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November 1, 2021

Mr. Thomas Buell
Nebraska Department of Environment and Energy
Division Administrator, Monitoring and Remediation Division
245 Fallbrook Blvd
Lincoln, Nebraska 68521

Subject: Submittal of Interim Remedial Action Plan #1, Voluntary Cleanup Program
Interim Site and Material Management Investigation Plan, AltEn Site, Mead, Nebraska

Dear Mr. Buell:

On behalf of the AltEn Facility Response Group, enclosed is the *Interim Remedial Action Plan #1, Interim Site and Material Management Investigation Plan, AltEn Site, Mead, Nebraska,* under the Nebraska Voluntary Cleanup Program. In addition, this document has been posted on the Project ShareFile Site and provided on the enclosed thumb drive.

Please let me know if you have any questions regarding this submittal.

Sincerely,

Donald G. Gunster, M.E.M.
Program Manager
NewFields
300 Ledgewood Place
Rockland, MA 02337

cc: AltEn Facility Response Group
Ms. Kerri Sitler

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Interim Remedial Action Plan #1
Voluntary Cleanup Program

Interim Site and Material Management Investigation Plan

AltEn Site, Mead, Nebraska

November 1, 2021

Prepared for:
AltEn Facility Response Group

Submitted to:
Nebraska Department of Environment and Energy
1200 N Street, Suite 400
PO Box 98922
Lincoln NE 68509

Prepared by:

NewFields
Perspective. Vision. Solutions.
1349 West Peachtree St., Suite 1950
Atlanta, Georgia 30609

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Executive Summary

This Interim Remedial Action Plan ("IRAP") is submitted by the AltEn Facility Response Group ("FRG") in furtherance of its ongoing work at the AltEn Ethanol Facility located in Mead, Nebraska ("Site"). The FRG consists of a group of former AltEn corn suppliers who are participating in the Nebraska Voluntary Cleanup Program ("VCP") pursuant to a Memorandum of Agreement. The members of the FRG do not own the Site, never operated the ethanol facility, and played no role in AltEn's regulatory noncompliance and violations of Nebraska environmental laws.

The Nebraska Department of Environment and Energy ("NDEE"), working with support from the United States Environmental Protection Agency ("EPA"), sought assistance from seed industry representatives with the agencies' efforts to address existing environmental issues at the Site. The FRG voluntarily stepped forward to work with NDEE in mitigating the risks created by AltEn's mismanagement of its ethanol facility, mishandling of byproducts from the ethanol production process, and cessation of operation and maintenance of the Site. This IRAP describes the mitigation measures taken to date by the FRG to prevent further releases from the property, including measures to stabilize the facility to mitigate potential for equipment failures due to freezing conditions. This IRAP also discusses the future actions that the FRG proposes to undertake to collect additional data and information to formulate a long-term management strategy to respond to the abandoned process water and wet cake, to prepare an Interim Remedial Action Report to provide the findings of both the data gap investigation and the evaluation of material management options, and to prepare and submit a Final Remedial Action Plan to NDEE.

History of AltEn's Operations at the Site

The FRG has made great efforts to understand AltEn's operations, as well as those relevant to Mead Cattle Company, LLC (an AltEn-affiliated entity), which are complex and intertwined. The statements about these operations contained in this IRAP are based on the FRG's understanding at this time after reasonable diligence but should not be construed as the FRG having primary knowledge. The FRG may learn new or different information than what is contained herein and will share that information with NDEE.

AltEn opened a bioprocessing facility to produce ethanol in 2015 in Mead, Nebraska, and solicited seed producers, suppliers and consumers to send corn seed to AltEn for conversion into ethanol. Byproducts of the ethanol fermentation process included untreated process water and "distiller's grain" a/k/a wet cake. During the period of AltEn's operations, NDEE (and formerly the Nebraska Department of Environmental Quality) issued air, compost, and water permits to AltEn, permitting land application of process water. The Nebraska Department of Agriculture also registered AltEn's wet cake as a soil conditioner. State officials subsequently conducted numerous inspections of the Site. In 2019, NDEE ordered AltEn to stop the land application of both wet cake (as a soil

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conditioner) and untreated water, and thereafter issued Notices of Violation to AltEn. On February 4, 2021, NDEE issued an order to AltEn to cease operations and AltEn then stopped its operations on February 8, 2021.

On February 12, 2021, a digester on Site failed due to the shut off of heating capacity to the digester and released approximately four million gallons of thin stillage and manure. The manure was a by-product from the adjacent Mead Cattle property. The State of Nebraska then filed suit against AltEn in the District Court of Saunders County. The Administrative and Legal enforcement actions are proceeding against AltEn while the FRG has been handling work necessary to mitigate and stabilize the Site.

Site Status Encountered by the FRG

At the time the FRG members began the work on Site, the conditions confronted at the Site were dire due to the presence of more than 180 million gallons of untreated water held in several lagoons in danger of overtopping. There was also 250,000 cubic yards (CY) of wet cake and contaminated solids stored in separate areas across the Site that was not being properly managed; contact stormwater was not being adequately controlled in accordance with NDEE permits, and community members expressed concerns about strong odors and health concerns

Emergency Response

After AltEn ceased operations, NDEE requested the FRG stabilize the Site by mitigating the risk of additional releases of untreated process water resulting from the deficient construction and maintenance of the lagoons by AltEn, and by stormwater that had come in contact with wet cake and was being allowed to leave the Site due to AltEn's failure to properly control stormwater. In coordination with NDEE, the FRG initiated several projects addressing the highest-known risks of release from the Site, as outlined in the VCP Memorandum of Agreement dated June 30, 2021:

- Construction of temporary storage capacity to allow draw down from the three lagoons to decrease the risk of overtopping and to bring them into compliance with design freeboard conditions;
- Removal and treatment of lagoon water to ensure lagoons are maintained at or below design freeboard levels and reduce the risk that rainwater would cause an overflow event;
- Rehabilitation of the emergency pond to provide additional storage capacity;
- Construction or reconstruction of berm structures to contain contact stormwater and prevent it from leaving the Site;
- Collection of contact stormwater for treatment and storage;

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- Consolidation and cover of wet cake to minimize the potential for stormwater contact.

Because no FRG member had been involved in operation of the Site, no member had knowledge regarding the Site condition and the environmental risks presented by the deficiencies in AltEn's operations and ultimate termination of plant operations and maintenance. Therefore, the FRG undertook an evaluation of Site conditions and risks at the same time as it worked to implement the time-critical Site stabilization and emergency response measures.

In addition to the identified and agreed upon initial Site stabilization activities, the FRG evaluated and began implementation of Site stabilization activities to minimize the risk that freezing may pose to Site infrastructure. Because treated water has not yet been able to be removed from the Site, it was necessary to construct storage capacity that would not be susceptible to failure due to freezing conditions. In coordination with the NDEE and relevant state agencies, the FRG was authorized by NDEE to implement the following interim responses:

- Construct a pond system to provide capacity for storage of up to 52 million gallons of water;
- Drain and decommission the above ground temporary storage tanks to minimize the risk of failure due to freezing conditions;
- Drain AltEn anaerobic digesters to manage the risk of uncontrolled releases from equipment subjected to freezing conditions.

Purpose of IRAP

Within the Nebraska VCP, the Remedial Action Plan "consists of an Investigation Report (IR), which presents a conceptual site model based on a thorough investigation, and a Remedial Action Work Plan (RAWP), which outlines the plan for cleaning up the site." (NDEE VCP Guidance, Section 1.1.3). At the AltEn Site, the time-sensitive demands of the emergency response actions, Site stabilization activities, and work to guard against risks from freezing conditions have not yet permitted completion of a full investigation that would allow for a thorough and informed evaluation of remedial options.

The purpose of this IRAP is to provide an update on Site Status and the implementation of the Emergency Response Measures, as well as describe plans to collect additional data/information that are needed to formulate a long-term management strategy for the process water and wet cake.

Next Steps

The FRG intends to undertake the following actions in its continued work to mitigate and address the risks posed by the process water and wet cake abandoned by AltEn:

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- Completion of Emergency Response Measures;
- Completion of Site improvements to allow for sufficient water storage capacity;
- Completion of a Data Gap Investigation;
- Preparation of an Interim Remedial Action Report to detail the data gap investigation and evaluation of material management options;
- Preparation of a final Remedial Action Plan.

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Interim Remedial Action Plan #1

Interim Site and Material Disposition Investigation

Voluntary Cleanup Program, AltEn Ethanol Plant Site
Facility IIS number I Project identifier: 115: 84069 I NE0137634

1.0 INTRODUCTION

This Interim Remedial Action Plan ("IRAP") is submitted by the AltEn Facility Response Group ("FRG") in furtherance of its ongoing work at the AltEn Ethanol Facility located at 1344 County Road 10, Mead, Nebraska in Saunders County (Figure 1) ("Site"). The FRG consists of a group of former AltEn corn suppliers who are participating in the Nebraska Voluntary Cleanup Program ("VCP") pursuant to a Memorandum of Agreement ("MOA"). The members of the FRG do not own the Site, never operated the ethanol facility, and played no role in AltEn's regulatory noncompliance and violations of Nebraska environmental laws. Rather, the FRG has been voluntarily working with the Nebraska Department of Environment and Energy ("NDEE") in mitigating the threats created by the abandoned wet cake and process water lagoons at the Site. In addition, Mead Cattle Company, LLC (an AltEn-affiliated entity) contributed considerable manure slurry, wastewater volumes, and nutrient loadings to the Site. The FRG has made great efforts to understand the AltEn operations, as well as those relevant from Mead Cattle, which are complex and intertwined. The statements about these operations contained in this IRAP are based on the FRG's understanding at this time after reasonable diligence but should not be construed as the FRG having primary knowledge. The FRG may learn new or different information than what is contained herein and will share that information with the NDEE.

At the time AltEn ceased operation and maintenance of the Site in February 2021, extensive emergency work was necessary to prevent the imminent threat of environmental damage from Site facilities that had been poorly maintained such as 35 acres of lagoons in danger of overtopping, an Emergency Pond with no remaining capacity, over 250,000 cubic yards (CY) of wet cake and contaminated solids spread over 35 acres, inadequate stormwater controls, and process materials remaining in tanks and piping. The NDEE conducted a preliminary investigation of the Site and determined that there is evidence of "land pollution," as defined by Neb. Rev. Stat. § 81-15,182(1), and "water pollution," as defined by Neb. Rev. Stat. § 81-15,182(2).

This IRAP for Interim Site and Material Management Investigation was prepared by NewFields on behalf of the FRG to provide an update on Site status and implementation of Emergency Response Measures ("ERMs"), as well as describe plans to collect additional data/information that are required to formulate a long-term management strategy for those materials left on-site by AltEn.

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The members of FRG are listed in Attachment A of the MOA between the NDEE and the FRG, dated June 30, 2021. The Site owner and operator, AltEn, is not a member of the FRG, and is not participating in the voluntary measures being implemented by the FRG.

The VCP Point of Contact (POC):

AltEn Facility Response Group
c/o Don Gunster
NewFields
300 Ledgewood Place
Suite 305
Rockland, MA 02370

The FRG has agreed to conduct activities at the Site under the VCP in accordance with the MOA. As part of the VCP, the FRG has conducted, and is currently conducting, several ERMs to adequately stabilize the Site's processing wastes such that it will not pose an imminent threat over the winter to human health or the environment. This IRAP summarizes the ERMs, identifies Site controls in place to manage the media targeted by these ERMs, and identifies the data gap investigations that the FRG will conduct to identify the potential long-term management options. Following a thorough analysis of the data collected pursuant to this and any subsequent IRAP or work plans agreed upon with the NDEE, a final Remedial Action Plan ("RAP") will be prepared which will identify an appropriate remedial action. The final RAP will be useful for the State of Nebraska to provide a basis for pursuing funding and other approaches for its long-term management of the Site.

1.1 Site Conditions

The AltEn facility is not currently producing ethanol or generating additional waste materials (wet cake or process wastewater). Based on aerial photography, wet cake and process waters and potentially impacted stormwater began to accumulate at the Site beginning in 2016. The Nebraska regulators issued AltEn authorizations that allowed for both the land application of wet cake as soil conditioner and treated process water. In May 2019, the State of Nebraska issued emergency stop orders for the sale and use of the distillers grain (wet cake) soil conditioner based on the presence of pesticides in the material,[1] and NDEE issued a notice of violation on September 13, 2019 requiring the immediate cessation of land application of process water from the lagoons.[2] These actions accelerated accumulation of wet cake and process water at the Site.

AltEn has also been cited and sued for operating a solid waste management facility without a permit (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01) and is the

[1] Nebraska Department of Agriculture, 2019. Stop-Use Stop-Sale Order In the Matter of the AltEn Soil Conditioner Mead, Nebraska. May 17.
[2] Nebraska Department of Environment and Energy, 2021. Case No. 3540 Emergency Complaint and Order. February 4.

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defendant in a lawsuit filed by the State of Nebraska alleging many violations of multiple environmental laws (State of Nebraska v. AltEn, LLC, Case No. D06CI210000036).

As part of the VCP, the FRG has voluntarily undertaken ERMs to stabilize the abandoned wet cake and process water lagoons at the Site. These activities will reduce the potential for uncontrolled releases, including during the upcoming cold weather season. These ERMs are described in Section 4. After completion of the ERMs, the Site activities will focus on site controls (Section 5) and filling the data gaps (Section 6) as appropriate for evaluation of long-term management options for the target media (wet cake, sludge, and untreated water).

Figure 2 presents the location of facilities and areas of the Site including:

- Northwest (NW) Wet Cake Pile
- (Former) East Wet Cake Pile
- Central Area (with the changes of this area from this time)
  - Central Wet Cake Area
  - Temporary water storage tanks
  - Treated Water Pond (West and East Cells)
- Northwest Lagoon
- Northeast Lagoon
- Southeast Lagoon
- Emergency Pond
- North Digester
- South Digester
- Water Treatment Facility
- Contractor staging area
- Other AltEn or nearby facilities:
  - Hoop buildings (North and South)
  - AltEn office building
  - Grain receiving/unloading area
  - WDG Loadout pad
  - Biochar Unit
  - Composting Pad (Mead Cattle Company)

1.2 Definitions

The following definitions are provided to reduce redundancy and to ensure the reader has a clear understanding of the terms used in this IRAP. Additionally, some facilities or materials at the Site have been referred to by multiple names in past documents and this list will relate those names to the name used in this document.

Contact water: water that has been in direct contact with the treated corn or with areas containing wastes from the processing of that corn, including wet cake and process wastewater generated from those waste materials. Contact water is also water, such as

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stormwater, that falls in/on waste materials or runs across areas where waste materials are located.

Emergency Pond: also called the Emergency Lagoon within some Site documents. See Figure 2 for location of this feature.

Impoundments: Throughout this document, the term "pond" is used for impoundments that have liners with confirmed integrity (the refurbished Emergency Pond and the two new Treated Water Ponds) and the term "lagoon" is used for the existing impoundments with liners of unknown or apparently degraded condition (the original three AltEn lagoons – Northwest, Northeast, Southeast).

Lagoons: the original three AltEn water lagoons: Northwest, Northeast, and Southeast Lagoons.

Non-contact water: water that has not come in contact with the Site's waste materials (wet cake or untreated water). These waters would typically be stormwater that has been directed away from the waste materials, such as rain that falls on an engineered cover or other portions of the Site not associated with process or waste materials. Such areas are access roads, and adjacent swales, outside edge of the embankments, the areas between embankments and Site boundaries, and the former East Wet Cake Pile area (after the ERMs are complete).

Northwest Lagoon: also called the West Lagoon and in some documents may have been referred to as a pond. In some reports, particularly inspection reports, it is referred to as Lagoon #3. See Figure 2 for location of this feature.

Northeast Lagoon: also called the North Lagoon and in some documents may have been referred to as a pond. In some reports, particularly NDEE inspection reports, it is referred to as Lagoon #2. See Figure 2 for location of this feature.

Process water: water generated directly from the AltEn facility process. This water includes the AltEn system effluent and process waste streams including the liquids from the plant's anaerobic digesters and other liquids from the process that may have been generated. It is the FRG's understanding that prior to 2021, these waters were treated in the original AltEn water treatment system consisting of equalization, chemical addition, and physical filtration.

Southeast Lagoon: also called the South Lagoon and in some documents may have been referred to as a pond. In some reports, particularly NDEE inspection reports, it is referred to as Lagoon #1. See Figure 2 for location of this feature.

Stillage or whole stillage: the remaining liquid from the distiller. It is the FRG's understanding that stillage was separated by the distillers into thin stillage (liquid) and wet cake (solids).

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Thin Stillage: the liquid from the distillers that was sent to the anaerobic digester.

Treated water: water that has been treated using the original AltEn water treatment system consisting of equalization, chemical addition, and filtration, supplemented by the FRG with carbon filters to remove pesticides. Water treated only by the AltEn water treatment system (without the carbon filter supplementation) is not referred to in this document as treated water but process water.

Untreated water (water requiring treatment): untreated water at the Site includes AltEn process water, AltEn treated process water, AltEn wastewater, contact water, and waters within the lagoons.

Wet cake: also called wet distillers grain (WDG). Wet cake is the solids from the distilling operations/the ethanol plant. The wet cake became mixed with soil in the storage and material handling on this Site. The word "wet cake" as used in this document refers to the mixed solid mass of material stockpiled on the Site.

2.0 Interim Remedial Action Objectives

The material management investigation activities addressed by this IRAP will generally be conducted after completion of the ERMs. These activities include site management activities as well as the collection of data and completion of analysis needed to develop an appropriate long-term management plan.

The IRAP interim remedial action objectives (RAOs) are:

- Interim management of treated water and untreated water;
- Interim management of wet cake; and
- Characterization of wet cake, lagoon sludge, and treated/untreated waters to determine the options for the long-term management of these media.

3.0 Compilation and Analysis of Background Information

3.1 Physical Setting

3.1.1 Location and Surface Features

The Site is located on Saunders County Road 10, approximately two miles south of Mead, Nebraska in the S ½ of the NW ¼, N ½ of SW ¼, and N ½ of SE ¼ of Section 12, T14N, R8E. The Site can be accessed from Omaha, Nebraska (from the east) via State Highway 92 to Mead, Nebraska and then south on County Road 10 or from Lincoln, Nebraska (from the south) via US Highway 77 to State Highway 66 and then north on County Road 10

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(see Figure 1). A map showing the location of the Site on the corresponding USGS 7.5-minute quadrangle (Mead, Nebraska) is provided in Appendix A-1. The Site is in the Lower Platte North Natural Resource District (LPNNRD). Figure 3 presents the Site and the surrounding lands. Agricultural lands of row crop grains and/or silage production surround the Site to the north, west, and east.

The Site was originally cleared of vegetation (cropland) for roads and plant facilities and operations. Currently, the ethanol plant is not operating and AltEn is not maintaining the facility. Weeds and natural vegetation have returned at the Site and the FRG is taking steps to manage this vegetation by mowing.

Directly south of the ethanol plant, the property is owned by another AltEn-affiliated entity, Greencycle Solutions, LLC, and contained a biochar operation.

The Site is bounded on the south by the feed lot formerly owned and operated by an AltEn-affiliated entity, the Mead Cattle Company, LLC. A shared natural gas line ran between the two properties, and manure and other materials from Mead Cattle were accepted by the AltEn operation. The ethanol plant, biochar plant, and the feed lot share internal roads and infrastructure and the boundaries between the three facilities are not clear. The feed lot was recently sold to Champion Feeders.

3.1.2 Climate and Meteorology

The climate varies widely from extremely cold with frequent snowfalls during the winter to hot and humid with widespread thunderstorms during the summer (see Table 1). The average monthly temperatures range from lows of 12°F in January to highs of 86.6°F in July (see Figure 4). On average, 29.4 days of the year will have temperatures over 90°F, typically in July or August, and 149.2 days will have temperatures below freezing (32°F), generally beginning in October and extending through April (NOAA NWS 2021).

Based on the 30-year average (1991-2020) for the Mead 6S NE station, the Site annually receives on average 30.1 inches of precipitation which includes the water equivalent of 20.3 inches of snow (NOAA NWS 2021). Most of the precipitation occurs between April and September, with heaviest rainfall during the months of May and June (see Figure 5). The heavy snowfall occurs in December through February (see Figure 6). Evapotranspiration occurs throughout the year with the highest rates occurring during the warm months with lower, but not insignificant, rates during the winter months in southeastern Nebraska (University of Nebraska 2021).

The predominant wind direction in the area is from the north-northwest (over 10 percent) and the second dominant wind direction is from the south-southeast (see Figure 7). Winds are predominantly from the north-northwest beginning in October through May with the strongest winds in April. The winds from the south and south-southeast are generally most

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common in the summer months, though the strongest winds from this direction are in May. The monthly wind roses are provided in Figure 8 for comparison.

3.1.3 Topography and Hydrology

The Site is located within the Todd Valley physiographic province. The Todd Valley is higher in elevation than the adjacent Platte Valley but is evident as a valley in the landscape (Divine 2015). The Todd Valley is about six to eight miles wide and cuts through the Rolling Hills physiographic province of eastern Nebraska for about 30 miles (NDEQ 2006-02-21).

The Todd Valley is nearly level with very gentle slopes to south to south-southeast. Similarly, the Site's local elevations are measured at 1195 to 1180 feet above mean sea level (feet amsl), with the highest elevations found in the northwestern corner of the Site and the lowest to the south and southeast. Site drainage is controlled by Site surface features including roads, berms, and drainage ditches (Figure 9).

Drainage in the Todd Valley portion of Saunders County is primarily southeastward through Wahoo Creek and its principal tributaries (Devine 2015). Silver Creek is to the west of the Site, as shown on Figure 10, and may receive some runoff from the southwestern portion of the plant area via the road and irrigation canals. Most of the Site, however, would naturally drain to the southeast to Clear Creek via an unnamed tributary.

3.1.4 Soils and Geology

The Todd Valley, a former channel of the Platte River, is filled with unconsolidated Quaternary deposits of fluvial sediments overlain by Peoria Loess and modern soils. The valley fill deposits are underlain by the consolidated Cretaceous Dakota Group, composed of sandstone, siltstone, mudstone, shale, sand, and gravel (Divine 2015). Based on driller's logs of the two water supply wells and four monitoring wells on Site, the Peoria loess, described as a clay, is 15 to 20 feet thick and the underlying fluvial sediments composed of sands and gravels are 112 to 130 feet thick beneath the Site. The Dakota Group sandstones and shales are found around 130 to 150 feet below ground surface. Appendix A-2 provides the lithology logs from Site wells and regional and local lithological cross-sections.

The soils at the Site are the Yutan silty clay loam, Filbert silt loam, and Tomek silt loam derived from the Peoria Loess. The Yutan and Tomek soils are well drained with permeabilities that are moderately low to moderately high. The Filbert soil is somewhat poorly drained with permeabilities that are very low to moderately low (USDA NRCS 2004, 2021). Appendix A-3 provides a map of the soil types and a summary table of the soil physical characteristics of Site and surrounding area soils.

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3.1.5 Hydrogeology

In the Todd Valley, the primary aquifer is the Quaternary fluvial sediments which are generally unconfined, though may be locally semi-confined to confined. Groundwater flow in the valley appears to be consistent to the southeast with a head decline of approximately 10 feet per mile. Devine (2015) estimates the groundwater flow velocity at 2.5 feet/day. Depth to water is less than 50 feet and the saturated thickness is approximately 100 feet for the Quaternary aquifers in the Todd Valley in the vicinity of the Site, during non-irrigation months (excludes summer months). Transmissivity of the Todd Valley Quaternary fluvial aquifers are generally high (Devine (2015).

Figure 11 presents all the registered wells on-site as well as within one mile of the Site boundary. In 2006, the original plant owners, Nebraska BioClean-Mead LLC, drilled two commercial/industrial water supply wells (G-136421 and G-136279) that were used exclusively for the Site (NBC 2006-01-13). The former Mead Cattle Co n/k/a Champion Feeders has one registered water supply well directly west-southwest of the Site and an irrigation well on the eastern south edge of the feed lot property (NDNR. 2021). Based on the static water levels reported in the Nebraska Department of Natural Resources (NDNR) data for registered wells shown on Figure 11, the local depth to water ranges from approximately 25 to 35 feet in the Site and the Champion Feeders wells. The saturated thickness of the Quaternary fluvial aquifers at the Site ranges from 90 to 120 feet thick (NDNR. 2021). These elevations and thickness are consistent with Devine (2015) data.

The Site has four shallow groundwater monitoring wells (33.5 to 40.5 feet below ground surface). One well is located at the northwest corner of the lagoons ("upgradient" of the lagoons) and the other three are located directly south and southeast of the lagoons. As shown on Figure 12, the groundwater flow direction beneath the lagoons is indicated to be toward the southeast with low hydraulic gradients of approximately 0.0017 foot/foot (consistent with regional gradients reported by Devine (2015)).

No registered domestic wells were identified downgradient of the Site for over four miles (NDNR. 2021). The Former Nebraska Ordnance Plant Superfund Site that is listed on the National Priorities List is located between the Site and the closest domestic well.

3.2 Historical Operations

Based on information and belief (including NDEE filings), the AltEn facility was a dry mill process ethanol plant with a capacity of 4.1 million gallons per year of denatured ethanol and 111,325 tons per year of wet cake (NDEQ 2005-01-27). The original plant owner was Nebraska BioClean-Mead, LLC. (Coranco Great Plains 2004-02-12). The owner's name changed in January 2006 to E3 BioFuels-Mead, LLC. (NDEQ 2007-01-25). The facility began operation in January 2007 under E3 BioFuels, LLC (E3 BioFuels LLC 2007-01-04). After a boiler explosion at startup, E3 BioFuels-Mead, LLC filed for bankruptcy in November 2007 and "mothballed" (deactivation and preservation of equipment and facility) the plant (Ethanol Producer Magazine 2010-11-15; NDEQ 2010-02-03). A related entity

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AltEn, LLC purchased the plant at auction in 2009 (NDEQ 2010-02-03). AltEn began ethanol manufacturing operations in January 2015 (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01). AltEn is used in subsequent text irrespective of the timing of the events (i.e., prior to AltEn's purchase of the facility).

A review of historical aerials (see Appendix B) indicates the plant portion of the Site was part of the Mead Cattle Company facility and the north portion of the Site was farmland prior to 2006. By July of 2006, the plant infrastructure was in place and clearing for the construction of the North and South Lagoons (currently called Northeast and Southeast Lagoons, respectively) and construction of the Emergency Pond was in progress.

Ethanol plants mill, mash, and cook corn, and then allow it to ferment (beer). During the distillation process, the fermented beer is separated into ethanol and the remaining materials called stillage. The stillage is separated further into "wet cake" (solid) and thin stillage (liquid). Both wet cake and ethanol are produced as products (Coranco Great Plains 2004-02-12).

AltEn stored wet cake in piles on Site. On October 23, 2018, AltEn applied to the Nebraska Department of Agriculture (NDA) to register its wet cake as a soil conditioner, a use NDA approved. NDA subsequently issued AltEn a Stop-Use and Stop-Sale Order on May 17, 2019 that prohibited use of the wet cake as a soil conditioner and accelerated the accumulation of wet cake at the Site (see Appendix B).

The boilers at the plant operated on a combination of biogas from the anaerobic digester and natural gas (NDEQ 2005-01-27). The anaerobic digester generated biogas from a combination of thin stillage from the plant's distillers and manure from the adjacent Mead Cattle feedlot (Settje Agri-Services and Engineering, Inc. 2007-01-08). The Emergency Pond was constructed in 2006 to provide an emergency overflow for the anaerobic digester system. The pond was constructed with a HDPE liner and earthen secondary-containment liner (Settje Agri-Services and Engineering, Inc. 2006-04-12).

AltEn contends that the plant's process waters were a byproduct from the plant and, as such, they could be, and were, used as irrigation water (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01). Two of the plant's three large process water lagoons were constructed for the E3 BioFuels 2007 plant (see aerial photos Figure B-1 2006 and Figure B-2 2009 in Appendix B). The third lagoon was constructed by AltEn in 2018 (see Figure B-3 in Appendix B). Two of the three lagoons have liners that have separated from the base of the lagoons and are floating and lifted above the water surface.

The plant was authorized to discharge industrial wastewater under NPDES permit NE0137634 (Consent Order, Case No 3483, FID#84069). The discharges were described in the permit (NDEQ 2011-11-14) as follows:

- Single-pass, non-contact cooling water derived from untreated groundwater wells discharges to an unnamed, intermittent tributary to Clear Creek. The cooling water

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could also supplement irrigation water when feasible. Discharge rate is estimated to be 1.3 million gallons per day for nine months of the year.

- Treated process and non-process wastewater will be discharged at an estimated rate of 0.468 million gallons per day into a lined holding lagoon for land application sites. Water from the lagoon will be discharged to land application sites.

NPDES permit NE0137634 authorized AltEn to land apply treated process water from the Site subject to the terms and requirements contained in the permit. AltEn submitted annual reports to NDEQ (aka NDEE) detailing the company's land application of treated process water in 2018, 2019 and 2020.

In October 2020, NPDES permit NE0137634 was modified to require groundwater monitoring on a quarterly basis, starting in the Fall of 2020 (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01). Based on the FRG's review of NDEE records, to date, AltEn has collected and reported three quarters of samples from the four on-site monitoring wells.

Based on NDEE's record's, the Site was authorized to discharge stormwater under an industrial activity general permit (NE00000000), pursuant to authorization number NER910444 (Consent Order, Case No 3483, FID#84069). The northern portion of the plant drains to the southeast to Clear Creek, located six miles away. A portion of the area around the plant entrance may drain periodically south to Silver Creek located four miles away (see Figure 13 for the location of the two stormwater outfalls).

Since May 2019, when the State took action to reverse prior authorizations, AltEn has been prohibited from land applying the wet cake as a soil conditioner, and since September 2019, AltEn has not been allowed to land apply the process water.

On February 4, 2021, NDEE issued an Emergency Complaint and Order requiring AltEn to immediately cease discharging process water to the lagoons and to provide a detailed protocol for management of the water within the lagoons. On February 10, 2021, NDEE confirmed that AltEn was shut down and process water was no longer discharging into the lagoons. On February 12, 2021, one of the four-million-gallon digesters experienced a valve failure releasing contents that subsequently traveled approximately 4.5 miles away from the Site via a series of drainage ditches before the flow path was cut off. On February 20, 2021, NDEE issued another Emergency Complaint and Order that required AltEn to take measures to prevent further releases and to clean up the waste materials from the February 12th release. The Order also prohibits AltEn from resuming operations until the discharged waste materials are sufficiently remediated (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01). As of the submittal date of this document, it is the FRG's understanding that AltEn has failed to satisfy the requirements of the cleanup requirements of the Order or previous Orders.

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3.3 Site Conditions

The AltEn facility is not currently producing ethanol or generating additional wet cake or process water. Since February 2021, AltEn has not been operating or maintaining the facility. Based on aerial photography (see Appendix B, Figure B-3) solid material, possibly wet cake, was accumulating on the Site as early as 2016. NDEE has confirmed that after the State Stop-Use and Stop-Sale orders in 2019, the wet cake and process waters continued to accumulate at the Site. AltEn has been cited for operating a solid waste management facility without a permit (State of Nebraska, NDEQ vs AltEn, LLC 2021-03-01).

The status of the Site features (Figure 2), currently or as they will be after the completion of the ERMs, are as follows:

- NW Wet Cake Pile – temporary storage of consolidated wet cake and solids generated during implementation of the ERM with cover and seepage collection
- Northwest Lagoon – storage for untreated water
- Northeast Lagoon – storage for untreated water
- Southeast Lagoon – storage for untreated water
- Treated Water Pond (West and East Cells) – storage for treated water
- Water Treatment Facility – operating as needed
- North Digester – liquids to be removed in 2021
- South Digester – liquids to be removed in 2021
- Emergency Pond – supplemental storage for untreated water
- Former East Wet Cake Pile – to be used as stockpile area for excess soil removed during construction of the Treated Water Pond

Current AltEn permits:

- NPDES stormwater permit NER910444
- NPDES permit NE0137634 (currently no discharge, required groundwater monitoring only)
- Title 123 Permit for construction of new treated water ponds (NO.2021-0183)
- Stormwater Permit for construction of new treated water ponds (CSW-202105946)
- NDNR Dam Permit (P-20847)

Pending permits as of 11-01-2021:

- Village of Mead Building Permit

3.4 Nature and Extent of Target Media and Data Gaps

As this IRAP focuses on site management activities and characterization of materials for the long-term management of wet cake, sludge, and managed waters, this section presents a characterization summary of these target media and identifies the data gaps needed to be filled to meet the IRAP RAOs (Section 2.0).

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Appendix C provides the results of individual samples from wet cake, untreated water in the lagoons, untreated water influent into the current treatment facility, and wet cake seepage (total and Toxicity Characteristic Leaching Procedure (TCLP) samples). Section 6 provides a discussion of these data by media and identifies specific analytical as well as physical and material handling property data needs/gaps to assess the determination of the long-term management options for each media.

