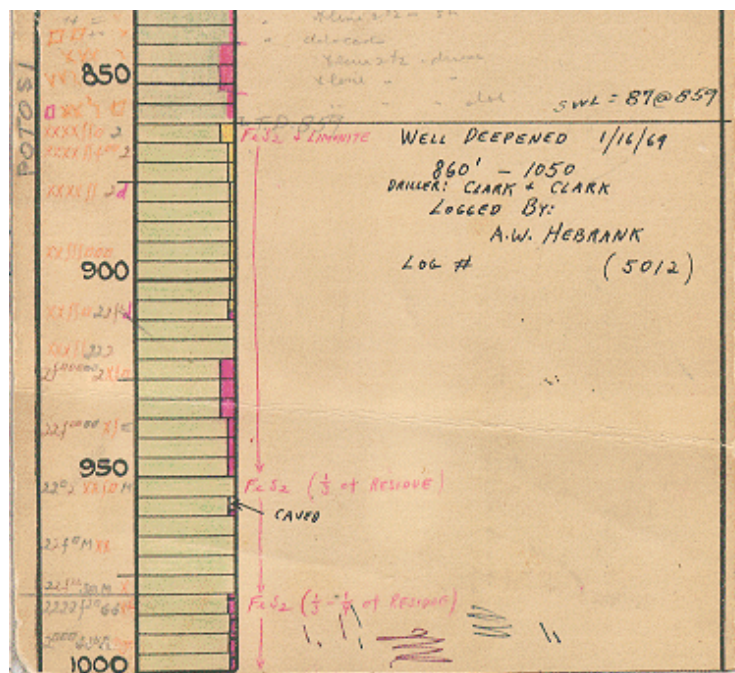
SAMPLES STUDIED (171' D.D.)

McCracken 165 samples.

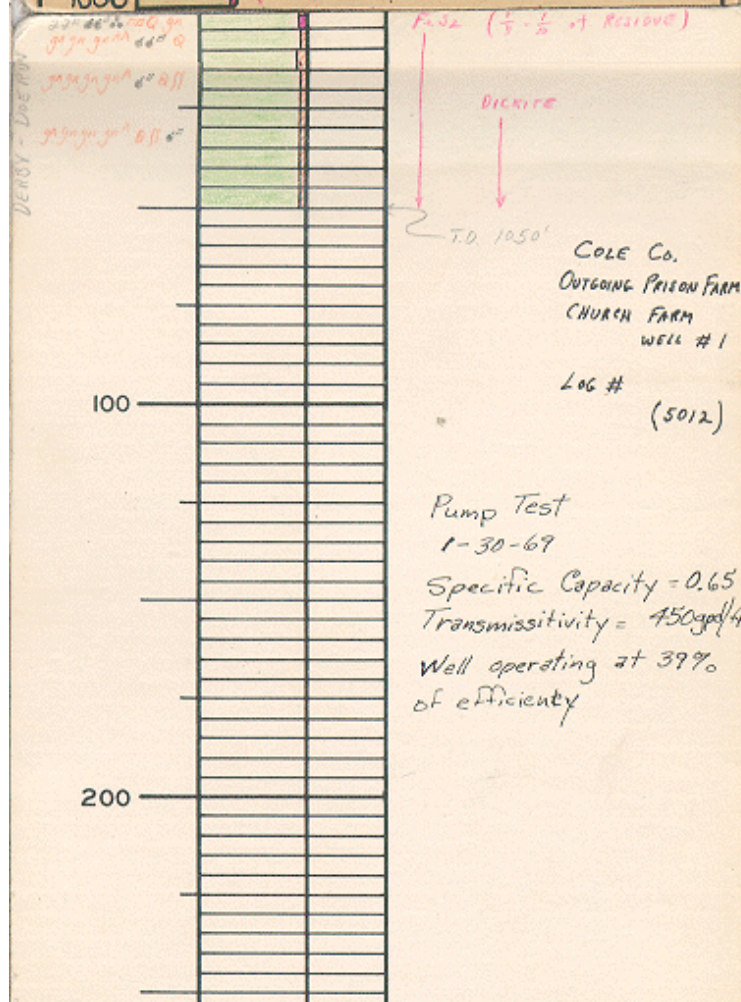
REMARKS 431' 8" of W. I. Pipe
SWL 140 @ 300; 133 @ 310; 123 @ 368; 120 @ 385; 118 @ 430; 96 @ 430; 96 @ 750
S.W.L. - 87' at T.D.







T.D. 859



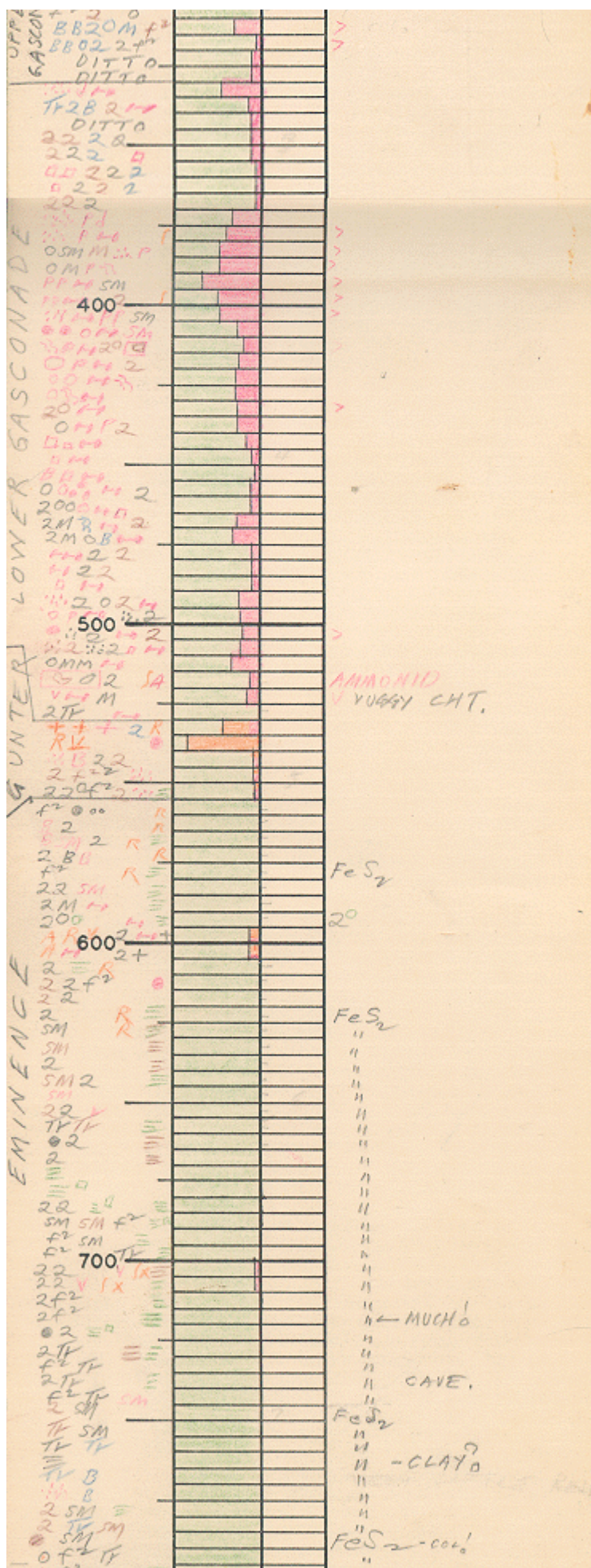
checked +
SCANNED

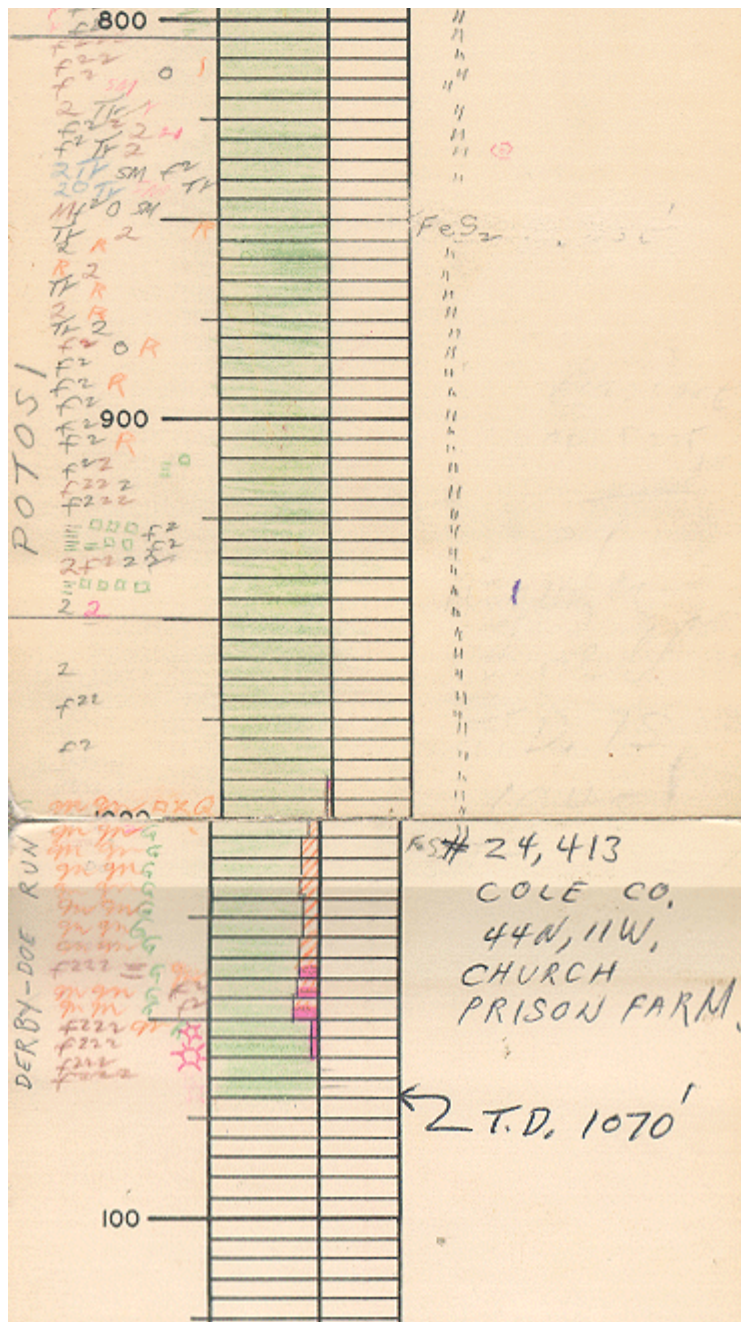
4/18/03

CHEMICAL WATER ANALYSIS PARTS PER MILLION

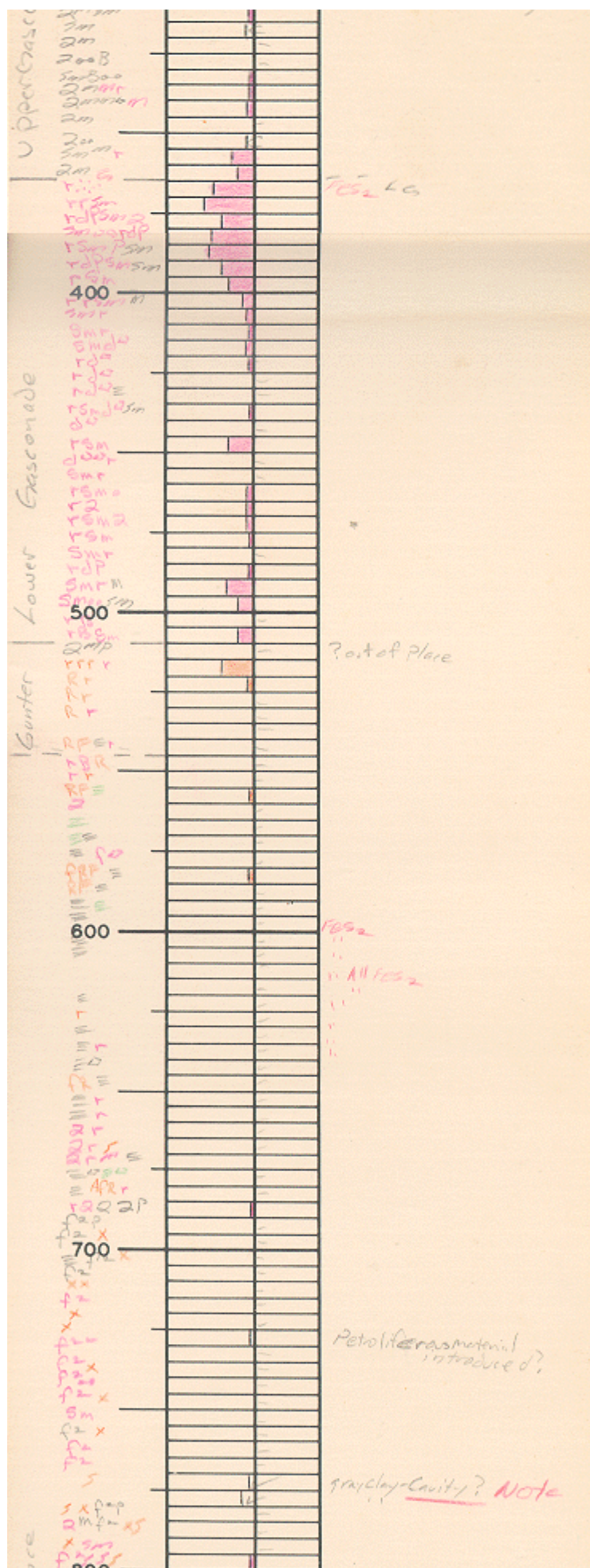
T.D.S. 506.0 Alk _____
Na _____ Cl 25.7
Mg _____ SO₄ 30.6
Ca _____ HCO₃ _____
Hard. _____ Fe _____
Analyst Mo. G.J.
Date 7-12-38 Remarks _____

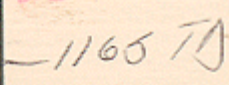
$\frac{1}{3}$





$\frac{1}{3}$





**FLYNN****DRILLING
Services****TELEVISED SURVEYS**

HWY. J, P.O. BOX 265
TROY, MISSOURI 63379
PHONE: 314-528-6137

JOB NAME C.M.C.C. DATE 3-27-97WELL NO. #3 LOCATION CHURCH FARM - WEST WELLCASING SIZE 10 CASING LENGTH 405 SWL 196 WELL DEPTH _____INSPECTED BY DAN B. MO. LIC. NO. _____REASON FOR INSPECTION DETERMINE INTEGRITY OF WELL CASING

NOTES: _____

0-20 AVERAGE20-80 RUST BUILD UP PITS80-196 AVERAGE CASING196 SWL269 LITTLE BUILD UP ON CASING405 END OF CASING408 OFF SET IN WELL415-778 NOTHING OUT OF ORDINARY778 LARGE CAVE MESSED UP HOLE778-782 OPENING AREA LOOKS LIKE CAVED IN* NO APPARENT GROUND WATER CONTAMINATION ACCESSING THRU CASING.CASING SHOWS AGE BUT NO HOLES OR RUPTURES.

