December 2023 LSB Chemical L.L.C. (Previously El Dorado Chemical) Quarterly Report per 8/16/2023 Notice of Non-compliance

Minimize Wastewater Contaminant Loading

LSB continues to initiate and implement projects to minimize the process loss of ammonia and nitrate. The following items have been implemented or are in various planning stages to address wastewater loading. Any additional projects developed will be outlined below.

Internal Engineering assessment of Process Water reuse (ongoing)

LSB is focusing on optimizing the reuse of process wastewater from the two ammonium nitrate prilling plants. We continue to evaluate potential products that could be manufactured from this concentrated process wastewater stream which could reduce the amount of ammonia and nitrate reaching the wastewater treatment system. Currently, the process wastewater cannot be reused in the processes because it causes build up of contaminants in the products.

Engineering study of stormwater flows in the prill area to reduce stormwater inflow into the remelt system.

Hunt, Guillot & Associates (HGA) has completed a draft basis of estimate and site paving drawing. LSB will be meeting with HGA and has finalized a paving plan. Part of the project is evaluating methods to reduce the contamination of stormwater including redirection of "clean" stormwater to a location that will not increase the load to the wastewater treatment system. The project is also evaluating elevations, additional grading, and installation of additional solid surfaces, e.g., concrete or asphalt, that can be compliantly directed to a stormwater outfall. This project is submitted under the 2024 capital budget and is under management review.

Ammonium nitrate Prill Stormwater Procedures (Completed April 2023)

LSB implemented improved Stormwater management practices related to transloading, i.e., unloading of Ammonium Nitrate Prill from railcars into storage or onto trucks, and transportation of Ammonium Nitrate Prill within the plant. These improved practices should minimize Ammonium Nitrate impacts to the stormwater and include 1) methods and equipment to minimize ammonium nitrate spillage when transloading from railcars such as the El Dorado asphalt pad at the transloading area and 2) spillage cleanup requirements.

Pad installation for prill transloading area. (Completed August 2023)

The above-mentioned asphalt pad was installed in August of 2023.

Installation of covers to protect significant materials from Stormwater exposure.

LSB has identified two locations to prevent exposure of AN to stormwater. Portable structures are being procured to protect these locations. Expected completion by the end of the 1st quarter of 2024.

Minimize Wastewater Inflows

LSB completed the following projects focused on minimization of wastewater volume. These efforts will allow the system to treat the wastewater volume more efficiently. Most projects that minimize wastewater flow should concurrently minimize wastewater loadings.

Stormwater runoff and water balance study (Completed June 2022)

LSB completed an initial stormwater runoff and water balance study in the ammonium nitrate plants in the 2nd Quarter of 2022. This assessed water inflows into Pond 004, and was focused on the ammonium nitrate plants and was not a plant wide study.

E2 Gutter Installation (Completed Oct 2022)

Installation of a gutter system to collect and redirect stormwater from the E2 ammonium nitrate plant building roof runoffs to Lake Lee instead of into Pond 004. This minimizes the amount of stormwater reaching Pond 004 which will enable better process water reuse. This installation was developed based upon the Water Balance Study.

Stormwater Diversion Structures

This project should reduce the amount of contaminants in the stormwater flow from areas from the two ammonium nitrate plants. Funding has been approved for this project, and it is scheduled to be implemented within the first quarter of 2024. All parts have arrived and construction has begun.

Maximize Treatment Efficiency and Capacity

Installation of NH3 Stripper (Completed July 2023)

In an effort to minimize the amount of ammonia in Lake Lee and the overall loading of nitrogen containing compounds in the wastewater treatment system, LSB completed air quality permitting and installed an air stripper on the water prior to entry into Lake Lee. The air stripper commenced operation on 21 July 2023. Initial testing indicates water being treated by the stripper results in an approximate 20% reduction of ammonia. This reduces the amount of nitrogen containing compounds in Lake Killdeer.

Installation of baffles in Lake Kildeer

In January 2023 a contractor completed a dye study to determine if channeling was occurring in the flow through Lake Killdeer. This study confirmed that the mixing in Lake Killdeer is not uniform, resulting in less than optimal treatment. LSB is evaluating bids from multiple contractors to install underwater baffles to direct the flow in Lake Killdeer, and it is anticipated the project will achieve increased residence time resulting in improved treatment in Lake Killdeer. Parts are onsite and permit application is expected to be submitted in January of 2024. It is currently scheduled for installation in the 2nd Quarter of 2024.

Formal Evaluation and Selection of Wastewater Treatment System

LSB met with Black & Veatch, a wastewater consulting firm, to determine the best treatment possibilities for Pond 004. Based on these preliminary conversations, a biological system initially appeared to be the leading option. LSB has recently received the report and has selected biological treatment units out of the options evaluated by Black & Veatch.