3.4.1 Wet Cake

A preliminary characterization of the wet cake located at the time within three stockpile locations on the Site was performed in March 2021. The sampling involved a single composite sample from each stockpile, with each composite sample being composed of between 10-12 aliquots from a depth of 0-6 inches (approximate) below the surface. Appendix C presents the results of the composite samples as well as one 2019 sample collected from an unknown location.

Additional sampling of wet cake will be conducted as described in Section 6.0 to assess management options.

3.4.2 Lagoon Sludge

Preliminary estimates are that approximately 100,000 to 150,000 CY of sludge will likely require management. Additional data will be collected as described in Section 6.0 to develop more precise estimates.

3.4.3 Untreated Water

The Site lagoons and digesters contained approximately 180 million gallons of untreated water when the FRG began the ERMs in late February 2021. Additionally, other waters requiring treatment include seepage or contact water from the wet cake, as well as any contact water. Analytical results for samples from the Site lagoons and the current treatment facility influent were available to assess the nature of the untreated waters. Appendix C presents the results of individual samples. Additionally, wet cake-seepage was assessed using a 2019 sample of site-generated wet cake seepage and a TCLP sample from wet cake; results of both samples are also provided in Appendix C. Section 6.0 provides a discussion of lagoon water characterization data needs

The Site currently has approximately 180 million gallons of treated water and untreated water and will accumulate approximately another 25 million gallons of contact stormwater and precipitation between August 2021 and May 2022 falling directly onto the treated water and wet cake prior to consolidation and covering. The quantity of water on-Site will continue to increase until off-site discharge of treated water is initiated.

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Samples of the treated water were reviewed to assess the viability of treated water management via land application or direct discharge to surface water under an NPDES permit. Section 6.0 provides a discussion of data gaps/needs to assess these management options.

4.0 EMERGENCY RESPONSE MEASURES

At the time AltEn ceased operating and maintaining the Site in February 2021, extensive emergency work was necessary to prevent environmental damage from Site facilities that AltEn had poorly maintained and from the remaining process materials in tanks and piping and contaminated media. Stabilization and containment were conducted for the following.

- 250,000 CY of wet cake and contaminated solids with physical and chemical characteristics that pose difficult management:
    - Chemical content that restricts land application
    - High moisture content and low shear strength that limit stockpiling and landfilling
    - Volume equivalent to a football field covered with 150 feet of material or 4,500 to 5,000 tractor trailer loads.
- 35 acres of uncontrolled runoff from the wet cake areas.
- Overgrown vegetation which prevents required inspections and potentially compromises dike wall integrity.
- Four impoundments (three lagoons and the Emergency Pond) covering approximately 40 acres and containing approximately 173 million gallons of process wastewater and over 100,000 CY of sludge:
    - Three of the impoundments had reached or exceeded the design freeboard
    - Three of the impoundments have compromised liners
    - At least one impoundment contained a mixture of digester solids and fats
    - Ongoing accumulation of water from direct rainfall and contact water pumped into impoundments
    - Total volume requiring management (including the digester liquids) is equivalent to over 273 Olympic-sized swimming pools or 30,000 tanker trucks.
- Two digesters containing 7.5 million gallons of liquid
- A processing facility with tanks and piping containing process liquids and unknown process safety hazards.

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Management of the above conditions had to overcome the absence of appropriate water treatment systems and the lack of physical space for placement of required infrastructure. There was no excess capacity in any impoundment to store the water that had to be removed promptly to maintain freeboard. Provision of such storage required consolidation of wet cake to obtain the required space for storage infrastructure. Consolidation of the wet cake itself required multiple stages of material handling due to the moisture content and low shear strength that limits the height of the consolidated wet cake pile.

Water storage had to be constructed in stages and coupled with additional treatment to remove pesticides. To prevent the risk of impoundments overtopping, temporary storage tanks were installed that could be constructed in days once the area was prepared. The water in these tanks subsequently had to be relocated between multiple tanks in a series of steps to allow for the removal of tanks within the footprint of a new constructed impoundment, the Treated Water Pond System.

Simultaneous to the above challenges, provisions for storage were necessary to allow the draining of the 7.5 million gallons of liquid from within the digesters. This required draining and refurbishing the 3.5-acre Emergency Pond. The Emergency Pond refurbishment also required complicated water and sludge management between the various impoundments and the wet cake consolidation pile to allow the pond to be drained and relined prior to the on-set of freezing conditions in the late Fall of 2021.

Section 4.1 describes the sequence of ERMs that began in the first quarter of 2021 and will be continuing into 2022. Sections 4.2 through 4.8 provide additional detail on each of the ERMs.

4.1 Overview and Schedule of Activities

ERMs were initiated by the FRG in the first quarter of 2021 and are ongoing. Given that to protect human health and the environment as well to protect the welfare of on-site workers, the timing of some of these activities are concurrent with the preparation of this document, the IRAP has been prepared such that any activity that is expected to be completed before November 1, 2021, will be discussed as completed, whereas any activity that is still underway or expected to continue beyond November 1, 2021 will be discussed as current and future activities, respectively.

The objective of the ERMs is near-term management of potentially contaminated solids and water on-site. This consists of drawing down and maintaining the lagoons' water levels, managing wet cake and other solid materials on-site through containment and stormwater management, draining digester tanks, treating contaminated water, and providing storage for treated water. These activities are necessary as emergency measures while permanent solutions can be identified for the large volume of solids (>350,000 CY of consolidated wet cake and lagoon sludges) and liquids (>180 million gallons) that have accumulated and the liquids continue to accumulate on the Site from rainfall.

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The areas and facilities that are being addressed under ERMs are shown on Figure 14. This figure is underlain by an April 21, 2020, aerial photograph that represents Site conditions during the final full year of AltEn operations. The priorities for the ERMs, in agreement with NDEE, are as follows.

1) Maintain freeboard (vertical distance between lagoon water surface and top of embankment) within the three lagoons to protect embankment integrity and prevent overtopping. This ERM required several sequential tasks.

    a) Preparation of an area of the Site for construction of temporary storage capacity.

    b) Construction of temporary storage capacity for both treated water and untreated water to allow maintenance of lagoon water levels.

    c) Removal of excess water above design freeboard in the three lagoons.

2) Removal and treatment of lagoon water and contact runoff as necessary to prevent an imminent hazard during emergency response. This ERM requires several sequential tasks:

    a) Treatment of wastewater through the existing AltEn treatment facility as supplemented by additional treatment installed by the FRG to remove pesticides from water

    b) Identify treated water discharge options, including but not limited to land application and/or direct discharge

    c) Periodic embankment inspection.

3) Consolidate wet cake to reduce the generation of contact water. This was conducted in two phases: the wet cake in the Central Wet Cake Area was consolidated first in the NW Wet Cake Pile to provide a location for temporary tank installation, followed by consolidation of the wet cake from the East Wet Cake Pile into the NW Wet Cake Pile.

4) Refurbish the Emergency Pond to provide surge capacity during heavy rainfall events for untreated water that may need to be removed from the lagoons faster than the treatment system can process to the treated water ponds (see item 6).

5) Cover wet cake in the NW Wet Cake Pile upon completion of consolidation to reduce generation of contact water.

6) Create additional treated water storage capacity to allow elimination of temporary tank storage subjected to freezing conditions and allow for management of

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winter/spring rainwater and contact water, in keeping with the overall Site water level maintenance objective.

The sequence of events for the ERMs are outlined in a timeline presented in Figures 15 and 16 and are depicted in a series of figures presented in this section.

February – March 2021

Clean Harbors mobilized to the Site with a portable water treatment system to begin treating the water from the Emergency Pond, which was recovered during the AltEn February 2021 digester release response. Three above ground temporary storage tanks (Tanks 1, 2 and 3) were installed to store treated water.

April 2021

To address the priority of drawdown and maintenance of lagoon water levels, additional storage capacity was necessary. NDEE granted permission on April 1, 2021, to begin pilot testing for the treatment of lagoon water with the existing AltEn treatment facility supplemented with carbon treatment (NDEE 2021-04-01).

As of April 2021, land application of treated water during the summer growing season was thought to be a possibility that would assist in maintaining lagoon freeboards until a final water disposition plan could be selected.[3] All water removed from the lagoons was treated prior to being stored in Tanks 1, 2, and 3, which contain only treated water. Figure 17 shows the ERMs conducted in April 2021.

May 2021

Drawdown and treatment of water from the three lagoons continued throughout May with treated water being placed within the three temporary storage tanks (Tanks 1, 2, and 3). Also, in May, consolidation of the wet cake in the Central Wet Cake Area to the NW Wet Cake Pile was initiated. The East Wet Cake Pile area was surrounded by a soil berm, and stormwater runoff from the wet cake areas is recovered and pumped into the lagoons. The rate of runoff addition to the lagoons was balanced with withdrawal and treatment of water followed by storage in the temporary treated water tanks. Figure 18 summarizes the ERMs conducted in May 2021.

June 2021

Consolidation of wet cake from the Central Wet Cake Area into the NW Wet Cake Pile area was completed. A soil pad was constructed to allow the installation of additional above ground tanks with a total capacity of approximately 21 million gallons. During this

[3] Land application was not possible during the summer and fall of 2021 due to permitting time constraints, identifying land for application, and the deteriorated state of AltEn infrastructure.

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month, installation of three tanks (Tanks 4, 5, and 6) was completed. Upon completion, these tanks began to receive untreated water to accelerate drawdown of the lagoon water levels. Simultaneously, lagoon water removal followed by treatment continued with the treated water transferred into treated water tanks (Tanks 1, 2, and 3). Installation of additional treated water temporary tank storage also began. Stormwater runoff from the wet cake areas continued to be collected and transferred into the lagoons. Figure 19 summarizes the ERMs conducted in June 2021.

July 2021

Four additional temporary above ground storage tanks (Tanks 7, 8, 9, and 10) were completed and began to receive treated water as it was removed from lagoons and treated. Stormwater runoff from the wet cake areas as well as from the area of Tanks 4 through 9 continued to be collected and transferred into the lagoons. Figure 20 shows the ERMs conducted in July 2021 and continued into August 2021.

August 2021

The NDEE and FRG agreed that in avoidance of a potential release it was preferable to decommission the temporary above ground tanks before the on-set of freezing conditions. The NDEE requested the digesters also be drained due to a similar concern. By August 2021, it became apparent that land application or direct discharge of treated Site water would not be approved in time, as well as implementation issues with existing AltEn infrastructure, to allow removal of temporary and permanent above ground storage tanks before the onset of the 2021/2022 winter season. To decommission the tanks, maintain the required freeboard in the three lagoons, and manage rainfall in the lagoons as well as contact runoff through the winter and spring of 2022, it was determined that over 50 million gallons of new storage was required (see Figure 21).

A conceptual plan to provide the required storage was submitted to NDEE in August 2021. The plan consists of construction of a pond system for treated water storage and refurbishing of the Emergency Pond for additional untreated water storage (See Figure 22). This Treated Water Pond System is designed to have a total capacity of 52.18 million gallons in two cells (West Cell – 26.07 million gallons and East Cell – 26.11 million gallons). The refurbished Emergency Pond will have a capacity of approximately 8 million gallons.

The refurbished Emergency Pond is to be used for surge storage of untreated water drawn from the lagoons to maintain freeboard when required drawdown rates exceed treatment capacity. The treatment facility will draw water for treatment directly from the lagoons or the Emergency Pond.

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September – October 2021

Relocation of the East Wet Cake Pile and permitting for the new Treated Water Pond System began the first week of September 2021. Relocation of the wet cake and the underlying one foot of soil from the East Wet Cake Pile was completed by the end of September, and the area was prepared to receive excess excavated soil from the Treated Water Pond System construction. Refurbishment of the Emergency Pond began in the third week of September and continued through October with relocation of sludge to the NW Wet Cake Pile consolidation area and liquids to the Southeast Lagoon. Construction of the West Cell of the Treated Water Pond System began the third week of October 2021.

November 2021 – January 2022

The completion of the above described ERMs will be conducted between November and January 2022. The features are shown on Figure 22. Emergency Pond refurbishment is anticipated to be completed by the end of November. Drainage of the digesters will begin in November and is projected to be completed before the end of December. The new Treated Water Pond System construction and covering of the consolidated wet cake in the NW Wet Cake Pile is projected to be completed before the end of January 2022.

4.2 Maintenance of Lagoon Design Freeboard

Many of the ERMs conducted by the FRG were performed to achieve and allow for maintenance of the Site lagoons' freeboard. The currently established design freeboard requirements are:

- Northwest Lagoon – 2 feet
- Northeast Lagoon – 3 feet
- Southeast Lagoon – 2 feet.

At the initiation of ERMs, the lagoon water levels did not meet the design freeboards and NDEE determined drawdown of lagoon water was required to reduce the risk of the lagoons overtopping. Drawdown of the lagoons was initiated in April 2021 after the installation of three temporary above ground tanks (Tanks 1, 2, and 3) and the installation of carbon filters for removal of pesticides. By late April, the FRG treatment included a two-stage system consisting of the existing AltEn components supplemented by FRG carbon treatment (see Section 4.3). Figure 21 shows the location of the temporary tanks. The rate of drawdown was increased in May 2021 with the installation of three additional temporary tanks (Tanks 4, 5 and 6). These tanks received untreated water directly from the lagoons. As a result, the desired freeboards (≥3 feet) were achieved by June of 2021.

Removal of water from the lagoons for treatment continued for the purpose of maintaining the water levels below desired freeboards as contact stormwater was transferred to the

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lagoons. The focus of drawdown beyond the design freeboard of 3 feet was on the Northeast Lagoon due to observed tears in the lagoon liner.

Four additional temporary tanks were installed in July 2021 (Tanks 7, 8, 9, and 10) to store treated water. This allowed continued removal of water from the lagoons to compensate for the regular contact stormwater and direct rainfall inputs. Treatment and storage of lagoon water continued through August with treated water storage in Tanks 7, 8, 9, and 10.

In August 2021, an alternative approach was selected for the storage of treated water from the lagoons in the form of a Treated Water Pond System (see Section 4.4). This approach was selected based on the challenges for tank maintenance presented by freezing conditions and the determination that the capacity of on-site storage through the first half of 2022 would not be sufficient even if land application of treated water was possible (see Section 4.8). Construction of the Treated Water Pond System required removal of seven of the ten temporary tanks (see Figure 22).

Removal of the temporary tanks to build the Treated Water Pond System required an adjustment to the temporary tank water management approach described in Section 4.4. As a result, drawdown of the lagoons was suspended in September 2021 and untreated water in Tanks 4, 5, and 6 was returned to the lagoons. Currently, construction of the new Treated Water Pond System is underway as a replacement for the former temporary tank system. Also, the retrofit of the Emergency Pond results in the temporary loss of untreated water storage volume while the modifications to this pond are underway (began in late September 2021).

4.3 Water Treatment System

In this section and Section 4.4, lagoons refer to impoundments that are not currently being refurbished and contain untreated water. These are the Northwest, Northeast and Southeast Lagoons. Site contact water is collected and transferred to the lagoons. The Emergency Pond is being refurbished through the Fall of 2021. When completed, the Emergency Pond will initially receive water from the draining of the digesters. Upon completion of the Treated Water Pond System, the Emergency Pond will be used solely for surge storage of untreated water.

Water from the lagoons is currently treated at the Site through a system comprised of both the original AltEn plant treatment system and supplements provided by the FRG.

Water is pumped from the lagoons (Southeast Lagoon, Northeast Lagoon, Northwest Lagoon) via the Southeast Lagoon and from the Emergency Pond to the treatment facility. At the treatment facility, gross solids are removed by a sand filter with backwash returned to the lagoons. The next step in the process is flocculation, sedimentation, and clarification with the addition of ferric chloride and polymer to enhance settling. Clarifier blowdown and settled solids are returned to the lagoons.

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Effluent from the clarifier is stored in a surge tank and then run through bag filters for further solids capture, which are returned to the lagoons. The next step is additional chemical addition (ferric chloride and polymer) followed by further clarification and sand filtration. The water is then treated by passing through a granular activated carbon (GAC) system and stored as the system effluent. Spent carbon is regenerated and reused, until the end of the project where it will be disposed of with other affected media.

Treated water is currently stored on-site in temporary tanks and will be transferred to the Treated Water Pond System upon completion. Water treatment will continue as necessary to meet water level objectives in the lagoons to prevent imminent hazard during emergency response as set forth in the VCP Agreement.

4.4 Treated Water Pond System

For explanation of the terminology of the treated and untreated water impoundments, see Section 4.3.

The FRG prepared a conceptual plan in August 2021 for the required supplemental storage needed to manage Site water though the winter and spring of 2022. The supplemental storage consists of two lined cells collectively termed the Treated Water Pond System with a capacity to store 52 million gallons. This capacity will manage treated water expected to be produced at the on-site water treatment facility between December 2021 and May 2022, plus the treated water currently staged in temporary on-site tanks during the ERMs (see Figure 21).

Permit applications for the Treated Water Pond System were submitted in September 2021. and approved on October 6, 2021. The construction of the Treated Water Pond System West Cell began during the third week of October. Both Treated Water Pond System cells are scheduled to be completed in January 2022, with the first cell (West Cell) anticipated to be completed and receiving water by November 30, 2021.

Construction of the Treated Water Pond System required drainage and removal of seven of the temporary above ground storage tanks. Relocation of water began in the middle of September 2021. To minimize the amount of water returned to the lagoons and maintain the design freeboard in the lagoons, water in the tanks was relocated and tanks removed in three phases:

1) Phase 1 (Figure 23): Untreated water located in Tanks 4, 5, and 6 was returned to the lagoons. Due to the volume of water already removed from the lagoons, treated, and stored in the Tanks 1 through 3, and 7 through 10, this could be accomplished without jeopardizing the maintenance of design freeboard.

2) Phase 2 (Figure 24): Tank 4 was cleaned and prepared for storage of treated water. Following cleaning and relining of this tank, treated water from Tanks 8 and

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9 was transferred to Tank 4. Upon completion of the transfer, Tanks 5, 6, 8, and 9 were removed to allow for construction of the West Cell of the Treated Water Pond System.

3) Phase 3 (Figure 25): Following completion of Treated Water Pond System West Cell, treated water in Tanks 1, 2, 3, 4, 7, and 10 will be relocated to this cell. This will allow removal of the remaining temporary storage tanks and the construction of the East Cell.

The detailed plan view of the Treated Water Pond System cells is shown in Figure 26. The footprint of both cells from the Northwest and Southeast Lagoons to the outside toe of the western and southern embankments is 16 acres. The embankment heights are 20 to 22 feet above the base of the pond, with a top of embankment width of 20 feet and a side slope of 4 horizontal to 1 vertical. The cells will be lined with a 60 mil HDPE liner with both a gas collection system and a water underdrain system. Both cells also will be equipped with concrete sumps in their southeast corners for input and removal of treated water.

The embankments are being constructed with material excavated from within the pond footprints. It is projected that there will be approximately 54,000 CY of excess material. A portion of the excess soils from excavation of the base of the ponds' cells may be used in the consolidated NW Wet Cake Pile and the rest is being stockpiled in the approximately 4-acre former East Wet Cake Pile area. This stockpiling began after completion of relocation of the wet cake.

Rainfall runoff or ponding water generated from within the construction footprint and the excess soil stockpile area is being collected and transferred into the lagoons. The excess soil stockpile area and the footprint of the pond construction were diked prior to initiation of material placement. Rainfall runoff from the pond footprint, including the outer slope of the embankment, will be collected until the embankment and the excess soil stockpile is covered or stabilized with vegetation.

After final elevations are reached, confirmation sampling will be conducted. The decision regarding whether the outer embankments and excess soil stockpile should be covered to prevent contact stormwater will be based on data collected after completion of soil placement.

4.5 Cleaning and Relining of Emergency Pond

In order to provide additional storage for untreated water, the FRG is refurbishing the Emergency Pond at the Site. Refurbishing was initiated during the third week of September 2021 and is scheduled to be completed by the middle of November 2021. When refurbished, the Emergency Pond will be used to store digester water and subsequently will be incorporated into the water treatment system as untreated water storage.

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The Emergency Pond measures approximately 700 feet by 150 feet (approximately 110,000 square feet). Approximately 25,000 CY of sludge is being removed and placed in the NW Wet Cake Pile. This work was performed as repair and maintenance of an existing facility.

Refurbishing of the Emergency Pond will consist of removal of solids and liquid contents and replacement of the existing liner. Free liquids are being pumped to the Southeast Lagoon and solids are being transported to the NW Wet Cake Pile area for consolidation.

The existing Emergency Pond liner is being removed and will be stored appropriately awaiting final disposal. After removal of the old liner and grading of the pond bottom, a new 60-mil liner will be installed over the Emergency Pond.

4.6 Draining of Digester Tanks

At the request of NDEE, the FRG is removing liquids from the two anaerobic digesters on the Site. The digester liquids (approximately 7.5 million gallons) will be pumped directly from the digesters to the newly lined Emergency Pond starting in late November. Liquid is to be removed to a tank elevation below the piping link-seals in each of the digesters, managing the risk of uncontrolled release due to freezing conditions.

4.7 Consolidation and Temporary Cover of Wet Cake

Materials from wet cake areas and from the Emergency Pond were consolidated in the NW Wet Cake Pile as shown on Figure 27. Consolidation of wet cake from the Central Wet Cake Area into the NW Wet Cake Pile was initiated in May 2021 and completed in June 2021. Consolidation of materials from the East Wet Cake Pile was completed during the latter half of September 2021. Sludge from the Emergency Pond, plus solids from other Site activities that may be commingled with wet cake, are being consolidated into the NW Wet Cake Pile. Explanation of the Emergency Pond activities is provided in Section 4.5.

The following are the objectives for this work:

- Consolidation of these materials into one area, reducing the environmental exposures of the wet cake left on the Site by AltEn and improving contact stormwater collection efficiency
- Eliminating the East Wet Cake Pile area as a source of contact stormwater requiring management.

The following is an overview of the work performed during wet cake relocation.

- Wet cake and a limited amount of surface soil (to a minimum of 1 foot depth and any additional based on visual identification of wet cake material) was removed

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and transported to the NW Wet Cake Pile. Once at the NW Wet Cake Pile, the material was consolidated with the existing materials.

- Throughout excavation and transport, dust control was maintained with water application on haul roads. Because of the wet nature of the wet cake material and on-site experience moving the material, no observable dust was generated from the wet cake itself.
- Odor control using lime was employed when disturbance of the material created a perceptible increase in odor. Ambient odor conditions at the Site were not notably affected by the material relocation activities. Work was suspended during inclement weather and during local high school football games.
- Standing water encountered within the wet cake piles throughout operations was collected and transferred into the lagoons or the Emergency Pond.
- For the central wet cake area, once the wet cake and visually impacted soils were removed, soils were covered with imported fill in preparation for installation of the six temporary tanks. These soils were subsequently removed for construction of the Treated Water Pond discussed in Section 4.4.
- None of the haul routes involved any public roads or right-of-way.
- Workers at the Site performed the transfer operations in accordance with written health and safety protocols consistent with those required for all operations. Workers used appropriate safety equipment and attire as needed for the various aspects of the work.

Once the soils were removed from the East Wet Cake Pile, a composite sample consisting of 24 aliquots was collected from the base of the East Wet Cake Pile excavation prior to initiation of placement of excess soils from the Treated Water Pond construction. The samples were collected from equal rectangles across the approximately 4-acre area. This data will be available, if necessary for future assessment of risk-based remedial decisions.

The NW Wet Cake Pile will be covered once materials have been consolidated. Any seepage from the material collected beneath the cover, which will require treatment, will be managed in the Site lagoons. Runoff from the top of the cover (non-contact water) will routed by gravity flow to the east into the Site stormwater system (permit NER910444).

4.8 Near-Term Water Management

Removal of water from the Site will be necessary. As indicated previously, the FRG anticipates that the combination of legacy water volume (left by AltEn), precipitation on the lagoons and on the new Treated Water Pond System, and contact stormwater that will require management, would be within 10 million gallons of the Site's total upgraded water storage capacity by approximately May 2022.

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The FRG is currently investigating two options for removal of water from the Site:

- Land application per a NDEE land application permit (proposal in preparation and NDEE discussion)
- Direct discharge under NPDES (see Section 6.3 for further details).

5.0 Interim Site Controls

Interim site controls will be utilized under the VCP to maintain the Site until long-term management is determined.

5.1 Impoundment Management

Six impoundments will be managed during the winter of 2021/2022 as necessary to maintain freeboard and treat water to prevent an imminent hazard during the interim actions. These impoundments (see Figure 28) are the three lagoons, the two Treated Water Pond System cells, and the Emergency Pond. These impoundments will continue to receive additional water from contact stormwater collection, from leachate collected from the NW Wet Cake Pile area, and from direct rainfall into the impoundments.

Water flows will be as follows (see Figure 28).

- Non-contact water will be directed into the ditch systems that drain into NPDES stormwater Outfalls 001 and 002 (see Figure 13 for locations) in accordance with the current stormwater permit.
- Seepage collected from the NW Wet Cake Pile will be collected and transferred into the lagoons.
- Untreated water will be removed from the lagoons to supply inflow to the water treatment facility. The Emergency Pond will be used, as needed, for surge storage of excess rainfall to maintain freeboard in the lagoons. Removal of water from the lagoons for treatment will generally be at a rate equal to or greater than the net precipitation onto the lagoons.
- Treated water will be pumped from the treatment facility to the Treated Water Pond.
- Water in the lagoons will be transferred between lagoons as needed to maintain the design freeboard. Emphasis will be placed on maintaining the Northeast Lagoon such that no overflow will occur between it and the other lagoons.

With the completion of the Treated Water Pond System and Emergency Pond refurbishment, there will be sufficient storage in the six impoundments to manage the volume of existing water on the Site, additional rainfall into ponds, and seepage collected from the Northwest Wet Cake Pile. Total storage capacity within impoundments will be

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approximately 217 million gallons. At design freeboards, there will be storage in the lagoons and Emergency Pond for approximately 165 million gallons of untreated water and 52 million gallons of storage in the Treated Water Pond System. Under conservative assumptions of winter and spring precipitation, the remaining unused storage capacity by May 2022 will be approximately 10 million gallons. This will provide some additional storage capacity in the event of a delay in the initiation of removal of water from the Site or excess precipitation.

The impoundments will be inspected by a Site Engineer to verify embankment stability. These inspections will be conducted as needed based on inclement conditions such as high precipitation, wind, or storm events.

5.2 Wet Cake Cover and Gas Control Inspection and Maintenance

By the end of November 2021, all of the wet cake and Emergency Pond sludge at the Site will be consolidated in the NW Wet Cake Pile area and the former East Wet Cake Pile area will be covered with excess soil from the Treated Water Pond System construction. A drainage network draining toward the southern edge of the NW Wet Cake Pile will be created within the pile. The entire NW Wet Cake Pile will be managed to minimize rainwater contact with the wet cake. Any seepage or contact water collected will be pumped to the Northwest Lagoon.

5.3 Air Monitoring

Air monitoring to ensure the safety of on-site workers will be conducted as needed during Site activities that include active management of wet cake or sludge. An on-site meteorological station provides real-time wind direction, wind speed, temperature, and precipitation data. All data is recorded.

If needed, multi-gas meters and dust monitoring equipment will be deployed both upwind and downwind of each impacted material handling location. Multi-gas meters will be used to monitor for ammonia and hydrogen sulfide concentrations in air and the dust meters will collect the average particulate matter in air. When utilized, all meters will be set to continuous data logging throughout the workday and downloaded at the end of each shift. Personnel will also periodically check the real-time readings of these meters throughout the day.

Any monitoring data will be assessed with respect to both OSHA/EPA worker safety standards.

5.4 Odor and Dust Control Plan

The wet cake material contains sufficient moisture to prevent the generation of dust from the piles or during material handling. Dust suppression is achieved on the unpaved

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roadways through the application of water. A dedicated truck with front and back spray bars (see Figure 29) is used to apply water on the roadways during construction periods, including those within the NW Wet Cake Pile area. Road conditions are monitored throughout the day and water is applied as necessary to mitigate dust generation. A wheel wash station is provided to prevent the transport of Site-related materials to public roads.

During the wet cake consolidation activities (movement of East Wet Cake Pile to the NW Wet Cake Pile), hydrated lime was applied to the exposed active face of the pile at the end of each workday to reduce the potential for odor generation. This activity was completed in early October. Sludge from the Emergency Pond will continue to be consolidated at the NW Wet Cake Pile into November.

Upon completion of placement of materials in the NW Wet Cake Pile, the pile will be covered, and therefore, no odor control is expected to be required during the winter. The necessity of lime application for odor control will be determined by field oversight personnel based on the activities being conducted.

5.5 Surface Water Control and Management

5.5.1 General

Stormwater control will be managed using best management practices to ensure that:

- Leachate from the NW Wet Cake Pile will be managed in on-site facilities and prevented from comingling with water from non-contact areas
- Non-contact stormwater will be managed in compliance with the current AltEn stormwater discharge permit NER910444.

Following completion of the ERMs, no contact stormwater runoff is anticipated from the NW Wet Cake Pile storage area. The wet cake pile will have a seepage collection system installed under the temporary cover (Figure 28). This collection system will collect any drainage from the wet cake under the temporary cover. Any collected water will be transferred into the Northwest Lagoon.

5.5.2 Non-Contact Stormwater Controls

Non-contact stormwater will be managed using controls generally used for industrial and construction sites in compliance with AltEn's current facility stormwater permit, NPDES Stormwater permit NER910444. The locations of the stormwater outfalls are shown on Figure 13 and are adjacent to the former Mead Cattle (now Champion Feeders) property. The permittee retains responsibility for monitoring required under the permit and any monitoring results from the two stormwater outfalls may also reflect stormwater discharges from the adjacent property.

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Baseline erosion control measures will be employed in the areas where ERMs were performed:

- Leave as much vegetation (plants) on Site as possible
- Minimize the time that bare soil is exposed
- Prevent the runoff from flowing across disturbed areas (divert the flow to vegetated areas)
- Stabilize disturbed soils as soon as possible
- Slow down the runoff flowing across the Site
- Provide drainage ways for the increased runoff (e.g., use grassy swales)
- Remove sediment from stormwater runoff before it leaves the Site utilizing Best Management Practices
- Silt fence will be installed and maintained in accordance with applicable State and local Standards.
- Perimeter dikes and swales will be installed and maintained in accordance with applicable State and local Standards.
- Riprap stone will be installed in swales observed to be receiving extensive sediment flow.

In addition to using baseline erosion control measures, good housekeeping, maintenance/inspection procedures, employee training, record keeping and internal reporting procedures, inspection and reporting requirements will be utilized.

Sediment barriers will be inspected on a periodic basis by the Site Engineer. These inspections will be determined by heavy precipitation or wind events. Repair will be conducted promptly as necessary. A surplus of silt fence and hay bales will be maintained on Site so damaged barriers can be repaired without delay. Accumulated sediment will be returned to its place of origin.

5.6 Vegetation Management

Vegetation management on the Site will be conducted as needed to facilitate and maintain safe conditions on the Site. Mowing of the embankments will be conducted as needed to allow visual inspection of the embankment conditions, maintain access to the impoundments and pumping equipment, and assure worker safety. Mowing of other areas within the Site will be conducted as needed to facilitate implementation of this IRAP.

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5.7 Site Security

The Site is not surrounded by security fencing and there is no security gate or guard. Security around the NW Wet Cake Pile and the lagoons is enhanced by the remote nature of the Site. A security fence will be installed around the Treated Water Pond System upon construction completion, in accordance with the Title 123 permit.

5.8 Health and Safety

All activities related to the IRAP will be performed under the site-specific health and safety plan. The plan has been developed to ensure that on-site workers are informed of potential hazards and mitigation measures such as personal protection equipment (PPE). A facility is available for personnel to shower and change clothing if necessary. Each subcontractor that is retained to perform work associated with this IRAP will have their own health and safety plan. Visitors to the Site are required to sign in and are notified of potential Site hazards.

6.0 Data Gap Investigation For Site Material Management

The data gap investigation is necessary to define the management options for the Site wet cake, lagoon sludge, and water. The Site currently has approximately 180 million gallons of treated and untreated water in storage. An additional 25 million gallons of rainwater falling directly onto the impoundments and wet cake is expected to accumulate between August 2021 and May 2022. Note that the direct contact of rainwater with wet cake is expected to be eliminated upon completion of material consolidation and covering of the NW Wet Cake Pile. Flow from the on-going drainage of water from the wet cake is likely to continue and will add to the amount of stored water at the Site.

The quantity of water on the Site will continue to increase until treated water can begin to be removed.

The Site currently has approximately 250,000 CY of wet cake and contaminated solids stockpiled on the Site, with potentially an additional 100,000 to 150,000 CY of sludge in the three lagoons that will require removal, dewatering and disposal.

Given the volume of materials, multiple management methods may be required for each of the media (wet cake, sludge, and water). The prospective management methods for each media are shown in Figure 30 along with the design constraints that must be quantified, along with the media characterization needed.

The selection of the combination of management methodologies for each media will consider implementation risk/benefit, schedule to complete, implementation impacts such as greenhouse gas emissions and transportation, resource consumption, sustainability, and cost.