(USE BACK IF NECESSARY)

**FLYNN****DRILLING
Services**

PUMP INSTALLATION

JOB NAME C.M.C.C.Address CHURCH FARMCity, State JEFFERSON CITY, MO.DATE 3 23 1997 Job Completion
Month Day YearPUMP NO. _____ Oil-Water Lube
Pump Trouble INSPECT New-Repair**PUMP SIZE**

| | DIAMETER | LENGTHS |
|-----------|--------------------------------------|---------|
| Discharge | 6" XXXX Above Below | X |
| Column | 5" Screw Flange | 10' |
| Tubing | | |
| Shaft | 1 1/4" Stainless XXXX | 10' |

Column setting to bowl 545 ft.**BOWL**Diameter 8" Shaft Diameter 1 1/4"Type _____ Stages 21

Cast Iron or Bronze

Suction 6 " Diameter 20 Ft. Long

Special Paint or Coating on: _____ Zinc Sleeves in:

Column N/ATubing N/A**MOTOR OR GEAR DRIVE**Make US ELECTRIC HP 40Speed 1775rpm Volts 460Or Gear Drive Ratio N/A Standard
CombinationFrame Size 324TP WPT Non-Reverse — Yes NoRunning Amps. 50 50 52Running Volts 460Serial No. N/A**WELL**No. 3 Year Drilled 1981Location West WellDiameter 10" Depth 1,165Measured from top of 10 " diameter casing which is
1 feet above ground

Tape to Water _____

Air Line Length 545 A.L. Material _____Static Gage LAYNE Static Level 196Pumping Gage LAYNE Pumping Level _____Discharge Pressure _____ Feet when pumping into
SystemINSTALLER TIM H.Rig Used 12 SMEALForeman Hours to Rig Up 2 To Pull 9Inspect 2 Repair N/A To Set N/A**PUMP REPAIR**

| CONDITION OF PUMP WHEN PULLED | NEW PARTS INSTALLED |
|-------------------------------|--|
| Column _____ | Column _____ |
| Tubing <u>N/A</u> | Tubing _____ |
| Shafting <u>O.K.</u> | Shafting _____ |
| Bowl <u>BAD</u> | Bowl _____ |
| Suction <u>BAD</u> | Suction _____ |
| MACHINE WORK _____ | 1. DRAIN PORTS OPEN Yes No |
| | 2. CHLORINATE WELL XXX No |
| | 3. PUMP RUNS _____ |
| | 4. ALIGN PUMP HEAD WITH DIAL INDICATOR Yes No |
| | 5. GROUTED HEAD-BASE PLATE XXX No |



FLYNN

DRILLING
Services

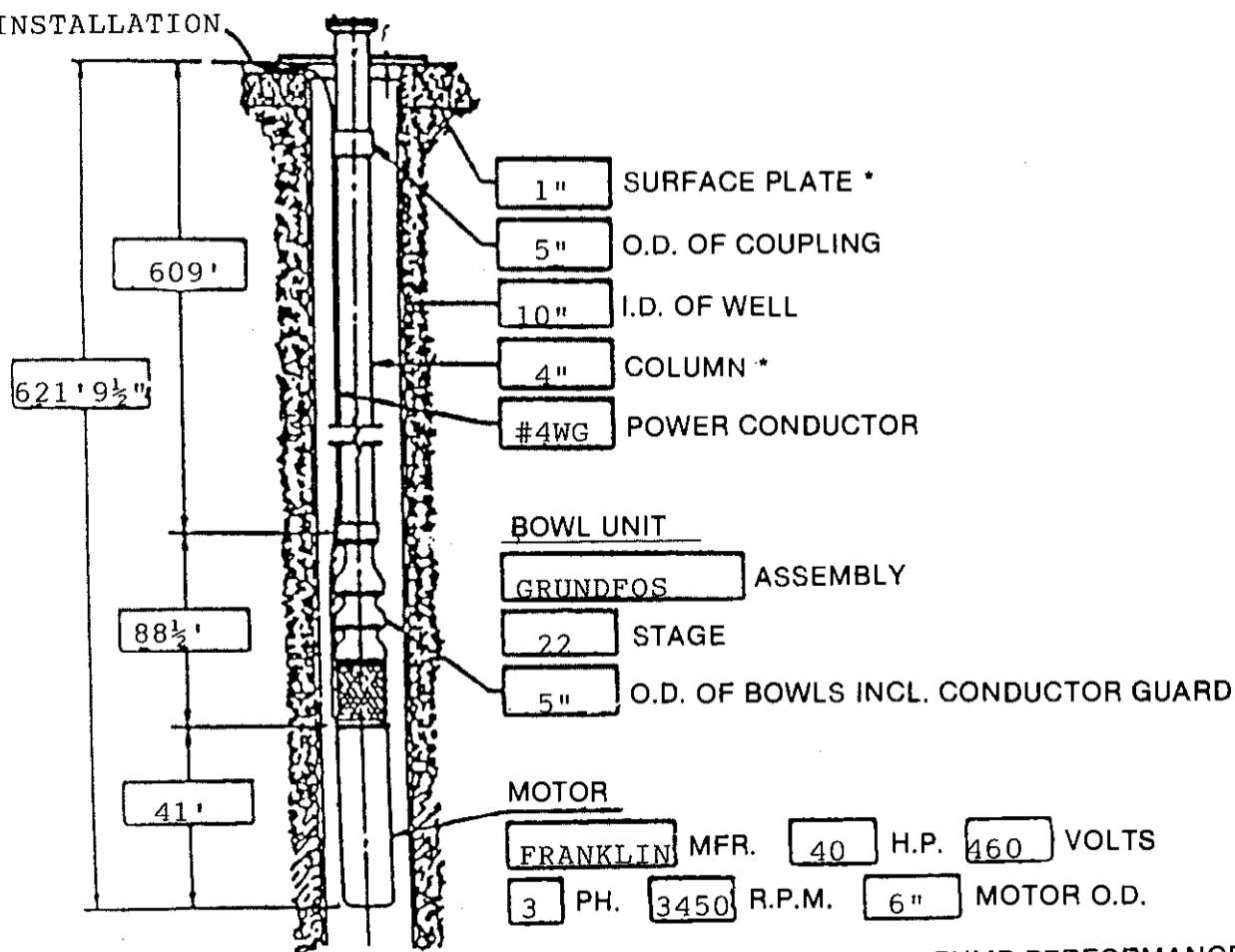
HWY. J, P.O. BOX 265
TROY, MISSOURI 63379
PHONE: 314-528-6137

C.M.C.C.

CHURCH FARM

WELL #3

NEW PUMP INSTALLATION



WELL DEPTH 1165 CAVED IN AT 782'

CASING DEPTH 405'

CASING SIZE 10"

STATIC WATER LEVEL 198'

DRAW DOWN 80' DOWN TO 278'
1 HOUR TEST

PUMP PERFORMANCE
U.S.G.P.M.
FT. TOTAL HD....
R.P.M. 3450

PUMP NO. 135S400-220DS
P.O. NO.



FLYNN

DRILLING
CO., INC.

INSPECTION REPORTS

1340 BOONE
P.O. BOX 265
TROY, MISSOURI 63379
OFFICE: 314-528-6137
FAX: 314-528-6156

3-25-97

OBSERVATION AND COMMENTS

JOB NAME C.M.C.C.

WELL NO. #3 LOCATION CHURCH FARM

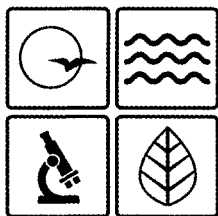
- A. Soundness and adequacy:
Comments: TOTAL GPM AT OPEN DISCHARGE HAS DROPPED
OFF ABOUT 10-20% FROM NEW
- B. Sound:
Comments: MOTOR AND BASE WERE VIBRATING AND HUMMING LOUDER
THAN SHOULD BE
- C. Odor:
Comments: NO ODOR DURING PUMP TEST
- D. Seals:
Comments: GREASE SEAL AND PACKING IN HEAD ARE BAD
- E. Ground Water Protection:
Comments: LAYNE BASE NO GROUT AROUND BASE 1"
VENT PIPE
- F. Isolation Valves:
Comments: ONLY VALVE IS 6" MUELLER TO DISCHARGE AND 6"
PANCAKE CHECK VALVE
- G. Guages, Meters:
Comments: 4" MCCROMETER OLD LAYNE PRESSURE AND AIR
LINE GAUGES DON'T WORK
- H. Interconnecting Piping:
Comments: PIPING FOR WATER LUBE NEEDS UP DATED
ALL PIPING NEEDS PAINTED (THIS WAS DELETED)

Appendix L

Plugging Requirements For CMCC Wells #1, #3, and #4

-

**Missouri Department of Natural Resources
Division of Geological Survey**



Missouri Department of dnr.mo.gov **NATURAL RESOURCES**

Michael L. Parson, Governor

Carol S. Comer, Director

October 2, 2019

Cary Sayre, PE
Allstate Consultants
3313 LeMone Industrial Blvd.
Columbia, MO 65201

Cole County

Well #1, Power Plant (WL14694, Log 0005012)

NE ¼ Sec. 19, T 45 N, R 12 W

Lat: 38° 38' 26.1" N Long: 92° 16' 40.1" W

Well #3, Entrance Gate (WL13313, Log 0024413)

NE ¼ Sec. 19, T 45 N, R 12 W

Lat: 38° 38' 15.8" N Long: 92° 16' 34.8" W

Well #4, Back Well (WL13312, Log 0028486)

NE ¼ Sec. 19, T 45 N, R 12 W

Lat: 38° 38' 24.25" N Long: 92° 16' 51.56" W

Plugging Requirements for Central MO Correctional Center Wells #1, #3 and #4

Dear Mr. Sayre,

This letter outlines plugging specifications for Central MO Correctional Center Wells #1, #3 and #4 in Cole County.

Because the wells are a public water supply wells, plugging specifications are given on a case-by-case basis and plugging must be completed by a permitted Missouri well or pump installation contractor (Standards for Non-Community Public Water Supplies 1982, 3.5.10 and Minimum Design Standards for Missouri Community Water Systems, 3.5.2.13).

Well #1, Power Plant

We have information that this well was drilled in September 1938, is 1040 feet deep and has 431 feet of 8 inch casing. The following steps shall be followed to plug this well:

- Remove all materials (including pumps and pipes), debris and obstructions that may interfere with plugging operations from the well.¹
- Cut the well casing off at 2 feet below ground surface. Excavate around the casing at least two feet in diameter larger than the outermost casing.²
- Fill the well with disinfected pea gravel from the bottom of the well to 530 feet below ground surface.

- Place a grout plug using neat cement grout³ from 530 feet below ground surface to 330 feet below ground surface using the one of the tremie or reverse tremie methods. The grout plug must total 200 feet.
- Fill the well with washed, disinfected pea gravel from 330 feet below ground surface to 100 feet below ground surface.
- Place a second grout plug using neat cement grout³ from 100 feet below ground surface to 2 feet below ground surface using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must total 100 feet.
- Fill the remaining area with clean fill or soil⁴.
- Alternatively, the well can be plugged full length with neat cement grout³ using one of the tremie or reverse tremie methods.
- Submit a well plugging registration record within 60 days after the plugging is completed.

Well #3, Entrance Gate

We have information that this well was drilled in 1966, is 1070 feet deep and has 320 feet of 10 inch casing. The following steps shall be followed to plug this well:

- Remove all materials (including pumps and pipes), debris and obstructions that may interfere with plugging operations from the well.¹
- Cut the well casing off at 2 feet below ground surface. Excavate around the casing at least two feet in diameter larger than the outermost casing.²
- Fill the well with disinfected pea gravel from the bottom of the well to 420 feet below ground surface.
- Place a grout plug using neat cement grout³ from 420 feet below ground surface to 220 feet below ground surface using the one of the tremie or reverse tremie methods. The grout plug must total 200 feet.
- Fill the well with washed, disinfected pea gravel from 220 feet below ground surface to 100 feet below ground surface.
- Place a second grout plug using neat cement grout³ from 100 feet below ground surface to 2 feet below ground surface using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must total 100 feet.
- Fill the remaining area with clean fill or soil⁴.
- Alternatively, the well can be plugged full length with neat cement grout³ using one of the tremie or reverse tremie methods.
- Submit a well plugging registration record within 60 days after the plugging is completed.

Well #4, Back Well

We have information that this well was drilled in 1981, is 1165 feet deep and has 400 feet of 10 inch casing. The following steps shall be followed to plug this well:

- Remove all materials (including pumps and pipes), debris and obstructions that may interfere with plugging operations from the well.¹
- Cut the well casing off at 2 feet below ground surface. Excavate around the casing at least two feet in diameter larger than the outermost casing.²

- Fill the well with disinfected pea gravel from the bottom of the well to 500 feet below ground surface.
- Place a grout plug using neat cement grout³ from 500 feet below ground surface to 300 feet below ground surface using the one of the tremie or reverse tremie methods. The grout plug must total 200 feet.
- Fill the well with washed, disinfected pea gravel from 300 feet below ground surface to 100 feet below ground surface.
- Place a second grout plug using neat cement grout³ from 100 feet below ground surface to 2 feet below ground surface using one of the tremie or reverse tremie methods. If there is no water in the casing in this interval, the gravity method can be used. The grout plug must total 100 feet.
- Fill the remaining area with clean fill or soil⁴.
- Alternatively, the well can be plugged full length with neat cement grout³ using one of the tremie or reverse tremie methods.
- Submit a well plugging registration record within 60 days after the plugging is completed.

¹ If this cannot be accomplished, contact the Well Installation Section to obtain alternative plugging specifications.

² If the well is located in an agricultural setting, remove the top 3 feet of casing. If the well is located in a structure or concrete pad, cut the casing off flush with the surface.

³ mixed at a ratio of not more than six gallons of water per 94-pound bag of cement

⁴ If the well is located in a structure or concrete pad, fill the uppermost 2 feet with neat cement or concrete.