Based on review of Black and Veatch data, LSB has made a decision to proceed with biological treatment of Pond 004. However, LSB must still assess treatment challenges such as predilution, carbon addition, and sludge generation. LSB is moving two existing off-site package plants that would be moved to El Dorado to facilitate biological treatment and they are expected to arrive in January 2024. This methodology will allow us to slowly treat the water in Pond 004 and allow the function of Pond 004 to transition into a stormwater retention pond.

Design of treatment system for Higher Contaminated water

LSB will begin working with B&V to develop a design of the treatment system to overcome the challenges to treatment such as predilution, carbon addition, and sludge generation. B&V is currently developing an engineering design for this option.

Installation of treatment system for Higher Contaminated Water

This will be developed as the design is finalized.

Research Ongoing biological Treatment in Lake Kildeer

We are discussing with suppliers of nitrification/denitrification bacteria on the best method to dose Lake Killdeer to increase carbon and alkalinity in the lake. Increasing available carbon should promote additional biological activity to reduce the amount of ammonia in Lake Killdeer and the effluent discharge. LSB will submit a permit application for any recommended biological additions before implementation.

Maximize Compliant Discharge

Emergency Spillway Permit Application (Completed April 2023)

In April 2023 LSB submitted a supplement to the current NPDES permit renewal that is pending with the Arkansas Department of Environmental Quality (ADEQ). This application contained information on the currently unpermitted emergency spillway on Lake Killdeer. This emergency spillway was part of the original construction of Lake Killdeer in the late 1970's but was never included in the site's NPDES permit.

Emergency Operating Procedure (Ongoing)

In the 3rd Quarter of 2022, LSB developed an operating procedure to guide decisions in responding to large rainfall events. This operating procedure, as supplemented, has been converted to the Emergency Contingency Plan requested by ADEQ under Interim Measure 5. LSB is using this Emergency Contingency Plan as a guide in making wastewater treatment system operating decisions.

Outfall 002

Replacement of battery backup for PLC (Completed February 2023)

Outfall 002 is an emergency outfall for Lake Lee. During the Night of December 29th, a power fluctuation due to a storm caused the transfer pump (Lake Lee to Lake Kildeer) PLC to lose its programing. The battery backup for the PLC failed to protect pump operations. This caused the pumps to shut down and not restart until it was discovered the next morning. If Outfall 002 had not been utilized the levee would have overtopped resulting in an unpermitted discharge. The battery backup for the PLC has been replaced. We have endured numerous power fluctuations since this time and the failure has not been repeated.

Outfall 003

Increase dosing of enzymes and bacteria for treatment (Completed March 2023)

In March of 2023, the values of fecal Coliform were elevated. To address this El Dorado Chemical has increased the dosing of enzymes and bacteria (Ridex). Sense this change in management we have had no other excursions for coliform.

Schedule

Activity	Start	Complete
Minimize Wastewater Contaminate Loading		
Internal engineering assessment of Process Water reuse	Aug-23	Ongoing
Identified projects will be added to the plan as they are developed	TBA	TBA
Engineering study of storm water flows in the prill area to reduce stormwater inflow into the remelt system	Aug-23	Dec-23
Ammonium Nitrate Prill Stormwater Procedures (Completed)	Apr-23	Apr-23
Pad installation for prill transloading area. (Completed)	Aug-23	Aug-23
Installation of covers to protect significant materials from Stormwater exposure	Jan-2024	Mar-2024
Minimize Wastewater Inflows		
Stormwater runoff and water balance Study		Jun-23
E2 Gutter installation (Completed)	Oct-22	Oct-22
Stormwater Diversion Structures (25% Complete)	Oct-23	Mar-24
Maximize Treatment Efficiency and Capacity		
Installation of NH3 Stripper (Completed)	Apr-23	Jul-23
Installation of baffles in Lake Kildeer	Dec-23	Mar-24
Formal Evaluation of Wastewater Treatment System (Completed)	Aug-23	Oct-23
Selection of treatment system for Higher Contaminated water. (Completed)	Oct-23	Oct-23
Design of treatment system for Higher Contaminated water.	Oct-23	Mar-24
Installation of treatment system for Higher Contaminated water.	TBA	TBA
Research Ongoing biological treatment in Lake Kildeer	Oct-23	Ongoing
Implement improvements to biological treatment as they are developed	TBA	TBA
Maximize Compliant Discharge		
Emergency Spillway Permit Application (Submitted)	Apr-23	Pending
Emergency Operating Procedure (Completed with Ongoing Implementation)	Aug-23	Ongoing
Outfall 002		
Replacement of battery backup for PLC (Completed)	Dec-23	Feb-23
Outfall 003		
Increase dosing of enzymes and bacteria for treatment (Completed)	Mar-23	Mar-23