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Media management possibilities, design constraints, and characterization requirements are shown in Figure 30 and described individually for each media in the following subsections. It should be noted that based on the results of the characterization, other options may be considered.

6.1 Wet Cake

6.1.1 Management Options

Possible management options for the wet cake include thermal treatment, landfill/ containment, and/or beneficial reuse in cement kilns.

Thermal Treatment

Thermal treatment is the most complete destructive technology for the wet cake. Both off-site thermal treatment at an industrial facility and on-site options would be considered as part of the overall strategy for the wet cake. The primary considerations for thermal treatment are the moisture content, permitting for an on-site incineration unit, and transportation and capacity for commercial off-site facilities.

Landfilling/Containment

Landfilling (or containment) of the material could be accomplished either on or off-site. Due to the moisture content of the material and its low shear strength, pre-processing of the material will be necessary for either the on- or off-site option. The preprocessing would consist of moisture reduction and/or use of blending agents that increase material shear strength.

Cement kiln

Utilization of the material in a cement kiln may be a possible beneficial reuse. The technical practicality of this option is dependent upon the thermal content of the material, the proximity of a kiln capable and willing to utilize the material, and kiln capacity.

6.1.2 Wet Cake Design Constraints

Moisture

Moisture content and the ability to reduce the moisture is relevant to all wet cake management options. Reduction of moisture in a preprocessing step would reduce the time for processing of material, the amount of material handling, and potentially cost.

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Performance Standards

The material is currently characterized as non-hazardous. Additional characterization would verify final material disposal meets all regulatory requirements.

Energy Content

Information on the energy content is necessary to determine the constraints on thermal treatment, beneficial reuse, and cement kiln blending.

Shear Strength

Testing of the wet cake during the summer of 2021 established the material has very low shear strength and only marginal improvement could be achieved with Portland cement, even up to 10% by weight. Investigations by Waste Management Inc. identified an additive that could achieve the material strength needed for landfilling, but the mixture rate was 15% by weight. Additional information on the material characteristics with various amendments is necessary to establish material handling constraints for storage prior to processing in off-site thermal treatment or cement kiln blending as well as preprocessing requirements for landfilling on- or off-site.

Pretreatment / Transport / Processing Throughput Rates

The selected combination of management options would be dictated by the rate that material can be addressed. That rate would be governed by the limiting factor of pretreatment on the Site, transportation, and throughput at the final disposal location.

6.1.3 Wet Cake Characterization

Material Sampling

Materials from the Central Wet Cake Pile, the East Wet Cake Pile, the Emergency Pond, and excess soils from other Site activities have been or will be consolidated into the NW Wet Cake Pile.

Permanent management of the NW Wet Cake Pile will be dictated by the chemical and physical characteristics of the consolidated material and regulatory standards. Wet cake, which is most of the material that has been consolidated into the NW Wet Cake Pile, contains pesticides. Some data currently exists on the presence and levels of these pesticides. For a subset of the pesticides, the appropriate standards for some exposure pathways, such as direct contact, are still to be agreed upon with the NDEE.

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A characterization of the wet cake located within each of the three wet cake piles was performed by NDEE in March 2021. The sampling involved a composite sample from each stockpile, with each composite sample being composed of between 10-12 aliquots at a depth of approximately 6 inches below the surface. During consolidation activities in September 2021, 15 additional discrete samples were collected from the NW Wet Cake Pile, and 25 from the East Wet Cake Pile. These samples are currently preserved and awaiting analysis in accordance with appropriate protocols at Pacific Agricultural Lab (PAL).

Additional samples of the wet cake, as appropriate, will be collected for the purposes of determining design parameters for dewatering, thermal treatment, beneficial reuse, and landfilling.

Laboratory Chemical Sampling

As discussed above, wet cake samples were collected from the wet cake piles during consolidation to assess the variability of pesticides in the wet cake. The purposes for each class of testing of the wet cake samples are provided in Tables 2 and 3.

- Table 2 Organic and Inorganic Data Purpose
- Table 3 Metals Data Purpose

Laboratory Physical Sampling

Samples to be collected from the consolidated NW Wet Cake Pile may be analyzed for physical properties affecting thermal treatment and beneficial reuse. The purposes for each class of testing of the wet cake are provided in Tables 4 and 5.

- Table 4 Proximate and Ultimate Analysis Purpose
- Table 5 Thermal Analysis Purpose

Wet Cake Dewatering/Stability Enhancement Testing

Bench and field scale treatability testing may be conducted to assess the extent to which the wet cake can be dewatered and/or shear strength increased prior to final disposition using material handling, mechanical, and/or microbial dewatering techniques. The purpose for each class of laboratory testing is provided in Table 6.

In addition to laboratory testing, field scale testing may be conducted of material handling techniques such as windrowing with periodic tilling and the addition of various commercially available blending agents. Bench scale testing may be conducted of microbial induced calcium precipitation (MICP). If bench scale testing indicates MICP may be practical to enhance dewatering and increase shear strength, testing would be expanded to the field scale.

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6.2 Lagoon Sludge

6.2.1 Sludge Management Options

The sludge that must be removed from the three lagoons has the same management options as described in Section 6.1.1 for wet cake. The sludge will, however, require additional pre-treatment and staging to dewater sufficiently for either on-site or off-site management.

6.2.2 Sludge Design Constraints.

The sludge design constraints that are in addition to the constraints associated with wet cake include removal from the lagoons, staging, and dewatering methodology. Staging will require determination of removal equipment and access, management of free water, staging area, and control of decant water.

The sludge will require removal from the lagoons either through dredging or excavation. Sludge removal may have to be coordinated with the removal and treatment of water from the lagoons as well as management of the liners, which for two of the lagoons have partially lifted above the water surface. The methodology selected would be dependent on the timing constraints associated with removal, treatment, and management of the water. Dredging could commence while the lagoons still retain water, but dredging would be constrained by the available land for dewatering of the sludge post removal. Excavation has the limitation that implementation would be affected by timing for removal of water from the lagoons.

Thickening and dewatering of the sludge to produce a non-liquid material or cake would a) reduce residual mass and volume to be treated, transported, and managed, b) eliminate free liquids, and c) reduce challenges with ponding and runoff of stockpiled material awaiting final disposition.

The primary sludge dewatering options are the use of mechanical filters and geotubes. Mechanical options include belt filter presses, centrifuges, and plant and frame filters. Geotubes are large diameter geotextile tubes used to contain and dewater dredge materials and have been in use for several decades. Solids within the geotubes settle and the water is separated. Polymers and other chemical conditioning agents are available to enhance the separation of solids from water.

The selection of sludge removal and dewatering approaches will be dictated principally by production rates of water and solids removal from the Site, and the available areas for staging.

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6.2.3 Sludge Characterization

Quantity Estimates

The quantity of sludge has been estimated using bathymetric measurements. This data will be supplemented with probes and grab samples within each of the three lagoons. Following confirmation of the depth of the sludge, a determination will be made regarding sampling requirements.

Sampling

Sampling of sludge for chemical and physical characterization may be conducted in each lagoon with a sediment core sampler. It is expected that sampling would consist of a minimum of four individual grab samples from each lagoon. If the sludge is deeper than 3 feet in any location, multiple depths may be sampled. A single composited bulk sample may be collected from each of the three lagoons for bench scale dewatering testing.

Chemical/Physical Characterization

The samples from each lagoon would be subjected to the same characterization as described for the wet cake and presented in Tables 2, 3, 4, and 5.

Dewatering Characterization

Dewatering characteristics may be analyzed with laboratory testing and bench scale testing. The laboratory testing methodology and the purpose of the testing is summarized in Table 6.

General Dewatering Characterization

A solid – liquid separation (SLS) evaluation would initially determine an effective flocculant. Polymeric (polyacrylamide) flocculants available as powders/beads, or as emulsions would be assessed. The objective is to determine the flocculant charge and charge density that most efficiently flocculates the solids. This is evaluated by floccule size, settling rate, and supernatant turbidity, all characterized qualitatively.

Once optimized flocculant(s) are identified, flocculant dosage, settling rate, and unit area requirements would be determined. The test used for these measurements is a Kynch test.

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Mechanical Dewatering Testing

Settled, flocculated solids (thickener underflow) usually enable fast filtration rates and because much of the water has been removed, allow for smaller filters than would be needed for the entire stream.

Vacuum, direct gas pressure, and filter press pressure filters may be evaluated at bench scale (batch), to provide rate data for scale-up. Plate-and-frame filters and belt press using industry filter cloth and a rolling pin would be evaluated in the laboratory along with tube-type laboratory centrifuges and a bench-scale semi-continuous filter bowl centrifuge. This would provide information on potential cake solids concentrations.

The filter cake from the preferred candidate technology would be analyzed for cake solids in accordance with the analytical regime of Tables 2, 3, 4, and 5.

Geotube Testing

The bench scale testing will be conducted for several geotube products and polymers. The filter cake from filtrate samples with the best performance, will be analyzed for cake composition in accordance with Tables 2, 3, 4, and 5.

6.3 Impoundment Water

6.3.1 Management Options

Over 200 million gallons of water will be stored on Site in impoundments by May 2022. Additional water will continue to accumulate on the Site until the impoundments are decommissioned or otherwise cleaned and solids are removed from the Site or otherwise prevented from creating contact water requiring treatment.

The management options for impoundment water are land application and direct discharge through an NPDES permit with possible supplementation by evaporation. Based on the characterization data, other options may be assessed.

6.3.2 Design Constraints

The two primary constraints on the management of water via any pathway are the pesticide characteristics and ammonia content. The pesticide components are currently being treated via filtration and activated carbon to reduce concentrations. Both phosphorus and sodium content may become a limiting factor for land application under the current treatment methodology. However, phosphorus is not expected to be a limiting factor due to co-treatment during both solids and ammonia removal. Sodium could become a limiting factor for land application but is unlikely to be a limiting factor for direct discharge into a surface water body.

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The treated water impounded on the Site contains an average of 350 mg/L or more of ammonia nitrogen. This concentration of ammonia in the treated water must be reduced to 1) reach regulatory discharge values and/or mixing zone concentrations, 2) sufficiently match the hydrologic properties of soils to which the treated effluent might be directed, or 3) increase the number of landowners that would be willing to receive the AltEn treated water on their agricultural fields.

Land application rates are limited by water needs of the soils and nutrient loading. Direct discharge of treated water from the Site under an NPDES permit will be limited by ammonia loading rates. There are several potential receiving water bodies that have been considered as possible by the NDEE (2021-09-09), including the Platte River and Johnson Creek. Additional options exist and will be explored, as necessary. Another option, if a very high level of ammonia removal is possible, is direct discharge through one of the existing NPDES discharge points. This may include supplemental treatment through an on-site constructed wetland.

Ammonia removal is essential for all the water bodies assessed by NDEE. Given the current levels of ammonia in the treated water, discharge to the largest receiving water body in the vicinity, the Platte River, would require up to 10 years without additional ammonia treatment. If ammonia removal of up to 95% can be achieved, the time required to remove all water from the site would be substantially reduced.

6.3.3 Water Characterization

Sampling

Lagoon water samples were collected from the four impoundments located on the Site (i.e., Emergency Pond, Northeast Lagoon, Southeast Lagoon, and Northwest Lagoon) between April 2019 and July 2021. The Emergency Pond and Northwest Lagoon were both sampled on three (3) sampling dates while the Northeast Lagoon and Southeast Lagoon were sampled on two (2) sampling dates. However, the details of the sampling including the specific location and the depth at which the samples were collected are unknown. A review of the sampling results shows wide variability in measured concentrations not only between the lagoons but also in the measured concentrations within individual lagoons. The absence of sampling details precludes an assessment of the potential source of the variability.

The observed range in the water quality data from the lagoons may be related to horizontal and vertical heterogeneity, dilution, and partitioning from the sediments. Horizontal variability includes variations in the characteristics of inflows/outflows in the lagoons, flow dead zones, the length of detention time of water within the lagoons, and wind induced mixing at the surface of the lagoons. The vertical heterogeneity may be a result of density gradients due to variations in water temperature and uneven mixing of the water column as well as partitioning between the solids and liquids in the accumulated sludge. The

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limited data and observed variability suggest that the current lagoon water dataset may not accurately characterize water quality within the lagoons to optimize treatment requirements.

Representative chemical composition of water within each lagoon (Northwest, Northeast, and Southeast) will be determined by composite sampling within each lagoon. Aliquots for the composite sample will be collected at locations that are representative of both the spatial and depth variations within each lagoon.

The water in the Emergency Pond, as of the issuance of this IRAP, had been transferred to the lagoons. The Emergency Pond's future use after refurbishment will be for surge storage of excess rainfall water from the lagoons, prior to transfer into the treatment system. As such, the Emergency Pond water will not be characterized as its quality will be represented by the composite samples from the three lagoons.

Treated water in each of the two cells of the Treated Water Pond System will be characterized following relocation of all existing treated water into the system. The characterization will consist of one composite from each Treated Water Pond Cell. The composite will consist of a minimum of five aliquots. This data will be compared to and supplemented by the on-going treatment facility effluent samples.

Laboratory Characterization

The Northwest Lagoon, Northeast Lagoon, Southeast Lagoon, West Cell, and East Cell waters will be individually characterized. In addition, the leachate collected from the consolidated NW Wet Cake Pile area will be characterized separately. Analytical testing parameters and laboratory methods are included on Table 7.

Bench Testing for Ammonia Removal

Based on the review of the various ammonia removal systems and the need to perform this water treatment as soon as possible, it was determined that the air-stripping process would be the best option for rapid removal of ammonia from the Site water (treated and untreated). To obtain design information for full-scale deployment, the ammonia stripping process is being tested on the bench at a smaller scale that mimics the behavior and function of the full-scale system. A brief description of that testing is provided below.

Water Collection and Characterization

Five 10-gallon containers of the treated water were collected the week of October 22, 2021 for bench scale testing. An aliquot of the bulk sample was collected and sent to the analytical laboratory for Table 7 analyses.

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Bench Testing Ammonia Removal

The air stripping treatment, with *in situ* pH adjustment, is being simulated in the laboratory. The bench testing of the air-stripping methods will examine the impact of variation of pH, temperature, and air to water ratios. The different treatment results will be compared via removal efficiency (% removed), rate of removal, and cost.

In situ approaches may also be tested and efficiency compared to the active air-stripping towers.

Sodium Adsorption Ratios

Treated water may also have to meet specific sodium adsorption ratios (SAR) for potential land application and agricultural use. If SAR limits are necessary, the treated water sodium (and calcium and magnesium) content will be determined. If sodium is too high to meet land application requirements, a simple cationic exchange column will be added to the ammonia stripping unit to ensure that an acceptable SAR results from the stripping process.

7.0 Interim Remedial Action Component Schedule

As discussed in Section 4.1, the ERMs are still in progress as of the submittal of this IRAP but are expected to be completed by the end of January 2022. As each ERM is completed, the Interim Site Controls for that area will begin, if not already in place.

The Data Gap Investigation has begun and is anticipated to be completed in April 2022. An Interim Remedial Action Report will be prepared summarizing the Data Gap Investigation and presenting a proposed final disposition for the target media (wet cake, sludge, and Site waters requiring treatment). This report will be submitted by the end of June 2022.

8.0 References

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TABLES

REC'D NDEQ - (11/1/2021) - (20210735614)

Table 1
Summary of Climate Data

Month	Total Precipitation Normal (inches)	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)	Total Snowfall Normal (inches)
January	0.62	32.7	12.0	22.4	4.7
February	0.78	37.4	15.9	26.6	6.0
March	1.53	50.5	26.6	38.6	2.6
April	2.92	62.7	37.2	49.9	0.8
May	4.72	72.6	49.3	60.9	0.1
June	4.9	82.8	59.9	71.3	0
July	3.08	86.6	63.7	75.1	0
August	3.77	84.5	61.3	72.9	0
September	3.15	78.4	51.8	65.1	0
October	2.18	65.4	39.2	52.3	0.5
November	1.33	50.0	26.3	38.2	1.2
December	1.12	37.0	16.9	27.0	4.4
Annual	30.1	61.7	38.3	50.0	

Source: National Oceanic and Atmospheric Administration, National Weather Service (NOAA NWS), 2021. Summary of Monthly Normals for Mead 6S NE station, data set 1991-2020. https://www.weather.gov/wrh/Climate?wfo=oax

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Table 2
Organic and Inorganic Data Purpose

Analyte	Analytical Method	Assess Treatability re: Site Cleanup Stds.	H&S Evaluation	Onsite Thermal Treatment Mass & Energy Balance	Waste Profiling for Offsite Disposal
Organic Contaminants					
Contemporary Pesticides (Fungicides, Herbicide, Insecticides)	SW-846 Method 8321B	X	X	X	X
	SW-846 Method 8270D	X	X	X	X
Moisture	ASTM D2216	X		X	
Inorganic Contaminants					
Cyanide - Amendable	SW-846 Method 9013A/9012B				X
Cyanide - Reactive	SW-846 Ch 7.3				X
Cyanide - Total	SW-846 Method 9013A/9012				X
Sulfide - Reactive	SW-846 Ch 7.3				X

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Table 3
Metals Data Purpose

Analyte	Analytical Method	Onsite Thermal Treatment Mass & Energy Balance	Acid Gas Generation Potential	Slagging Potential	Cement	Waste Profiling for Offsite Disposal	Nebraska Air Construction Permit Requirement	Cement Kiln or HWC MACT Stds.
Aluminum	SW-846 Method 6020B					X		
Antimony	SW-846 Method 6020B					X		
Arsenic	SW-846 Method 6020B					X		X
Barium	SW-846 Method 6020B					X		
Beryllium	SW-846 Method 6020B					X		X
Cadmium	SW-846 Method 6020B					X		X
Calcium	SW-846 Method 6020B	X						
Chromium	SW-846 Method 6020B					X		X
Cobalt	SW-846 Method 6020B					X		
Copper	SW-846 Method 6020B					X		
Lead	SW-846 Method 6020B					X	X	X
Magnesium	SW-846 Method 6020B	X						
Manganese	SW-846 Method 6020B					X		
Mercury	SW-846 Method 7471A					X		X
Nickel	SW-846 Method 6020B					X		
Potassium	SW-846 Method 6020B			X	X	X		
Phosphorus	SW-846 Method 6020B		X			X		
Selenium	SW-846 Method 6020B					X		
Silicon	SW-846 Method 6020B			X		X		
Silver	SW-846 Method 6020B					X		
Sodium	SW-846 Method 6020B			X	X	X		
Thallium	SW-846 Method 6020B					X		
Vanadium	SW-846 Method 6020B					X		
Zinc	SW-846 Method 6020B					X		

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Table 4
Proximate and Ultimate Analysis Purpose

Analyte	Analytical Method	Onsite Thermal Treatment Mass & Energy Balance	Acid Gas Generation Potential	Slagging Potential	Cement	Waste Profiling for Offsite Disposal	Nebraska Air Construction Permit Requirement
Proximate Analysis (Standard and Modified(a) Test Conditions)	ASTM D3172						
Moisture	ASTM D3173	X				X	
Ash	ASTM D3174	X				X	X
Volatile matter	ASTM D3175	X					
Fixed carbon	By Difference	X					
Ultimate Analysis	ASTM D3176	X					
Moisture	ASTM D3173	X				X	
Ash	ASTM D3174	X				X	
Carbon	ASTM D5373	X				X	
Hydrogen	ASTM D5373	X					
Nitrogen	ASTM D5373	X					X
Sulfur	ASTM D4239	X	X	X	X	X	X
Oxygen	By Difference	X					
Other Elements not Included in Ultimate Analysis							
Chlorine	EPA Methods 5050/9056A	X	X	X	X	X	
Fluorine	EPA Methods 5050/9056A	X	X	X	X	X	
Bromine	EPA Methods 5050/9056A	X	X	X	X	X	

(a) Proximate analysis may be run under alternative temperature conditions reflecting potential operating conditions of thermal treatment options under consideration. Specific temperature conditions will be defined once thermal alternatives to be evaluated are determined and TGA/DSC analyses are completed.

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Table 5
Thermal Analysis Purpose

Analyte	Analytical Method	Onsite Thermal Treatment Mass & Energy Balance	Slagging Potential	Waste Profiling for Offsite Disposal
Thermal Analyses				
Thermogravimetric Analysis (TGA)	TGA/DSC Instrument	X		
Differential Scanning Calorimetry (DSC)	TGA/DSC Instrument	X		
Calorific Value	ASTM D 5865	X		X
Ash Fusability (oxidizing)	ASTM D1857	X	X	
Ash Fusability (reducing)	ASTM D1857	X	X	
Physical/ Properties				
Bulk Density	ASTM E 873	X		X
Flash Point	ASTM D93			X
pH (Sludge Matrix)	Hazen Research In-house method	X		X
pH (Aqueous Matrix)	ASTM E70	X		X

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Table 6
Dewatering Analysis Purpose

Analyte	Analytical Method	Onsite Thermal Treatment Mass & Energy Balance	Waste Profiling for Offsite Disposal
Dewatering Studies			
Sludge (solid layer)	SNF Environmental In-house method	X	X
Dewatering Rate	SNF Environmental In-house method	X	X
Filtrate TSS	SNF Environmental In-house method	X	X
Filtrate NTU	SNF Environmental In-house method	X	X
Cake solids	SNF Environmental In-house method	X	X
Sludge (liquid layer)	SNF Environmental In-house method	X	X
Dewatering Rate	SNF Environmental In-house method	X	X
Filtrate TSS	SNF Environmental In-house method	X	X
Filtrate NTU	SNF Environmental In-house method	X	X
Cake solids	SNF Environmental In-house method	X	X
Plant process water (used to blend polymer materials)	SNF Environmental In-house method	X	X

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Table 7
Organic and Inorganic Laboratory and Field, Water Analyses

Analyte	Analytical Method
Field Parameters	
pH	NA
Oxygen Reduction Potential (ORP)	NA
Dissolved Oxygen (DO)	NA
Specific Conductivity	NA
Organic Contaminants	
Contemporary Pesticides	SW-846 Method 8321B
(Fungicides, Herbicide, Insecticides)	SW-846 Method 8270D
Inorganic Contaminants	
Major cations (Ca, Mg, Na, K)	SW-846 Method 6020B
Total Phosphorus	SM4500
Metals	SW-846 Method 6020B
Total Nitrogen (TKN)	EPA Method 1687
Nitrate/Nitrite	SM4500
Nitrate (as N)	SM4500
Nitrite (as N)	SM4500
Ammonia	SM4500
Chloride, Bromide, Fluoride	EPA Method 300.0
Sulfate	EPA Method 300.0/375.4
Alkalinity	SM 2320B
COD	EPA Method 410.4
BOD	SM 5210B

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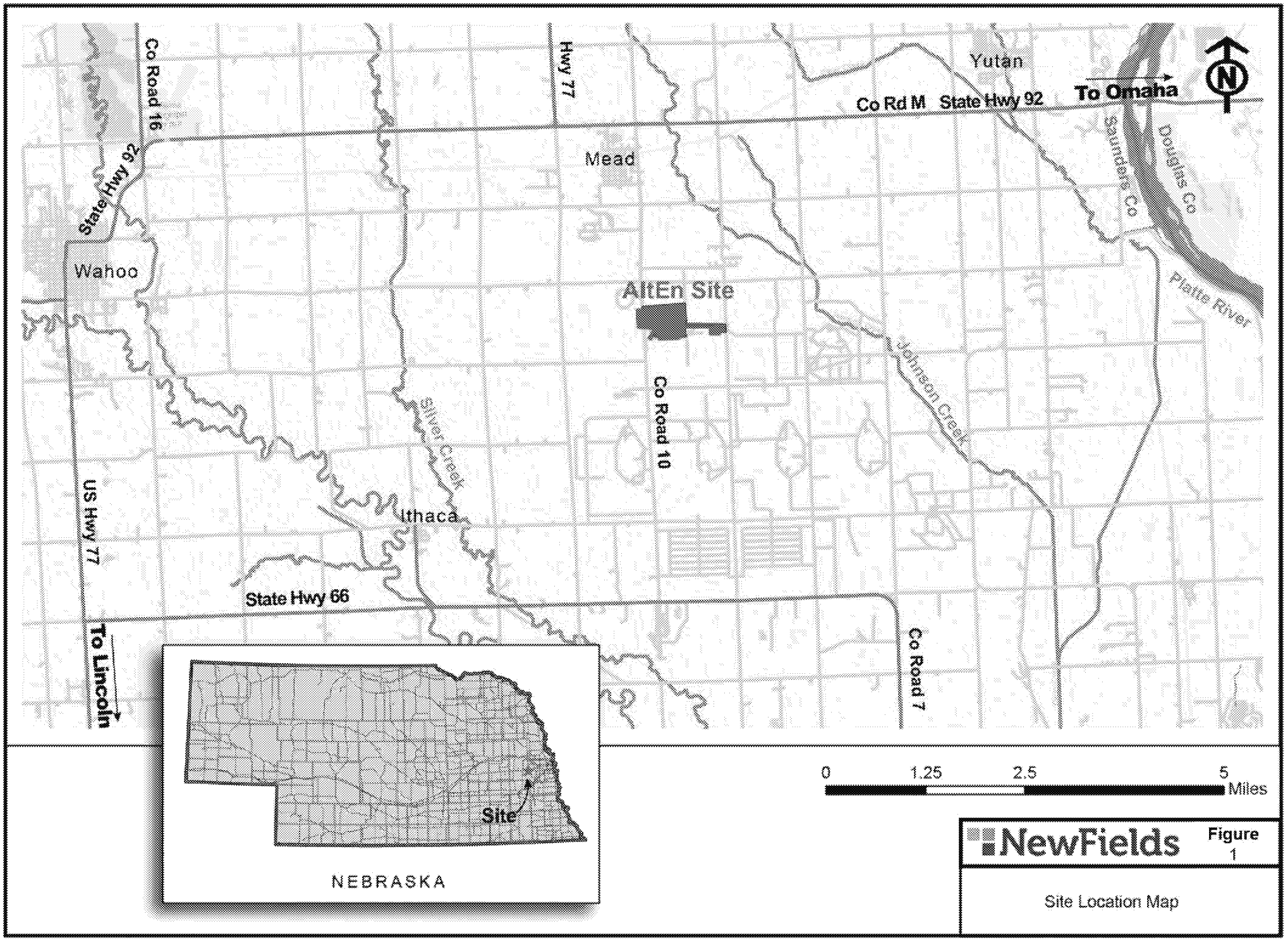
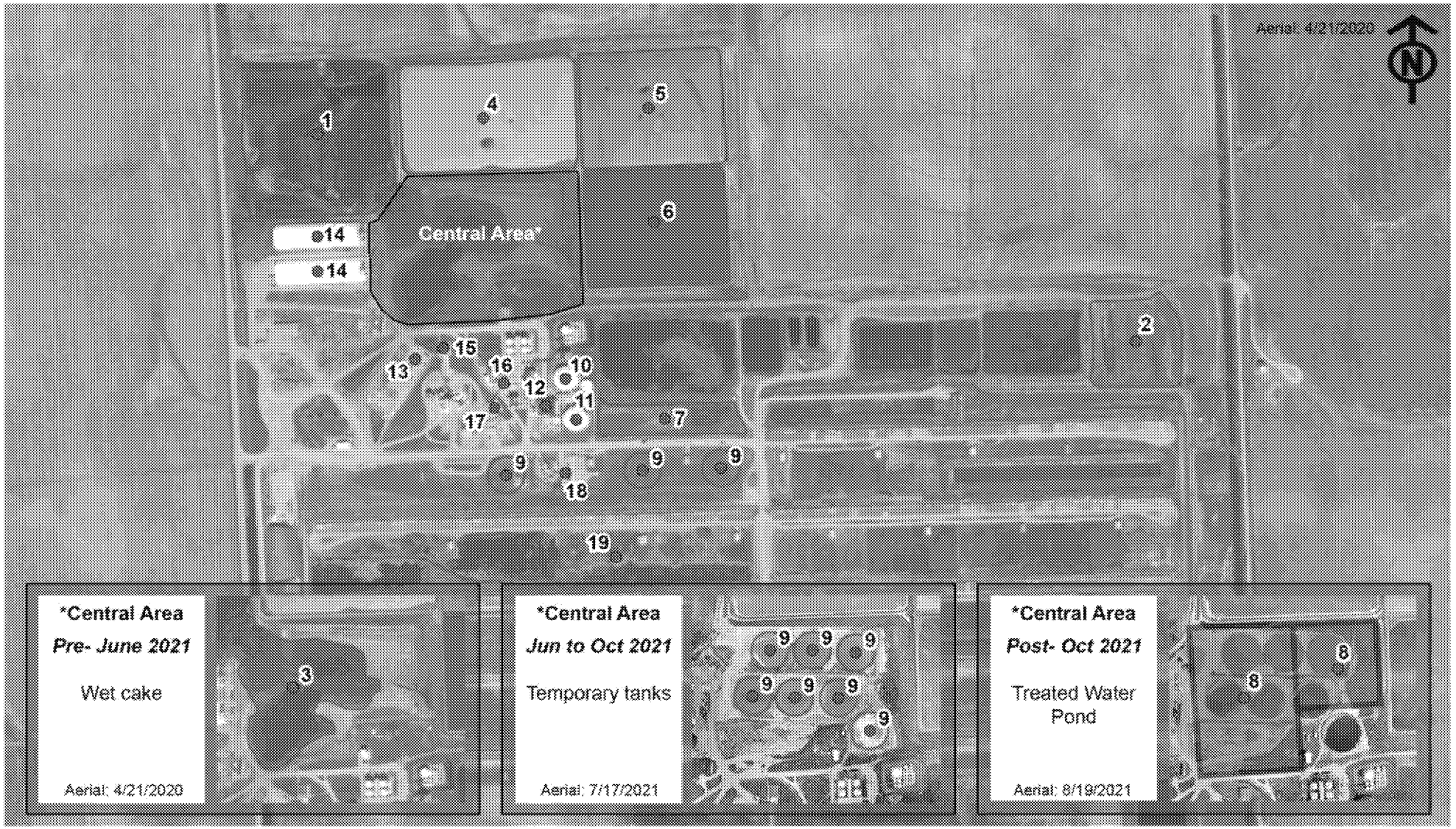
FIGURES


Co Road 16
Hwy 77
Yutan
Co Rd M
State Hwy 92
To Omaha
N
Mead
Saunders Co
Douglas Co
State Hwy 92
Wahoo
AltEn Site
Platte River
Johnson Creek
Co Road 10
Silver Creek
US Hwy 77
Ithaca
State Hwy 66
To Lincoln
Co Road 7
Site
NEBRASKA
0
1.25
2.5
5
Miles
NewFields
Figure 1
Site Location Map

REC'D NDEQ - (11/1/2021) - (202107356 14)



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 250 500 1,000 1,500 2,000 Feet

1. Northwest Wet Cake Pile
2. East Wet Cake Pile
3. Central Wet Cake Area
4. Northwest Lagoon
5. Northeast Lagoon
6. Southeast Lagoon
7. Emergency Pond
8. Treated Water Pond (West and East Cells)
9. Temporary water storage tanks
10. North Digester
11. South Digester
12. Water Treatment Facility
13. Contractor staging area
14. Hoop buildings (North and South)
15. AltEn office building
16. Grain receiving/unloading area
17. WDG Loadout pad
18. Biochar unit
19. Composting Pad

NewFields

Figure 2

AltEn Site Features

REC'D NDEQ - (11/1/2021) - (202107356 14)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- AltEn Site
- Mead Cattle Company feed lot
- Greencycle Solutions biochar operation