Thank you for your effort preventing contamination of Missouri's groundwater. If I can be of any assistance, please contact me or call the Well Installation Section at 573-368-2165.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Airin Haselwander

Airin Haselwander, RG
Well Installation Section
Missouri Department of Natural Resources
P.O. Box 250 Rolla, MO 65402
573/368-2196
573/368-2317 (fax)
email: airin.haselwander@dnr.mo.gov



- c: Mr. Maher Jaafari, DEQ-Public Drinking Water Branch, Jefferson City via email
Department of Natural Resources Central Field Operations, Jefferson City via email
Mr. Ken Tomlin, DEQ-Public Drinking Water Branch, Jefferson City via email

Appendix M

MDNR Drinking Water Well Forms



MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM
PRENOTIFICATION FORM

FOR OFFICE USE ONLY

DATE REPORT RECEIVED

RECEIVED BY

DATE RECORD DUE

DATE RECORD RECEIVED

REFERENCE NO

***Note: Incomplete forms will not be processed. Required fields are noted by an asterisk (*).**

CONTRACTOR INFORMATION

| | | |
|--------------------------|----------------|-------------------------------|
| CONTRACTOR NAME* | PERMIT NUMBER* | BUSINESS OR CELLPHONE NUMBER* |
| PRIMARY CONTRACTOR NAME* | PERMIT NUMBER* | BUSINESS NAME* |

WELL OWNER/BUSINESS INFORMATION

| | | |
|--|--------------|------------------|
| OWNER/BUSINESS NAME* | CONTACT NAME | TELEPHONE NUMBER |
| MAILING ADDRESS | | |
| CITY | STATE | ZIP CODE |
| PHYSICAL ADDRESS OF WORK SITE (IF DIFFERENT FROM MAILING ADDRESS)* | | |
| CITY* | STATE | ZIP CODE |

LOCATION OF WORK

| | | | |
|---------|-----------|------------|--|
| COUNTY* | LATITUDE* | LONGITUDE* | SITE NAME/ID NUMBER (IF APPLICABLE - FOR MONITORING WELLS) |
|---------|-----------|------------|--|

TYPE OF WORK REPORTING – This field is required (please pick at least one)

| | | | |
|--|---|------------------------------------|---|
| <input type="checkbox"/> Water Well | <input type="checkbox"/> Pump | <input type="checkbox"/> Heat Pump | <input type="checkbox"/> Heat Pump using 5' grout plugs |
| <input type="checkbox"/> Monitoring Well | <input type="checkbox"/> Reconstruction | <input type="checkbox"/> Plugging | <input type="checkbox"/> Other _____ |

DATE WORK IS SCHEDULED TO BEGIN*

Form must be submitted at least 24 hours prior to beginning any regulated construction.

FOR OFFICE USE ONLY

| | | |
|--|---|---|
| <input type="checkbox"/> Field Verified | Staff Contact: _____ | Date of Inspection: _____ |
| <input type="checkbox"/> Witnessed Entire Installation | <input type="checkbox"/> Witnessed Partial Installation | <input type="checkbox"/> Deficiencies Noted |
| Notes and Follow-Up Action: _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |



MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

**WATER WELL / HEAT PUMP PLUGGING
REGISTRATION REPORT**

FOR OFFICE USE ONLY

| | | |
|------------------|-----------|---------------|
| REF NO. | ENTERED | DATE RECEIVED |
| REGISTRATION NO. | CHECK NO. | REVENUE NO. |
| ROUTE / / | APPROVED | DATE |

**NOTE: FOR MONITORING WELLS, USE MONITORING WELL
PLUGGING REGISTRATION FORM 780-2161**

OWNER INFORMATION

| | | | |
|--|-------------------------------|---------------------------------|----------------|
| NAME | BUSINESS NAME (IF APPLICABLE) | TELEPHONE NUMBER WITH AREA CODE | |
| MAILING ADDRESS | | CITY | STATE ZIP CODE |
| PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED (IF DIFFERENT THAN MAILING ADDRESS) | | CITY | |

LOCATION INFORMATION

| | | |
|-------------------------------|--|-----------------|
| Lat. _____ ° _____ ' _____ " | COUNTY | _____ ¼ _____ ¼ |
| Long. _____ ° _____ ' _____ " | Section _____ Township _____ N Range _____ <input type="checkbox"/> E <input type="checkbox"/> W | |

PLUGGING INFORMATION

| | | | | | |
|--|--|--|--|------------------------------------|--|
| FORMER USE OF WELL <input type="checkbox"/> Domestic <input type="checkbox"/> High yield unconsolidated <input type="checkbox"/> Hand dug <input type="checkbox"/> Pilot hole <input type="checkbox"/> Heat pump <input type="checkbox"/> Multi-family <input type="checkbox"/> High yield bedrock (plugging letter required if fill is used) <input type="checkbox"/> Public water supply well (plugging letter required) | | WELL CERTIFICATION OR REFERENCE NUMBER (IF KNOWN) | WELL NUMBER | VARIANCE NUMBER (IF ISSUED) | |
| COST SHARE <input type="checkbox"/> Yes <input type="checkbox"/> No | | ORIGINAL DRILLER (IF KNOWN) | | DATE ORIGINALLY DRILLED (IF KNOWN) | |
| DATE WELL / LOOPS PLUGGED OR EXCAVATED | | DEPTH OF THE WELL FT. | LENGTH OF CASING FT. | CASING OR HOLE DIAMETER IN. | STATIC WATER LEVEL FT. |
| WELL REMOVED BY EXCAVATION <input type="checkbox"/> Yes <input type="checkbox"/> No | | PUMP REMOVED FROM WELL <input type="checkbox"/> Yes <input type="checkbox"/> No | CASING CUT OFF BELOW GROUND SURFACE <input type="checkbox"/> Yes, to what depth _____ FT. <input type="checkbox"/> No, state reason below* <input type="checkbox"/> Removed | | HEAT PUMP LOOPS <input type="checkbox"/> Filled <input type="checkbox"/> Remove TYPE OF CASING <input type="checkbox"/> Steel <input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Fiberglass <input type="checkbox"/> Other _____ |
| WELL ABANDONED DUE TO CONNECTION TO A MUNICIPALITY OR RURAL WATER SUPPLY DISTRICT <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide the name of the municipality or water district below: | | *REMARKS/REASON WELL WAS PLUGGED | | | |

GROUT INFORMATION (GROUT MATERIAL MUST EXTEND AT LEAST 50 FEET BELOW CASING FOR DOMESTIC/MULTI-FAMILY WELLS)

| | | | |
|---|---|--|---|
| INSTALLATION METHOD <input type="checkbox"/> Gravity <input type="checkbox"/> Tremie <input type="checkbox"/> Tremie pumped <input type="checkbox"/> Reverse tremie | MATERIAL USED CEMENT BENTONITE <input type="checkbox"/> Type I <input type="checkbox"/> Chips <input type="checkbox"/> Granular <input type="checkbox"/> Type III <input type="checkbox"/> Pellets <input type="checkbox"/> Slurry | GROUT PLUGS 1 ST Top depth _____ Bottom depth _____ 2 ND Top depth _____ Bottom depth _____ (if applicable) | AMOUNT USED Number of sacks _____ Pounds per sack _____ or cubic yards _____ Gallons of water/sack _____ |
|---|---|--|---|

FILL MATERIAL INFORMATION (FILL MATERIAL MAY NOT BE USED IN PLACE OF GROUT)

| | | | | |
|---|--|--|--|--|
| MATERIAL USED <input type="checkbox"/> Gravel <input type="checkbox"/> Ag-lime <input type="checkbox"/> Sand <input type="checkbox"/> Other _____ | AMOUNT USED <input type="checkbox"/> Tons _____ or <input type="checkbox"/> Cubic yards _____ | DEPTH TO TOP OF FILL FROM SURFACE FT. | WELL CHLORINATED BEFORE PLUGGING <input type="checkbox"/> Yes <input type="checkbox"/> No | AMOUNT USED FOR CHLORINATION <input type="checkbox"/> Gallons _____ <input type="checkbox"/> Pounds _____ <input type="checkbox"/> Tablets _____ |
|---|--|--|--|--|

I hereby certify that the well herein described was plugged in accordance with Department of Natural Resources requirements. (All fields must be completed but only one signature is required.)

| | | |
|--|---------------|------|
| PRIMARY CONTRACTOR OR WELL OWNER (WELL OWNER MAY ONLY PLUG DOMESTIC OR HAND DUG WELLS) | PERMIT NUMBER | DATE |
| WELL OR PUMP INSTALLATION CONTRACTOR | PERMIT NUMBER | DATE |
| WELL OR PUMP INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE) | PERMIT NUMBER | DATE |

MO 780-1603 (06-19)

FEES - \$50 FOR PUBLIC WATER SUPPLY, HIGH YIELD AND HEAT PUMP WELLS ONLY. ALL WELL TYPES ARE SUBJECT TO LATE FEE SCHEDULE.
SEND COMPLETED FORM TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELL INSTALLATION SECTION,
PO BOX 250, ROLLA, MO 65402 PHONE: 573-368-2165 FAX: 573-368-2317 EMAIL: welldrillers@dnr.mo.gov
RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

Michael L. Parson
Governor

STATE OF MISSOURI

James Remillard
Director

Sandra K. Karsten
Director of Public Safety

STATE EMERGENCY MANAGEMENT AGENCY



DEPARTMENT OF PUBLIC SAFETY
PO Box 116, Jefferson City, Missouri 65102
Phone: (573) 526-9100 Fax: (573) 634-7966
E-mail: mosema@sema.dps.mo.gov



October 28, 2022

Mr. Eric Hibdon
Project Manager
Missouri Office of Administration Design & Construction
301 West High Street
Jefferson City, MO 65102

Re: Approved Floodplain Development Permit for State Owned Development

Dear Mr. Hibdon:

Enclosed is the approved floodplain development permit for the Missouri Office of Administration Design & Construction Project No. C1919-01. This project involves the closure of the wastewater treatment lagoon on Church Farm Road in Cole County, Missouri.

This development is located within the political boundary of Cole County, Community ID Number 290107 as shown on the Flood Insurance Rate Map (FIRM) panel number 29051C0045E, with an effective date of November 2, 2012. It has been determined that this project is located within the Special Flood Hazard Area (SFHA) Zone-AE of the Missouri River. This project is not located within the regulatory floodway of the Missouri River.

If the project requires additional permits from other regulatory agencies it is the Missouri Office of Administration Design & Construction's responsibility to obtain those permits prior to the beginning of construction.

If you have any other questions, please do not hesitate to contact me at 573-526-9129.

Sincerely,

A handwritten signature in black ink that reads "Karen McHugh".

Karen McHugh, CFM
State NFIP Coordinator
Floodplain Management Section Manager

Enclosures

cc: OAFMDC Permit File - OA FMDC 2022-002
Eric Landwehr, Cole County, Floodplain Administrator
Community File - Cole County



A Nationally
Accredited
Agency

STATE OF MISSOURI FLOODPLAIN DEVELOPMENT PERMIT/APPLICATION

Application No.: OA FMDC 2022-002

Date: October 5, 2022

TO THE ADMINISTRATOR: The undersigned hereby makes application for a permit to develop in the Special Flood Hazard Area (SFHA) or "floodplain." The work to be performed, including flood protection works, is as described below and in attachments hereto. The undersigned agrees that all such work shall be in accordance with the requirements of the Floodplain Management Ordinance and with all other applicable county/city ordinances, federal programs, and the laws and regulations of the State of Missouri.

| | | |
|---|------------------------|---|
| <u>OA-FMDC</u> | <u>October 1, 2022</u> | <u>Cole</u> |
| State Agency | Date | County Development Located Within |
| <u>301 West High Street, Jefferson City, MO 65102</u> | | <u>Cole County</u> |
| Address | | Community Development Located Within |
| <u>(573) 751-3339</u> | | <u>N/A</u> |
| Phone | | Second Community Development Located Within (If Applicable) |

SITE DATA

- Location: NW 1/4; SE 1/4; Section 18, Township 45N; Range 12W
Street Address: Church Farm Road, Jefferson City, MO 65109
- Type of Development: Filling ☒ Grading ☒ Excavation ☐ Minimum Improvement ☐
Routine Maintenance ☐ Substantial Improvement ☐ New Construction ☐ Other ☒
- Description of Development: Closure of a wastewater treatment lagoon.

- Premises: Structure Size N/A ft. By N/A ft. Area of Site 631,620 Sq. Ft.
Principal Use: Wastewater treatment Accessory Uses (storage, parking, etc.): N/A
- Value of Improvement (fair market) \$ N/A Pre-Improvement/Assessed Value of Structure \$ N/A
- Is the Development Located in a Designated FLOODWAY? Yes ☐ No ☒

IF ANSWERED YES, CERTIFICATION MUST BE PROVIDED PRIOR TO THE ISSUANCE OF A PERMIT TO DEVELOP, THAT THE PROPOSED DEVELOPMENT WILL RESULT IN NO INCREASE IN THE BASE (1%) FLOOD ELEVATIONS.

- Is the Development Located in a Designated Flood FRINGE? or a Floodplain (SFHA) without a Designated FLOODWAY? Yes ☒ No ☐
- Elevation of the 1% Base Flood (ID source) 566 from FIS Profile NGVD ☐ NAVD ☒
- Elevation of the Proposed Development Site 553.00 NGVD ☐ NAVD ☒
- State of Missouri Ordinance Elevation/Floodproofing Requirement N/A NGVD ☐ NAVD ☐
- Other Floodplain Elevation Information (ID and describe source) FIRM Panel No. 29051C0045E dated 11/2/2012

- Other Permits Required?

| | | | |
|---|------------------------------|--|-----------------------------------|
| Corps of Engineer 404 Permit: | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Provided <input type="checkbox"/> |
| State Department of Natural Resources 401 Permit: | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Provided <input type="checkbox"/> |
| Environmental Protection Agency NPDES Permit: | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Provided <input type="checkbox"/> |

The Applicant shall be in compliance with all provisions of the Endangered Species Act (ESA) of 1973.

The Applicant shall be in compliance with all provisions of Executive Order 98-03, the "Floodplain Management Ordinance".

PERMIT APPROVAL/DENIAL

Plans and Specifications [Approved ☒ Denied ☐28th Day of October, 20 22

Eric Hibdon

Digitally signed by Eric Hibdon
Date: 2022.10.27 13:56:58 -05'00'

Signature of State Agency or Representative

Eric Hibdon, Project Manager

Print Name and Title

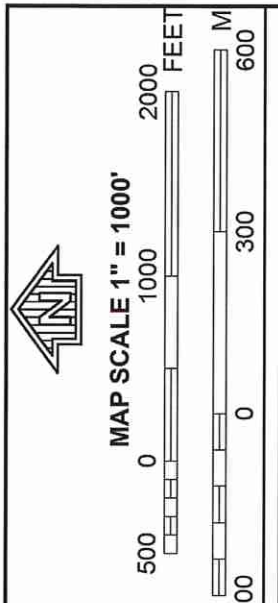
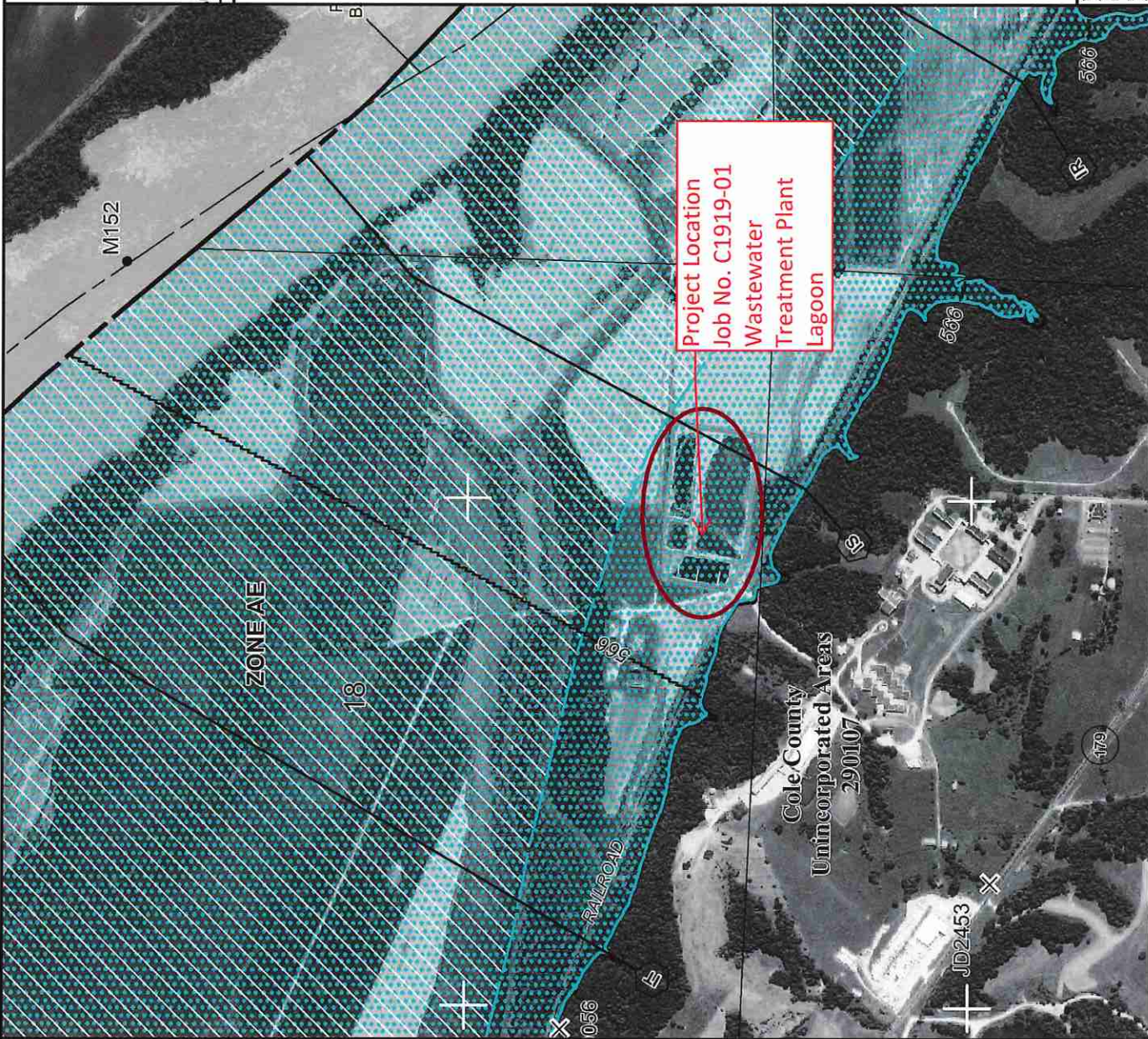
Karen McHugh

Signature of Authorizing Official

Karen McHugh, CFM, Floodplain Section Manager/State NFIP Coordinator

Print Name and Title

IF APPLICABLE, THIS PERMIT IS ISSUED WITH THE CONDITION, THAT THE LOWEST FLOOR (INCLUDING BASEMENT FLOOR) OF ANY NEW OR SUBSTANTIALLY IMPROVED STATE OWNED OR LEASE BUILDING WILL BE ELEVATED TO OR ABOVE THE BASE FLOOD ELEVATION. IF THE PROPOSED NEW OR SUBSTANTIALLY IMPROVED DEVELOPMENT IS A NON-RESIDENTIAL BUILDING, THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT) WILL BE ELEVATED OR FLOODPROOFED TO OR ABOVE THE BASE FLOOD ELEVATION. AN ELEVATION OR FLOODPROOFING CERTIFICATE WILL BE REQUIRED UPON COMPLETION OF ALL STATE DEVELOPMENT THAT MEETS THE ELEVATION REQUIREMENTS OF THE NFIP INCLUDING ALLOWABLE ENCLOSURES BELOW THE BASE FLOOD ELEVATION.



NFIP

PANEL 0045E

FIRM
FLOOD INSURANCE RATE MAP

COLE COUNTY,
MISSOURI
AND INCORPORATED AREAS

PANEL 45 OF 350
(SEE LOCATOR DIAGRAM OR MAP INDEX
FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY
COLE COUNTY

NUMBER
290107

PANEL
0045

SUFFIX
E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
29051C0045E

MAP REVISED
NOVEMBER 2, 2012

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.

State FPDP OA FMDC 2022-002

Job No. C1919-01
Wastewater Treatment Plant
Approx. Lat. = 38.644054
Approx. Long. -92.276256

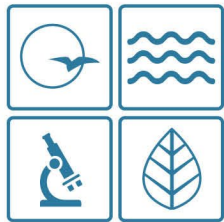
Legend

Existing Wastewater
Treatment Plant
Lagoon



500 ft

Google Earth



MISSOURI DEPARTMENT OF NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

August 1, 2022

Leanne Mattern
Office of Administration, Facilities Management Design & Construction
Harry S. Truman SOB,
301 West High Street, Room 730
Jefferson City, MO 65102

Dear Permittee:

Pursuant to the Federal Water Pollution Control Act, under the authority granted to the State of Missouri and in compliance with the Missouri Clean Water Law, we have issued and are enclosing your Missouri State Operating Permit for Office of Administration, MOR-100038.

Please read and review your permit and attached Standard Conditions. They contain important information on site management and reporting requirements. Quarterly reports required by this report must be submitted through our eDMR system.

This permit may include requirements with which you may not be familiar. If you would like The Department of Natural Resources to meet with you to discuss how to satisfy the permit requirements, an appointment can be set up by contacting the permit writer at 573-526-1139. These visits are called Compliance Assistance Visits and focus on explaining the requirements to the permit holder.

This permit is both your Federal NPDES Permit and your new Missouri State Operating Permit and replaces all previous State Operating Permits issued for this facility under this permit number. In all future correspondence regarding this facility, please refer to your State Operating Permit number and facility name as shown on page one of the permit.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to 10 CSR 20-1.020 and 10 CSR 20-6.020; RSMo Section 621.250, 640.013, and 644.051.6. To appeal, you must file a petition with the AHC within thirty 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 AHC. Contact information for the AHC is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: (573) 751-2422, fax: (573) 751-5018; website: <http://ahc.mo.gov/>.

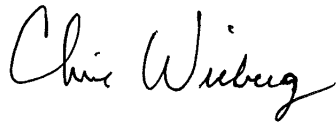


Office of Administration
Page Two

Please be aware that this facility may also be subject to any applicable county or other local ordinances or restrictions. If you have any questions concerning this permit, please do not hesitate to contact the Water Protection Program at P.O. Box 176, Jefferson City, MO 65102, 573-522-4502.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in black ink that reads "Chris Wieberg". The signature is written in a cursive, flowing style.

Chris Wieberg
Director

CW/qs

Enclosure

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

General Operating Permit

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

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|--------------------------------|---|
| Permit No | MOR100038 |
| Owner: | OA-Facilities Mgmt, Design, and Construc |
| Address: | 301 West High Street, Hst Rm 370 Jefferson City, MO 65101 |
| Continuing Authority: | OA Facilities Mgmt Design Construction 301 West High St. HST SOB Rm 730 Jefferson City, MO 65102 |
| Facility Name: | Office of Administration |
| Facility Address: | OA-FMDC, PO Box 809 301 W High street JEFFERSON CITY, MO 65102 |
| Legal Description: | Land Grant 02681, Cole County |
| UTM Coordinates: | 571840.000/4270368.000 |
| Receiving Stream: | Tributary to Wears Creek (U) |
| First Classified Stream - ID#: | 100K Extent-Remaining Streams (C) 3960.00 |
| USGS# and Sub Watershed#: | 10300102 - 1304 |

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

FACILITY DESCRIPTION All Outfalls SIC #1629

All Outfalls - Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling and other activity that results in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution of waters of the state)

Issued to a city, county, state or federal agency, other governmental jurisdiction, or other private area-wide projects as determined by the Department on a case-by-case basis

This permit authorizes only wastewater, including storm water, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System, it does not apply to other regulated areas. This permit may be appealed in accordance with RSMo Section 644.051.6 and 621.250, 10 CSR 20-6.020, and 10 CSR 20-1.020.

August 01, 2022

Issue Date

Chris Wieberg, Director
Water Protection Program

July 04, 2027

Expiration Date

I. APPLICABILITY

A. Permit Coverage and Authorized Discharges

1. This Missouri State Operating Permit (permit) authorizes the discharge of stormwater and certain non-stormwater discharges from land disturbance sites that disturb one or more acres, or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project.

A Missouri State Operating Permit must be issued before any site vegetation is removed or the site disturbed. Any site owner/operator subject to these requirements for stormwater discharges and who disturbs land prior to permit issuance from the Missouri Department of Natural Resources (Department) is in violation of both State regulations per 10 CSR 20-6.200(1)(A) and Federal regulations per 40 CFR 122.26. The owner/operator of this permit is responsible for compliance with this permit [10 CSR 20-6.200 (3)(B)].

2. This general permit is issued to a city, county, state or federal agency, other governmental jurisdiction, or other private area-wide projects as determined by the Department on a case-by-case basis, for land disturbance projects performed by or under contract to the permittee.
3. This permit authorizes stormwater discharges from land disturbance support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas, concrete, or asphalt batch plants) provided appropriate stormwater controls are designed, installed, and maintained and the following conditions are met and addressed in the Stormwater Pollution Prevention Plan (SWPPP). The permittee is responsible for compliance with this permit for any stormwater discharges from construction support activity.
 - (a) The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
 - (b) The support activity is not a commercial operation or serve multiple unrelated construction sites;
 - (c) The support activity does not continue to operate beyond the completion of the construction activity at the project it supports;
 - (d) Sediment and erosion controls are implemented in accordance with the conditions of this permit; and
 - (e) The support activity is strictly stormwater discharges or non-stormwater discharges listed in PART I, APPLICABILITY, Condition A.4. Support activities which discharge process water shall apply for separate coverage (e.g., a concrete batch plant discharging process water shall be covered under a MOG49).
4. This permit authorizes non-stormwater discharges associated with your construction activity from the following activities provided that these discharges are treated by appropriate Best Management Practices (BMPs) where applicable and addressed in the permittee's site specific SWPPP required by this general permit:
 - (a) Discharges from emergency fire-fighting activities;
 - (b) Hydrant flushing and water line flushing, provided the discharged water is managed to avoid instream water quality impacts;
 - (c) Landscape watering, including to establish vegetation;
 - (d) Water used to control dust;
 - (e) Waters used to rinse vehicles and equipment, provided there is no discharge of soaps, solvents, or detergents used for such purposes;
 - (f) External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (e.g., paint or caulk containing polychlorinated biphenyls (PCBs))
 - (g) Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any water of the state, storm drain inlet, or stormwater conveyance (constructed or natural site drainage features), unless the conveyance is connected to an effective control, is prohibited;
 - (h) Uncontaminated air conditioning or compressor condensate;
 - (i) Uncontaminated, non-turbid discharges of ground water or spring water;
 - (j) Foundation or footing drains where flows are not contaminated with process materials; and
 - (k) Uncontaminated construction dewatering water discharged in accordance with requirements found in this permit for specific dewatering activities.

B. Permit Restrictions and Limitations

1. This permit does not authorize the discharge of process wastewaters, treated or otherwise.
2. For sites operating within the watershed of any Outstanding National Resource Water (which includes the Ozark National Riverways and the National Wild and Scenic Rivers System), sites that discharge to an Outstanding State Resource Water, or facilities located within the watershed of an impaired water as designated in the Clean Water Act (CWA) Section 303(d) list with an impairment for sedimentation/siltation:
 - (a) This permit authorizes stormwater discharge provided no degradation of water quality occurs due to discharges from the permitted facility per 10 CSR 20-7.031(3)(C).
 - (b) A site with a discharge found to be causing degradation or contributing to an impairment by discharging a pollutant of concern, during an inspection or through complaint investigations, may be required to become a no discharge facility or obtain a site-specific permit with more stringent monitoring and SWPPP requirements.
3. This permit does not allow placement of fill material into any stream or wetland, alteration of a stream channel, or obstruction of stream flow unless the appropriate CWA Section 404 permitting authority provides approval for such actions or determines such actions are exempt from Section 404 jurisdiction. Additionally, this permit does not authorize placement of fill in floodplains unless approved or determined exempt by appropriate federal and/or state floodplain development authorities.
4. This operating permit does not affect, remove, or replace any requirement of the National Environmental Policy Act; the Endangered Species Act; the National Historic Preservation Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; or any other relevant acts. Determination of applicability to the above mentioned acts is the responsibility of the permittee. Additionally, this permit does not establish terms and conditions for runoff resulting from silvicultural activities listed in Section 402(l)(3)(a) of the Clean Water Act.
5. Compliance with all requirements in this permit does not supersede any requirement for obtaining project approval from an established local authority nor remove liability for compliance with county and other local ordinances.
6. The Department may require any facility or site authorized by a general permit to apply for a site-specific permit [10 CSR 20-6.010(13)(C)].
7. If a facility or site covered under a current general permit desires to apply for a site-specific permit, the facility or site may do so by contacting the Department for application requirements and procedures.
8. Any discharges not expressly authorized in this permit and not clearly disclosed in the permit application cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Discharges at the facility not expressly authorized by this permit must be covered by another permit, be exempt from permitting, or be authorized through some other method.

II. EXEMPTIONS FROM PERMIT REQUIREMENTS

1. Sites that discharge all stormwater runoff directly to a combined sewer system (as defined in 40 CFR 122.26 and 40 CFR 35.2005) connecting to a publicly owned treatment works which has consented to receive such a discharge are exempt from Department stormwater permit requirements.
2. Land disturbance activities that disturb less than one (1) acre of total land area which are not part of a common plan or sale where water quality standards are not exceeded are exempt from Department stormwater permit requirements.