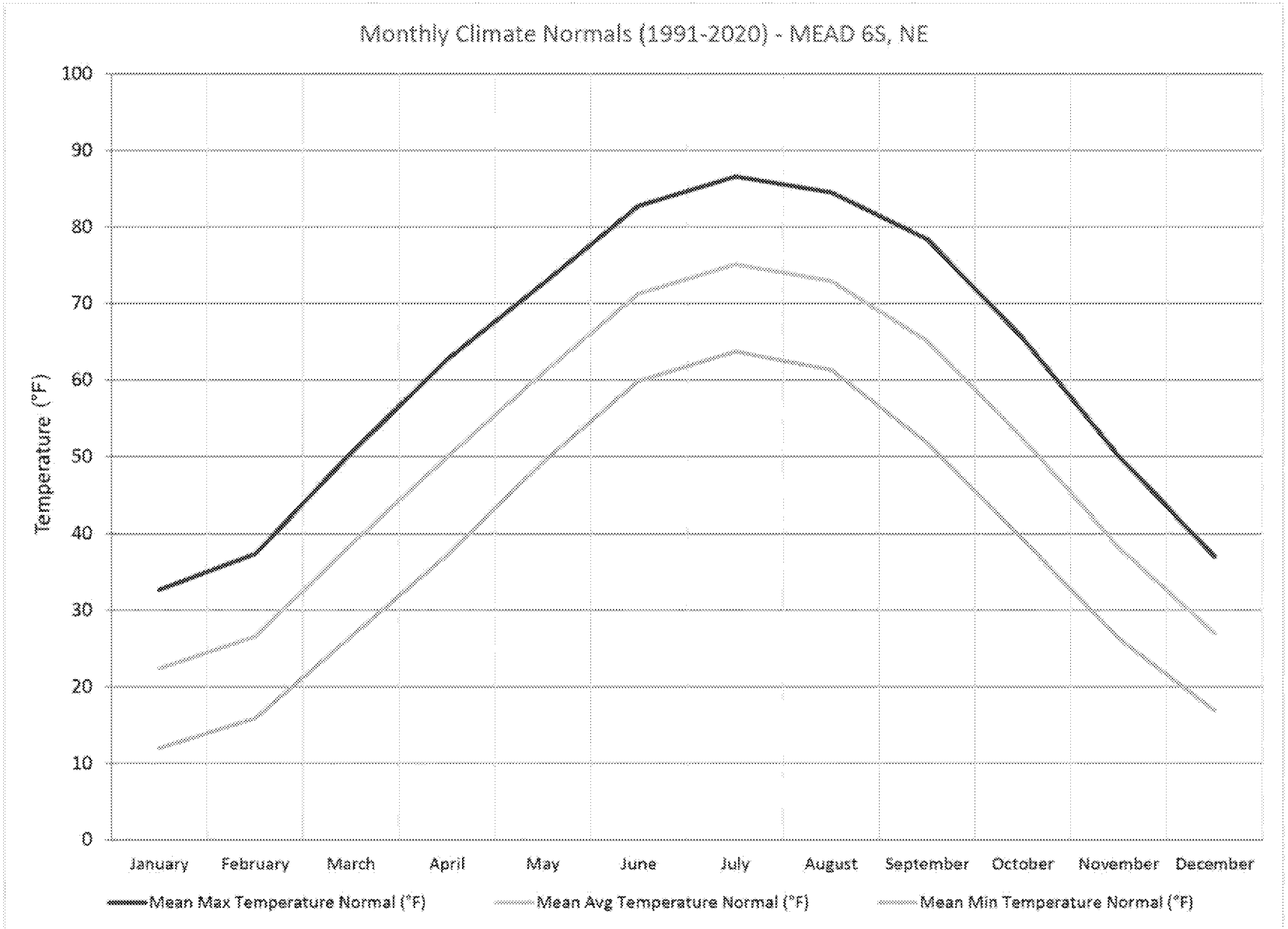
0 1,250 2,500 5,000 Feet

NewFields

Figure 3

Site & Surrounding Areas

REC'D NDEQ - (11/1/2021) - (202107356 14)



NewFields

Figure 4

Average Monthly Temperatures

Source: National Oceanic and Atmospheric Administration, National Weather Service (NOAA NWS), 2021. Summary of Monthly Normals for Mead 6S NE station, data set 1991-2020. https://www.weather.gov/wrh/Climate?wfo=oax

REC'D NDEQ - (11/1/2021) - (202107356 14)

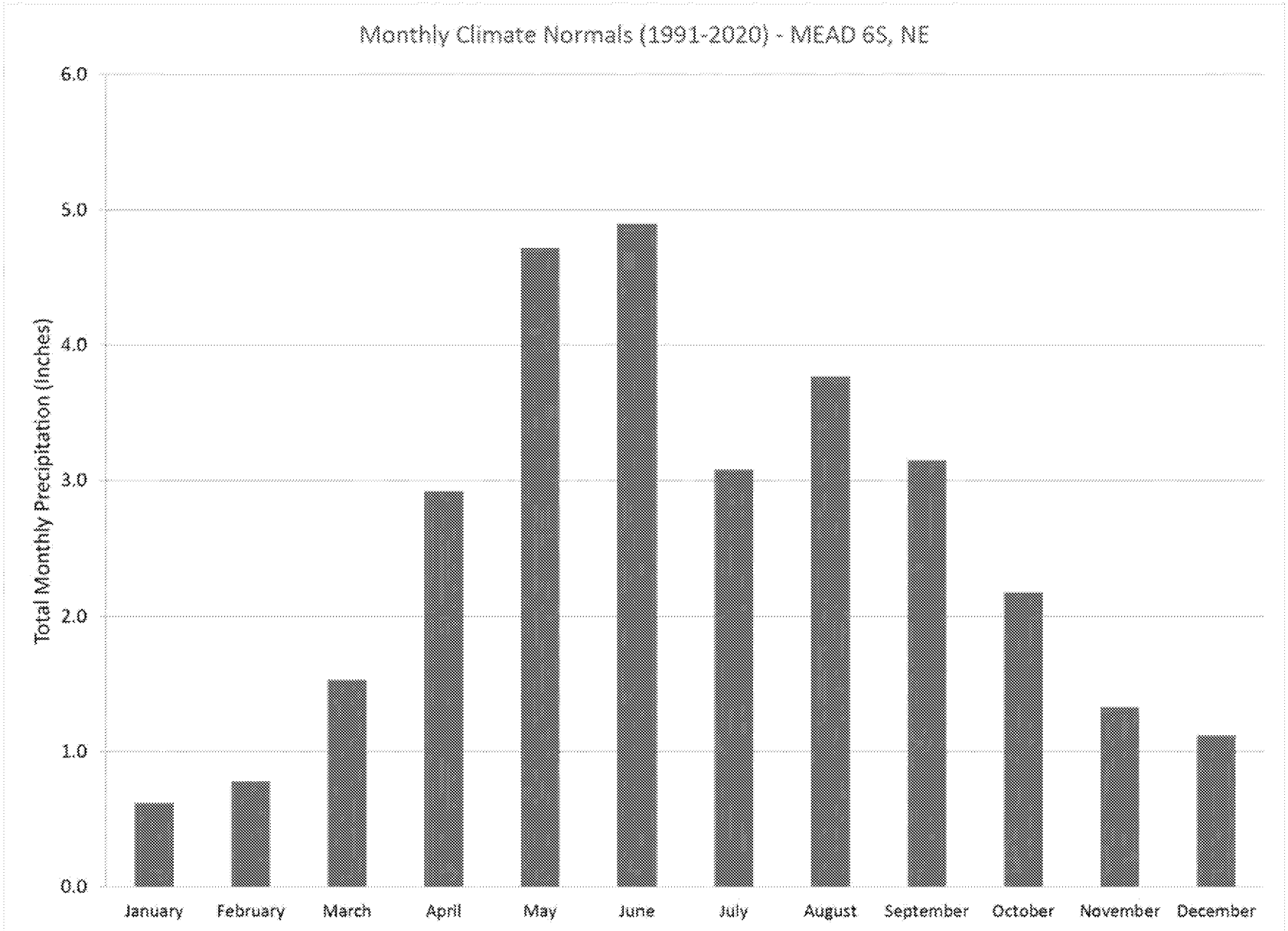


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Figure 5

Average Monthly Precipitation

Source: National Oceanic and Atmospheric Administration, National Weather Service (NOAA NWS), 2021. Summary of Monthly Normals for Mead 6S NE station, data set 1991-2020. https://www.weather.gov/wrh/Climate?wfo=oax

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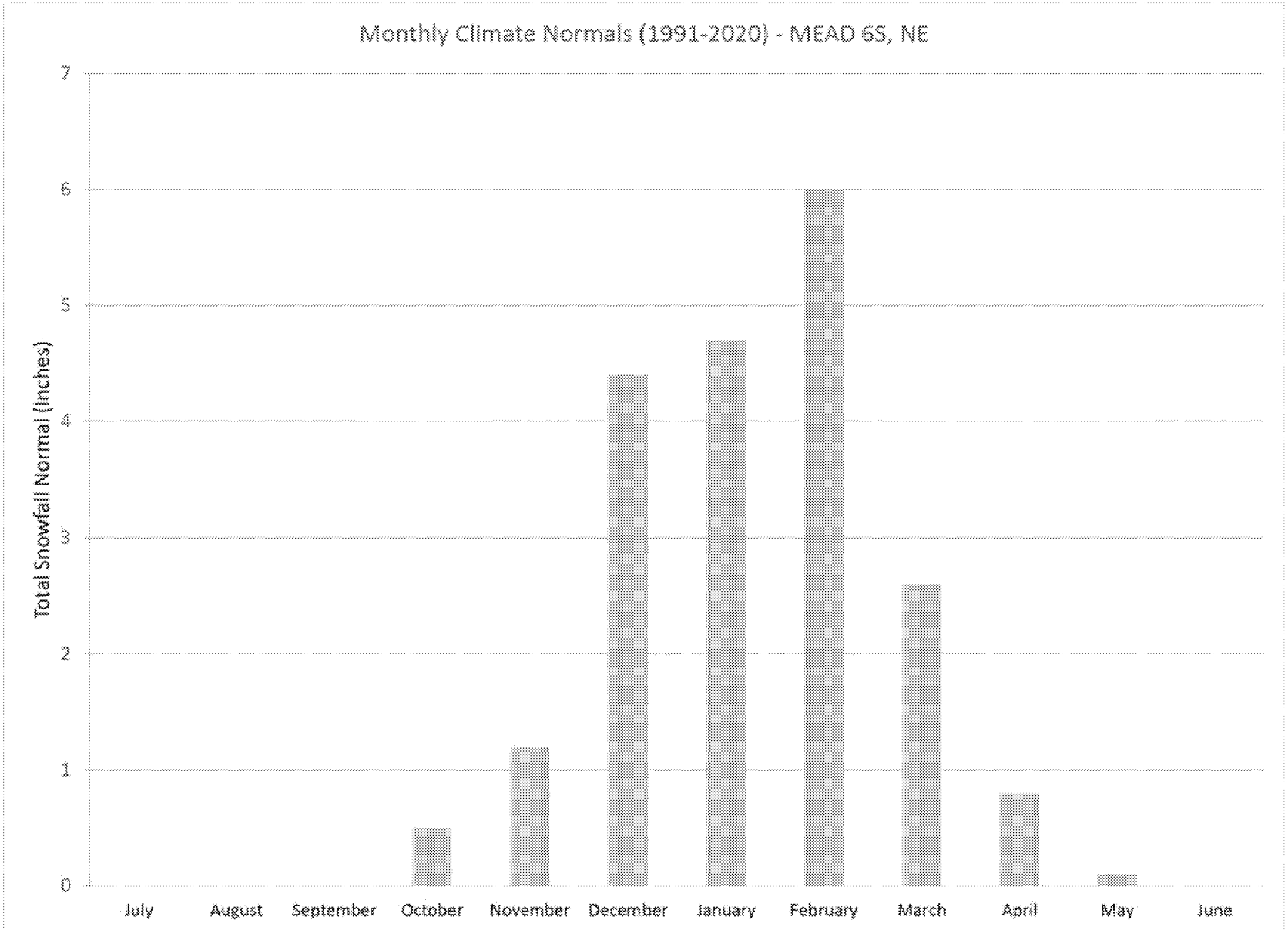

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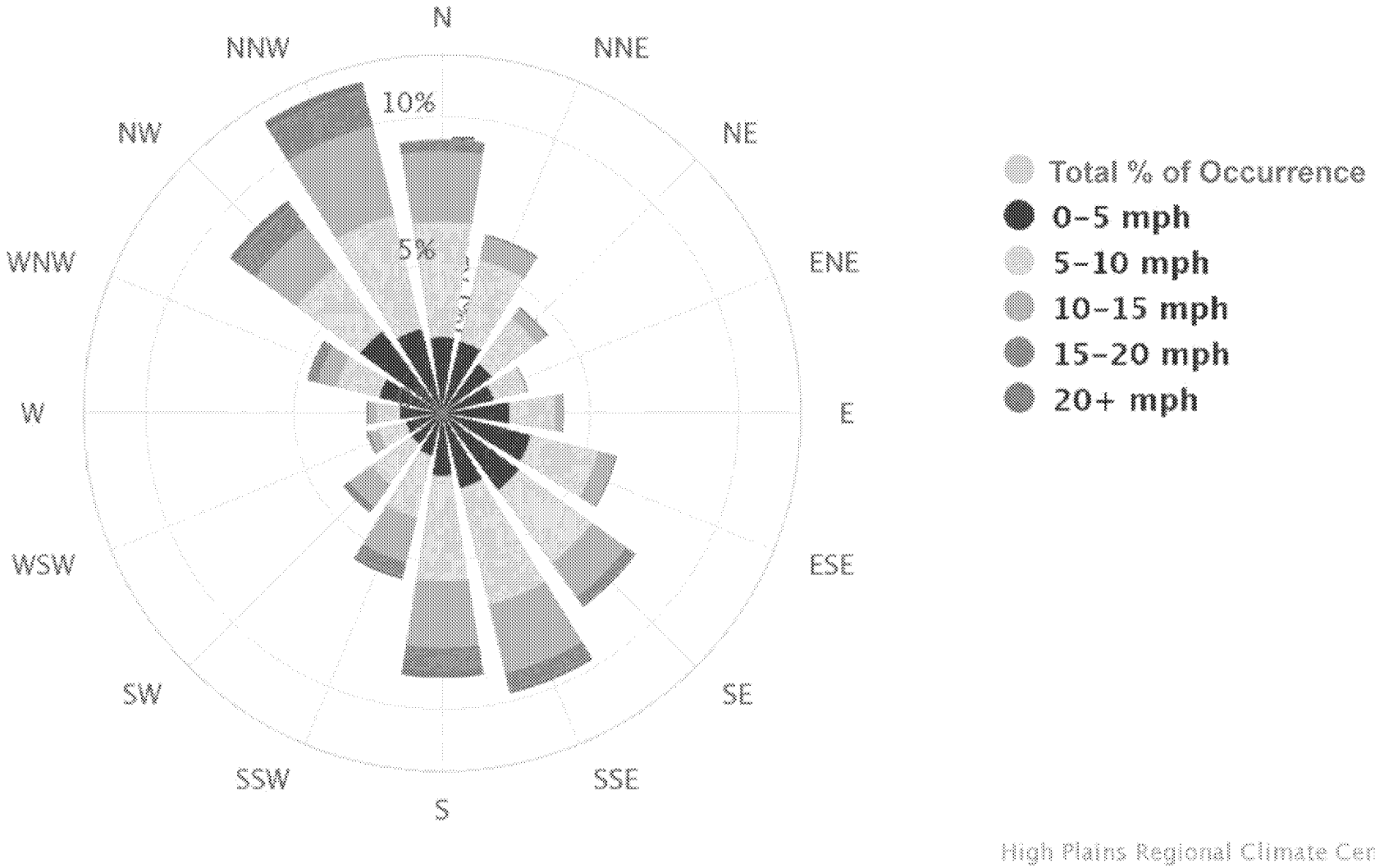
Figure 6

Average Monthly Snowfall

Source: National Oceanic and Atmospheric Administration, National Weather Service (NOAA NWS), 2021. Summary of Monthly Normals for Mead 6S NE station, data set 1991-2020. https://www.weather.gov/wrh/Climate?wfo=oax

Wind rose for Mead 4s, NE Annual 1996–2012



High Plains Regional Climate Center

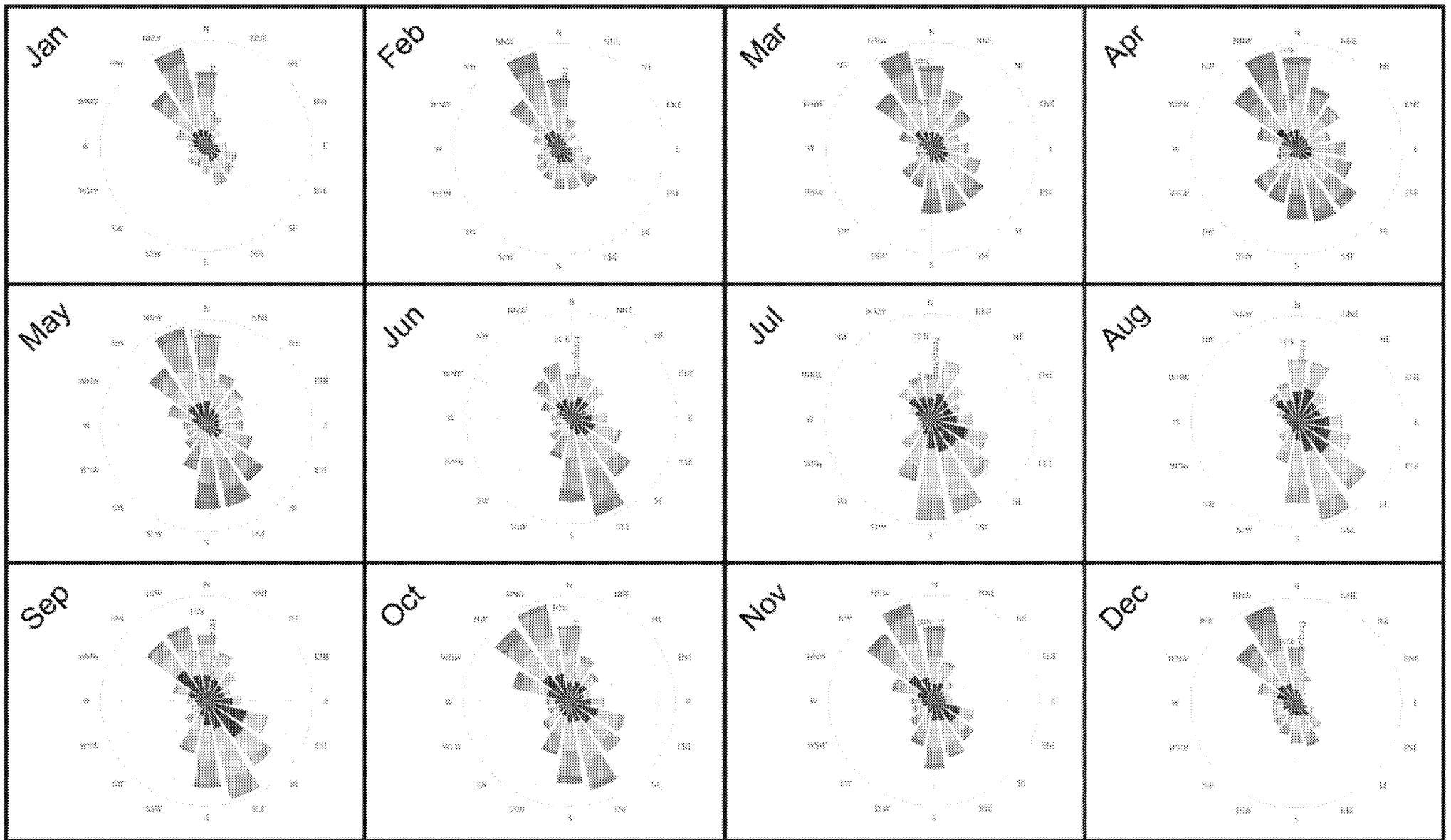
NewFields

Figure 7

Annual Wind Direction & Speeds

Source: High Plains Regional Climate Center (HPRCC), 2021: Automated Weather Data Network (AWDN), Nebraska Mesonet, Wind Station Mead 4s, NE, data set 1996-2012, https://hprcc.unl.edu/datasets.php?set=WindRose#.

REC'D NDEQ - (11/1/2021) - (20210735614)



Wind Roses for Mead 4s, NE, January - December, 1996-2012

Legend

- Total % of Occurrence
- 0–5 mph
- 5–10 mph
- 10–15 mph
- 15–20 mph
- 20+ mph

NewFields

Figure 8

Monthly Wind Direction & Speeds

Source: High Plains Regional Climate Center (HPRCC), 2021: Automated Weather Data Network (AWDN), Nebraska Mesonet, Wind Station Mead 4s, NE, data set 1996-2012, https://hprcc.unl.edu/datasets.php?set=WindRose#.

REC'D NDEQ - (11/1/2021) - (202107356 14)

Source: ERM digital terrain model from 4/23/2021 aerial photography

0 250 500 1,000 1,500 2,000 Feet

Legend

Elevation (ft amsl), 4/23/2021, contour interval = 1 foot

Stormwater Approximate Flow Direction (4/23/2021)

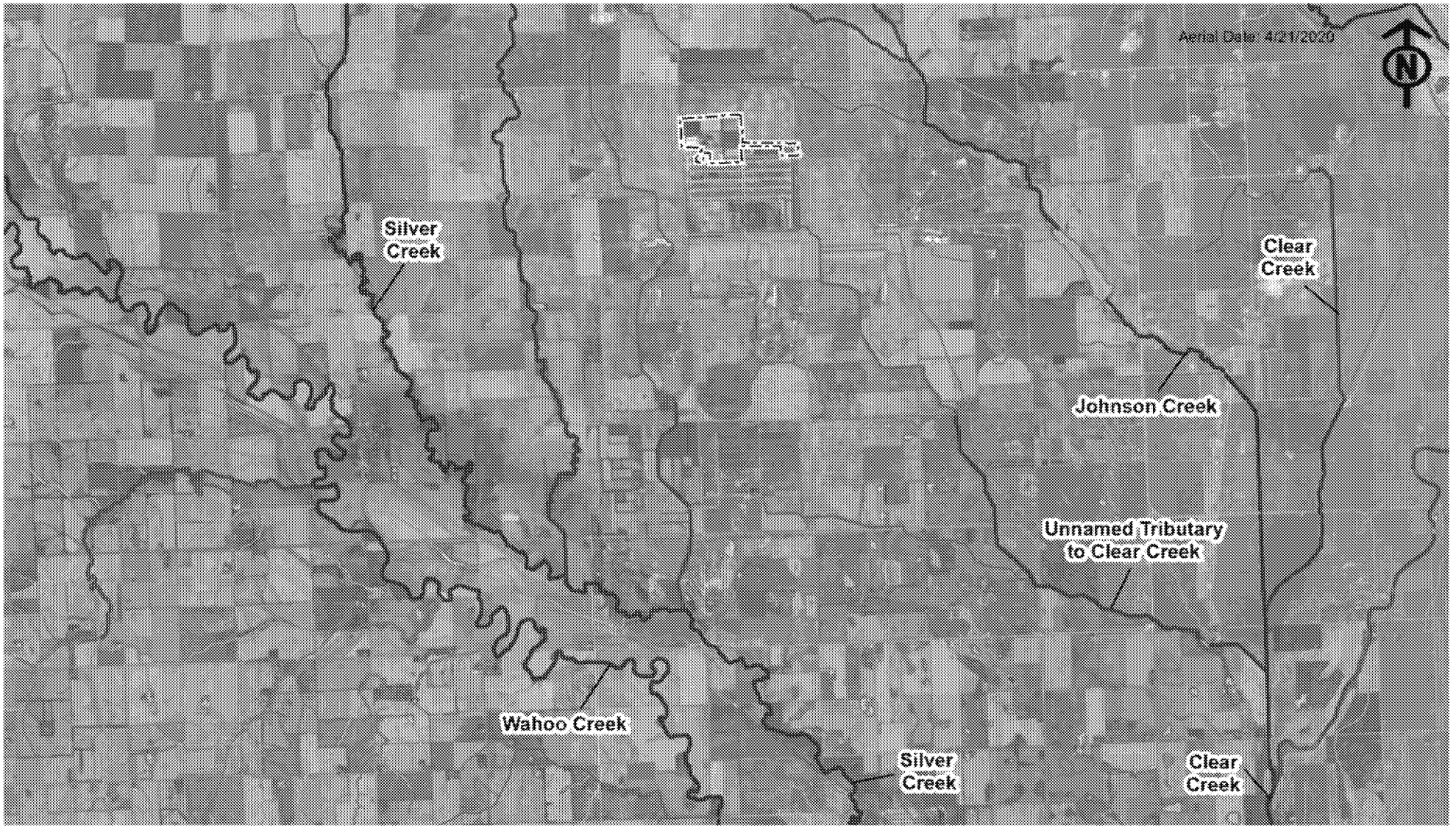
Site Boundary

NewFields

Figure 9

Site Surface Topography

REC'D NDEQ - (11/1/2021) - (202107356 14)



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

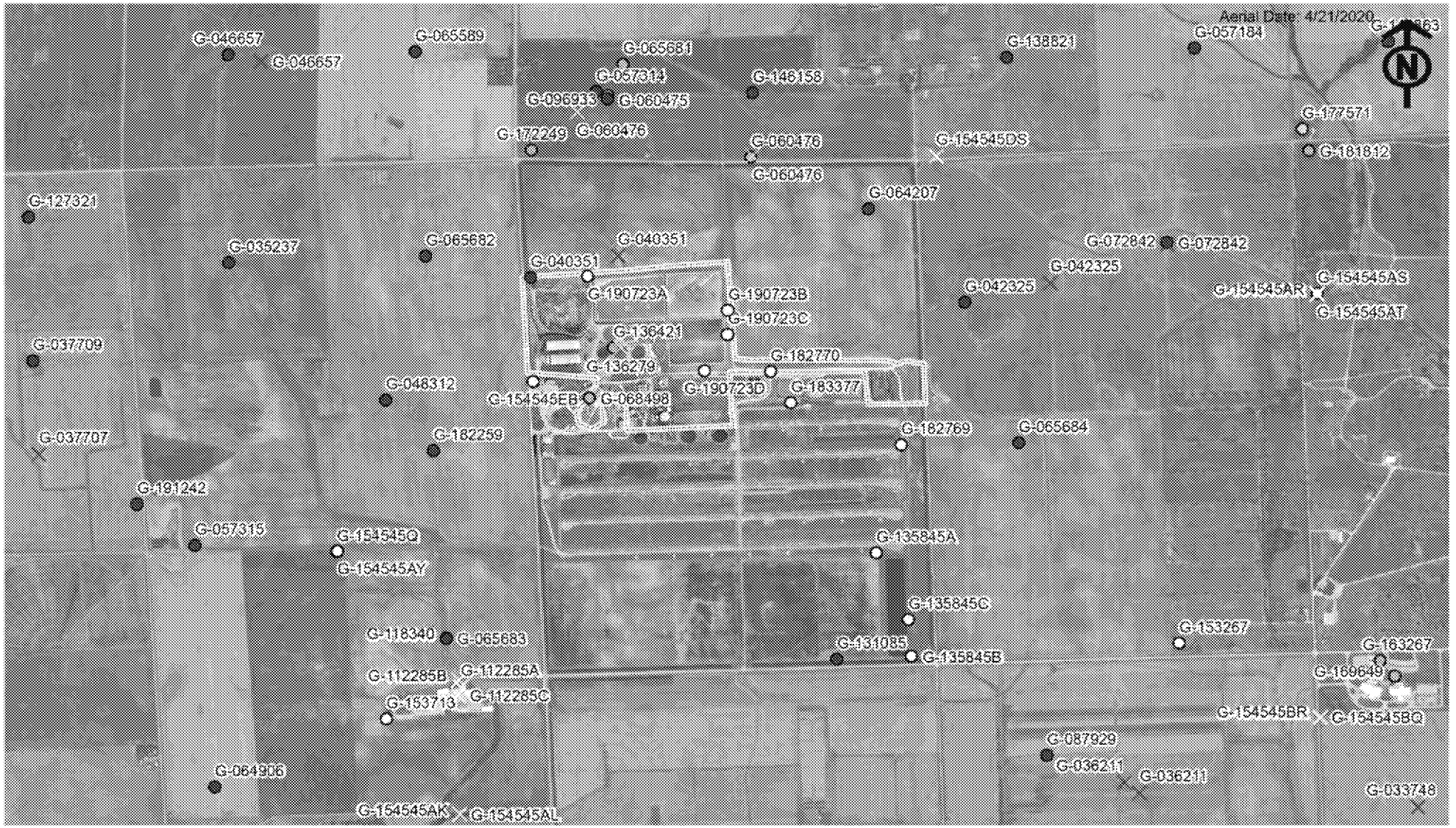
- Lakes and Ponds
- Rivers and Streams
- Site Boundary

0 1.25 2.5 5 Miles

NewFields

Figure 10

Surface Water Streams & Water Bodies



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Irrigation, Active/Inactive
- Irrigation, Decommissioned
- Commercial/Industrial, Active/Inactive
- Commercial/Industrial, Decommissioned
- Domestic, Active/Inactive
- Open/Closed Loop Heat Pump well, Active/Inactive
- Monitoring (GW Quality), Active
- Monitoring (GW Quality), Decommissioned
- Site Boundary

0 1,250 2,500 5,000 Feet

Source: Nebraska (NDNR) Registered Wells Inventory website (https://gis.ne.gov/portal/apps/webappviewer/index.html?id=7e332656859247c9874b02c7aa1f58e8)

NewFields

Figure 11

Location of Site Wells & Surrounding Wells

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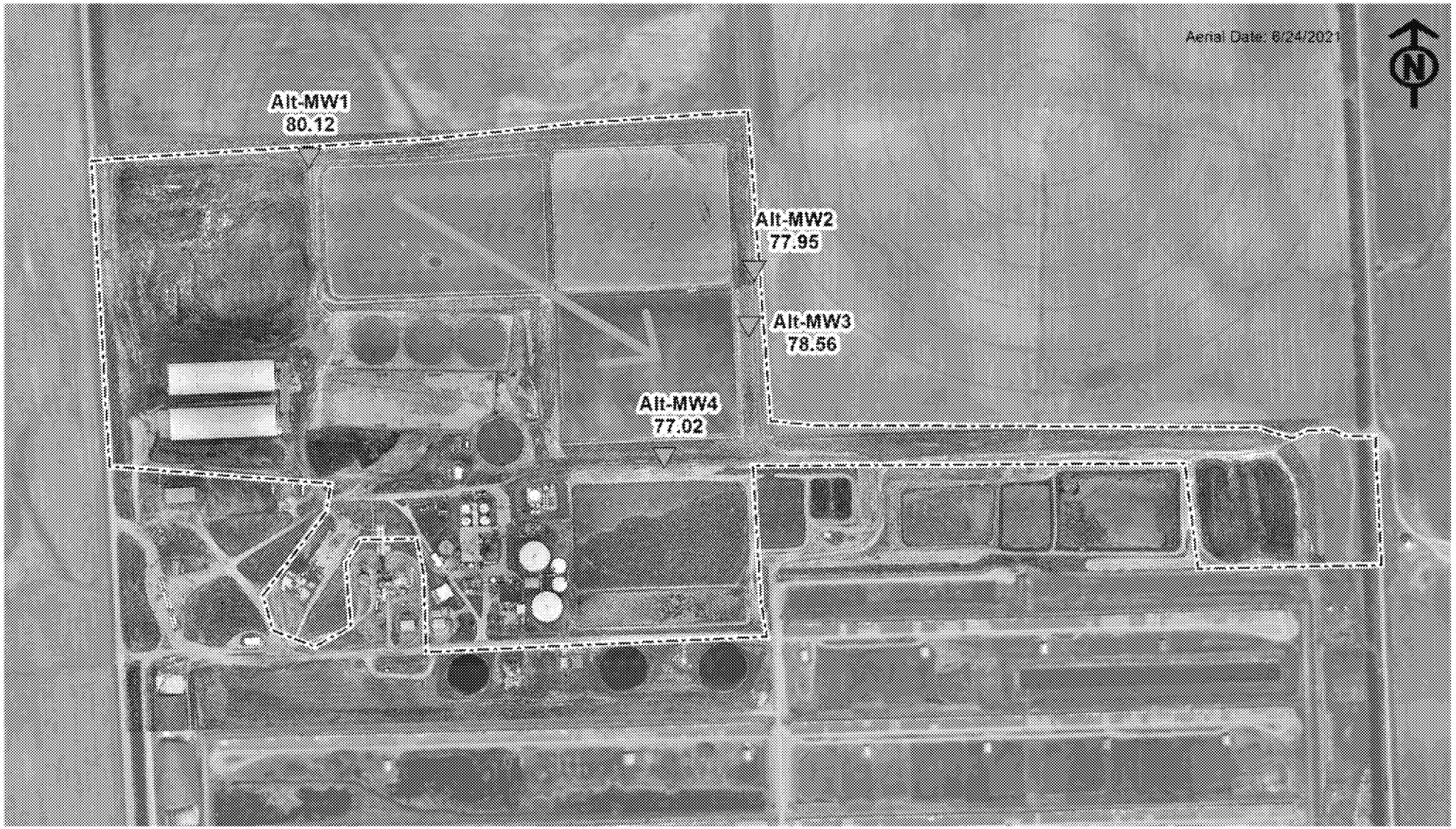


Source: Advanced Aerial Solutions

Legend

Relative Groundwater Elevation (ft)

Groundwater Flow Direction

Site Boundary

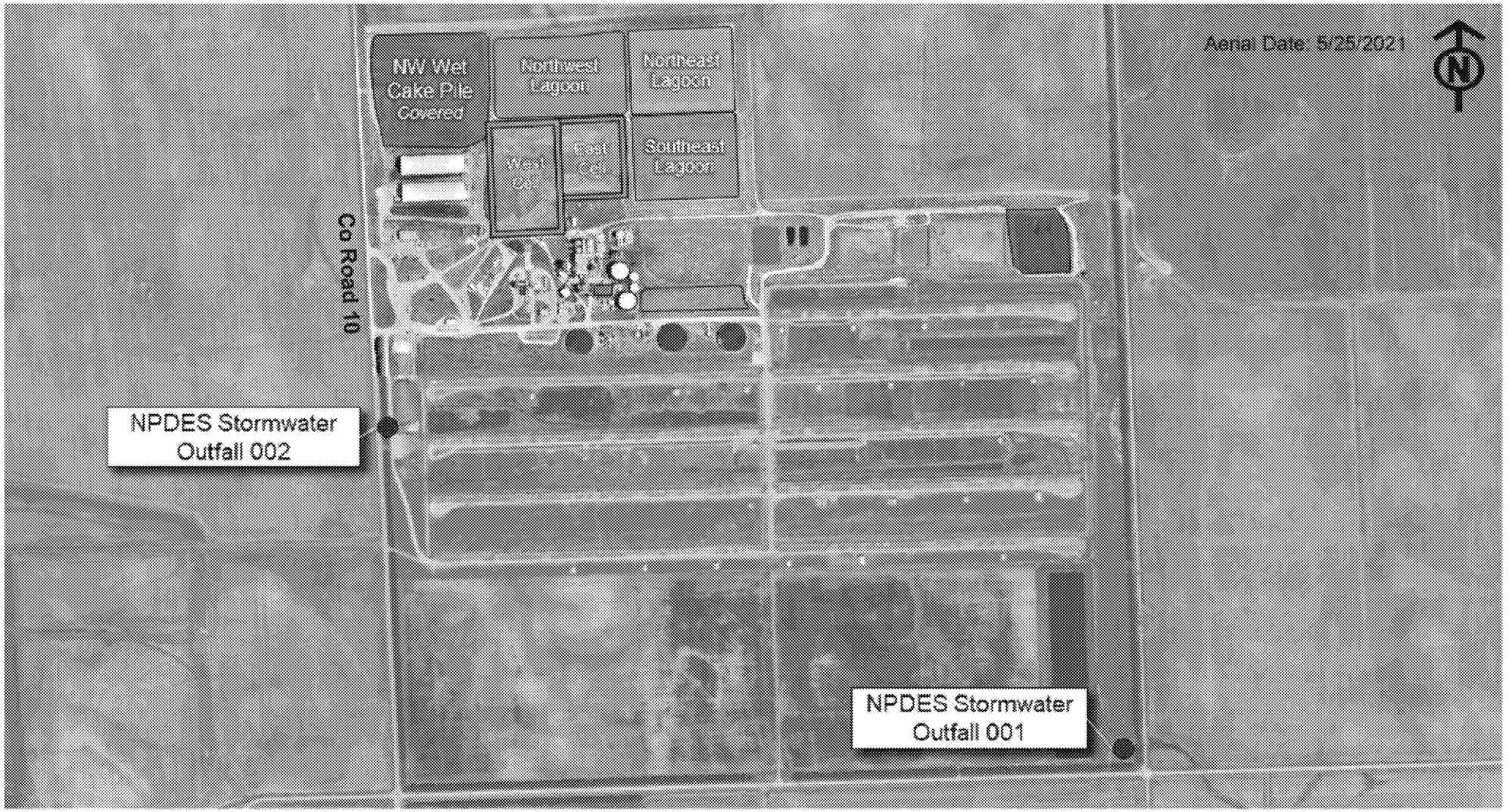
0 250 500 1,000 1,500 2,000 Feet

NewFields

Figure 12

Site Groundwater Elevations

Source: Nutrient Advisors. (2021-06-16). 2021 Spring Sampling Event, AltEn, LLC, IS# 84069. Groundwater elevations are not true elevations but are relative to each other using a Site-derived surface elevation base point.