3. Oil and gas related activities as listed in 40 CFR 122.26(a)(2)(ii) where water quality standards are not exceeded are exempt from Department stormwater permit requirements.
4. Linear, strip, or ribbon construction or maintenance operations meeting one (1) of the following criteria are exempt from Department stormwater permit requirements:
 - (a) Grading of existing dirt or gravel roads which does not increase the runoff coefficient and the addition of an impermeable surface over an existing dirt or gravel road;
 - (b) Cleaning or routine maintenance of roadside ditches, sewers, waterlines, pipelines, utility lines, or similar facilities;
 - (c) Trenches two (2) feet in width or less; or
 - (d) Emergency repair or replacement of existing facilities as long as BMPs are employed during the emergency repair.

III. REQUIREMENTS

1. The permittee shall post a public notification sign at the main entrance to the site, or a publically visible location, with the specific MOR100 permit number. The public notification sign must be visible from the public road that provides access to the site's main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the site is finalized.
2. The permittee shall be responsible for notifying the land owner and each contractor or entity (including utility crews and city employees or their agents) who will perform work at the site of the existence of the SWPPP and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any BMP. The permittee is responsible for any damage a subcontractor may do to established BMPs and any subsequent water quality violation resulting from the damage.
3. Ensure the design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:
 - (a) Control stormwater volume, velocity, and peak flow rates to minimize soil erosion;
 - (b) Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour;
 - (c) Minimize the amount of exposed soil during construction activity;
 - (d) Minimize the disturbance of steep slopes;
 - (e) Minimize sediment discharges from the site. Address factors such as:
 - 1) The amount, frequency, intensity, and duration of precipitation;
 - 2) The nature of resulting stormwater runoff;
 - 3) Expected flow from impervious surfaces, slopes, and drainage features; and
 - 4) Soil characteristics, including the range of soil particle size expected to be present on the site.
 - (f) Provide and maintain natural buffers around surface waters as detailed in Part V. BMP REQUIREMENTS Condition 7, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible; and
 - (g) Minimize soil compaction and preserve topsoil where practicable.

A 2-year, 24-hour storm event can be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 which can be located at https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html, or the permittee can determine local rainfall distribution for a 2-year, 24 hours storm event using multi-decade local high density rain gauge data, as approved by the Department.

4. BMPs for land disturbance [10 CSR 20-6.200(1)(D)2] are a schedule of activities, practices, or procedures that reduces the amount of soil available for transport or a device that reduces the amount of suspended solids in runoff before discharge to waters of the state. The term BMPs are also used to describe the sediment and erosion controls and other activities used to prevent stormwater pollution. BMPs are divided into two main categories: structural or non-structural; and they are also classified as temporary or permanent. Temporary BMPs may be added and removed as necessary with updates to the SWPPP as specified in the requirements below.

5. Installation of BMPs necessary to prevent soil erosion and sedimentation at the downgradient project boundary (e.g. buffers, perimeter controls, exit point controls, storm drain inlet protection) must be complete prior to the start of all phases of construction. By the time construction activity in any given portion of the site begins, downgradient BMPs must be installed and operational to control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities. Additional BMPs shall be installed as necessary throughout the life of the project.
6. All BMPs shall be maintained and remain in effective operating condition during the entire duration of the project, with repairs made within the timeframes specified elsewhere in this permit, until final stabilization has been achieved.
 - (a) Ensure BMPs are protected from activities that would reduce their effectiveness.
 - (b) Remove any sediment per the BMP manufacturer's instructions or before it has accumulated to one-half of the above-ground height of any BMP that collects sediment (i.e., silt fences, sediment traps, etc.)
 - (c) The project is considered to achieve final stabilization when Part V. BMP REQUIREMENTS, Condition 13 is met.
7. Minimize sediment trackout from the site and sediment transport onto roadways.
 - (a) Restrict vehicle traffic to designated exit points.
 - (b) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
 - (c) Use additional controls or BMPs to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
 - (d) Any sediment or debris that is tracked out past the exit pad or is deposited on a roadway after a precipitation event shall be removed by the shorter of either the same business day (for business days only), or by the end of the next business day if track-out occurs on a non-business day, and before predicted rain events. Remove the track-out sediment by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Sediment or debris tracked out on pavement or other impervious surfaces shall not be disposed of into any stormwater conveyance, storm drain inlet, or water of the state.
 - (e) Stormwater inlets susceptible to receiving sediment or other pollutants from the permitted land disturbance site shall have curb inlet protection. This may include inlets off the active area where track out from vehicles and equipment could impact the stormwater runoff to those inlets.
8. Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an off-site location.

The washout facility shall be managed to prevent solid and/or liquid waste from entering waters of the state by the following:

 - (a) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
 - (b) Locate washout activities away from waters of the state, stormwater inlets, and/or stormwater conveyances where practicable. If not practicable, use BMPs to reduce risk of waste leaving the washout facility;
 - (c) Washout facilities shall be cleaned, or new facilities must be constructed and ready for use, once the washout is 75% full;
 - (d) Designate the washout area(s) and conduct such activities only in these areas.
 - (e) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.
9. Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state.
 - (a) Provide solid and hazardous waste management practices, including providing trash containers, regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, food/beverage containers, spent structural BMPs;
 - (b) Provide containers and methods for proper disposal of waste paints, solvents, and cleaning compounds.
 - (c) Manage sanitary waste. Portable toilets shall be positioned so that they are secure and will not be tipped or knocked over and so that they are located away from waters of the state and stormwater inlets and stormwater conveyances.
 - (d) Ensure the storage of construction materials be kept away from drainage courses, stormwater conveyances, storm drain inlets, and low areas.

10. All fueling facilities present shall at all times adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers.
11. Any hazardous wastes that are generated onsite shall be managed, stored, and transported according to the provisions of the Missouri Hazardous Waste Laws and Regulations.
12. Store all paints, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so they are not exposed to stormwater or provide other prescribed BMPs (such as plastic lids and/or portable spill pans) to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention, control, and countermeasures to contain the spill. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall prevent the contamination of groundwater.
13. Implement measures intended to prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicles and equipment to thereby prevent the contamination of stormwater from these substances. This may include prevention measures such as, but not limited to, utilizing drip pans under vehicles and equipment stored outdoors, covering fueling areas, using dry clean-up methods, use of absorbents, and cleaning pavement surfaces to remove oil and grease.
14. Spills, Overflows, and Other Unauthorized Discharges.
 - (a) Any spill, overflow, or other discharge not specifically authorized in the permit above are unauthorized.
 - (b) Should an unauthorized discharge cause or permit any contaminants, other than sediment, or hazardous substance to discharge or enter waters of the state, the unauthorized discharge must be reported to the regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at (573) 634-2436. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.
 - (c) A record of all spills shall be retained with the SWPPP and made available to the Department upon request.
 - (d) Other spills not reaching waters of the state must be cleaned up as soon as possible to prevent entrainment in stormwater but are not required to be reported to the Department.
15. The full implementation of this operating permit shall constitute compliance with all applicable federal and state statutes and regulations in accordance with RSMo 644.051.16 and the CWA §402(k); however, this permit may be reopened and modified or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Clean Water Act §§ 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) if the effluent standard or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in the permit or controls any pollutant not limited in the permit. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

IV. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MANAGEMENT REQUIREMENTS

1. The primary requirement of this permit is the development and implementation of a SWPPP which incorporates site specific practices to best minimize the soil exposure, soil erosion, and the discharge of pollutants, including solids for each site covered under this permit.

The purpose of the SWPPP is to ensure the design, implementation, management, and maintenance of BMPs in order to prevent sediment and other pollutants in stormwater discharges associated with the land disturbance activities [40 CFR 122.44 (k)(4)] from entering waters of the state above established general and narrative criteria; compliance with Missouri Water Quality Standards; and compliance with the terms and conditions of this general permit.

- (a) **The SWPPP must be developed and implemented prior to conducting any land disturbance activities and must be specific to the land disturbance activities at the site.**
- (b) The permittee shall fully implement the provisions of the SWPPP required under this permit as a condition of this general permit throughout the term of the land disturbance project. Failure to develop, implement, and maintain a SWPPP may lead to immediate enforcement action.

- (c) The SWPPP shall be updated any time site conditions warrant adjustments to the project or BMPs.
 - (d) Either an electronic copy or a paper copy of the SWPPP, and any required reports, must be accessible to anyone on site at all times when land disturbance operations are in process or other operational activities that may affect the maintenance or integrity of the BMP structures and made available as specified under Part VIII. STANDARD PERMIT CONDITIONS, Condition 1 of this permit. The SWPPP shall be readily available upon request and should not be sent to the Department unless specifically requested
2. Failure to implement and maintain the BMPs chosen, which can be revised and updated, is a permit violation. The chosen BMPs will be the most reasonable and cost effective while also ensuring the highest quality water discharged attainable for the facility. Facilities with established SWPPPs and BMPs shall evaluate BMPs on a regular basis and change the BMPs as needed if there are BMP deficiencies.
3. The SWPPP must:
- (a) List and describe the location of all outfalls;
 - (b) List any allowable non-stormwater discharges occurring on site and where these discharges occur;
 - (c) Incorporate required practices identified below;
 - (d) Incorporate sediment and erosion control practices specific to site conditions;
 - (e) Discuss whether or not a 404 Permit is required for the project; and
 - (f) Name the person(s) responsible for inspection, operation, and maintenance of BMPs. The SWPPP shall list the names and describe the role of all owners/primary operators (such as general contractor, project manager) responsible for environmental or sediment and erosion control at the land disturbance site.
4. The SWPPP briefly must describe the nature of the land disturbance activity, including:
- (a) The function of the project (e.g., low density residential, shopping mall, highway, etc.);
 - (b) The intended sequence and timing of activities that disturb the soils at the site; and
 - (c) Estimates of the total area expected to be disturbed by excavation, grading, or other land disturbance support activities including off-site borrow and fill areas;
5. In order to identify the site, the SWPPP shall include site information including size in acres. The SWPPP shall have sufficient information to be of practical use to contractors and site construction workers to guide the installation and maintenance of BMPs.
6. The function of the SWPPP and the BMPs listed therein is to prevent or minimize pollution to waters of the state. A deficiency of a BMP means it was not effective in preventing or minimizing pollution of waters of the state.

The permittee shall select, install, use, operate and maintain appropriate BMPs for the permitted site. The following manuals are acceptable resources for the selection of appropriate BMPs.

Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites, (Document number EPA 833-R-06-004) published by the United States Environmental Protection Agency (USEPA) in May 2007. This manual as well as other information, including examples of construction SWPPPs, is available at the USEPA internet site at https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf; and <https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>.

The latest version of *Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri*, published by the Department. This manual is available at: <https://dnr.mo.gov/document-search/protecting-water-quality-field-guide>.

The permittee is not limited to the use of these guidance manuals. Other guidance publications may be used to select appropriate BMPs. However, all BMPs must be described and justified in the SWPPP. Although the use of these manuals or other resources is recommended and may be used for BMP selection, they do not supersede the conditions of this permit. They may be used to inform in the decision making process for BMP selection but they are not themselves part of the permit conditions.

The permittee may retain the SWPPP, inspection reports, and all other associated documents (including a copy of this permit) electronically pursuant to RSMo 432.255. The documents must be made available to all interested persons in either paper or electronic format as required by this permit and the permittee must remit a copy (electronic or otherwise) of the SWPPP and inspection reports to the Department upon request.

7. The SWPPP must contain a legible site map, multiple maps if necessary, identifying:
 - (a) Site boundaries of the property;
 - (b) Locations of all waters of the state (including wetlands) within the site and half a mile downstream of the site's outfalls;
 - (c) Location of all outfalls;
 - (d) Direction(s) of stormwater flow (use arrows) and approximate slopes before and after grading activities;
 - (e) Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
 - (f) Location of structural and non-structural BMPs, including natural buffer areas, identified in the SWPPP;
 - (g) Locations where stabilization practices are expected to occur;
 - (h) Locations of on-site and off-site material, waste, borrow, or equipment storage areas and stockpiles;
 - (i) Designated points where vehicles will exit the site;
 - (j) Location of stormwater inlets and conveyances including ditches, pipes, man-made conduits, and swales; and
 - (k) Areas where final stabilization has been achieved.
8. An individual shall be designated by the permittee as the environmental lead. This environmental lead shall have knowledge in erosion, sediment, and stormwater control principles, knowledge of the permit, and the site's SWPPP. The environmental lead shall ensure all personnel and contractors understand any requirements of this permit may be affected by the work they are doing. The environmental lead or designated inspector(s) knowledgeable in erosion, sediment, and stormwater control principles shall inspect all structures that function to prevent or minimize pollution of waters of the state.
9. Throughout coverage under this permit, the permittee shall amend and update the SWPPP as appropriate during the term of the land disturbance activity. All SWPPP modifications shall be signed and dated. The permittee shall amend the SWPPP to incorporate any significant site condition changes which impact the nature and condition of stormwater discharges. At a minimum, these changes include whenever the:
 - (a) Location, design, operation, or maintenance of BMPs is changed;
 - (b) Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;
 - (c) The permittee's inspections indicate deficiencies in the SWPPP or any BMP;
 - (d) Department notifies the permittee in writing of deficiencies in the SWPPP;
 - (e) SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes off site); and/or
 - (f) Department determines violations of water quality standards may occur or have occurred.
10. Site Inspections: The environmental lead, or a designated inspector, shall conduct regularly scheduled inspections. These inspections shall be conducted by a qualified person, one who is responsible for environmental matters at the site, or a person trained by and directly supervised by the person responsible for environmental matters at the site. Site inspections shall include, at a minimum, the following:
 - (a) For disturbed areas that have not achieved final stabilization, all installed BMPs and other pollution control measures shall be inspected to ensure they are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
 - (b) For areas on site that have achieved either temporary or final stabilization, while at the same time active construction continues on other areas, ensure that all stabilization measures are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
 - (c) Inspect all material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit. Inspect for conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
 - (d) Inspect all areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater.

- (e) All stormwater outfalls shall be inspected for evidence of erosion, sediment deposition, or impacts to the receiving stream. If a discharge is occurring during an inspection, the inspector must observe and document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including turbidity, color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
 - (f) When practicable the receiving stream shall also be inspected for a minimum of 50 feet downstream of the outfall.
 - (g) The perimeter of the site shall be inspected for evidence of BMP failure to ensure concentrated flow does not develop a new outfall.
 - (h) The SWPPP must explain how the environmental lead will be notified when stormwater runoff occurs.
11. Inspection Frequency: All BMPs must be inspected in accordance to one of the schedules listed below. The inspection frequency shall be documented in the SWPPP, and any changes to the frequency of inspections, including switching between the options listed below, must be documented on the inspection form:
- (a) At least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday; or
 - (b) Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater, or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on the site, the permittee shall either keep a properly maintained rain gauge on site, or obtain the storm event information from a weather station near the site location.
 - 1) Inspections are only required during the project's normal working hours.
 - 2) An inspection must be conducted within 24 hours of a storm event which has produced 0.25 inches. The inspection shall be conducted within 24 hours of the event end, or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
 - 3) If it is elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee shall conduct an inspection within 24 hours of the end of the storm or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
 - (c) Areas on site that have achieved stabilization, while at the same time active construction continues on other areas, may reduce inspection frequency to monthly, for those stabilized areas, if the following conditions exist:
 - 1) For areas where disturbed portions have undergone temporary stabilization, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in (a),(b), or (c) above.
 - 2) Areas on site that have achieved final stabilization must be inspected at least once per month until the permit is terminated.
 - (d) If construction activities are suspended due to frozen conditions, the permittee may temporarily reduce site inspections to monthly until thawing conditions begin to occur if all of the following are met:
 - 1) Land disturbances have been suspended; and
 - 2) All disturbed areas of the site have been stabilized in accordance with Part V. BMP REQUIREMENTS, Condition 13.
 - 3) The change shall be noted in the SWPPP.
 - (e) Any basin dewatering shall be inspected daily when discharge is occurring. The discharge shall be observed and dewatering activities shall be ceased immediately if the receiving stream is being impacted. These inspections shall be noted on a log or on the inspection report.
- If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (including pictures), and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The documentation must be filed with the regular inspection reports. The corrections shall be made as soon as weather conditions or other issues allow.
12. Site Inspection Reports: A log of each inspection and/or copy of the inspection report shall be kept readily accessible and must be made available upon request by the Department. Electronic logs are acceptable as long as reports can be provided within 24 hours. If inspection reports are kept off site, the SWPPP must indicate where they are stored. The inspection report shall be signed by the environmental lead or designated inspector (electronically or otherwise).
- (a) The inspection report is to include the following minimum information:
 - 1) Inspector's name and title.
 - 2) Date and time of inspection.
 - 3) Observations relative to the effectiveness of the BMPs and stabilization measures. The following must be

documented:

- a. Whether BMPs are installed, operational, and working as intended;
- b. Whether any new or modified stormwater controls are needed;
- c. Facilities examined for conditions that could lead to spill or leak;
- d. Outfalls examined for visual signs of erosion or sedimentation at outfalls. Excessive erosion or sedimentation may be due to BMP failure or insufficiency. Response to observations should be addressed in the inspection report.

4) Corrective actions taken or necessary to correct the observed problem.

5) Listing of areas where land disturbance operations have permanently or temporarily stopped.

13. Any structural or maintenance deficiencies for BMPs or stabilization measures shall be documented and corrected as soon as possible but no more than seven (7) calendar days after the inspection.

(a) Corrective action documentation shall be stored with the associated site inspection report.

(b) Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events.

(c) If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (this may include pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The permittee shall correct the problem as soon as weather conditions or issues allow.

(d) Corrective actions may be required by the Department. The permittee must comply with any corrective actions required by the Department as a result of permit violations found during an inspection.

V. BMP REQUIREMENTS

1. The information, practices, and BMP requirements in this section shall be implemented on site and, where noted, provided for in the SWPPP.

2. Existing vegetation and trees shall be preserved where practicable. The permittee is encouraged to preserve topsoil where practicable.

3. The permittee shall select appropriate BMPs for use at the site and list them in the SWPPP. When selecting effective BMPs, the permittee shall consider stormwater volume and velocity. A BMP that has demonstrated ineffectiveness in preventing or minimizing sediment or other pollutants from leaving a given site shall be replaced with a more effective BMP, or additional and sequential BMPs and treatment devices may be incorporated as site conditions allow. The permittee should consider a schedule for performing erosion control measures when selecting BMPs.

4. The SWPPP shall include a description of both structural and non-structural BMPs that will be used at the site.

(a) The SWPPP shall provide the following general information for each BMP which will be used one or more times at the site:

- 1) Physical description of the BMP;
- 2) Site conditions that must be met for effective use of the BMP;
- 3) BMP installation/construction procedures, including typical drawings; and
- 4) Operation and maintenance procedures and schedules for the BMP.

(b) The SWPPP shall provide the following information for each specific instance where a BMP is to be installed:

- 1) Whether the BMP is temporary or permanent;
- 2) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project; and
- 3) Site conditions that must be met before removal of the BMP if the BMP is not a permanent BMP.

5. Structural BMP Installation: The permittee shall ensure all BMPs are properly installed and operational at the locations and relative times specified in the SWPPP.

(a) Perimeter control BMPs for runoff from disturbed areas shall be installed before general site clearing is started. Note this requirement does not apply to earth disturbances related to initial site clearing and establishing entry, exit, or access of the site, which may require that stormwater controls be installed immediately after the earth

disturbance.

- (b) For phased projects, BMPs shall be properly installed as necessary prior to construction activities.
 - (c) Stormwater discharges which leave the site from disturbed areas shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps (including vegetative buffers), or silt fences prior to leaving the land disturbance site.
 - (d) A drainage course change shall be clearly marked on a site map and described in the SWPPP.
 - (e) If vegetative stabilization measures are being implemented, stabilization efforts are considered “installed” when all activities necessary to seed or plant the area are completed. Vegetative stabilization is not considered “operational” until the vegetation is established.
6. Install sediment controls along any perimeter areas of the site that are downgradient from any exposed soil or other disturbed areas. Prevent stormwater from circumventing the edge of the perimeter control. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.
7. For surface waters of the state, defined in Section 644.016.1(27) RSMo, located on or adjacent to the site, the permittee must maintain a riparian buffer or structural equivalent in accordance with at least one of the following options. The selection and location must be described in the SWPPP.
- (a) Provide and maintain a 50-foot undisturbed natural buffer; or
 - (b) Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - (c) If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
 - (d) The permittee is not required to comply with (a), (b), or (c) above if one or more of the following exceptions apply and documentation is provided in the SWPPP:
 - 1) As authorized per CWA Section 404 Department of the Army permit and its associated Section 401 Water Quality Certification from the Department.
 - 2) If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and waters of the state located within 50 feet of the site. This includes situations where the permittee has implemented permanent control measures that will prevent such discharges, such as a berm or other barrier.
 - 3) Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.
 - a. Where some natural buffer exists but portions of the area within 50 feet of the waters of the state are occupied by preexisting development disturbances the permittee is required to comply with (a), (b), or (c) above.
 - 4) For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided the permittee limit disturbances within 50 feet of any waters of the state and/or the permittee provides supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the water of the state. The permittee must also document in the SWPPP the rationale for why it is infeasible for the permittee to implement (a), (b), or (c) and describe any buffer width retained and supplemental BMPs installed.
 - (e) Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:
 - 1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
 - 2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable.
8. Slopes for disturbed areas must be identified in the SWPPP. A site map or maps defining the sloped areas for all phases of the project must be included in the SWPPP. The disturbance of steep slopes shall be minimized.
9. Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil.
- (a) Locate the piles outside of any natural buffers zones, established under the condition above, and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
 - (b) Install a sediment barrier along all downgradient perimeter areas;
 - (c) Divert surface flows around stockpiles to reduce and minimize erosion of the stockpile.

- (d) For piles that will be unused for 14 or more days, provide cover with appropriate temporary stabilization in accordance with Part V. BMP REQUIREMENTS, Condition 13.
 - (e) Rinsing, sweeping, or otherwise placing any soil, sediment, debris, or stockpiled product which has accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the state is prohibited.
10. The site shall include BMPs for pollution prevention measures and shall be noted in the SWPPP. At minimum such measures must be designed, installed, implemented, and maintained to:
- (a) Minimize the discharge of pollutants from equipment and vehicle rinsing; no detergents, additives, or soaps of any kind shall be discharged. Rinse waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
 - (b) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;
 - (c) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures, including, but not limited to, the installation of containment berms and use of drip pans at petroleum product and liquid storage tanks and containers; and
 - (d) Prevent discharges from causing or contributing to an exceedance of water quality standards including general criteria.
11. Sedimentation Basins: The SWPPP shall include a sedimentation basin for each drainage area with ten or more acres disturbed at one time.
- (a) The sedimentation basin shall be sized, at a minimum, to treat a local 2-year, 24-hour storm.
 - (b) Sediment basins shall not be constructed in any waters of the state or natural buffer zones.
 - (c) Discharges from dewatering activities shall be managed by appropriate controls. The SWPPP shall include a description of any anticipated dewatering methods and specific BMPs designed to treat dewatering water.
 - 1) Appropriate controls include, but are not limited to, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g. bag or sand filters), and passive treatment systems that are designed to remove or retain sediment.
 - 2) Erosion controls and velocity dissipation devices (e.g., check dams, riprap, and vegetated buffers) to minimize erosion at inlets, outlets, and discharge points from shall be utilized.
 - 3) Water with an oil sheen shall not be discharged and shall be marked in SWPPP.
 - 4) Visible floating solids and foam shall not be discharged.
 - (d) Until final stabilization has been achieved, sediment basins and impoundments shall utilize outlet structures or floating skimmers that withdraw water from the surface when discharging.
 - 1) Under frozen conditions, it may be considered infeasible to withdraw water from the surface and an exception can be made for that specific period as long as discharges that may contain sediment and other pollutants are managed by appropriate controls. If determined infeasible due to frozen conditions, documentation must be provided in the SWPPP to support the determination, including the specific conditions or time period when this exception applies.
 - (e) Accumulated sediment shall not exceed 50% of total volume or as prescribed in the design, whichever is less. Note in the SWPPP the locations for disposal of the material removed from sediment basins.
 - (f) Prevent discharges to the receiving stream causing excessive visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer.
 - (g) The SWPPP shall require the basin be maintained until final stabilization of the disturbed area served by the basin.

Where use of a sediment basin is infeasible, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent water quality protection to achieve compliance with this permit. The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

12. Soil disturbing activities on site that have ceased either temporarily or permanently shall initiate stabilization immediately in accordance with the options below. For soil disturbing activities that have been temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:
 - (a) The permittee shall construct BMPs to establish interim stabilization; and
 - (b) Stabilization must be initiated immediately and completed within 14 calendar days.
 - (c) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately and completed within 14 calendar days.
 - 1) Allowances to the 14-day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. The use of allowances shall be documented in the SWPPP. Allowances may be determined unnecessary after review by the Department.
 - (d) Until stabilization is complete, interim sediment control shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes. If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical), then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site. The following activities would constitute the immediate initiation of stabilization:
 - 1) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;
 - 2) Applying mulch or other non-vegetative product to the exposed areas;
 - 3) Seeding or planting the exposed areas;
 - 4) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.
 - (e) If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. Installed does not mean established.
 - (f) If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied.
 - 1) Non-vegetative stabilization shall prevent erosion and shall be chosen for site conditions, such as slope and flow of stormwater.
 - (g) Final stabilization is not considered achieved until vegetation has grown and established to meet the requirements below.
13. Prior to removal of BMPs, ceasing site inspections, and removing from the quarterly report, final stabilization must be achieved. Final stabilization shall be achieved as soon as possible once land disturbance activities have ceased. Document in the SWPPP the type of stabilization and the date final stabilization is achieved.
 - (a) The project is considered to have achieved final stabilization when perennial vegetation (excluding volunteer vegetation), pavement, buildings, or structures using permanent materials (e.g., riprap, gravel, etc.) cover all areas that have been disturbed. With respect to areas that have been vegetated, vegetation must be at least 70% coverage of 100% of the vegetated areas on site. Vegetation must be evenly distributed.
 - (b) Disturbed areas on agricultural land are considered to have achieved final stabilization when they are restored to their preconstruction agricultural use. If former agricultural land is changing to non-agricultural use, this is no longer considered agricultural land and shall follow condition (a).
 - (c) If the intended function of a specific area of the site necessitates that it remain disturbed, final stabilization is considered achieved if all of the following are met:
 - 1) Only the minimum area needed remains disturbed (i.e., dirt access roads, motocross tracks, utility pole pads, areas being used for storage of vehicles, equipment, materials). Other areas must meet the criteria above.

- 2) Permanent structural BMPs (e.g., rock checks, berms, grading, etc.) or non-vegetative stabilization measures are implemented and designed to prevent sediment and other pollutants from entering waters of the state.
- 3) Inspection requirements in Part IV. SWPPP MANAGEMENT REQUIREMENT, Condition 11 are met and documented in the SWPPP.
- (d) Winter weather and frozen conditions do not excuse any of the above final stabilization requirements. If vegetation is required for stabilization the permittee must maintain BMPs throughout winter weather and frozen conditions until thawing and vegetation meets final stabilization criteria above. Document stabilization attempts during frozen conditions in the SWPPP. Consider future freezing when removing vegetation and plan with temporary stabilization techniques before the ground becomes frozen.

VI. SITE FINALIZATION & PERMIT TERMINATION

1. Until a site is finalized, the permittee must comply with all conditions in the permit, including continuation of site inspections and reporting quarterly to the Department. To finalize the site and remove from this permit coverage, the site shall meet the following requirements:
 - (a) For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which the permittee had control during the construction activities, the requirements for final vegetative or non-vegetative stabilization in Part V. BMP REQUIREMENTS, Condition 13;
 - (b) The permittee has removed and properly disposed of all construction materials, waste, and waste handling devices and has removed all equipment and vehicles that were used during construction, unless intended for long-term beyond construction phase;
 - (c) The permittee has removed all temporary BMPs that were installed and maintained during construction, except those that are intended for long-term use or those that are biodegradable; and
 - (d) The permittee has removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following the construction activities.
2. The permit may be terminated if;
 - (a) There has been a transfer of control of all areas of the site for which the current permittee is responsible under this permit to another operator, and that operator has obtained coverage under this permit;
 - (b) Active sites obtain coverage under an individual or alternative general NPDES permit, with land disturbance conditions; or
 - (c) This permit may be terminated when all projects covered under this permit are finalized. In order to terminate the permit, the permittee shall notify the Department by submitting a Request for Termination along with the final quarterly report for the current calendar quarter.

VII. REPORTING AND SAMPLING REQUIREMENTS

1. The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns, or evidence of off-site impacts from activities at a site. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.
2. Electronic Discharge Monitoring Report (eDMR) Submission System. The NPDES Electronic Reporting Rule, 40 CFR Part 127, reporting of any report required by the permit shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only Department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the Department. The facility must register in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due.
3. Permittees shall prepare a quarterly report with a list of active land disturbance sites including any off-site borrow or depositional areas associated with the construction project and submit the following information electronically as an

attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:

- (a) The name of the project;
- (b) The location of the project (including the county);
- (c) The name of the primary receiving water(s) for each project;
- (d) A description of the project;
- (e) The number of acres disturbed;
- (f) The percent of completion of the project; and
- (g) The projected date of completion.