Source: Advanced Aerial Solutions

0 750 1,500 3,000 Feet

Legend

- Stockpiled excavated soils from the Treated Water Pond area
- Consolidated and covered Wet Cake and other site solids
- Untreated Water
- Treated Water

NewFields

Figure 13

Location of NPDES Stormwater Outfalls

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 250 500 1,000 1,500 2,000 Feet

NewFields

Figure 14

AltEn Site Features Addressed Under Emergency Response Measures

REC'D NDEQ - (11/1/2021) - (20210735614)

	Feb	• Clean Harbors mobilized to the Site • Clean Harbors installed Poseidon Tank 1 for treated water • Clean Harbors mobilized portable water treatment systems • Clean Harbors processed Emergency Pond water to Tank 1
	Mar	• Clean Harbors installed Poseidon Tanks 2 & 3 for treated water • Continued processing emergency lagoon water to Tank 1
Refer to Figure 17	Apr	• AltEn processed water from the South Digester and sent to Clean Harbors for further treatment and storage in Tanks 2 & 3 • Began land application evaluation for the current treated water • Began treating water from the lagoons using the NDEE approved combined AltEn and Clean Harbors treatment facilities
Refer to Figure 18	May	• Began removal of wet cake from Central Wet Cake Area to NW Wet Cake Pile • East Wet Cake Pile berm installed and began collection of contact stormwater • Management of contact stormwater in central area of the Site (Central Wet Cake Area) • Technical assessment of land application requirements • Regulatory analysis of land application requirements • Continued treating water from lagoons using the supplemented treatment facility • Began preparation for installation of additional treated water tanks
Refer to Figure 19	Jun	• Completion of removal of wet cake from Central Wet Cake Pile to NW Wet Cake Pile • Graded and stacked wet cake in NW Wet Cake Pile • Clean Harbors installed Poseidon Tanks 4, 5, & 6 for untreated water and moved approximately 8.7 MM gallons from the lagoons to tanks to manage freeboard • Clean Harbors installed Tank 10 for treated water • Management of contact stormwater in central area of the Site (untreated and treated tank area) • Began discussions with landowners regarding land application • Assessment of land application infrastructure capability • Continued treating water from the lagoons using the supplemented treatment facility
Refer to Figure 20	Jul Aug	• Clean Harbors installed Poseidon Tanks 7, 8, & 9 for treated water • Land application proposal and NDEE negotiations • Assessment of land application infrastructure capability • Determination that land application in 2021 may not be approved and a contingency plan should be developed • Development of emergency plan for water storage as above ground tanks (temporary tank and existing digesters) will require draining prior to winter • Wet cake analysis for landfilling • Continued contact stormwater management from wet cake areas and tank areas • Continued treating water from the lagoons using the supplemented treatment facility

2021

Completed

To be completed

NewFields

Figure 15

Emergency Response Measures Timeline
February through August 2021

REC'D NDEQ - (11/1/2021) - (20210735614)

Refer to Figures 24, 26, & 27	2021	Sep Oct	• Continued treating water from the lagoons using the supplemented treatment facility • Consolidated materials from East Wet Cake Pile and Emergency Pond to NW Wet Cake Pile • Refurbished Emergency Pond (70% complete) • Designed and permitted the Treated Water Pond System • Began moving stored water and draining temporary tanks • Removed Tanks 5, 6, 8, & 9 • Began construction on newly designed and permitted Treated Water Pond West Cell • Water treatment reduced to allow completion of Treated Water Pond System • Began site preparation work for covering NW Wet Cake Pile • Began characterizing materials on plant site to determine winter decommissioning requirements
Refer to Figures 25, 26, & 28		Nov Dec	• Complete construction of new Treated Water Pond West Cell • Complete Emergency Pond refurbishment • Transfer water from Tanks 1, 2, 3, 4, 7, & 10 to Treated Water Pond System • Remove remaining Treated Water Tanks from the Site • Drain Digesters to refurbished Emergency Pond • Apply Posi-Shell cover to Northwest Wet Cake Pile/Consolidation Area • Cover area of former East Wet Cake Pile/remove berms • Install Northwest Wet Cake Pile leachate collection and non-contact water management systems • Continue construction of new Treated Water Pond East Cell
Refer to Figure 28	2022	Jan	• Complete construction of new Treated Water Pond System • Complete construction of swales/stormwater control improvements • Resume water treatment for freeboard control

Completed

To be completed

NewFields

Figure 16

Emergency Response Measures Timeline
September 2021 through January 2022

REC'D NDEQ - (11/1/2021) - (202107356 14)

Source: ERM

0 250 500 1,000 1,500 2,000 Feet

Legend

Untreated Water

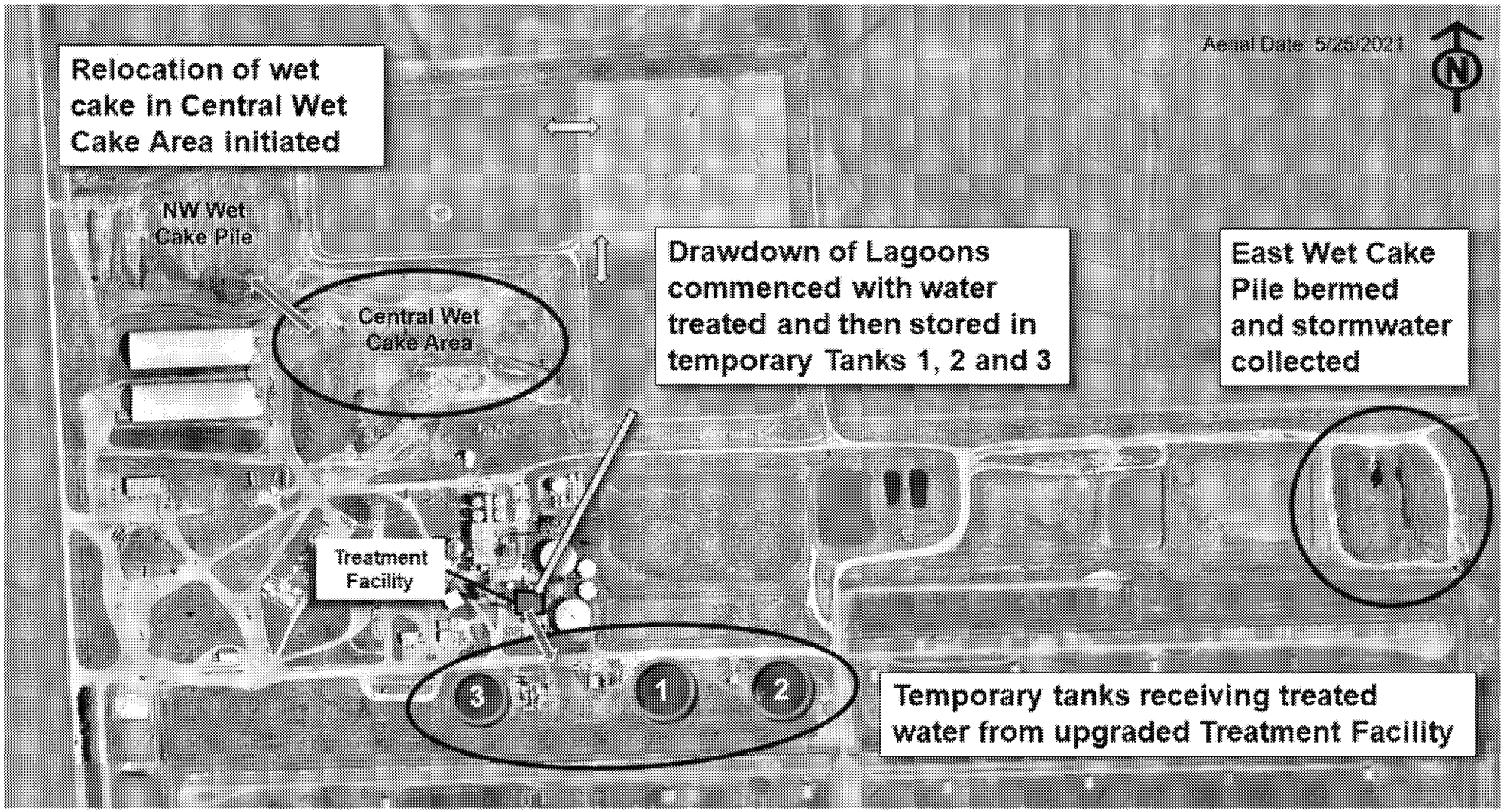
Temporary Tanks for Treated Water

NewFields

Figure 17

Emergency Response Measures Status
April 2021

REC'D NDEQ - (11/1/2021) - (20210735614)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

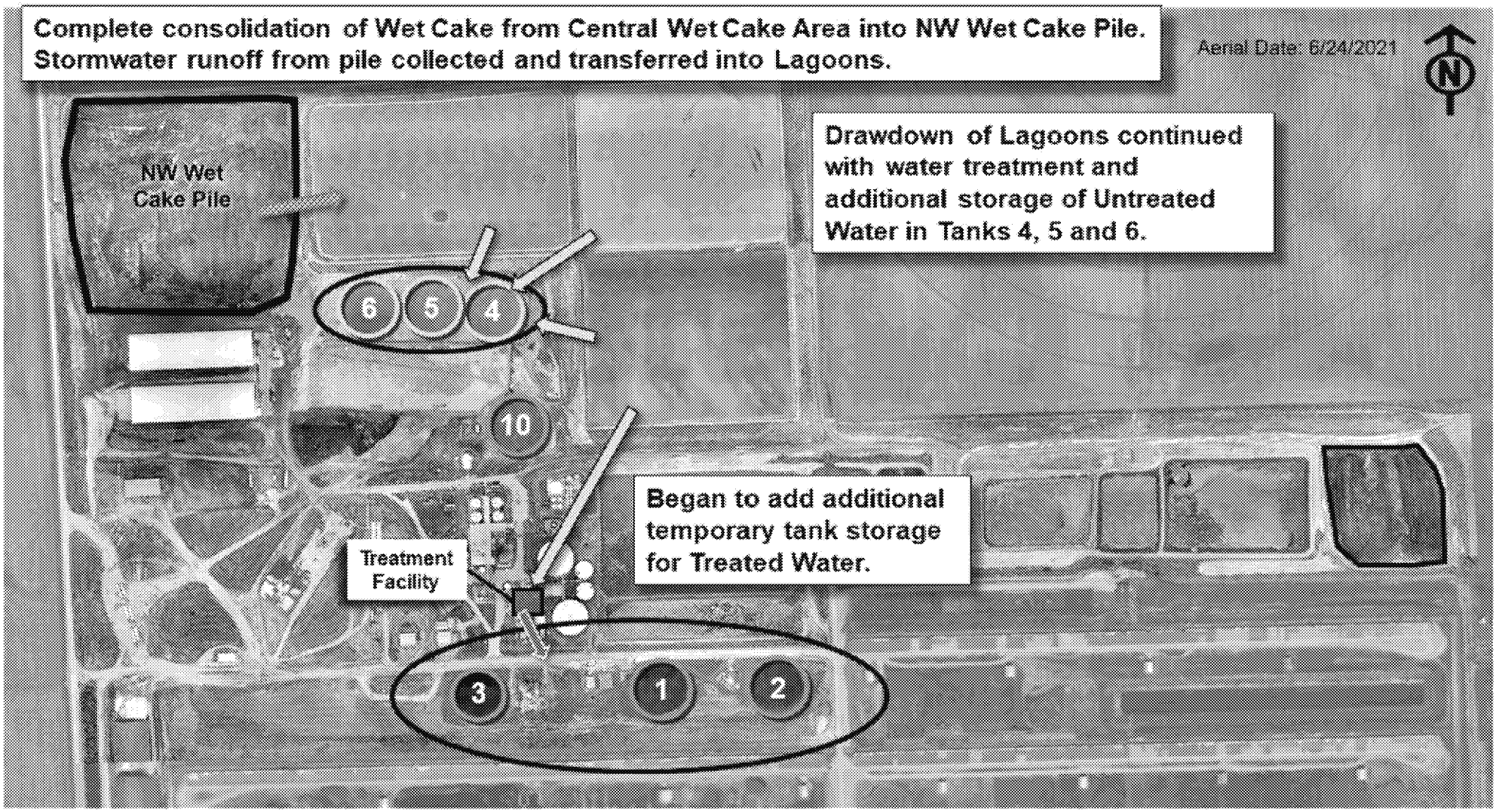
- Movement of Untreated Water
- Movement of Treated Water
- Movement of Wet Cake
- Temporary Tanks for Treated Water

NewFields

Figure 18

Emergency Response Measures Status
May 2021

REC'D NDEQ - (11/1/2021) - (202107356 14)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

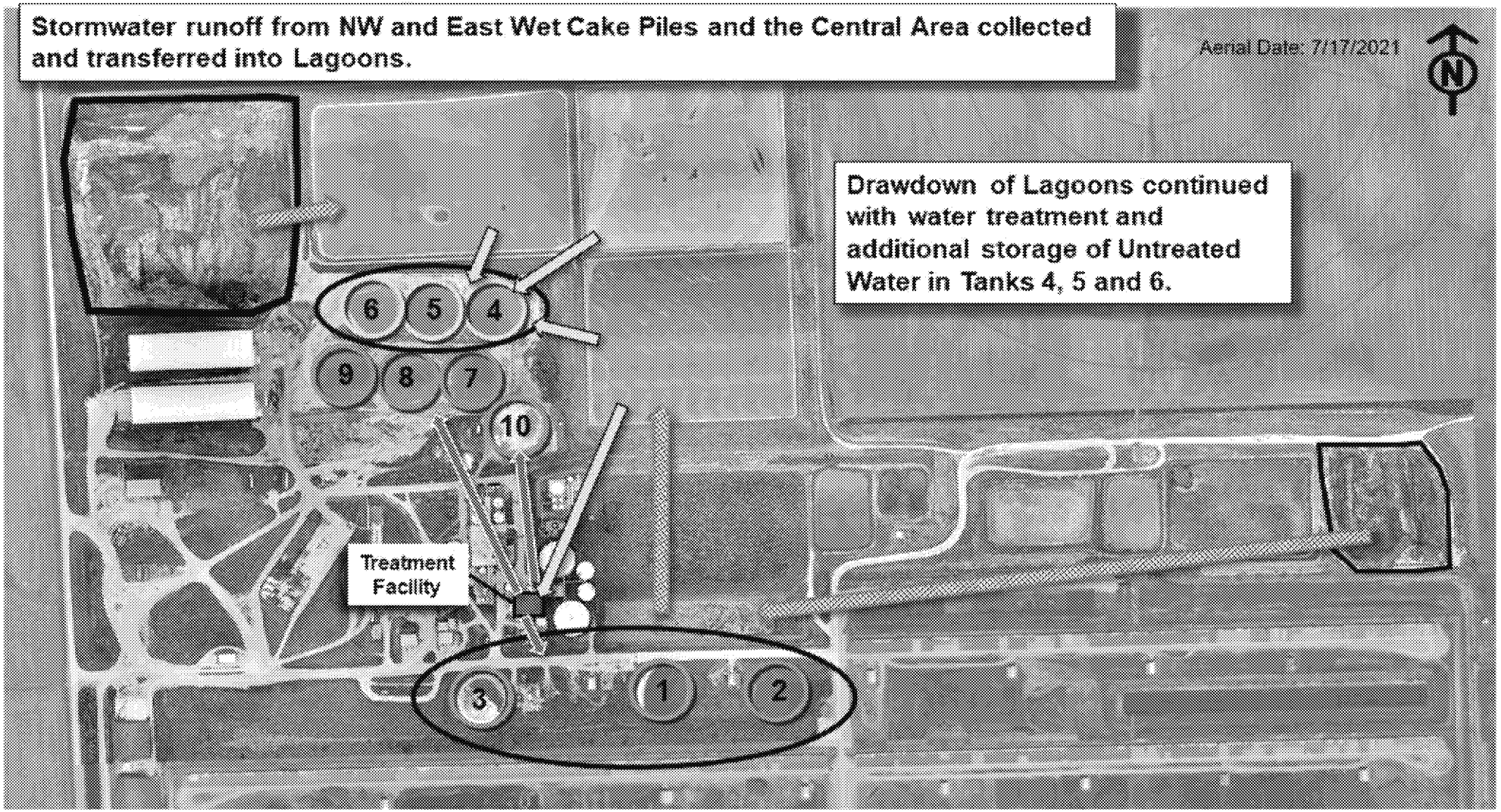
- Movement of Untreated Water
- Movement of Treated Water
- Movement of collected stormwater
- Temporary Tanks for Untreated Water
- Temporary Tanks for Treated Water

NewFields

Figure 19

Emergency Response Measures Status
June 2021

REC'D NDEQ - (11/1/2021) - (20210735614)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

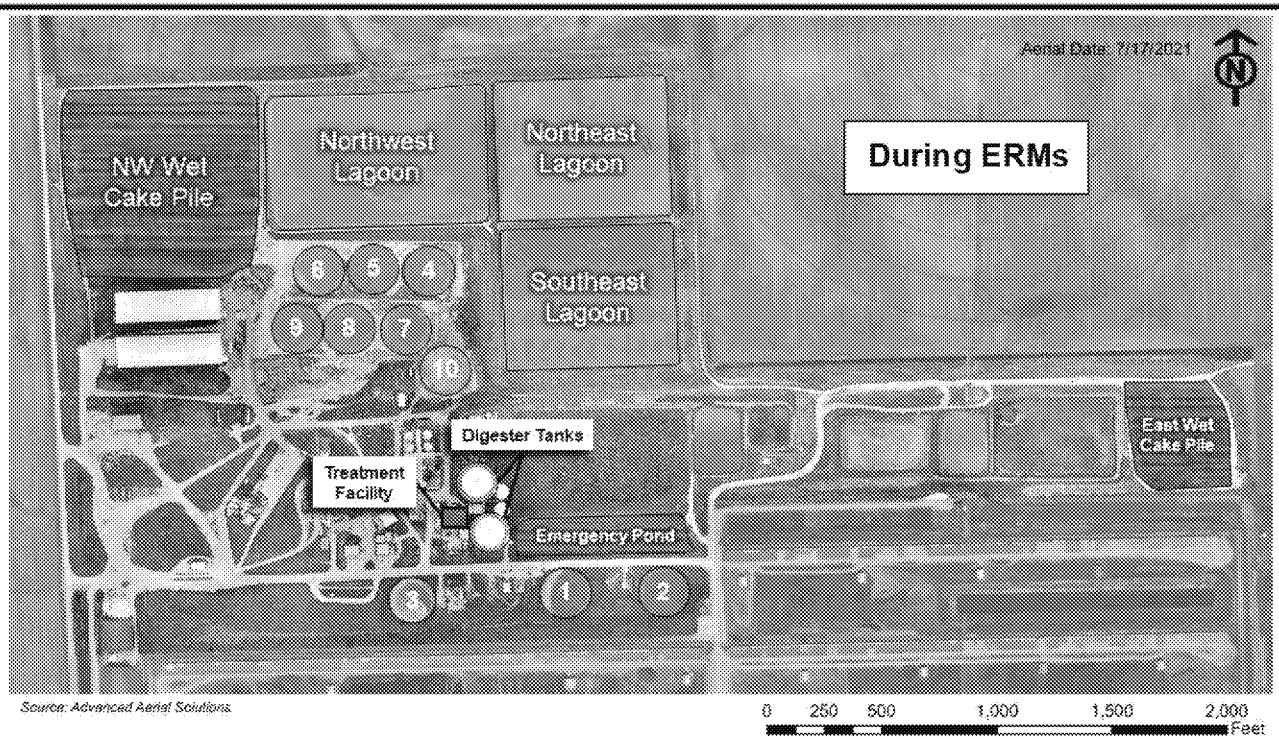
- Movement of Untreated Water
- Movement of Treated Water
- Movement of collected stormwater
- Temporary Tanks for Untreated Water
- Temporary Tanks for Treated Water

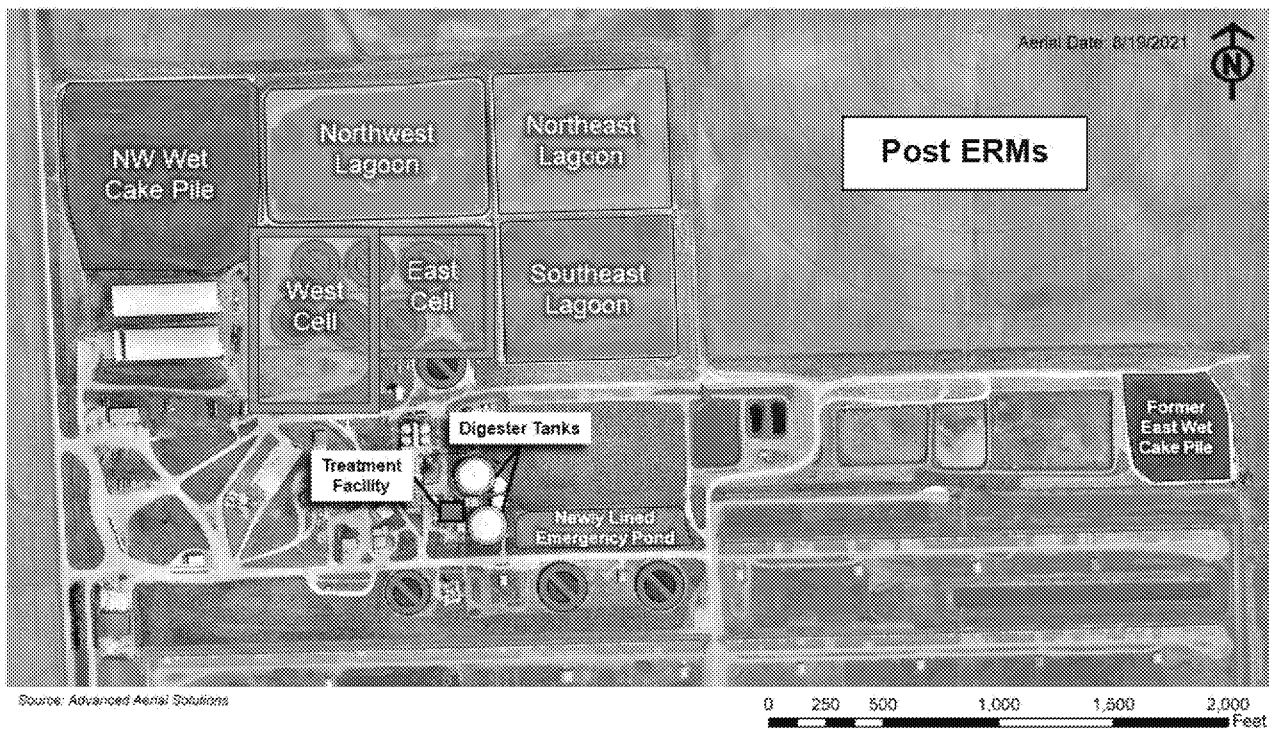
NewFields

Figure 20

Emergency Response Measures Status
July - August 2021

REC'D NDEQ - (11/1/2021) - (20210735614)





Estimated Water Management Requirements through May 2022

- **25 MM gal** contact stormwater from Wet Cake piles and direct discharge into lagoons/tanks from September 2021 to May 2022
- **8.7 MM gal** Untreated Water in existing tanks (4, 5, & 6)
- **7.5 MM gal** digester water
- **10.6 MM gal** in all 7 Treated Water tanks (1, 2, 3, 7, 8, 9, & 10)

52 MM GALLONS TOTAL

Legend

- Untreated Water
- Treated Water
- Wet Cake or Wet Cake mixture/sludges
- Consolidated and covered Wet Cake and other site solids
- Stockpile excavated soils from the Treated Water Pond area
- Removed Tanks

New Treated Water Storage Capacity

- **26.07 MM gal** West Cell
- **26.11 MM gal** East Cell

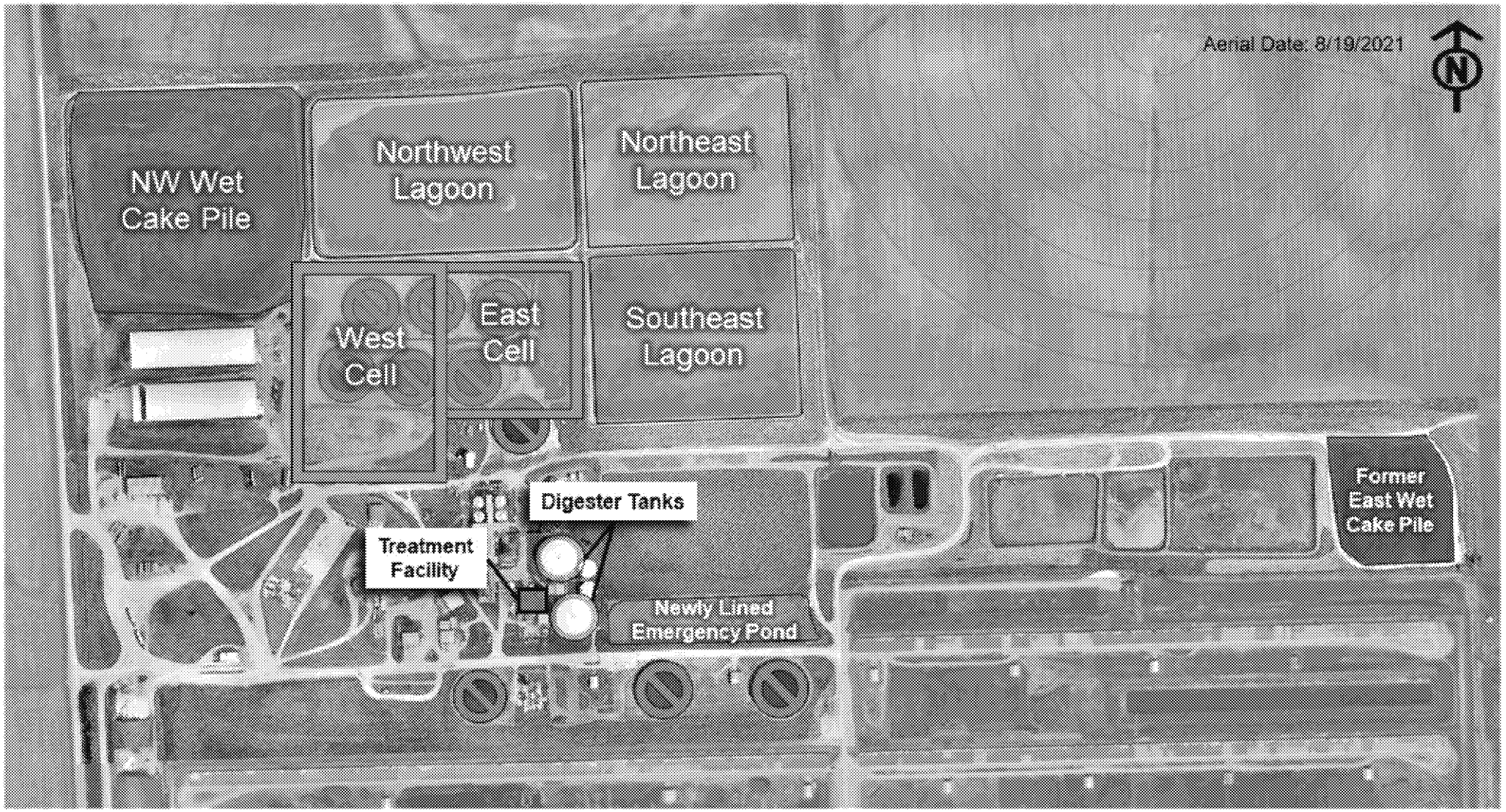
52.2 MM GALLONS TOTAL

NewFields

Figure 21

Water Management Requirements

REC'D NDEQ - (11/1/2021) - (20210735614)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

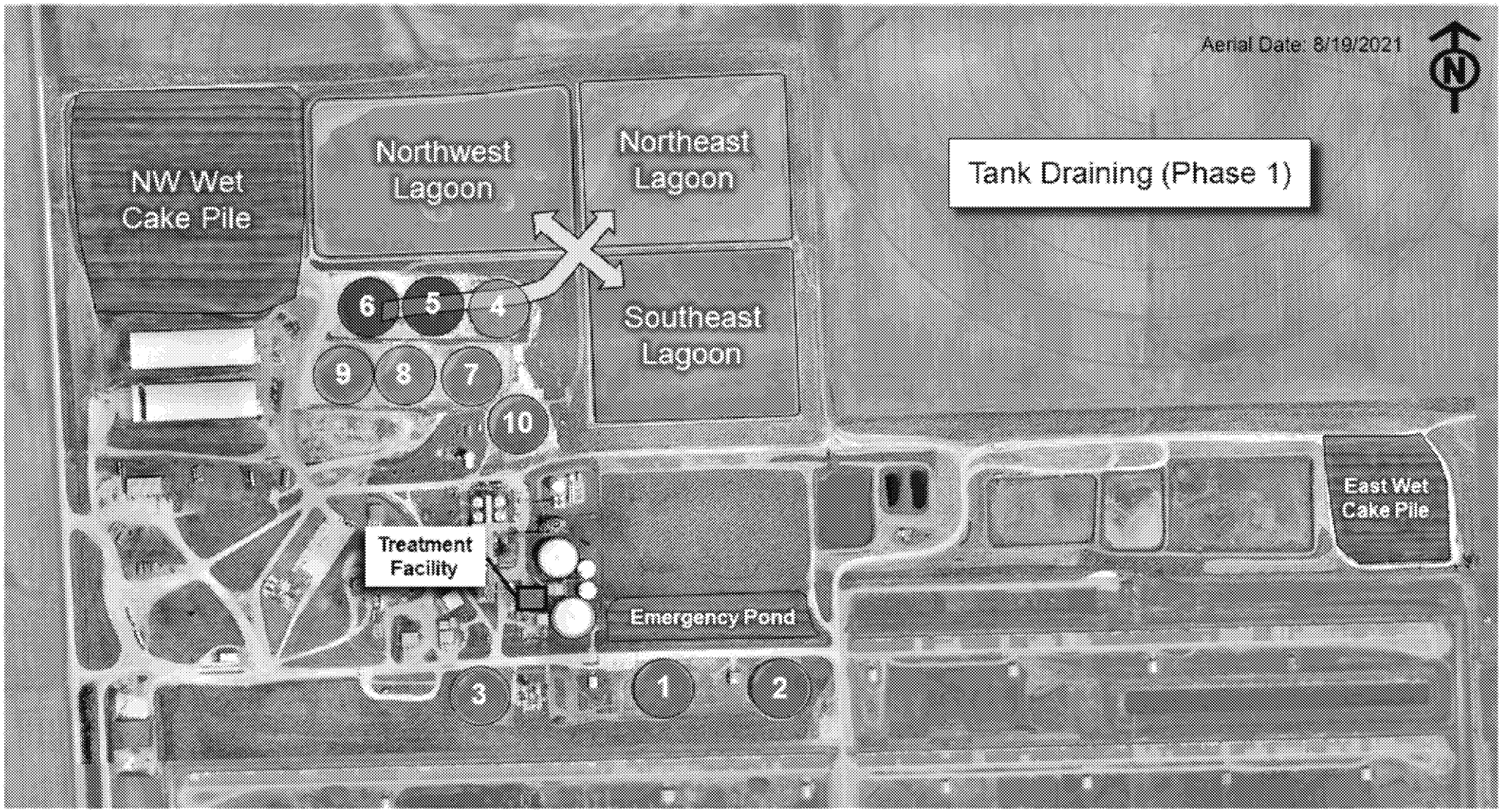
- Consolidated and covered Wet Cake and other site solids
- Untreated Water
- Treated Water
- Stockpile excavated soils from the Treated Water Pond area
- Drained Digesters
- Removed Tanks