The quarterly report(s) shall be maintained by the permittee and readily available for review by the Department at the address provided on the application as well as submitted quarterly via the Department's eDMR system. The permittee shall submit quarterly reports according to Table A.

| Table A | Schedule for Quarterly Reporting |
|---|---|
| Activity for the months of: | Report is due: |
| January, February, March (1st Quarter) | April 28 |
| April, May, June (2nd Quarter) | July 28 |
| July, August, September (3rd Quarter) | October 28 |
| October, November, December (4th Quarter) | January 28 |

VIII. STANDARD PERMIT CONDITIONS

1. **Records:** The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site named in the State Operating Permit, results of any monitoring and analysis, and all site inspection records required by this general permit.
 - (a) The records shall be accessible during normal business hours and retained for a period of at least three (3) years from the date of termination.
 - (b) The permittee shall provide a copy (electronic or otherwise) of the SWPPP to the Department, USEPA, or any local agency or government representative if they request a copy in the performance of their official duties within 24 hours of the request (or next working day), unless given more time by the representative.
 - (c) The permittee shall provide a copy of the SWPPP to those who are responsible for installation, operation, or maintenance of any BMP. The permittee, their representative, and/or the contractor(s) responsible for installation, operation and maintenance of the BMPs shall have a current copy of the SWPPP with them when on the project site.
2. **Land Ownership and Change of Ownership:** Federal and Missouri stormwater regulations [10 CSR 20-6.200(1) (B)] require a stormwater permit and erosion control measures for all land disturbances of one or more acres. These regulations also require a permit for less than one acre lots if the lot is part of a larger common plan of development or sale where that plan is at least one acre in size.
 - (a) If the permittee sells any portion of a permitted site to a developer for commercial, industrial, or residential use, this land remains a part of the common sale and the new owner must obtain a permit prior to conducting any land disturbance activity. Therefore, the original permittee must amend the SWPPP to show that the property has been sold and, therefore, no longer under the original permit coverage.
 - (b) Property of any size which is part of a larger common plan of development where the property has achieved final stabilization and the original permit terminated will require application of a new land disturbance permit for any future land disturbance activity unless the activity is by an individual residential building lot owner on a site less than one acre.
 - (c) If a portion of a larger common plan of development is sold to an individual for the purpose of building his or her own private residence, a permit is required if the portion of land sold is equal to or greater than one acre. No permit is required, however, for less than one acre of land sold.
3. **Permit Transfer:** This permit may not be transferred to a new owner.

4. Termination: This permit may be terminated when the project has achieved final stabilization, defined in Part VI. SITE FINALIZATION & PERMIT TERMINATION.
 - (a) In order to terminate the permit, the permittee shall notify the Department by submitting the form Request for Termination of Operating Permit Form MO 780-2814. The form should be submitted to the appropriate regional office or through an approved electronic system if it should become available.
 - (b) The Cover Page (Certificate Page) of the Master General Permit for Land Disturbance specifies the “effective date” and the “expiration date” of the Master General Permit. The “issued date” along with the “expiration date” will appear on the State Operating Permit issued to the applicant. **This permit does not continue administratively beyond the expiration date.**
5. Duty to Reapply: If the project or development completion date will be after the expiration date of this general permit, then the permittee must reapply to the Department for a new permit. This permit may be applied for and issued electronically in accordance with Section 644.051.10, RSMo.
 - (a) Due to the nature of the electronic permitting system, a period of time may be granted at the discretion of the Department in order to apply for a new permit after the new version is effective. Applicants must maintain appropriate best management practices and inspections during the discretionary period.
6. Duty to Comply: The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
7. Modification, Revocation, and Reopening:
 - (a) If at any time the Department determines that the quality of waters of the state may be better protected by reopening this permit, or revoking this permit and requiring the owner/operator of the permitted site to apply for a site-specific permit, the Department may revoke a general permit and require any person to obtain such an operating permit as authorized by 10 CSR20-6.010(13) and 10 CSR 20-6.200(1)(B).
 - (b) If this permit is reopened, modified, or revoked pursuant to this Section, the permittee retains all rights under Chapter 536 and 644 Revised Statutes of Missouri upon the Department’s reissuance of the permit as well as all other forms of administrative, judicial, and equitable relief available under law.
8. Other Information: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
9. Duty to Provide Information: The permittee shall furnish to the Department, within 24 hours unless explicitly granted more time in writing, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
10. Inspection and Entry: The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of the permit;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

11. Signatory Requirement:

- (a) All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
- (b) The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit (including monitoring reports or reports of compliance or non-compliance) shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
- (c) The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

12. Property Rights: This permit does not convey any property rights of any sort or any exclusive privilege.

13. Notice of Right to Appeal: If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty 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 AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: <https://ahc.mo.gov>



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

STORMWATER DISCHARGES FROM
THIS LAND DISTURBANCE SITE ARE
AUTHORIZED BY THE MISSOURI
STATE OPERATING PERMIT NUMBER:

ANYONE WITH QUESTIONS OR
CONCERNS ABOUT STORMWATER
DISCHARGES FROM THIS SITE,
PLEASE CONTACT THE MISSOURI
DEPARTMENT OF NATURAL
RESOURCES AT

1-800-361-4827

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET FOR MASTER GENERAL PERMIT
MO-R100xxx

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

Per 40 CFR 124.56, 40 CFR 124.8, and 10 CSR 20-6.020(1)(A)2, a Fact Sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the permit. A Fact Sheet is not an enforceable part of an MSOP.

DEFINITIONS FOR THE PURPOSES OF THIS PERMIT:

Common Promotional Plan: A plan undertaken by one (1) or more persons to offer lots for sale or lease; where land is offered for sale by a person or group of persons acting in concert, and the land is contiguous or is known, designated, or advertised as a common unit or by a common name or similar names, the land is presumed, without regard to the number of lots covered by each individual offering, as being offered for sale or lease as part of a common promotional plan.

Dewatering: The act of draining rainwater and/or groundwater from basins, building foundations, vaults, and trenches.

Effective Operating Condition: For the purposes of this permit, a stormwater control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Emergency-Related Project: A project initiated in response to a public emergency (e.g. earthquakes, extreme flooding conditions, tornado, disruptions in essential public services, pandemic) for which the related work requires immediate authorization to avoid imminent endangerment to human health/safety or the environment or to reestablish essential public services.

Exposed Soils: For the purposes of this permit, soils that as a result of earth-disturbing activities are left open to the elements.

Immediately: For the purposes of this permit, immediately should be defined as within 24 hours.

Impervious Surface: For the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

Infeasible: Infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices.

Install or Installation: When used in connection with stormwater controls, to connect or set in position stormwater controls to make them operational.

Land Disturbance Site or Site: The land or water area where land disturbance activities will occur and where stormwater controls will be installed and maintained. The land disturbance site includes construction support activities, which may be located at a different part of the property from where the primary land disturbance activity will take place or on a different piece of property altogether. Off-site borrow areas directly and exclusively related to the land disturbance activity are part of the site and must be permitted.

Larger Common Plan of Development or Sale: A continuous area where multiple separate and distinct construction activities are occurring under one plan, including any off-site borrow areas that are directly and exclusively related to the land disturbance activity. Off-site borrow areas utilized for multiple different land disturbance projects are considered their own entity and are not part of the larger common plan of development or sale. See definition of Common Promotional Plan to understand what a 'common plan' is.

Minimize: To reduce and/or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Non-structural Best Management Practices (BMPs): Institutional, educational, or pollution prevention practices designed to limit the amount of stormwater runoff or pollutants that are generated in the landscape. Examples of non-structural BMPs include picking up trash and debris, sweeping up nearby sidewalks and streets, maintaining equipment, and training site staff on stormwater control practices.

Operational: for the purposes of this permit, stormwater controls are made "operational" when they have been installed and implemented, are functioning as designed, and are properly maintained.

Ordinary High Water Mark: The line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.

Peripheral: For the purposes of this permit, peripheral should be defined as the outermost boundary of the area that will be disturbed.

Permanently: For the purposes of this permit, permanently is defined as any activity that has been ceased without any intentions of future disturbance.

Pollution Prevention Controls (or Measures): Stormwater controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

Qualified Person (inspections): A person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Stormwater Control (also referred to as sediment/erosion controls): refers to any temporary or permanent BMP or other method used to prevent or reduce the discharge of pollutants to waters of the state.

Structural BMP: Physical sediment/erosion controls working individually or as a group (treatment train) appropriate to the source, location, and area climate for the pollutant to be controlled. Examples of structural BMPs include silt fences, sedimentation ponds, erosion control blankets, and seeding.

Temporary Stabilization: A condition where exposed soils or disturbed areas are provided temporary vegetation and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Treatment Train: A multi-BMP approach to managing the stormwater volume and velocity and often includes erosion prevention and sediment control practices often applied when the use of a single BMP is inadequate in preventing the erosion and transport of sediment. A good option to utilize as a corrective action.

Volunteer Vegetation: A volunteer plant is a plant that grows on its own, rather than being deliberately planted for stabilization purposes. Volunteers often grow from seeds that float in on the wind, are dropped by birds, or are inadvertently mixed into soils. Commonly, volunteer vegetation is referred to as 'weeds'. This does not meet the requirements for final stabilization.

Waters of the State: Section 644.016.1(27) RSMo. defines waters of the state as, "All waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common."

PART I – BASIC PERMIT INFORMATION

| | |
|-----------------------|---|
| Facility Type: | Industrial Stormwater; Land Disturbance |
| Facility SIC Code(s): | 1629 |
| Facility Description: | Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state). |

This permit establishes a Stormwater Pollution Prevention Plan (SWPPP) requirement for pollutants of concern from this type of facility or for all facilities and sites covered under this permit. 10 CSR 20-6.200(7) specifies "general permits shall contain BMP requirements and/or monitoring and reporting requirements to keep the stormwater from becoming contaminated".

Land disturbance activities include clearing, grubbing, excavating, grading, filling and other activities that result in the destruction of the root zone and/or other activities that are reasonably certain to cause pollution to waters of the state. A Missouri State Operating Permit for land disturbance permit is required for construction disturbance activities of one or more acres or for construction activities that disturb less than one acre when they are part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project.

The primary requirement of a land disturbance permit is the development of a SWPPP which incorporates site-specific BMPs to minimize soil exposure, soil erosion, and the discharge of pollutants. The SWPPP ensures the design, implementation, management, and maintenance of BMPs in order to prevent sediment and other pollutants from leaving the site.

When it precipitates, stormwater washes over the loose soil on a construction site and various other materials and products being stored outside. As stormwater flows over the site, it can pick up pollutants like sediment, debris, and chemicals from the loose soil and transport them to nearby storm sewer systems or directly into rivers, lakes, or coastal waters.

The Missouri Department of Natural Resources is responsible for ensuring that construction site operators have the proper stormwater controls in place so that construction can proceed in a way that protects your community's clean water and the surrounding environment. One way the department helps protect water quality is by issuing land disturbance permits.

Local conditions are not considered when developing conditions for a general permit. A facility may apply for a site-specific permit if they desire a review of site-specific conditions.

PART II – RECEIVING STREAM INFORMATION

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

Per Missouri Effluent Regulations (10 CSR 20-7.015), the waters of the state are divided into seven (7) categories. This permit applies to facilities discharging to the following water body categories:

- ✓ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ✓ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ✓ Losing Streams [10 CSR 20-7.015(4)]
- ✓ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ✓ Special Streams [10 CSR 20-7.015(6)]
- ✓ Subsurface Waters [10 CSR 20-7.015(7)]
- ✓ All Other Waters [10 CSR 20-7.015(8)]

Missouri Water Quality Standards (10 CSR 20-7.031) defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's designated water uses shall be maintained in accordance with 10 CSR 20-7.031(24). A general permit does not take into consideration site-specific conditions.

MIXING CONSIDERATIONS:

This permit applies to receiving streams of varying low flow conditions. Therefore, the effluent limitations must be based on the smallest low flow streams considered, which includes waters without designated uses. As such, no mixing is allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)]. No Zone of Initial Dilution is allowed. [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:

There are no receiving water monitoring requirements recommended at this time.

PART III – RATIONALE AND DERIVATION OF EFFLUENT LIMITATIONS & PERMIT CONDITIONS

305(B) REPORT, 303(d) LIST, & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 305(b) of the Federal CWA requires each state identify waters not meeting Water Quality Standards and for which adequate water pollution controls have not been required. Water Quality Standards protect such beneficial uses of water as whole body contact, maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The 303(d) list helps state and federal agencies keep track of waters which are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed which shall include the TMDL calculation. For facilities with an existing general permit before a TMDL is written on their receiving stream, the Department will evaluate the permit and may require any facility authorized by this general permit to apply for and obtain a site-specific operating permit.

ANTI-BACKSLIDING:

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

- ✓ Not Applicable: All effluent limitations in this permit are at least as protective as those previously established.

ANTIDEGRADATION:

Antidegradation policies ensure protection of water quality for a particular water body on a pollutant by pollutant basis to ensure Water Quality Standards are maintained to support beneficial uses such as fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as an Outstanding National Resource Water or Outstanding State Resource Water [10 CSR 20-7.031(3)(C)]. Antidegradation policies are adopted to minimize adverse effects on water.

The Department has determined the best avenue forward for implementing the Antidegradation requirements into general stormwater permits is by requiring the appropriate development and maintenance of a SWPPP. The SWPPP must identify all reasonable and effective BMPs, taking into account environmental impacts and costs. This analysis must document why no discharge or no exposure options are not feasible at the facility. This selection and documentation of appropriate control measures will then serve as the analysis of alternatives and fulfill the requirements of the Antidegradation Rule and Implementation Procedure 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Any facility seeking coverage under this permit which undergoes expansion or discharges a new pollutant of concern must update their SWPPP and select reasonable and cost effective new BMPs. New facilities seeking coverage under this permit are required to develop a SWPPP including this analysis and documentation of appropriate BMPs. Renewal of coverage for a facility requires a review of the SWPPP to ensure the selected BMPs continue to be appropriate.

- ✓ Applicable; the facility must review and maintain stormwater BMPs as appropriate.

BENCHMARKS:

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented at the discretion of the permit writer. Benchmarks require the facility to monitor and, if necessary, replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the limitations of the permit.

- ✓ Not applicable; this permit does not contain numeric benchmarks.

BEST MANAGEMENT PRACTICES (BMPs):

Minimum site-wide BMPs are established in this permit to ensure all permittees are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. While not all sites require a SWPPP because the SIC codes are specifically exempted in 40 CFR 122.26(b)(14), these BMPs are not specifically included for stormwater purposes. These practices are minimum requirements for all industrial sites to protect waters of the state. If the minimum BMPs are not followed, the facility may violate general criteria [10 CSR 20-7.031(4)]. Statutes are applicable to all permitted facilities in the state; therefore, pollutants cannot be released unless in accordance with RSMo 644.011 and 644.016 (17).

CHANGES IN DISCHARGES OF TOXIC POLLUTANT:

This special condition reiterates the federal rules found in 40 CFR 122.44(f) and 122.42(a)(1). In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "...any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the CWA then refers to those parameters found in 40 CFR 401.15.