NewFields

Figure 22

Completed Emergency Response Measures

REC'D NDEQ - (11/1/2021) - (20210735614)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

- Movement of Untreated Water
- Wet Cake and other site solids
- Untreated Water
- Treated Water
- Emptied tank
- Digesters

NewFields

Figure 23

Treated Water Pond Area
Tank Draining & Removal (Phase 1)

REC'D NDEQ - (11/1/2021) - (20210735614)

Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

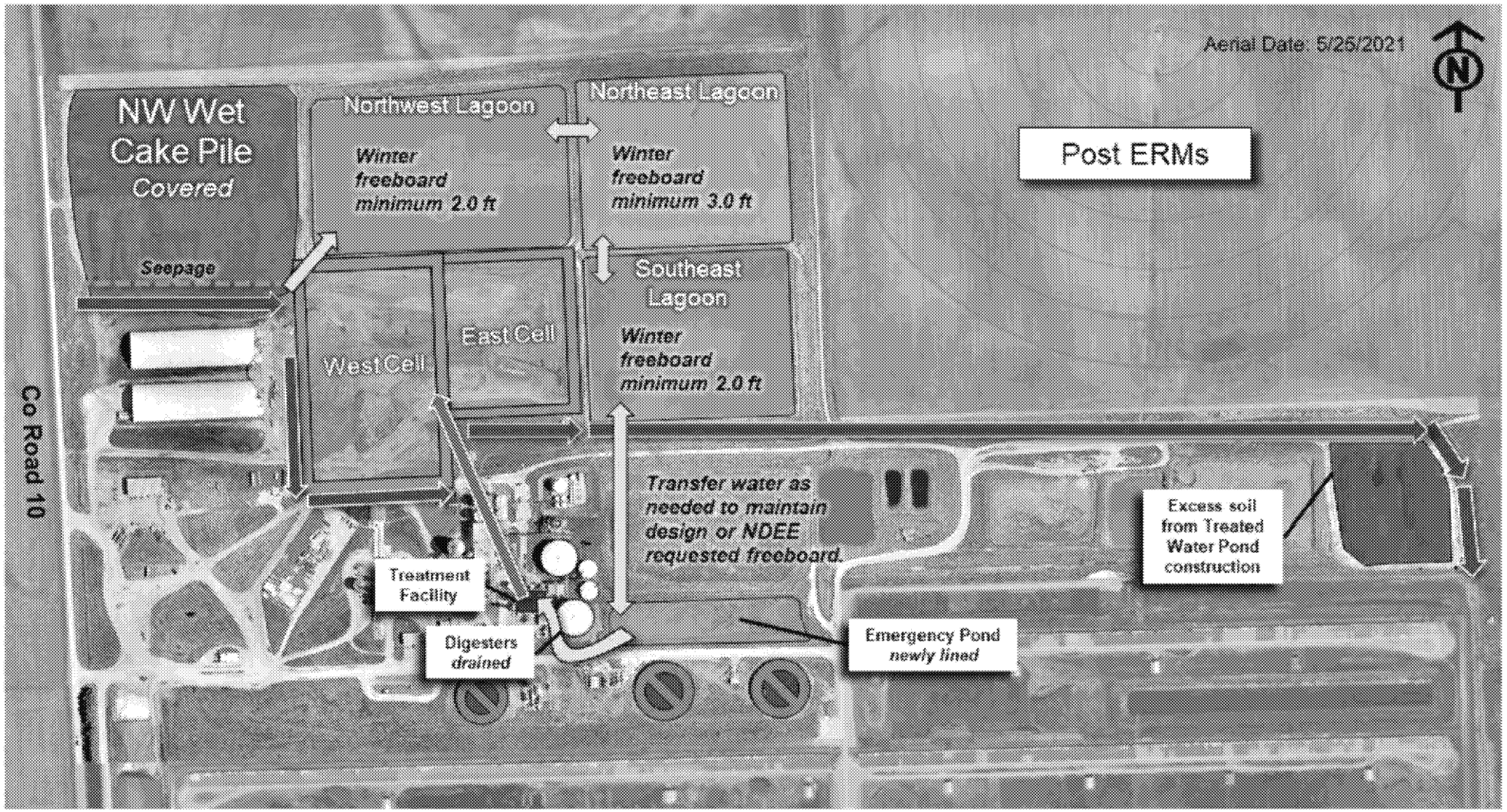
- Movement of Treated Water
- Wet Cake and other site solids
- Untreated Water
- Treated Water
- Emptied tank
- Digesters

NewFields

Figure 24

Treated Water Pond Area
Tank Draining & Removal (Phase 2)

REC'D NDEQ - (11/1/2021) - (20210735614)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

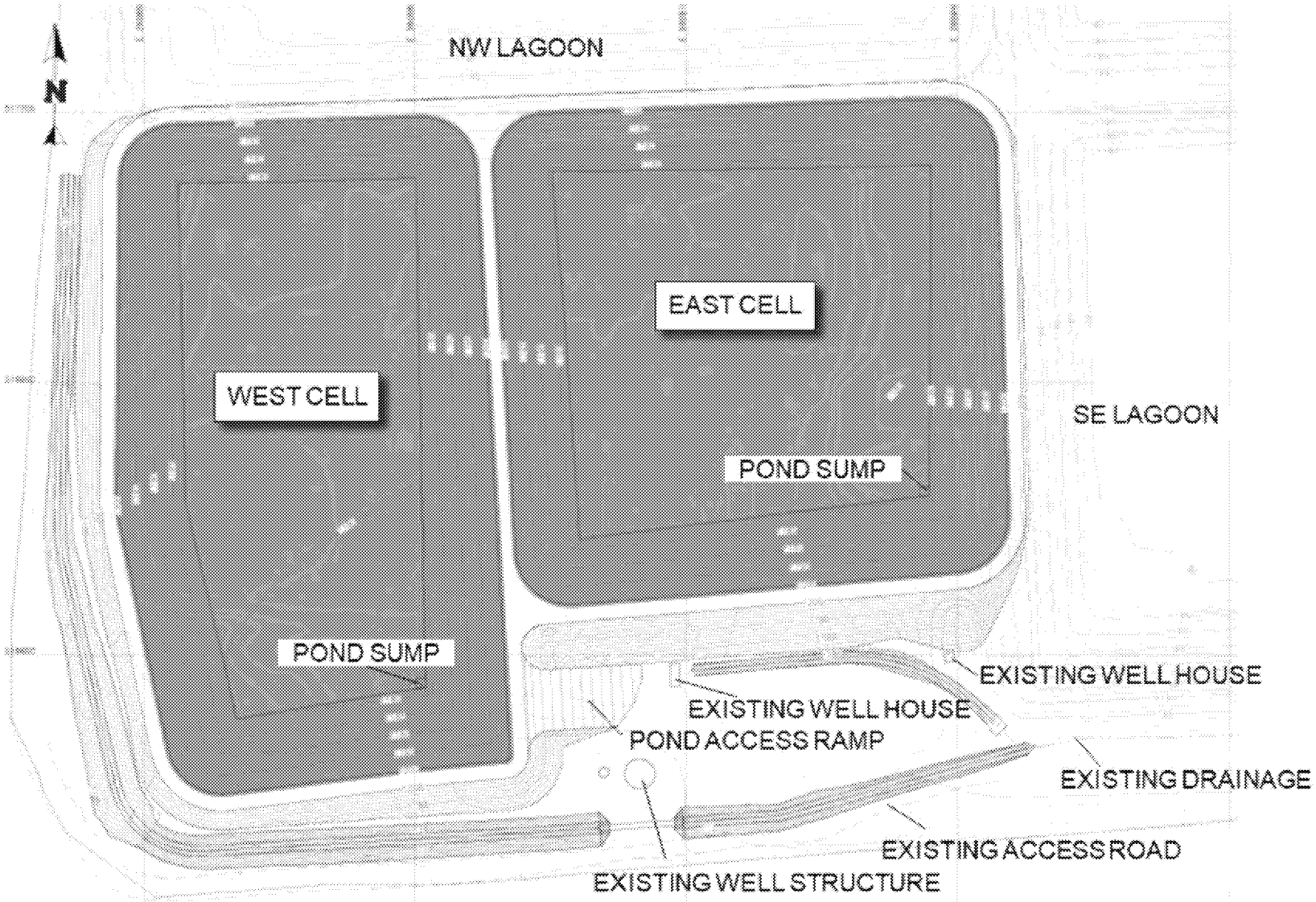
- Movement of Untreated Water
- Movement of Treated Water
- Movement of non-contact stormwater
- Stockpile excavated soils from the Treated Water Pond area
- Consolidated and covered Wet Cake and other site solids
- Untreated Water
- Treated Water
- Drained Digesters
- Removed Tanks

NewFields

Figure 25

Post ERMs Features & Operations

REC'D NDEQ - (11/1/2021) - (20210735614)



NewFields

Figure 26

Treated Water Pond
Plan View Details

REC'D NDEQ - (11/1/2021) - (20210735614)

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 250 500 1,000 1,500 2,000 Feet

Legend

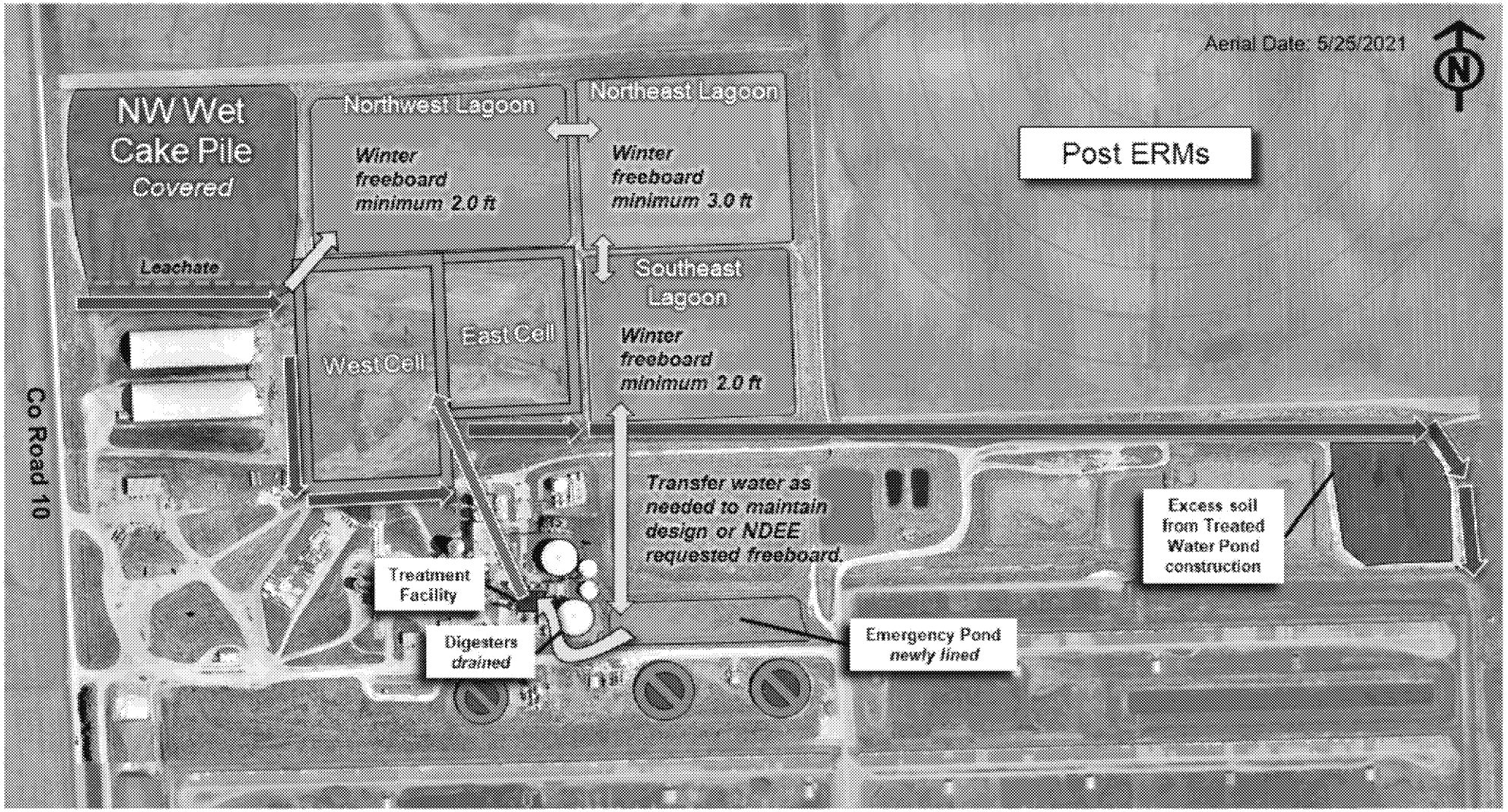
- Areas or piles of Wet Cake
- Mixture of Wet Cake and other sludges
- Movement of Wet Cake

NewFields

Figure 27

Wet Cake Consolidation

REC'D NDEQ - (11/1/2021) - (202107356 14)



Source: Advanced Aerial Solutions

0 250 500 1,000 1,500 2,000 Feet

Legend

- Movement of Untreated Water
- Movement of Treated Water
- Movement of non-contact stormwater
- Stockpile excavated soils from the Treated Water Pond area
- Consolidated and covered Wet Cake and other site solids
- Untreated Water
- Treated Water
- Drained Digesters
- Removed Tanks

NewFields

Figure 28

Post ERMs Features & Operations

REC'D NDEQ - (11/1/2021) - (202107356 14)

NewFields

Figure 29

Water Spray Truck

REC'D NDEQ - (11/1/2021) - (20210735614)

Data Gap Resolution

	A. Management Options	B. Design Constraints	C. Characterization	
Wet Cake	• Thermal treatment • Landfill/containment • Cement kiln	• Moisture reduction • Disposal performance standards • Shear strength • Transport /Processing rates	*Quantity (survey)*	• Chemical • Physical (including BTU) • Dewatering
Lagoon Sludge	• Thermal treatment • Landfill/containment • Cement kiln	• Sludge removal • Staging/free water removal • Same as Wet Cake items	*Quantity* • *Bathymetry* • *Soundings*	• Chemical • Physical (including BTU) • Dewatering

Water	• Land application
	• Direct discharge (NPDES)
	• Supplemental evaporation
		• Treatment train
		• Process flow
		• Disposal rates
			Volume determination	• Chemical and nutrient
				  • Treated Water Ponds
				  • Northwest Lagoon
				  • Northeast Lagoon
				  • Southeast Lagoon
				  • Emergency Pond
				  • Contact Water (seepage)
				• Treatability
				  • Nitrogen removal
				  • Air stripping
				  • Chemical removal
				• Field soil testing
				• NPDES requirements

NewFields

Figure 30

Site Materials Management Options, Design Constraints, & Characterization Requirements

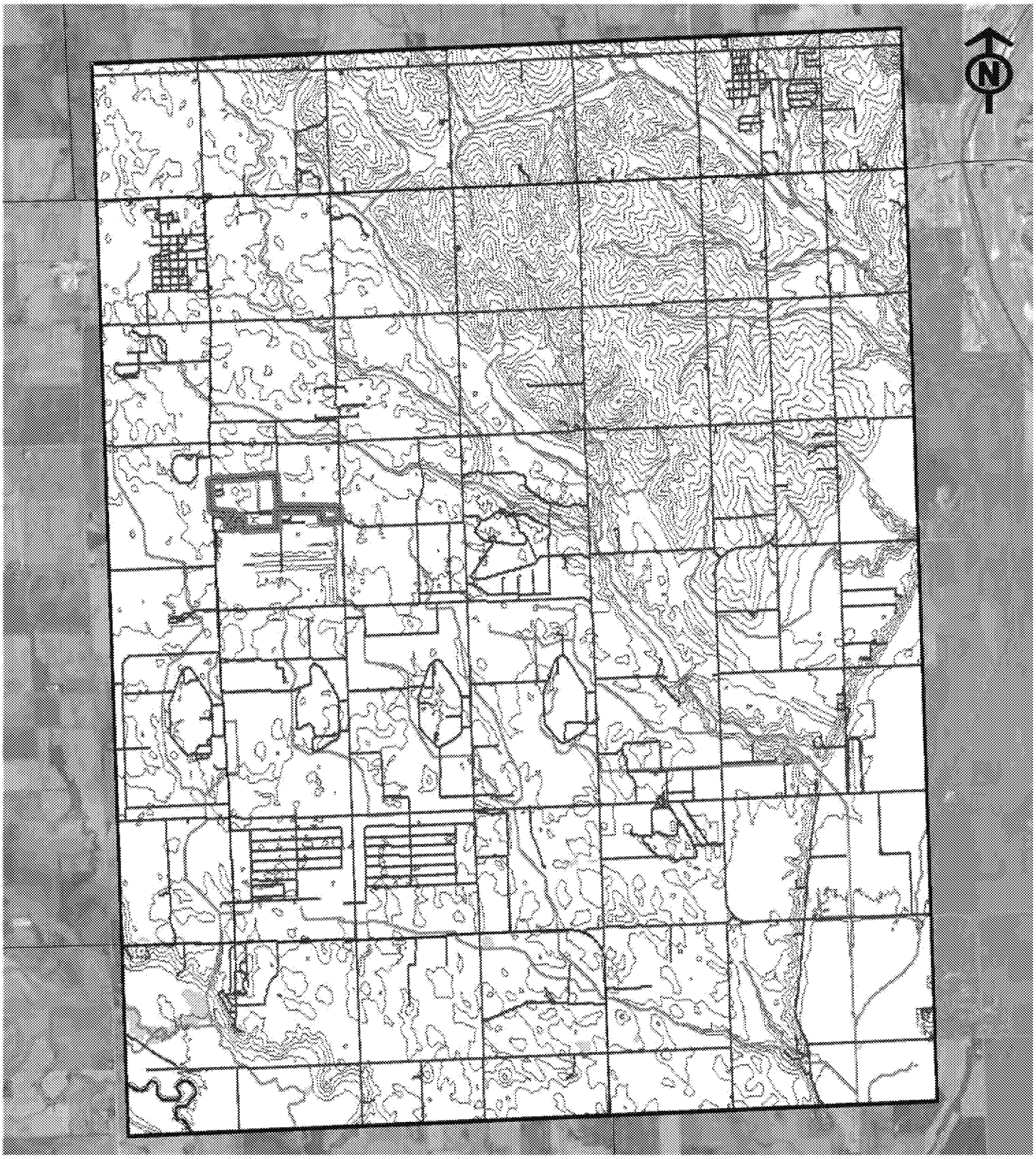
REC'D NDEQ - (11/1/2021) - (202107356 14)

APPENDIX A

BACKGROUND INFORMATION

REC'D NDEQ - (11/1/2021) - (202107356 14)

A-1 Additional Site Location Maps



Legend

AltEn Site

0 0.5 1 2 3 4 Miles

28549 Mead, Nebraska 7.5 Minute Quadrangle

Publication Date: 2021-07-15
Start Date: 1972-01-01
End Date: 2012-01-01

Source: U.S. Geological Survey, National Geospatial Technical Operations Center, 20210715, USGS Topo Map Vector Data (Vector) 28549 Mead, Nebraska 20210715 for 7.5 x 7.5 minute FileGDB 10.1: U.S. Geological Survey.

NewFields

Site Location on the USGS Mead, Nebraska 7.5 Minute Quadrangle

REC'D NDEQ - (11/1/2021) - (202107356 14)

A-2 Regional and Local Lithology

REGIONAL GEOLOGY

Era	Period	Epoch	Group		Formation	Thickness (ft)	Lithology	Age (Ma)†
Cenozoic	Quaternary	Holocene				0 to 440+	Alluvium (silt, sand, gravel)	0.0117
		Pleistocene					Loess and glacial fill (clay, silt, sand, gravel)	2.58
	Neogene					Absent		
	Paleogene							
Mesozoic	Cretaceous	Late	Colorado		Greenhorn	0 to 75+	Chalky limestone	
					Graneros		Gray shale	100.3
		Early	Dakota			0 to 700+	Sandstone and shale	
	Jurassic					Absent		
	Triassic					Absent		
Paleozoic	Permian	Ocoquan	Big Blue Series	Chase		Absent		299.0
				Council Grove				
				Admire				
	Pennsylvanian	Late	Virgil Series	Wabaunsee		0 to 250+	Shale, limestone, sandstone, coal	
				Shawnee			Limestone and shale	
				Douglas			Shale and limestone	
			Missouri Ser.	Lansing		<150 to 250	Limestone and shale	
				Kansas City				
				Pleasanton				307.0
		Middle	Des Moines Ser.	Marmaton		<150 to 300+	Shale, limestone, coal	
				Cherokee			Shale, sandstone, coal	
	Mississippian					0 to 75+		
	Devonian					<100 to 300+	Dolomite and limestone	
	Silurian					0 to 100+	Chert dolomite	
	Ordovician					<600 to 650+	Dolomite, shale, and sandstone	
	Cambrian					0 to 300+	Dolomite and sandstone	
Precambrian							Metamorphic and sedimentary rocks	

The shaded rock units are at or near land surface.
Chart modified from R. B. Burchett (unpublished) using information from:
Burchett et al. (1975), Heckel and Watney (2002), Sawin et al. (2006), and Cohen et al. (2014).

† Million years ago

Figure 2. Geologic time scale chart. Youngest deposits are shown at the top of the table, oldest at the bottom. The complete stratigraphic section is shown to provide context. Although Permian and Pennsylvanian rocks are the oldest mentioned in this atlas,

Highlighted rock units have been observed in well logs at or near the Site.

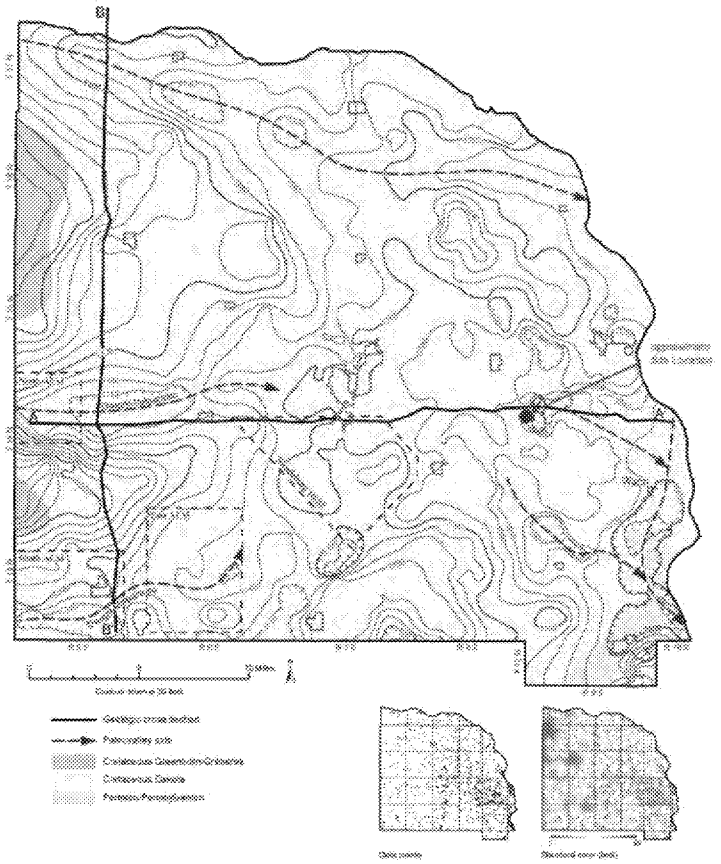


Figure 3. Elevation of top of bedrock. The bedrock surface consists of Pennsylvanian units (blue), Cretaceous Dakota Group (light green), and Cretaceous Greenhorn-Graneros bioregulations (dark green). Red dashed lines delineate paleovalley axes, and black dashed lines delineate airborne geophysical survey areas.

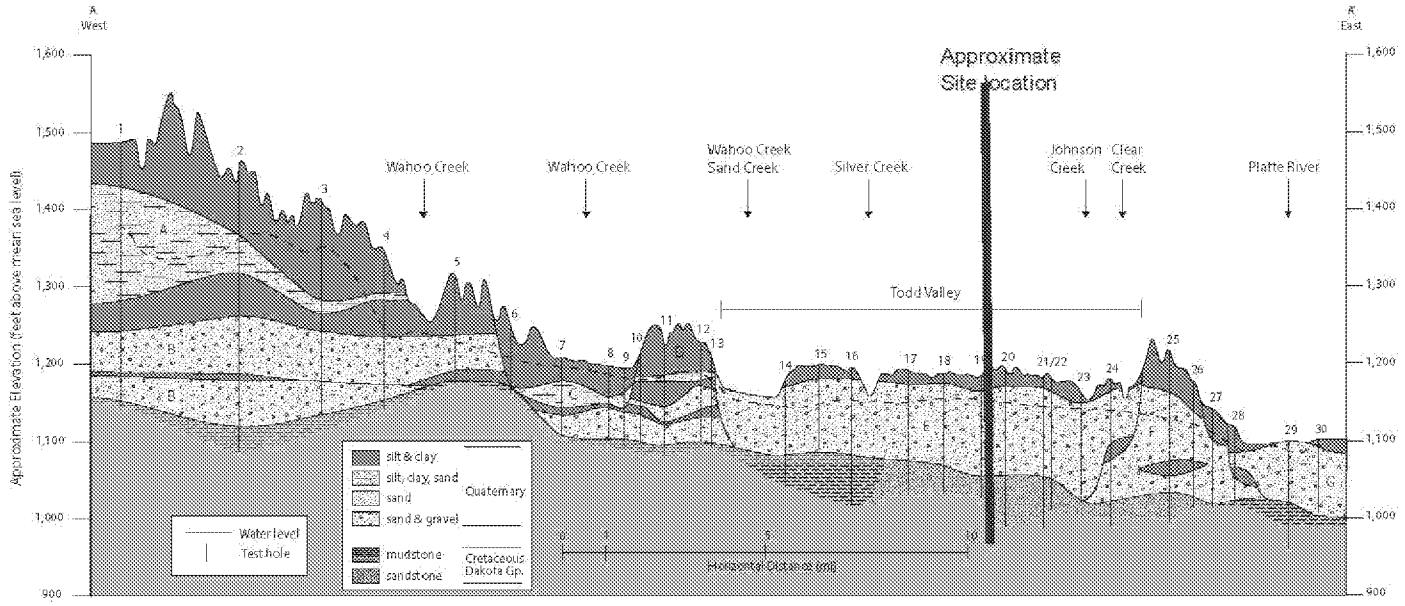
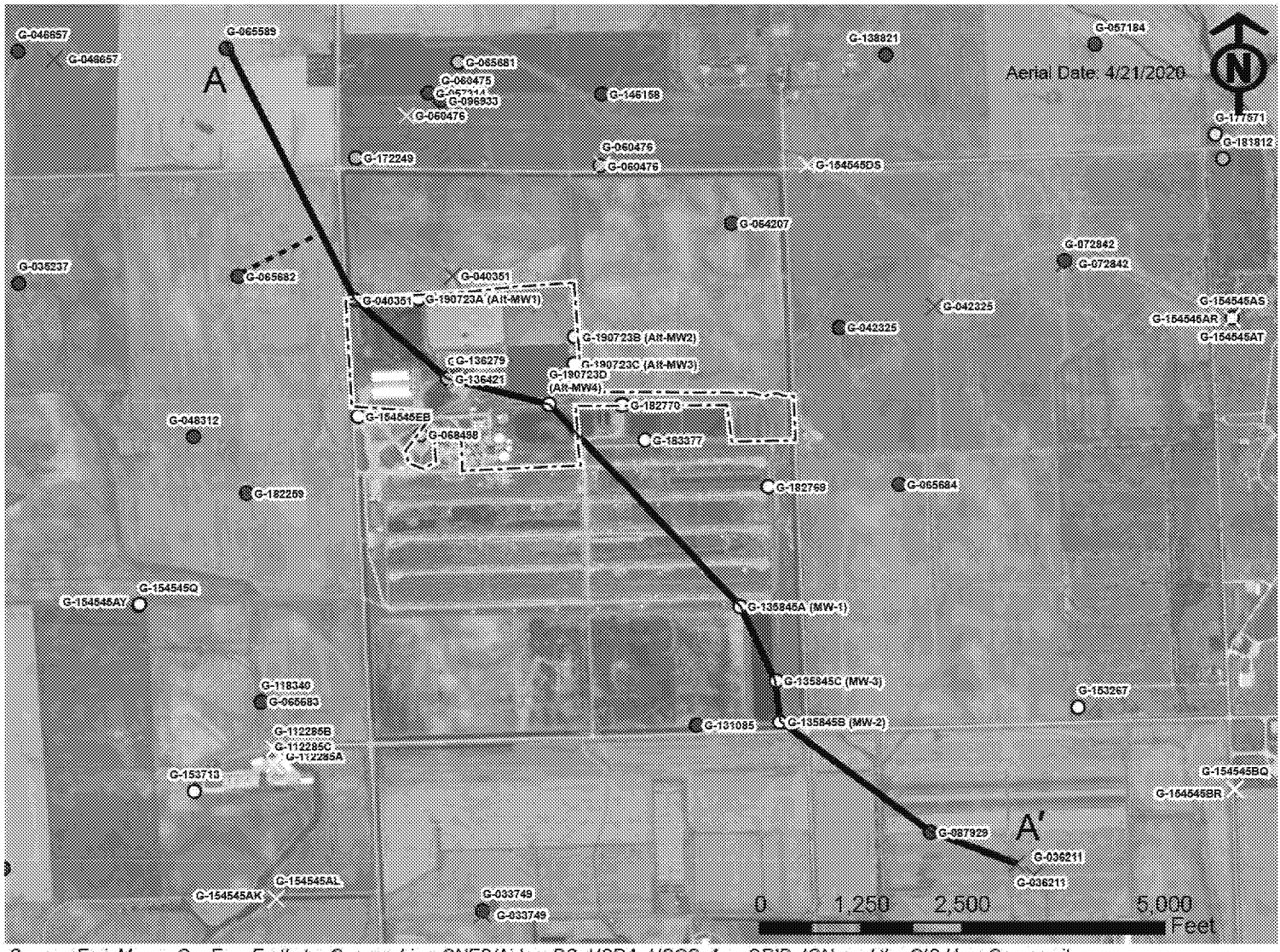
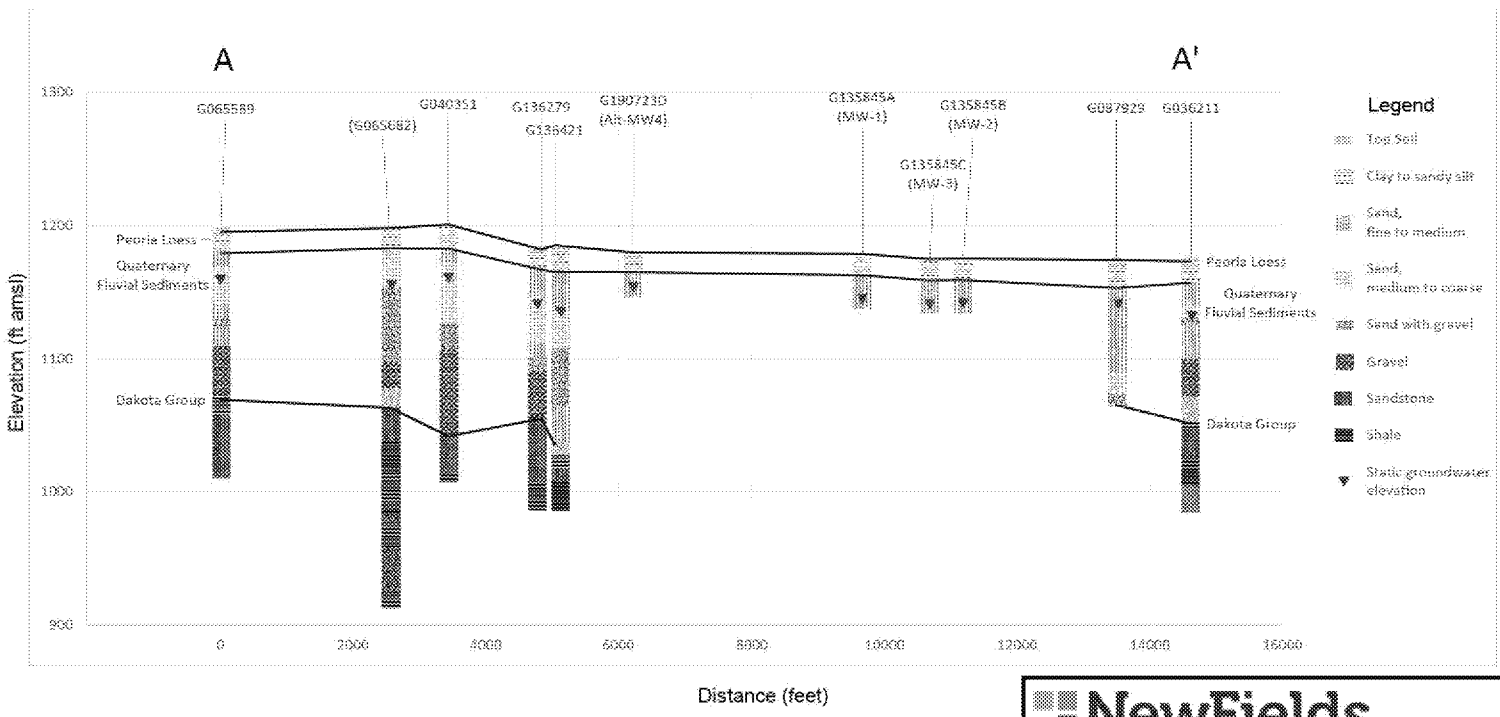


Figure 4. Interpretive geologic cross section A-A', West-East. The location of this cross section is shown on figure 3. The dashed horizontal line is an estimated water level elevation and the solid vertical lines represent the locations (Appendix A) of bore holes and registered well logs. Loess, till, silt, and clay deposits are not subdivided. A = upper sand unit of the Dwight-Valparaiso Ground Water Reservoir that overlies both the north and south paleovalleys and the divide between them, B = channel fill in the north Dwight-Valparaiso paleovalley, C = undefined sediments possibly associated with Wahoo Creek, D = uplands south of Wahoo, E = sand and gravel fill beneath the Todd Valley, F = uplands separating the Todd Valley from the Platte River valley, G = channel fill in the north-south paleovalley where it crosses under the Platte River.

Source: Divine, Dana. (2015). The Groundwater Atlas of Saunders County, Nebraska.



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



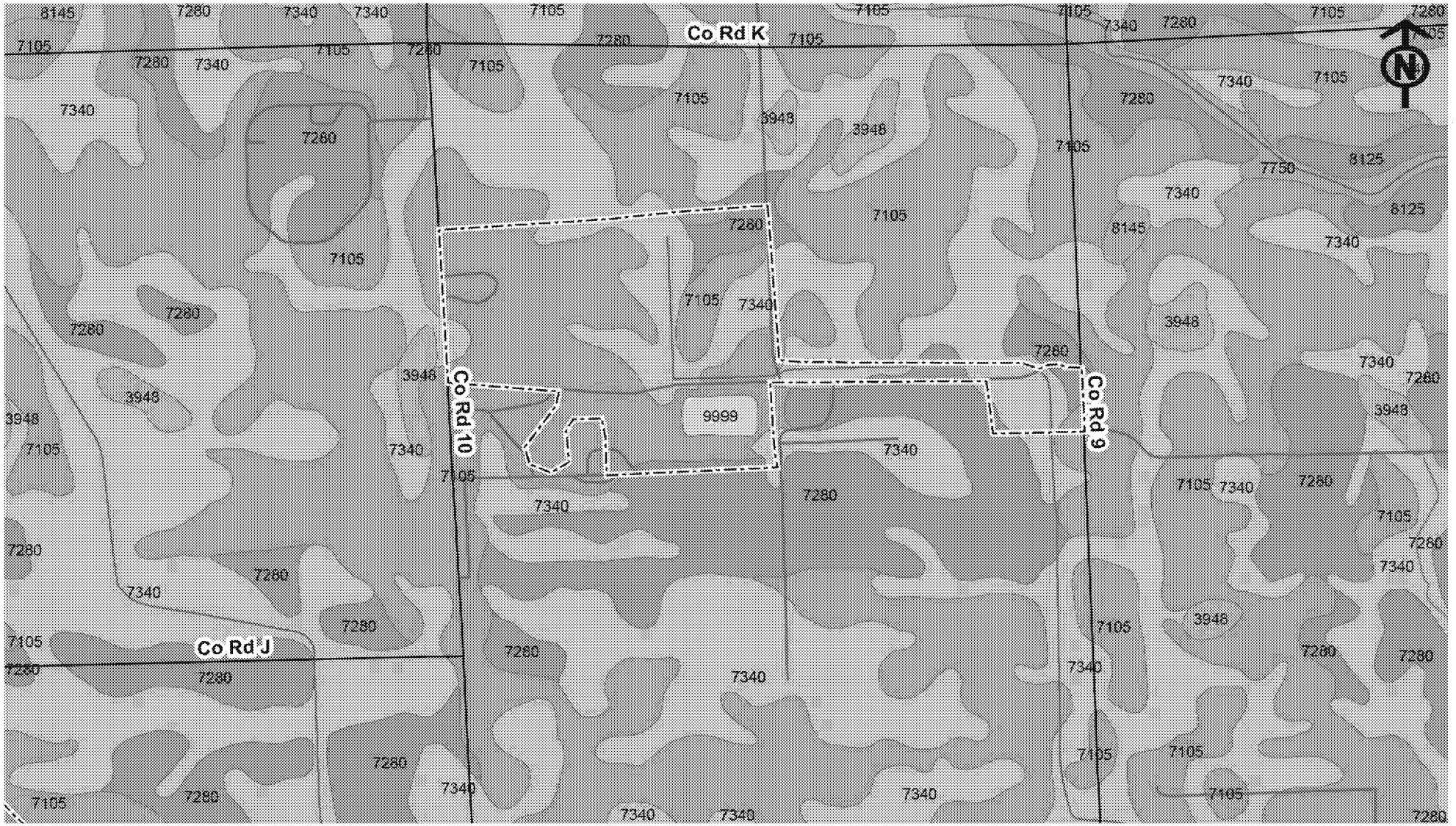
Source: Nebraska (NDNR) Registered Wells Inventory website (https://gis.ne.gov/portal/apps/webappviewer/index.html?id=7e332656859247c9874b02c7aa1f58e8)

NewFields

Lithology & Hydrogeology of the Site

REC'D NDEQ - (11/1/2021) - (202107356 14)

A-3 Site and Surrounding Area Soils



Legend

Soil Type

- 3948 Fillmore silt loam, terrace, occasionally ponded
- 7105 Yutan silty clay loam, terrace, 2 to 6 percent slopes, eroded
- 7280 Tomek silt loam, 0 to 2 percent slopes
- 7340 Filbert silt loam, 0 to 1 percent slopes
- 7750 Nodaway silt loam, occasionally flooded
- 8125 Pohocco silty clay loam, 6 to 11 percent slopes, eroded
- 8145 Pohocco-Pahuk complex, 6 to 11 percent slopes, eroded
- 9999 Water
- Site Boundary

Source: USDA NRCS. 2020. Soil Survey Geographic (SSURGO) database for Saunders County, Nebraska. Published June 10, 2020. Accessed September 3, 2021. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

0 500 1,000 2,000 Feet

NewFields

Site & Surrounding Area Soils

REC'D NDEQ - (11/1/2021) - (20210735614)

Properties and Qualities of Site Soils

Map Unit	Soil Class	Parent Material	Slope	Depth to restrictive feature	Drainage class	Runoff class	Capacity of the most limiting layer to transmit water (Ksat)	Depth to water table	Frequency of flooding	Frequency of ponding	Available water supply, 0 to 60 inches	Calcium carbonate, maximum content	Maximum salinity
3911	Scott silt loam, terrace, frequently ponded	Loess	0 to 1 percent	More than 80 inches	Poorly drained	Negligible	Low to moderately low (0.01 to 0.06 in/hr)	About 0 to 12 inches	None	Frequent	High (about 9.2 inches)		
3948	Fillmore silt loam, terrace, occasionally ponded	Loess	0 to 1 percent	More than 80 inches	Somewhat poorly drained	Negligible	Low to moderately low (0.01 to 0.06 in/hr)	About 0 to 24 inches	None	Occasional	High (about 10.0 inches)		
7105	Yutan silty clay loam, terrace, 2 to 6 percent slopes, eroded	Loess	2 to 6 percent	More than 80 inches	Well drained	Medium	Moderately low to moderately high (0.06 to 0.20 in/hr)	More than 80 inches	None	None	High (about 10.9 inches)	2 percent	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
7280	Tomek silt loam, 0 to 2 percent slopes	Loess	0 to 2 percent	More than 80 inches	Well drained	Medium	Moderately low to moderately high (0.06 to 0.20 in/hr)	More than 80 inches	None	None	High (about 10.1 inches)	1 percent	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
7340	Filbert silt loam, 0 to 1 percent slopes	Loess	0 to 1 percent	More than 80 inches	Somewhat poorly drained	Negligible	Very low to moderately low (0.00 to 0.06 in/hr)	About 6 to 18 inches	None	None	Moderate (about 8.8 inches)		
7750	Nodaway silt loam, occasionally flooded	Fine-silty alluvium	0 to 2 percent	More than 80 inches	Moderately well drained	Low	Moderately high (0.20 to 0.60 in/hr)	About 36 to 60 inches	Occasional	None	High (about 11.2 inches)		Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
8125	Pohocco silty clay loam, 6 to 11 percent slopes, eroded	Loess	5 to 11 percent	More than 80 inches	Well drained	High	Moderately high to high (0.60 to 2.00 in/hr)	More than 80 inches	None	None	Very high (about 12.4 inches)	10 percent	
8145	Pohocco-Pahuk complex, 6 to 11 percent slopes, eroded	Loess	5 to 11 percent	More than 80 inches	Well drained	High	Moderately high to high (0.60 to 2.00 in/hr)	More than 80 inches	None	None	Very high (about 12.4 inches)	10 percent	

REC'D NDEQ - (11/1/2021) - (202107356 14)

APPENDIX B

HISTORICAL AERIAL PHOTOGRAPHS

REC'D NDEQ - (11/1/2021) - (202107356 14)

Legend

Site Boundary

Source:
1999 - USGS Earth Explorer, imagery date: 4/3/1999

2003 - USGS Earth Explorer, imagery date: 12/31/2003

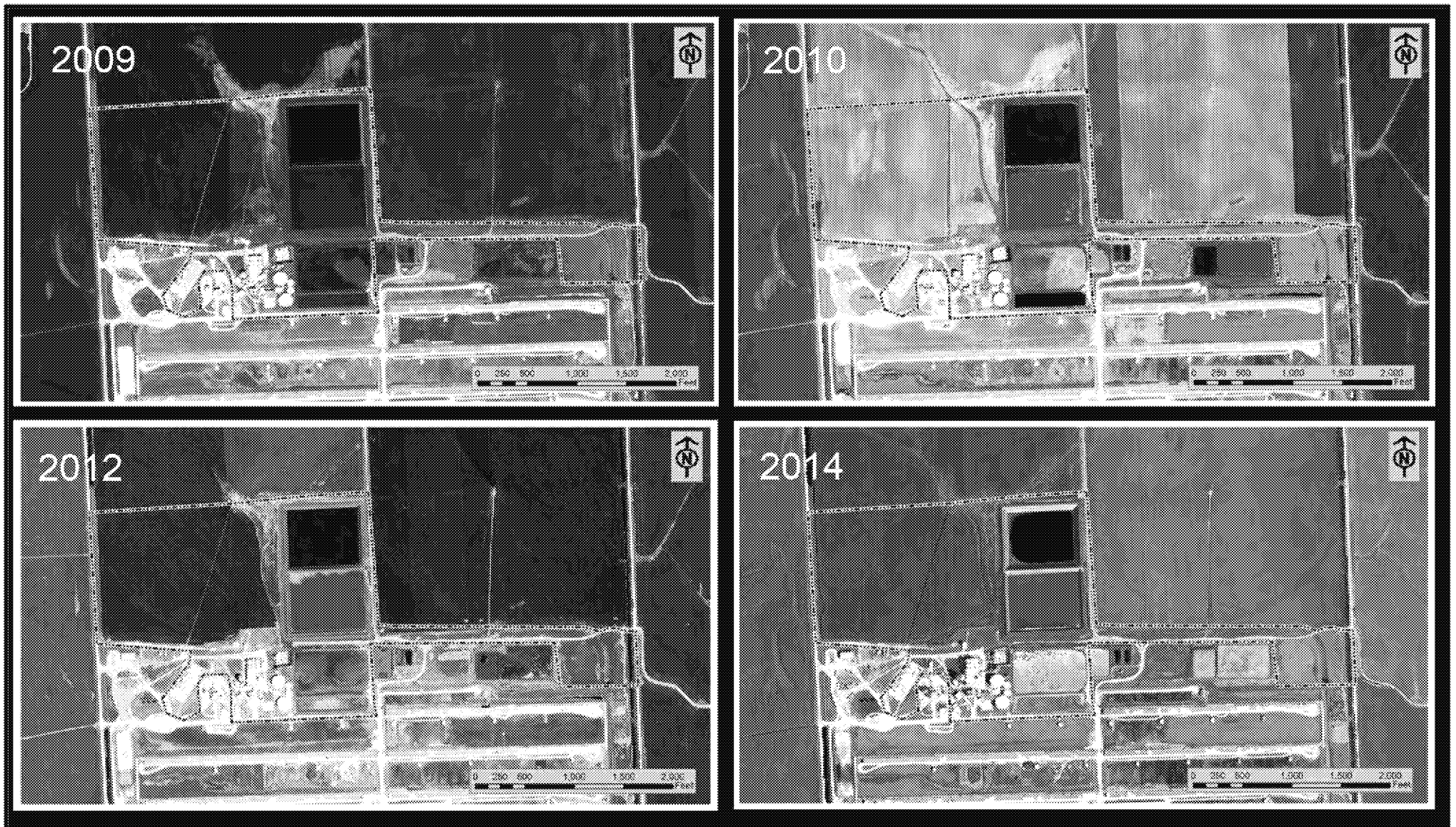
2005 - USDA Farm Service Agency via Google Earth, imagery date: 6/28/2005

2006 - USDA-FSA-APDO Aerial Photography Field Office, imagery date: 7/28/2006

NewFields B-1

Pre-Plant to Plant Construction

REC'D NDEQ - (11/1/2021) - (202107356 14)



Legend

Site Boundary

Source:
2009 - USDA-FSA-APFO Aerial Photography Field Office, imagery date: 7/15/2009

2010 - USDA-FSA-APFO Aerial Photography Field Office, imagery date: 7/27/2010

2012 - USDA-FSA-APFO Aerial Photography Field Office, imagery date: 6/26/2012

2014 - USDA-FSA-APDO Aerial Photography Field Office, imagery date: 9/16/2014

NewFields B-2

Post E3 BioFuels Plant to
Pre AltEn Plant

REC'D NDEQ - (11/1/2021) - (202107356 14)

Legend

Site Boundary

Source:

2016 - USDA-FSA-APFO Aerial Photography Field Office, imagery date: 7/20/2016

2018 - USDA-FSA-APFO Aerial Photography Field Office, imagery date: 7/2/2018

2020 - Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; imagery date: 4/21/2020

2021 - ERM, imagery date: 4/23/2021

NewFields B-3

AltEn Plant Operations

REC'D NDEQ - (11/1/2021) - (202107356 14)

APPENDIX C

TARGET MEDIA ANALYTICAL DATA

Wet Cake Solids

Analyte Class	Analyte Name		location_name	Unspecified	East Wet Cake Pile		Central Wet Cake Area		NW Wet Cake Pile	
			sample_matrix_code	CK	CK	CK	CK	CK	CK	CK
			sample_type_code	N	N	N	N	N	N	N
			sample_date	4/8/2019	3/11/2021	6/4/2021	3/11/2021	6/3/2021	3/11/2021	6/3/2021
			sample_name	Wet_Cake_4/8/2019_N	Wet-Cake #1_3/11/2021_N	East DG Piles_6/4/2021_N	Wet-Cake #3_3/11/2021_N	Center DG Piles_6/3/2021_N	Wet-Cake #2_3/11/2021_N	West DG Piles_6/3/2021_N
		CAS RN	Unit							
FUNG	Azoxystrobin	131860-33-8	ug/kg	1430	2620		2090		2740	
FUNG	Brassinazole	224047-41-0	ug/kg	U	1 U		1 U		1 U	
FUNG	Cyproconazole	94361-06-5	ug/kg	U	1 U		1 U		1 U	
FUNG	Desthio-Prothioconazole	120983-64-4	ug/kg		1670		1800		3180	
FUNG	Difenoconazole	119446-68-3	ug/kg		407		1730		1470	
FUNG	Dimoxystrobin	149961-52-4	ug/kg	U	1 U		1 U		1 U	
FUNG	Epoxiconazole	135319-73-2	ug/kg	U	1 U		1 U		1 U	
FUNG	Fluconazole	86386-73-4	ug/kg	U	1 U		1 U		1 U	
FUNG	Fluoxastrobin	361377-29-9	ug/kg		60700		49500		62700	
FUNG	Ipconazole	125225-28-7	ug/kg		7400		5980		5260	
FUNG	Isavuconazole	241479-67-4	ug/kg	U	1 U		1 U		1 U	
FUNG	Metconazole	125116-23-6	ug/kg	U	23.6		1 U		1 U	
FUNG	Mold count	MOLD	cfu/g			10		10 U		40
FUNG	Orysastrobin	248593-16-0	ug/kg	U	1 U		1 U		1 U	
FUNG	Picoxystrobin	117428-22-5	ug/kg		1 U		1 U		1 U	
FUNG	Posaconazole	171228-49-2	ug/kg	U						
FUNG	Propiconazole	60207-90-1	ug/kg	U	1 U		1 U		1 U	
FUNG	Prothioconazole	178928-70-6	ug/kg		8620		5120		3550	
FUNG	Pyraclostrobin	175013-18-0	ug/kg	U	494		233		1 U	
FUNG	Ravuconazole	182760-06-1	ug/kg	U	1 U		1 U		1 U	
FUNG	Sulfonic Acid Prothioconazole	178928-70-6_Dtr	ug/kg		200		190		303	
FUNG	Tebuconazole	107534-96-3	ug/kg	10400	3900		5300		20600	
FUNG	Tetraconazole	112281-77-3	ug/kg		1 U		1 U		1 U	
FUNG	Thiabendazole	148-79-8	ug/kg	55600	40500		37100		49200	
FUNG	Trifloxystrobin	141517-21-7	ug/kg	1750	1100		2160		5010	
FUNG	Uniconazole	83657-22-1	ug/kg	U	1 U		1 U		1 U	
FUNG	Voriconazole	137234-62-9	ug/kg	U	1 U		1 U		1 U	
FUNG	Yeast	YEAST	cfu/g			10		10 U		550
HERB	Glufosinate	51276-47-2	ug/kg	U	74.3		99.5		147	
HERB	Glyphosate	1071-83-6	ug/kg	U	3 U		3 U		3 U	
INST	Abamectin	71751-41-2	ug/kg		3220		2850		1370	
INST	Acetamiprid	135410-20-7	ug/kg	U	1 U		1 U		1 U	
INST	Baythroid	68359-37-5	ug/kg	U						
INST	Biphenthrin	82657-04-3	ug/kg	U						
INST	Chlorpyrifos	2921-88-2	ug/kg	U						
INST	Clothianidin	210880-92-5	ug/kg	112000	18300		101000		217000	
INST	Cyhalothrin/Karate	68085-85-8	ug/kg	U						
INST	Cypermethrin	52315-07-8	ug/kg	U						
INST	Deltamethrin	52918-63-5	ug/kg	U						
INST	Dinotefuran	165252-70-0	ug/kg		1 U		1 U		1 U	
INST	Imidacloprid	138261-41-3	ug/kg	485	323		1060		737	
INST	Nitenpyram	150824-47-8	ug/kg		1 U		1 U		1 U	
INST	Permethrin	52645-53-1	ug/kg	U						
INST	Thiacloprid	111988-49-9	ug/kg	U	1 U		1 U		1 U	
INST	Thiamethoxam	153719-23-4	ug/kg	30500	154000		15300		33900	
INOR	Aluminum	7429-90-5	mg/kg	2420						
INOR	Antimony	7440-36-0	mg/kg	1.9 U						
INOR	Arsenic	7440-38-2	mg/kg	4.8 U						
INOR	Barium	7440-39-3	mg/kg	42.3						
INOR	Beryllium	7440-41-7	mg/kg	1 U						
INOR	Cadmium	7440-43-9	mg/kg	1 U						

REC'D NDEQ - (11/1/2021) - (20210735614)

Wet Cake Solids

Analyte Class	Analyte Name		location_name:	Unspecified	East Wet Cake Pile		Central Wet Cake Area		NW Wet Cake Pile	
			sample_matrix_code:	CK	CK	CK	CK	CK	CK	CK
			sample_type_code:	N	N	N	N	N	N	N
			sample_date:	4/8/2019	3/11/2021	6/4/2021	3/11/2021	6/3/2021	3/11/2021	6/3/2021
			sample_name:	Wet_Cake_4/8/2019_N	Wet-Cake #1_3/11/2021_N	East DG Piles_6/4/2021_N	Wet-Cake #3_3/11/2021_N	Center DG Piles_6/3/2021_N	Wet-Cake #2_3/11/2021_N	West DG Piles_6/3/2021_N
		CAS RN	Unit							
INOR	Chromium	7440-47-3	mg/kg	3.4						
INOR	Cobalt	7440-48-4	mg/kg	1.7						
INOR	Copper	7440-50-8	mg/kg	13.6						
INOR	Iron	7439-89-6	mg/kg	3270						
INOR	Lead	7439-92-1	mg/kg	4.8 U						
INOR	Manganese	7439-96-5	mg/kg	124						
INOR	Molybdenum	7439-98-7	mg/kg	1.9 U						
INOR	Nickel	7440-02-0	mg/kg	4.2						
INOR	Selenium	7782-49-2	mg/kg	9.7 U						
INOR	Silver	7440-22-4	mg/kg	1.9 U						
INOR	Thallium	7440-28-0	mg/kg	9.7 U						
INOR	Vanadium	7440-62-2	mg/kg	5.9						
INOR	Zinc	7440-66-6	mg/kg	262						
NUT	Potassium	7440-09-7	mg/kg	3960						
ANCAT	Calcium	7440-70-2	mg/kg	2640						
ANCAT	Magnesium	7439-95-4	mg/kg	1610						
ANCAT	Sodium	7440-23-5	mg/kg	694						
OTHER	Percent Moisture	PMOIST	%			67.3		47.14		47.91
SUGAR	Fructose	57-48-7	%			0.8 U		0.8 U		0.8 U
SUGAR	Glucose	50-99-7	%			0.8 U		0.8 U		0.8 U
SUGAR	Lactose	200-559-2	%			0.8 U		0.8 U		0.8 U
SUGAR	Maltose	6363-53-7	%			0.8 U		0.8 U		0.8 U
SUGAR	Sucrose	57-50-1	%			0.8 U		0.8 U		0.8 U

Notes: *Data as of 9/30/2021*

sample_matrix_code:
CK = wet cake

sample_type_code:
NM = primary sample

Analyte Class
FUNG fungicide
HERB herbicide
INST insticide
MYCTXN mycotoxin
NUT nutrient
INOR inorganics
ANCAT anion/cation
SUGAR sugars
OTHER miscellaneous parameters

	Not analyzed in sample
U	Not detected, detection limit not reported

Qualifers:
U = Analyte/parameter was analyzed for but not detected above the practical quantification limit (PQL)

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REC'D NDEQ - (11/1/2021) - (20210735614)

Wet Cake (Liquid Total and TCLP)

Analyte Class	Analyte Name				TCLP Extractions from Wet Cake Solids		
			location_name	Wetcake Liquid	Wetcake Barn	Wetcake Staging	Unspecified
			sample_matrix_code	WL	CK	CK	CK
			sample_type_code	N	N	N	N
			sample_date	8/1/2018	8/1/2018	8/1/2018	4/8/2019
			sample_name	Wetcake Liquid_8/1/2018_N	Wetcake Barn_8/1/2018_N	Wetcake Staging_8/1/2018_N	Wet Cake_4/8/2019_N_TCLP
		CAS RN	Unit				
NUT	Biological Oxygen Demand (BOD)	BOD	mg/L	12300			
NUT	Chemical Oxygen Demand (COD)	COD	mg/L	25400			
OTHER	Ammonium chloride	12125-02-9	mg/L	1420			
OTHER	Total Organic Carbon (TOC)	TOC	mg/L	10300			
OTHER	Total Suspended Solids (TSS)	TSS	mg/L	540			
				TCLP Results			
HERB	2,4,5-TP	93-72-1	ug/L				10 U
HERB	2,4-D	94-75-7	ug/L				10 U
INST	Chlordane	57-74-9	ug/L				2 U
INST	Endrin	72-20-8	ug/L				0.2 U
INST	Heptachlor	76-44-8	ug/L				0.1 U
INST	Heptachlor epoxide	1024-57-3	ug/L				0.1 U
INST	Lindane	58-89-9	ug/L				0.5 U
INST	Methoxychlor	72-43-5	ug/L				1 U
INST	Toxaphene	8001-35-2	ug/L				3 U
MYCTXN	Aflatoxin B1	1162-65-8	ug/L				1 U
MYCTXN	Aflatoxin B2	7220-81-7	ug/L				1 U
MYCTXN	Aflatoxin G1	1165-39-5	ug/L				1 U
MYCTXN	Aflatoxin G2	7241-98-7	ug/L				1 U
MYCTXN	Aflatoxins (total)	AFLATOXINS	ug/L				1 U
MYCTXN	Fumonisin B1	116355-83-0	ug/L				1000 U
MYCTXN	Fumonisin B2	116355-84-1	ug/L				1000 U
MYCTXN	Fumonisin B3	136379-59-4	ug/L				1000 U
MYCTXN	Fumosins (total)	FUMOSINS	ug/L				1000 U
MYCTXN	Ochratoxin	OCHRATOXIN	ug/L				1 U
MYCTXN	T-2 Mycotoxin	21259-20-1	ug/L				1000 U
MYCTXN	Vomitoxin	51481-10-8	ug/L				1000 U
MYCTXN	Zearalenone	17924-92-4	ug/L				1 U
INOR	Mercury	7439-97-6	ug/L				0.025 U
SVOC	1,4-Dichlorobenzene	106-46-7	ug/L		90 U	90 U	
SVOC	2,4,5-Trichlorophenol	95-95-4	ug/L		30 U	30 U	
SVOC	2,4,6-Trichlorophenol	88-06-2	ug/L		30 U	30 U	
SVOC	2,4-Dinitrotoluene	121-14-2	ug/L		30 U	30 U	
SVOC	Cresol (Total)	CRESOLS	ug/L		100 U	1	
SVOC	Hexachlorobenzene	118-74-1	ug/L		30 U	30 U	
SVOC	Nitrobenzene	98-95-3	ug/L		50 U	50 U	
SVOC	Pentachlorophenol	87-86-5	ug/L		100 U	100 U	
SVOC	Pyridine	110-86-1	ug/L		100 U	100 U	
VOC	1,1-Dichloroethene	75-35-4	ug/L		5 U	5 U	
VOC	1,2-Dichloroethane	107-06-2	ug/L		5 U	5 U	
VOC	Benzene	71-43-2	ug/L		5 U	5 U	
VOC	Carbon tetrachloride	56-23-5	ug/L		5 U	5 U	
VOC	Chlorobenzene	108-90-7	ug/L		5 U	5 U	
VOC	Chloroform	67-66-3	ug/L		5 U	5 U	
VOC	Hexachlorobutadiene	87-68-3	ug/L		20 U	20 U	
VOC	Hexachloroethane	67-72-1	ug/L		10 U	10 U	
VOC	Methyl ethyl ketone	78-93-3	ug/L		130	122	
VOC	Tetrachloroethylene	127-18-4	ug/L		5 U	5 U	

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REC'D NDEQ - (11/1/2021) - (202107356 14)

Wet Cake (Liquid Total and TCLP)

Analyte Class	Analyte Name				TCLP Extractions from Wet Cake Solids		
				location_name	Wetcake Liquid	Wetcake Barn	Wetcake Staging	Unspecified
				sample_matrix_code	WL	CK	CK	CK
				sample_type_code	N	N	N	N
				sample_date	8/1/2018	8/1/2018	8/1/2018	4/8/2019
				sample_name	Wetcake Liquid_8/1/2018_N	Wetcake Barn_8/1/2018_N	Wetcake Staging_8/1/2018_N	Wet Cake_4/8/2019_N_TCLP
		CAS RN	Unit					
VOC	Trichloroethylene	79-01-6	ug/L		5 U	5 U		
VOC	Vinyl chloride	75-01-4	ug/L		5 U	5 U		

Notes: *Data as of 9/30/2021*

sample_matrix_code:
- WL = leachate
- CK = wet cake (TCLP leachate)

sample_type_code:
- NM = primary sample
- FD = field duplicate

Not analyzed in sample

Qualifers:
- U = Analyte/parameter was analyzed for but not detected above the practical quantification li

Analyte Class

FUNG	fungicide	NUT	nutrient	SVOC	semivolatile organic compound
HERB	herbicide	INOR	inorganics	VOC	volatile organic compound
INST	insticide	OTHER	miscellaneous parameters		
MYCTXN	mycotoxin				

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REC'D NDEQ - (11/1/2021) - (20210735614)