The permittee should also consider any other toxic pollutant in the discharge as reportable under this condition.

EFFLUENT LIMITATION GUIDELINE:

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. All are technology based limitations which must be met by the applicable facility at all times.

- ✓ The industries covered under this permit have an associated Effluent Limit Guideline (ELG) which is applicable to the stormwater discharges in this permit and is applied under 40 CFR 125.3(a).

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize CWA reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

- ✓ Applicable; this permit requires quarterly reports.

GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether discharges have reasonable potential to cause or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). In instances where reasonable potential exists, the permit includes limitations within the permit to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, RSMo 644.076.1, as well as Standard Permit Conditions Part VIII of this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission.

LAND APPLICATION:

Land application, or surficial dispersion of wastewater and/or sludge, is performed by facilities to maintain a basin as no-discharge. Requirements for these types of operations are found in 10 CSR 20-6.015; authority to regulate these activities is from RSMo 644.026.

- ✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

LAND DISTURBANCE:

Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.

- ✓ Applicable; this permit provides coverage for land disturbance activities. These activities have SWPPP requirements and may be combined with the standard site SWPPP. Land disturbance BMPs should be designed to control the expected peak discharges. The University of Missouri has design storm events for the 25 year 24 hour storm; these can be found at: http://ag3.agebb.missouri.edu/design_storm/comparison_reports/20191117_25yr_24hr_comparison_table.htm; to calculate peak discharges, the website <https://www.lmnoeng.com/Hydrology/rational.php> has the rational equation to calculate expected discharge volume from the peak storm events.

NUTRIENT MONITORING:

Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8.

- ✓ This is a stormwater only permit; therefore, it is not subject to provisions found in 10 CSR 20-7.015 per 10 CSR 20-7.015(1)(C).

OIL/WATER SEPARATORS:

Oil water separator (OWS) tank systems are frequently found at industrial sites where process water and stormwater may contain oils and greases, oily wastewaters, or other immiscible liquids requiring separation. Food industry discharges typically require pretreatment prior to discharge to municipally owned treatment works. Per 10 CSR 26-2.010(2)(B), all oil water separator tanks must be operated according to manufacturer's specifications and authorized in NPDES permits per 10 CSR 26-2.010(2) or may be regulated as a petroleum tank.

- ✓ Not applicable; this permit does not authorize the operation of OWS. The facility must obtain a separate permit to cover operation of and discharge from these devices.

PERMIT SHIELD:

The permit shield provision of the CWA (Section 402(k)) and Missouri Clean Water Law (644.051.16 RSMo) provides that when a permit holder is in compliance with its NPDES permit or MSOP, they are effectively in compliance with certain sections of the CWA and equivalent sections of the Missouri Clean Water Law. In general, the permit shield is a legal defense against certain enforcement actions but is only available when the facility is in compliance with its permit and satisfies other specific conditions, including having completely disclosed all discharges and all facility processes and activities to the Department at time of application. It is the facility's responsibility to ensure that all potential pollutants, waste streams, discharges, and activities, as well as wastewater land application, storage, and treatment areas, are all fully disclosed to the Department at the time of application or during the draft permit review process. Subsequent requests for authorization to discharge additional pollutants or expanded or newly disclosed flows, or for authorization for previously unpermitted and undisclosed activities or discharges, will likely require permit modification or may require the facility be covered under a site specific permit.

PRETREATMENT PROGRAM:

This permit does not regulate pretreatment requirements for facilities discharging to an accepting permitted wastewater treatment facility. If applicable, the receiving entity (the publicly owned treatment works - POTW) must ensure compliance with any effluent limitation guidelines for pretreatment listed in 40 CFR Subchapter N per 10 CSR 20-6.100. Pretreatment regulations per RSMo 644.016 are limitations on the introduction of pollutants or water contaminants into publicly owned treatment works or facilities.

- ✓ Not Applicable; the facilities covered under this permit are not required to meet pretreatment requirements under an ELG.

PUBLIC NOTICE OF COVERAGE FOR AN INDIVIDUAL FACILITY:

Public Notice of reissuance of coverage is not required unless the facility is a specific type of facility as defined in 10 CSR 20-6.200(1). The need for an individual public notification process shall be determined and identified in the permit [10 CSR 20-6.020(1)(C)5.].

- ✓ Not applicable; public notice is not required for coverage under this permit to individual facilities. The MGP is public noticed in lieu of individual permit PN requirements.

REASONABLE POTENTIAL ANALYSIS (RPA):

Federal regulation 40 CFR Part 122.44(d)(1)(i) requires effluent limitations for all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with 40 CFR Part 122.44(d)(iii) if the permit writer determines any given pollutant has the reasonable potential to cause or contribute to an in-stream excursion above the water quality standard, the permit must contain effluent limits for the pollutant.

- ✓ The permit writer reviewed industry materials, available past inspections, and other documents and research to evaluate general and narrative water quality reasonable potential for this permit. Permit writers also use the Department's permit writer's manual, the EPA's permit writer's manual (<https://www.epa.gov/npdes/npdes-permit-writers-manual>), program policies, and best professional judgment. For each parameter in each permit, the permit writer carefully considers all applicable information regarding technology based effluent limitations, effluent limitation guidelines, and water quality standards. Best professional judgment is based on the experience of the permit writer, cohorts in the Department and resources at the EPA, research, and maintaining continuity of permits if necessary. For stormwater permits, the permit writer is required per 10 CSR 6.200(6)(B)2 to consider: A. application and other information supplied by the permittee; B. effluent guidelines; C. best professional judgment of the permit writer; D. water quality; and E. BMPs.

SCHEDULE OF COMPLIANCE (SOC):

Per § 644.051, RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement or if prohibited by other statute or regulation. An SOC includes an enforceable sequence of interim requirements (e.g. actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the CWA, and 40 CFR 122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, an SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

- ✓ Not Applicable: This permit does not contain a SOC.

SETBACKS:

Setbacks, sometimes called separation distances, are common elements of permits and are established to provide a margin of safety in order to protect the receiving water and other features from accidents, spills, unusual events, etc. Specific separation distances are included in 10 CSR 20-8 for minimum design standards of wastewater structures. While wastewater is considered separately from stormwater under this permit, the guides and Chapter 8 distances may remain relevant to requirements under this permit if deemed appropriate by the permittee.

- ✓ Discharge to the watersheds of a Metropolitan No-Discharge Stream (10 CSR 20-7.031 Table F) is authorized by this permit if the discharges are in compliance with 10 CSR 20-7.015(5) and 10 CSR 20-7.031(7). Discharges to these watersheds are authorized for uncontaminated stormwater discharges only.
- ✓ This permit authorizes stormwater discharges which are located in a way to allow water to be released into sinkholes, caves, fissures, or other openings in the ground which could drain into aquifers (except losing streams) per 10 CSR 20-7.015(7). It is the best professional judgment of the permit writer to allow discharges to losing streams as the effluent is stormwater only.
- ✓ This permit authorizes stormwater discharge in the watersheds of Outstanding state Resource Waters (OSRW); Outstanding National Resources Waters (ONRW), which includes the Ozark National Riverways and the National Wild and Scenic Rivers System; and impaired waters as designated in the 305(b) Report provided no degradation of water quality occurs in the OSRW and ONRW due to discharges from the permitted facility per 10 CSR 20-7.015(6)(B) and 10 CSR 20-7.031(3)(C). Additionally, if the facility is found to be causing degradation or contributing to an impairment by discharging a pollutant of concern during an inspection or through complaint investigations, they will be required to become a no discharge facility or obtain a site specific permit with more stringent monitoring and SWPPP requirements. Missouri's impaired waters can be found at <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters>. Sites within 1000 feet of a OSRW, ONRW, or water impaired for sediment must operate as a no-discharge facility. These additional protections are borrowed from the USEPA 2021 draft Construction General Permit.

SLUDGE – DOMESTIC BIOSOLIDS:

Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for beneficial use (i.e. fertilizer). Sewage sludge is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works; including, but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ This permit does not authorize discharge or land application of biosolids. Sludge/biosolids is not generated by this industry.

SLUDGE – INDUSTRIAL:

Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process wastewater in a treatment works; including, but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and a material derived from industrial sludge.

- ✓ Not applicable; sludge is not generated by this industry.

SPILL REPORTING:

Any emergency involving a hazardous substance must be reported to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The Department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply when the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I. <https://dnr.mo.gov/waste-recycling/investigations-cleanups/environmental-emergency-response>.

Underground and above ground storage devices for petroleum products, vegetable oils, and animal fats may be subject to control under federal Spill Prevention, Control, and Countermeasure Regulation and are expected to be managed under those provisions, if applicable. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) which are transported, stored, or used for maintenance, cleaning or repair shall be managed according to the provisions of RCRA and CERCLA.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k), BMPs must be used to control or abate the discharge of pollutants when: 1) Authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; 3) Numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*, (Document number EPA 833-R-06-004) published by the EPA in 2007 https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf, BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. BMPs may take the form of a process, activity, or physical structure. Additionally, in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to 1) identify sources of pollution or contamination, and 2) select and carry out actions which prevent or control the pollution of storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

A SWPPP must be prepared if the SIC code for the facility is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management.

The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed, the facility will employ the control measures determined to be adequate to prevent pollution from entering waters of the state. The facility will conduct inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example if the BMP being employed is deficient in controlling stormwater pollution, corrective action should be taken to repair, improve, or replace the failing BMP. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

The EPA has developed factsheets on the pollutants of concern for specific industries along with the BMPs to control and minimize stormwater (<https://www.epa.gov/npdes/stormwater-discharges-industrial-activities>). Along with EPA's factsheets, the International Stormwater BMP database (<https://bmpdatabase.org/>) may provide guidance on BMPs appropriate for specific industries.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)].

Alternative analysis evaluation of the BMPs is a structured evaluation of BMPs which are reasonable and cost effective. The alternative analysis evaluation should include practices designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of the *Antidegradation Implementation Procedure* defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The alternative analysis evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure*, Section II.B.

- ✓ Applicable: A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate control practices specific to site conditions, and provide for maintenance and adherence to the plan.

UNDERGROUND INJECTION CONTROL (UIC):

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to section 1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by RSMo 577.155; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in RSMo 577.155; Class V wells are shallow injection wells; some examples are heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well.

In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of drinking water standards or groundwater standards under 10 CSR 20-7.031 or other health-based standards or may otherwise adversely affect human health. If the Department finds the injection activity may endanger USDWs, the Department may require closure of the injection wells or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the permittee shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)).

- ✓ Not applicable; this permit does not authorize subsurface wastewater systems or other underground injection. These activities must be assessed under an application for a site specific permit. Certain discharges of stormwater into sinkholes may qualify as UIC. It is important the permittee evaluate all stormwater basins, even those holding water; as sinkholes have varying seepage rates. This permit does not allow stormwater discharges into sinkholes. The facility must ensure sinkholes are avoided in the construction process. The State's online mapping resource <https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=87ebef4af15d438ca658ce0b2bbc862e> has a sinkhole layer.

VARIANCE:

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

- ✓ Not Applicable: This permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITATIONS:

Per 10 CSR 20-2.010(78), the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant which may be discharged into the stream without endangering its water quality. 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 (TSD) (EPA/505/2-90-001).

- ✓ Not applicable; water quality limitations were not applied in this permit.

WATER QUALITY STANDARDS:

Per 10 CSR 20-7.031(4), General Criteria shall be applicable to all waters of the state at all times, including mixing zones. Additionally, 40 CFR 122.44(d)(1) directs the Department to include in each NPDES permit conditions to achieve water quality established under Section 303 of the CWA, including state narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

Per 10 CSR 20-7.031(1)(FF), a toxicity test conducted under specified laboratory conditions on specific indicator organism; and per 40 CFR 122.2, the aggregate toxic effect of an effluent measured directly by a toxicity test. A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with, or through synergistic responses when mixed with receiving water.

- ✓ Not applicable: At this time, permittees are not required to conduct a WET test. This permit is for stormwater only.

PART IV – EFFLUENT LIMITATIONS DETERMINATION

EPA Construction General Permit (CGP)

The CGP was used to research and support best professional judgment decisions made in establishing technology-based conditions for this general permit which are consistent with national standards. The permit writer determined the standards established by the CGP are achievable and consistent with federal regulations. Additionally, the conditions reflecting the best practicable technology currently available are utilized to implement the ELG.

In this general permit, technology-based effluent conditions are established through the SWPPP and BMP requirements. Effective BMPs should be designed on a site-specific basis. The implementation of inspections provides a tool for each facility to evaluate the effectiveness of BMPs to ensure protection of water quality. Any flow through an outfall is considered a discharge. Future permit action due to permit modification may contain new operating permit terms and conditions which supersede the terms and conditions, including effluent limitations, of this operating permit.

PART V–REPORTING REQUIREMENTS

SAMPLING:

The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns or BMP effectiveness, or evidence of off-site impacts from activities at the facility. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.

REPORTING:

There are quarterly reporting requirements for MO-R100xxx land disturbance permits. Project specific information is required to be report to the Department through the eDMR system.

PART VI – RAINFALL VALUES FOR MISSOURI & SURFACE WATER BUFFER ZONES

Knowledge of the 2-year, 24-hour storm event is used in this permit for two main reasons:

- 1) The design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants.
- 2) If the seven-day inspection frequency is utilized, an inspection must occur within 48 hours after any storm event equal to or greater than a 2-year, 24 hour storm has ceased.

For site-specific 2-year, 24-hour storm event information utilize the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 (NOAA Atlas 14) which is located at https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html. For more information visit; https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14_Volume8.pdf.

Surface Water Buffer Zones: In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of erosion and sediment controls used to reduce the discharge of sediment prior to the buffer. For additional information; https://www.epa.gov/sites/default/files/2017-02/documents/2017_cgp_final_appendix_g_-_buffer_reqs_508.pdf

PART VII – ADMINISTRATIVE REQUIREMENTS

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

PUBLIC MEETING:

The department hosted three public meetings for this permit. The meetings were held on January 27, February 17, and March 9, 2021.

PUBLIC NOTICE:

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

The Department must give public notice of a pending permit or of a new or reissued Missouri State Operating Permit. The public comment period is a length of time not less than thirty (30) days following the date of the public notice, during which interested persons may submit written comments about the proposed permit.

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

- ✓ The Public Notice period for this permit is started March 25, 2022 and ended April 25, 2022. Two comment letters were received.

DATE OF FACT SHEET: 03/2/2022

COMPLETED BY:

SARAH WRIGHT

MS4 & LAND DISTURBANCE PERMITTING COORDINATOR

MISSOURI DEPARTMENT OF NATURAL RESOURCES

WATER PROTECTION PROGRAM

OPERATING PERMITS SECTION - STORMWATER AND CERTIFICATION UNIT

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