Untreated Water - Lagoon

Analyte Class	Analyte Name	location_name		Emergency Pond (pre-refurbishment)			Northeast Lagoon			Southeast Lagoon		Northwest Lagoon		
		sample_matrix_code		WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG
		sample_type_code		NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM
		sample_date		4/8/2019	3/4/2021	5/17/2021	11/12/2019	11/12/2019	5/17/2021	5/17/2021	7/6/2021	4/8/2019	11/12/2019	5/17/2021
		sample_name		Emergency Lagoon_4/8/2019_N	20210304 SYS INF	20210517-EL	North_Lagoon_11/12/2019_N	North_Lagoon_11/12/2019_FD	20210517-NL	20210517-SL	20210706 Plant Inf	West_Lagoon_4/8/2019_N	West_Lagoon_11/12/2019_N	20210517-WL
		CAS RN	Unit											
FUNG	Azoxystrobin	131860-33-8	ug/L	581		1.8	33.9	32.4	43	15	3.9 HJ	99.3	111	56
FUNG	Brassinazole	224047-41-0	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Captan	133-06-2	ug/L								1.7 U			
FUNG	Carbendazim	10605-21-7	ug/L			1 U			1 U	1 U	1 U,Ht			1 U
FUNG	Carboxin	5234-68-4	ug/L			1.1			4.5	6.6	3.4 HJ			1 U
FUNG	Cyproconazole	94361-06-5	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Desthio-Prothioconazole	120983-64-4	ug/L				5 U	5 U					5 U	
FUNG	Difenoconazole	119446-68-3	ug/L		3.4	18	84.5	81.7	5	5.4	2.4 HJ		66.2	1.7
FUNG	Dimoxystrobin	149961-52-4	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Epoxiconazole	135319-73-2	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Fluconazole	86386-73-4	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Fludioxonil	131341-86-1	ug/L			110			47	53	18 HJ			22
FUNG	Fluoxastrobin	361377-29-9	ug/L		1.9	18	312	312	480	190	60 HJ		735	480
FUNG	Ipconazole	125225-28-7	ug/L		4.1	17	181	166	31	27	9.1 HJ		134	15
FUNG	Isavuconazole	241479-67-4	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Itraconazole	84625-61-6	ug/L			1 U	5 U	5 U	1 U	1 U	1 U,Ht		5 U	1 U
FUNG	Metalaxyl	57837-19-1	ug/L			75			1600	470	13 HJ			2600
FUNG	Metconazole	125116-23-6	ug/L	U		5.9	5 U	5 U	1 U	2	1.2 HJ	U	5 U	1 U
FUNG	Orysastrobin	248593-16-0	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Picoxystrobin	117428-22-5	ug/L			1 U	5 U	5 U	1 U	1 U	1 U,Ht		5 U	1 U
FUNG	Posaconazole	171228-49-2	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Propiconazole	60207-90-1	ug/L	726		50	15.1	17	3.3	13	8.7 HJ	U	5 U	1.7
FUNG	Prothioconazole	178928-70-6	ug/L		8.2	8.4	149	141	43	22	7.1 HJ		150	18
FUNG	Pyraclostrobin	175013-18-0	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Ravuconazole	182760-06-1	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Sedaxane	874967-67-6	ug/L											
FUNG	Sulfonic Acid Prothioconazole	178928-70-6_Dtr	ug/L											
FUNG	Tebuconazole	107534-96-3	ug/L	2330	41	160	634	627	120	240	100 HJ	213	216	65
FUNG	Tetraconazole	112281-77-3	ug/L			1.3	5 U	5 U	1 U	1 U	1 U		5 U	1 U
FUNG	Thiabendazole	148-79-8	ug/L	39700	300	1600	2450	2470	1200	1300	710 HJ	8450	2160	170
FUNG	Thiophanate-methyl	23564-05-8	ug/L			1 U			1 U	1 U	1 U,Ht			1 U
FUNG	Trifloxystrobin	141517-21-7	ug/L	737		2.3	36	32.4	2.2	1 U	1 U,Ht	58.2	53.3	3.1
FUNG	Uniconazole	83657-22-1	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
FUNG	Voriconazole	137234-62-9	ug/L	U		1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
HERB	2,4,5-T	93-76-5	ug/L											
HERB	2,4,5-TP	93-72-1	ug/L	10 U								10 U		
HERB	2,4-D	94-75-7	ug/L	10 U								10 U		
HERB	4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	ug/L											
HERB	Acetochlor	34256-82-1	ug/L											
HERB	Acifluorfen	50594-66-6	ug/L											
HERB	Alachlor	15972-60-8	ug/L											
HERB	AMPA	1066-51-9	ug/L		27	250			40 U	98	200 U			40 U
HERB	Atrazine	1912-24-9	ug/L											
HERB	Bentazon	25057-89-0	ug/L											
HERB	Bromoxynil	1689-84-5	ug/L											
HERB	Clopyralid	1702-17-6	ug/L											
HERB	Dicamba	1918-00-9	ug/L											
HERB	Dichloroprop	120-36-5	ug/L											
HERB	Dimethenamid	163515-14-8	ug/L											
HERB	Fluroxypyr	69377-81-7	ug/L											
HERB	Glufosinate	51276-47-2	ug/L	86.7		10 U	10.3	10 U	10 U	10 U	50 U	U	10 U	10 U
HERB	Glyphosate	1071-83-6	ug/L	3850	660	2800	206	200	120	260	310	124	116	200
HERB	MCPA	94-74-6	ug/L											
HERB	MCPP	93-65-2	ug/L											
HERB	Metolachlor	51218-45-2	ug/L											
HERB	Metribuzin	21087-64-9	ug/L											
HERB	Pendimethalin	40487-42-1	ug/L											
HERB	Picloram	1918-02-1	ug/L											
HERB	Prometon	1610-18-0	ug/L											
HERB	Pyrasulfotole	365400-11-9	ug/L											
HERB	Quinclorac	84087-01-4	ug/L											
HERB	Simazine	122-34-9	ug/L											

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REC'D NDEQ - (11/1/2021) - (20210735614)

Untreated Water - Lagoon

Analyte Class	Analyte Name	location_name		Emergency Pond (pre-refurbishment)			Northeast Lagoon			Southeast Lagoon		Northwest Lagoon		
		sample_matrix_code		WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG	WLG
		sample_type_code		NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM
		sample_date		4/8/2019	3/4/2021	5/17/2021	11/12/2019	11/12/2019	5/17/2021	5/17/2021	7/6/2021	4/8/2019	11/12/2019	5/17/2021
		sample_name		Emergency Lagoon_4/8/2019_N	20210304 SYS INF	20210517-EL	North_Lagoon_11/12/2019_N	North_Lagoon_11/12/2019_FD	20210517-NL	20210517-SL	20210706 Plant Inf	West_Lagoon_4/8/2019_N	West_Lagoon_11/12/2019_N	20210517-WL
		CAS RN	Unit											
HERB	Triclopyr	55335-06-9	ug/L											
INST	Abamectin	71751-41-2	ug/L			690			300	260	160 H3			150
INST	Acetamiprid	135410-20-7	ug/L	U	1 U	1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
INST	Baythroid	68359-37-5	ug/L	U			5 U	5 U			5 U	U	5 U	
INST	Bifenthrin	82657-04-3	ug/L	U			5 U	5 U			1 U	U	5 U	
INST	Chlorantraniliprole	500008-45-7	ug/L			58			890	450	210 H3			810
INST	Chlordane	57-74-9	ug/L	10 U								10 U		
INST	Chlorpyrifos	2921-88-2	ug/L	U			5 U	5 U			1 U	U	5 U	
INST	Chlorpyrifos-methyl	5598-13-0	ug/L				5 U	5 U			1 U	U	5 U	
INST	Clothianidin	210880-92-5	ug/L	44.7	71	2.8	7070	5980	9400	34	1 U,Ht	58400	31000	6600
INST	Cyantraniliprole	736994-63-1	ug/L			1 U			1.6	1 U	1 U,Ht			2.9
INST	Cyhalothrin/Karate	68085-85-8	ug/L	5 U			5 U	5 U			1 U	U	5 U	
INST	Cypermethrin	52315-07-8	ug/L	U			5 U	5 U			5 U	U	5 U	
INST	Deltamethrin	52918-63-5	ug/L	5 U			5 U	5 U			5 U	5 U	5 U	
INST	Dinotefuran	165252-70-0	ug/L		1 U	1 U	5 U	5 U	1 U	1 U	1 U,Ht		5 U	1 U
INST	Endrin	72-20-8	ug/L	1 U								1 U		
INST	Heptachlor	76-44-8	ug/L	0.5 U								0.5 U		
INST	Heptachlor epoxide	1024-57-3	ug/L	0.5 U								0.5 U		
INST	Imidacloprid	138261-41-3	ug/L	U	1 U	1 U	40.8	40.8	21	1 U	1 U,Ht	108	312	29
INST	Lindane	58-89-9	ug/L	2.5 U								2.5 U		
INST	Methoxychlor	72-43-5	ug/L	5 U								5 U		
INST	Nitenpyram	150824-47-8	ug/L			1 U	5 U	5 U	1 U	1 U	1 U,Ht		5 U	1 U
INST	Permethrin	52645-53-1	ug/L	U			5 U	5 U			2 U	U	5 U	
INST	Thiacloprid	111988-49-9	ug/L	U	1 U	1 U	5 U	5 U	1 U	1 U	1 U,Ht	U	5 U	1 U
INST	Thiamethoxam	153719-23-4	ug/L	26	25	1 U	2400	2360	5400	30	1 U,Ht	35400	24000	3100
INST	Tioxazafen	330459-31-9	ug/L											
INST	Toxaphene	8001-35-2	ug/L	15 U								15 U		
MYCTXN	Fumonisin B1	116355-83-0	ug/L	100 U										
MYCTXN	Fumonisin B2	116355-84-1	ug/L	100 U										
MYCTXN	Fumonisin B3	136379-59-4	ug/L	100 U										
MYCTXN	Fumosins (total)	FUMOSINS	ug/L	100 U										
MYCTXN	Ochratoxin	OCHRATOXIN	ug/L	1 U										
MYCTXN	T-2 Mycotoxin	21259-20-1	ug/L	100 U										
MYCTXN	Vomitoxin	51481-10-8	ug/L	100 U										
MYCTXN	Zearalenone	17924-92-4	ug/L	50 U										
NUT	Ammonia	7664-41-7	mg/L			779			473	552 SC	525			522
NUT	Biological Oxygen Demand (BOD)	BOD	mg/L			3000			17700 SC	5520	5080 Ht			16900
NUT	Nitrate (as N)	14797-55-8	mg/L			0.26			0.26	0.26	0.1 U			0.26
NUT	Nitrite (as N)	14797-65-0	mg/L			0.1 U			0.1 U	0.1 U	0.1 U			0.1 U
NUT	Phosphorus (as P)	7723-14-0	mg/L			130			554	205	342			551 SC
NUT	Total Kjeldahl Nitrogen (TKN)	TKN	mg/L			1090			724	647	590			820
NUT	Total Nitrate/Nitrite	NO3/NO2-N	mg/L			0.26			0.26	0.26	0.1 U			0.26
INOR	Selenium	7782-49-2	ug/L			15 U			42.5	27.7	27.3			41.3
OTHER	pH	PH	SU			7.1 Ht			4.9 Ht	6.3 Ht	6.6 Ht			4.8 Ht
OTHER	Total Organic Carbon (TOC)	TOC	mg/L			1600			5800	2690	2710			7570
OTHER	Total Suspended Solids (TSS)	TSS	mg/L			620			264	242	387			123

Notes: *Data as of 9/30/2021, analyte list based on all untreated waters (Lagoon and Influent into the treatment facility)*

sample_matrix_code:
- INF = sample from influent into the current treatment system
- WLG = sample from lagoon

sample_type_code:
- NM = primary sample
- FD = field duplicate

Analyte Class
- FUNG fungicide
- HERB herbicide
- INST insecticide
- MYCTXN mycotoxin
- NUT nutrient
- INOR inorganics
- OTHER miscellaneous parameters

	Not analyzed in sample
TBD	Analytical result to be determined as of 9/30/2021

Qualifiers:
- U = Analyte/parameter was analyzed for but not detected above the practical quantification limit (PQL)
- Ht = Holding time violation
- H3
- SC = Quality control was outside statistical control limit, but not outside required limit.
- J = estimated
- J- = estimated low bias
- J+ = estimated high bias

ED_013286A_00003352-00107

REC'D NDEQ - (11/1/2021) - (20210735614)

Untreated Water - Influent into the Treatment Facility

Analyte Class	Analyte Name	location_name		Treatment Facility Influent															
		sample_matrix_code		INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF
		sample_type_code		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
		sample_date		2/28/2021	2/28/2021	3/3/2021	4/11/2021	4/12/2021	4/13/2021	4/14/2021	4/14/2021	4/16/2021	4/16/2021	4/19/2021	4/22/2021	5/3/2021	5/6/2021	5/13/2021	5/14/2021
		sample_name		Influent_2/28/2021_N	Influent_2/28/2021_N_Filtered	Influent_3/3/2021_N	20210411INF	20210412INF-BW	20210412INF-T1	20210413 Inf BW	20210413 Inf T1	20210415 Inf.BW	20210415 Inf.T1	20210418 Inf.T1	20210421 Inf.T1	20210504 INF-C	20210506 INF	20210513 INF	PL20210514 INF
		CAS RN	Unit																
FUNG	Azoxystrobin	131860-33-8	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	3.2	17	1.1	15
FUNG	Brassinazole	224047-41-0	ug/L	U	U	U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
FUNG	Captan	133-06-2	ug/L															1.7 U,Ht	1.7 U,Ht
FUNG	Carbendazim	10605-21-7	ug/L													1 U	1 U	1 U	1 U
FUNG	Carboxin	5234-68-4	ug/L													1 U	1.3	1 U	6.9
FUNG	Cyproconazole	94361-06-5	ug/L	U	U	U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
FUNG	Desthio-Prothioconazole	120983-64-4	ug/L	U	U	U	3.7	2 U		2.42	3.08	2.64	5.03	2.8	4.74				
FUNG	Difenoconazole	119446-68-3	ug/L	5 U	U	5 U	1.92	1 U		1 U	1 U	1 U	1.25	1 U	1 U	1 U	1 U	1 U	4.8
FUNG	Dimoxystrobin	149961-52-4	ug/L	U	U	U	3 U	3 U		3 U	3 U	3 U	3 U	3 U	3 U	1 U	1 U	1 U	1 U
FUNG	Epoxiconazole	135319-73-2	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Fluconazole	86386-73-4	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Fludioxonil	131341-86-1	ug/L													1.1	1.3	1 U	51
FUNG	Fluoxastrobin	361377-29-9	ug/L	5 U	U	5 U	1 U	11.6		9.34	1 U	15.1	1 U	1 U	1 U	66	59	7.1	190
FUNG	Ipconazole	125225-28-7	ug/L	5.68	5 U	5 U	4.03	2.49		2 U	2 U	2 U	2 U	2 U	2 U	1 U	3.8	1 U	29
FUNG	Isavuconazole	241479-67-4	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Itraconazole	84625-61-6	ug/L				3 U	3 U		3 U	3 U	3 U	3 U	3 U	3 U	1 U	1 U	1 U	1 U
FUNG	Metalaxyl	57837-19-1	ug/L													98	270	66	470
FUNG	Metconazole	125116-23-6	ug/L	5 U	U	U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1.9
FUNG	Orysastrobin	248593-16-0	ug/L	U	U	U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U
FUNG	Picoxystrobin	117428-22-5	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Posaconazole	171228-49-2	ug/L				3 U	3 U		3 U	3 U	3 U	3 U	3 U	3 U	1 U	1 U	1 U	1 U
FUNG	Propiconazole	60207-90-1	ug/L	20.1	6.03	8.83	4.65	2 U		2 U	2 U	2 U	8.2	4.06	5.46	1 U	2.6	1 U	11
FUNG	Prothioconazole	178928-70-6	ug/L	U	U	U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	1 U	3.3	2 U	18
FUNG	Pyraclostrobin	175013-18-0	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Rawuconazole	182760-06-3	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Sedaxane	874967-67-6	ug/L																
FUNG	Sulfonic Acid Prothioconazole	178928-70-6_Dtr	ug/L	U	U	5 U	3 U	3 U		3 U	3 U	3 U	3 U	3 U	3 U				
FUNG	Tebuconazole	107534-96-3	ug/L	104	18.8	46.6	25.9	2 U		3.69	22.1	2.27	22.5	20.8	32.4	6.9	71	3.9	250
FUNG	Tetraconazole	112281-77-3	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Thiabendazole	148-79-8	ug/L	1450	63	350	47.2	10.9		19.1	46.2	13.2	41.4	40.1	48.3	25	43	1	1300
FUNG	Thiophanate-methyl	23564-05-8	ug/L													1 U	1 U	1 U	1 U
FUNG	Trifloxystrobin	141517-21-7	ug/L	5 U	U	U	3 U	3 U		3 U	3 U	3 U	3 U	3 U	3 U	1 U	1 U	1 U	1 U
FUNG	Uniconazole	83657-22-1	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
FUNG	Voriconazole	137234-62-9	ug/L	U	U	U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
HERB	2,4,5-T	93-76-5	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	2,4,5-TP	93-72-1	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	2,4-D	94-75-7	ug/L				2.75	1 U		1 U	2.19	1 U	1.77	1.17	2.04				
HERB	4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Acetochlor	34256-82-1	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Acifluorfen	50594-66-6	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Alachlor	15972-60-8	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	AMPA	1066-51-9	ug/L													40 U	40 U	40 U	43
HERB	Atrazine	1912-24-9	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Bentazon	25057-89-0	ug/L				2.58	1 U		1 U	2.33	1 U	1.73	2.9	2.74				
HERB	Bromoxynil	1689-84-5	ug/L				1.05	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Clopyralid	1702-17-6	ug/L				13.5	1 U		2.35	13.9	1 U	8.24	8.54	14.7				
HERB	Dicamba	1918-00-9	ug/L				0.62	0.5 U		0.5 U	0.69	0.5 U	0.5 U	0.54	0.71				
HERB	Dichlorprop	120-36-5	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Dimethenamid	163515-14-8	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Fluroxypyr	69377-81-7	ug/L				2.59	1 U		1 U	1 U	1 U	1 U	2.61	2.21				
HERB	Glufosinate	51276-47-2	ug/L	13.1	11.7	34.1	18.3	3 U		3 U	3 U	3 U	3 U	3 U	3 U	10 U	10 U	10 U	10 U
HERB	Glyphosate	1071-83-6	ug/L	1900	2060	786	1020	219		130	609	3 U	696	807	930	10 U	97	90	160
HERB	MCPA	94-74-6	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	MCPP	93-65-2	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Metolachlor	51218-45-2	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Metribuzin	21087-64-9	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Pendimethalin	40487-42-1	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Picloram	1918-02-1	ug/L				2.29	1 U		1 U	1.84	1 U	1.68	6.22	1.87				
HERB	Prometon	1610-18-0	ug/L				2.19	2 U		2 U	2 U	2 U	2 U	3 U	3 U				
HERB	Pyrasulfotole	365400-11-9	ug/L				3.41	1 U		1 U	2.69	1 U	2.19	3.78	2.38				
HERB	Quinclorac	84087-01-4	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
HERB	Simazine	122-34-9	ug/L				2 U	2 U		2 U	2 U	2 U	2 U	3 U	3 U				

ED_013286A_00003352-00108

REC'D NDEQ - (11/1/2021) - (202107356 14)

Untreated Water - Influent into the Treatment Facility

Analyte Class	Analyte Name	location_name		Treatment Facility Influent															
		sample_matrix_code		INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF
		sample_type_code		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
		sample_date		2/28/2021	2/28/2021	3/3/2021	4/11/2021	4/12/2021	4/13/2021	4/14/2021	4/14/2021	4/16/2021	4/16/2021	4/19/2021	4/22/2021	5/3/2021	5/6/2021	5/13/2021	5/14/2021
		sample_name		Influent_2/28/2021_N	Influent_2/28/2021_N_Filtered	Influent_3/3/2021_N	20210411INF	20210412INF-BW	20210412INF-T1	20210413 Inf BW	20210413 Inf T1	20210415 Inf.BW	20210415 Inf.T1	20210418 Inf.T1	20210421 Inf.T1	20210504 INF-C	20210506 INF	20210513 INF	PL20210514 INF
		CAS RN	Unit																
HERB	Triclopyr	55335-06-3	ug/L				1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U				
INST	Abamectin	71751-41-2	ug/L	377	247	204	37.1	3 U		5.26	28.2	5.74	33.1	39.7	50.2	5.5	110	3.9	230
INST	Acetamiprid	135410-20-7	ug/L	U	U	U										1 U	1 U	1 U	1 U
INST	Baythroid	68359-37-5	ug/L	U	U	U												5 U,Ht	5 U,Ht
INST	Bifenthrin	82657-04-3	ug/L	U	U	U												1 U,Ht	1 U,Ht
INST	Chlorantraniliprole	500008-45-7	ug/L													63	190	63	450
INST	Chlordane	57-74-9	ug/L																
INST	Chlorpyrifos	2921-88-2	ug/L	U	U	U												1 U,Ht	1 U,Ht
INST	Chlorpyrifos-methyl	5598-13-0	ug/L	U	U	U												1 U,Ht	1 U,Ht
INST	Clothianidin	210880-92-5	ug/L	624	U	103										99	46	3.1	45
INST	Cyantraniliprole	736994-63-1	ug/L													1 U	1.3	1 U	1 U
INST	Cyhalothrin/Karate	68085-85-8	ug/L	U	U	U												1 U,Ht	1 U,Ht
INST	Cypermethrin	52315-07-8	ug/L	U	U	U												5 U,Ht	5 U,Ht
INST	Deltamethrin	52918-63-5	ug/L	U	U	U												5 U,Ht	5 U,Ht
INST	Dinotefuran	165252-70-0	ug/L	U	U	U										1 U	1 U	1 U	1 U
INST	Endrin	72-20-8	ug/L																
INST	Heptachlor	76-44-8	ug/L																
INST	Heptachlor epoxide	1024-57-3	ug/L																
INST	Imidacloprid	138261-41-3	ug/L	U	U	U										1 U	1 U	1 U	1 U
INST	Lindane	58-89-9	ug/L																
INST	Methoxychlor	72-43-5	ug/L																
INST	Nitenpyram	150824-47-8	ug/L	U	U	U										1 U	1 U	1 U	1 U
INST	Permethrin	52645-53-1	ug/L	U	U	U												2 U,Ht	2 U,Ht
INST	Thiacloprid	111988-49-9	ug/L	U	U	U										1 U	1 U	1 U	1 U
INST	Thiamethoxam	153719-23-4	ug/L	128	U	36.3										31	61	2.1	25
INST	Tioxazafen	330459-31-9	ug/L																
INST	Toxaphene	8001-35-2	ug/L																
MYCTXN	Fumonisin B1	116355-83-0	ug/L																
MYCTXN	Fumonisin B2	116355-84-1	ug/L																
MYCTXN	Fumonisin B3	136379-59-4	ug/L																
MYCTXN	Fumosins (total)	FUMOSINS	ug/L																
MYCTXN	Ochratoxin	OCHRATOXIN	ug/L																
MYCTXN	T-2 Mycotoxin	21259-20-1	ug/L																
MYCTXN	Vomitoxin	51481-10-8	ug/L																
MYCTXN	Zearalenone	17924-92-4	ug/L																
NUT	Ammonia	7664-41-7	mg/L				193	365	223	349	226	400	231	205	222				
NUT	Biological Oxygen Demand (BOD)	BOD	mg/L				367 J-	430	341	2430	371	3160	582 SC	234	294 J-				
NUT	Nitrate (as N)	14797-55-8	mg/L				0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
NUT	Nitrite (as N)	14797-65-0	mg/L				0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
NUT	Phosphorus (as P)	7723-14-0	mg/L																
NUT	Total Kjeldahl Nitrogen (TKN)	TKN	mg/L																
NUT	Total Nitrate/Nitrite	NO3/NO2-N	mg/L				0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U				
INOR	Selenium	7782-49-2	ug/L																
OTHER	pH	PH	SU																
OTHER	Total Organic Carbon (TOC)	TOC	mg/L																
OTHER	Total Suspended Solids (TSS)	TSS	mg/L																

Notes: *Data as of 9/30/2021, analyte list based on all untreated waters (Lagoon and Influent into the treatment facility)*

sample_matrix_code:
- INF = sample from influent into the current treatment system
- WLG = sample from lagoon

sample_type_code:
- NM = primary sample
- FD = field duplicate

Analyte Class
- FUNG fungicide
- HERB herbicide
- INST insticide
- MYCTXN mycotoxin
- NUT nutrient
- INOR inorganics
- OTHER miscellaneous parameters

	Not analyzed in sample
TBD	Analytical result to be determined as of 9/30/2021

Qualifers:
- U = Analyte/parameter was analyzed for but not detected above the practical quantification limit (PQL)
- Ht = Holding time violation
- H3 = Holding time violation
- SC = Quality control was outside statistical control limit, but not outside required limit.
- J = estimated
- J- = estimated low bias
- J+ = estimated high bias

ED_013286A_00003352-00109

REC'D NDEQ - (11/1/2021) - (20210735614)

Untreated Water - Influent into the Treatment Facility

Analyte Class	Analyte Name	location_name		Treatment Facility Influent							
		sample_matrix_code		INF	INF	INF	INF	INF	INF	INF	INF
		sample_type_code		NM	NM	NM	NM	NM	NM	NM	NM
		sample_date		5/17/2021	6/21/2021	7/14/2021	8/5/2021	8/10/2021	8/17/2021	8/26/2021	9/2/2021
		sample_name		PL20211705INF	20210621 INF	20210714PLANTINF	20210805 PL INF	PL20210810 INF	20210817 PL INF	PL20210826INF	PL 20210902 INF
		CAS RN	Unit								
FUNG	Azoxystrobin	131860-33-8	ug/L	15	6.5	3.3	1.4	1.6	1.5	1.5	TBD
FUNG	Brassinazole	224047-41-0	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Captan	133-06-2	ug/L	1.7 U,Ht	1.7 U	1.7 U,Ht	5 U	5 U	5 U	5 U	TBD
FUNG	Carbendazim	10605-21-7	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Carboxin	5234-68-4	ug/L	6.9	2.3	7.2	4.4	7.2	6.3	6	TBD
FUNG	Cyproconazole	94361-06-5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Desthio-Prothioconazole	120983-64-4	ug/L								
FUNG	Difenoconazole	119446-68-3	ug/L	5.2	1 U	7.5	6	4.7	1.9	4.5	TBD
FUNG	Dimoxystrobin	149961-52-4	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Epoxiconazole	135319-73-2	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Fluconazole	86386-73-4	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Fludioxonil	131341-86-1	ug/L	51	1.1	64	98	44	53	33	TBD
FUNG	Fluoxastrobin	361377-29-9	ug/L	200	92	120	52	52	35	32	TBD
FUNG	Ipconazole	125225-28-7	ug/L	28	2.2	28	17	16	12	12	TBD
FUNG	Isavuconazole	241479-67-4	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Itraconazole	84625-61-6	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Metalaxyl	57837-19-1	ug/L	440	140	4.6	1.5	1.7	2.2	1.6	TBD
FUNG	Metconazole	125116-23-6	ug/L	2	1 U	2.7	3.5	3.5	3.6	3.3	TBD
FUNG	Orysastrobin	248593-16-0	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Picoxystrobin	117428-22-5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Posaconazole	171228-49-2	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Propiconazole	60207-90-1	ug/L	13	2.3	20	30	24	26	29	TBD
FUNG	Prothioconazole	178928-70-6	ug/L	23	1.8	27	26	21	19	22	TBD
FUNG	Pyraclostrobin	175013-18-0	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Ravuconazole	182760-06-1	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Sedaxane	874967-67-6	ug/L					61	71	46	TBD
FUNG	Sulfonic Acid Prothioconazole	178928-70-6_Otr	ug/L								
FUNG	Tebuconazole	107534-96-3	ug/L	240	51	260	240	260	200	210	TBD
FUNG	Tetraconazole	112281-77-3	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Thiabendazole	148-79-8	ug/L	1200	29	1500	970	1500	1300	1100	TBD
FUNG	Thiophanate-methyl	23564-05-8	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Trifloxystrobin	141517-21-7	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Uniconazole	83657-22-1	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
FUNG	Voriconazole	137234-62-9	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
HERB	2,4,5-T	93-76-5	ug/L								
HERB	2,4,5-TP	93-72-1	ug/L								
HERB	2,4-D	94-75-7	ug/L								
HERB	4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	ug/L								
HERB	Acetochlor	34256-82-1	ug/L								
HERB	Acifluorfen	50594-66-6	ug/L								
HERB	Alachlor	15972-60-8	ug/L								
HERB	AMPA	1066-51-9	ug/L	91	400 U	200 U	100	91	130	95	TBD
HERB	Atrazine	1912-24-9	ug/L								
HERB	Bentazon	25057-89-0	ug/L								
HERB	Bromoxynil	1689-84-5	ug/L								
HERB	Clopyralid	1702-17-6	ug/L								
HERB	Dicamba	1918-00-9	ug/L								
HERB	Dichlorprop	120-36-5	ug/L								
HERB	Dimethenamid	163515-14-8	ug/L								
HERB	Fluroxypyr	69377-81-7	ug/L								
HERB	Glufosinate	51276-47-2	ug/L	10 U	100 U	50 U	10 U	10 U	10 U	10 U	TBD
HERB	Glyphosate	1071-83-6	ug/L	260	100 U	310	270	330	370	340	TBD
HERB	MCPA	94-74-6	ug/L								
HERB	MCPP	93-65-2	ug/L								
HERB	Metolachlor	51218-45-2	ug/L								
HERB	Metribuzin	21087-64-9	ug/L								
HERB	Pendimethalin	40487-42-1	ug/L								
HERB	Picloram	1918-02-1	ug/L								
HERB	Prometon	1610-18-0	ug/L								
HERB	Pyrasulfotole	365400-11-9	ug/L								
HERB	Quinclorac	84087-01-4	ug/L								
HERB	Simazine	122-34-9	ug/L								

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REC'D NDEQ - (11/1/2021) - (20210735614)

Untreated Water - Influent into the Treatment Facility

Analyte Class	Analyte Name	CAS RN	Unit								
		location_name		Treatment Facility Influent							
		sample_matrix_code		INF	INF	INF	INF	INF	INF	INF	INF
		sample_type_code		NM	NM	NM	NM	NM	NM	NM	NM
		sample_date		5/17/2021	6/21/2021	7/14/2021	8/5/2021	8/10/2021	8/17/2021	8/26/2021	9/2/2021
		sample_name		PL20211705INF	20210621 INF	20210714PLANTINF	20210805 PL INF	PL20210810 INF	20210817 PL INF	PL20210826INF	PL 20210902 INF
HERB	Triclopyr	55335-06-3	ug/L								
INST	Abamectin	71751-41-2	ug/L	240	11	430	300	110	150	120	TBD
INST	Acetamiprid	135410-20-7	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Baythroid	68359-37-5	ug/L	5 U,Ht	5 U	5 U,Ht	5 U	5 U	5 U	5 U	TBD
INST	Biphenthrin	82657-04-3	ug/L	1 U,Ht	1 U	1 U,Ht	1 U	1 U	1 U	1 U	TBD
INST	Chlorantraniliprole	500008-45-7	ug/L	450	140	470	300	300	240	220	TBD
INST	Chlordane	57-74-9	ug/L								
INST	Chlorpyrifos	2921-88-2	ug/L	1 U,Ht	1 U	1 U,Ht	1 U	1 U	1 U	1 U	TBD
INST	Chlorpyrifos-methyl	5598-13-0	ug/L	1 U,Ht	1 U	1 U,Ht	1 U	1 U	1 U	1 U	TBD
INST	Clothianidin	210880-92-5	ug/L	35	10	1 U	1 U	1 U	1 U	1 U	TBD
INST	Cyantraniliprole	736994-63-1	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Cyhalothrin/Karate	68085-85-8	ug/L	1 U,Ht	1 U	1 U,Ht	1 U	1 U	1 U	1 U	TBD
INST	Cypermethrin	52315-07-8	ug/L	5 U,Ht	5 U	5 U,Ht	5 U	5 U	5 U	5 U	TBD
INST	Deltamethrin	52918-63-5	ug/L	5 U,Ht	5 U	5 U,Ht	5 U	5 U	5 U	5 U	TBD
INST	Dinotefuran	165252-70-0	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Endrin	72-20-8	ug/L								
INST	Heptachlor	76-44-8	ug/L								
INST	Heptachlor epoxide	1024-57-3	ug/L								
INST	Imidacloprid	138261-41-3	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Lindane	58-89-9	ug/L								
INST	Methoxychlor	72-43-5	ug/L								
INST	Nitenpyram	150824-47-8	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Permethrin	52645-53-1	ug/L	2 U,Ht	2 U	2 U,Ht	2 U	2 U	2 U	2 U	TBD
INST	Thiacloprid	111988-49-9	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	TBD
INST	Thiamethoxam	153719-23-4	ug/L	30	1.3	1 U	1 U	1 U	1 U	1 U	TBD
INST	Tioxazafen	330459-31-9	ug/L					1 U	1 U	1 U	TBD
INST	Toxaphene	8001-35-2	ug/L								
MYCTXN	Fumonisin B1	116355-83-0	ug/L								
MYCTXN	Fumonisin B2	116355-84-1	ug/L								
MYCTXN	Fumonisin B3	136379-59-4	ug/L								
MYCTXN	Fumosins (total)	FUMOSINS	ug/L								
MYCTXN	Ochratoxin	OCHRATOXIN	ug/L								
MYCTXN	T-2 Mycotoxin	21259-20-1	ug/L								
MYCTXN	Vomitoxin	51481-10-8	ug/L								
MYCTXN	Zearalenone	17924-92-4	ug/L								
NUT	Ammonia	7664-41-7	mg/L		454		498	478	487	497	476
NUT	Biological Oxygen Demand (BOD)	BOD	mg/L		652		1470	1610	1590	1030	929
NUT	Nitrate (as N)	14797-55-8	mg/L		0.1 U		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NUT	Nitrite (as N)	14797-65-0	mg/L		0.1 U		0.1 U	0.1 U	0.15	0.1 U	0.13
NUT	Phosphorus (as P)	7723-14-0	mg/L		71.2 SC		56.9	74.7	70	66.2	52.5
NUT	Total Kjeldahl Nitrogen (TKN)	TKN	mg/L		1200		756	522	562	585	616
NUT	Total Nitrate/Nitrite	NO3/NO2-N	mg/L		0.1 U		0.1 U	0.1 U	0.13	0.1 U	0.1 U
INOR	Selenium	7782-49-2	ug/L		17.6		23.2	15 U	15.2	75 U	19.5
OTHER	pH	PH	SU		4.2 Ht		7.6	7.7	7.7	7.8	TBD
OTHER	Total Organic Carbon (TOC)	TOC	mg/L		345		890	890	810	702	644
OTHER	Total Suspended Solids (TSS)	TSS	mg/L				4520	129	141	70.4	166

Notes: *Data as of 9/30/2021, analyte list based on all untreated waters (Lag*

sample_matrix_code:
- INF = sample from influent into the current treatment system
- WLG = sample from lagoon

sample_type_code:
- NM = primary sample
- FD = field duplicate

Analyte Class
- FUNG fungicide
- HERB herbicide
- INST insticide
- MYCTXN mycotoxin
- NUT nutrient
- INOR inorganics
- OTHER miscellaneous parameters

	Not analyzed in sample
TBD	Analytical result to be determined as of 9/30/2021

Qualifers:
- U = Analyte/parameter was analyzed for but not detected above the practical quantification limit (PQL)
- Ht = Holding time violation
- H3 = Holding time violation
- SC = Quality control was outside statistical control limit, but not outside required limit.
- J = estimated
- J- = estimated low bias
- J+ = estimated high bias

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