

300 Ledgewood Place  
Suite 305  
Rockland, MA 02370

August 12, 2022

Mr. Thomas Buell  
Division Administrator  
Monitoring and Remediation Division  
Department of Environment and Energy  
P.O. Box 98922  
Lincoln, NE 68922

SUBJECT: Northwest Lagoon Response Action  
AltEn Facility Response Group VCP Project, Mead, Nebraska  
FACILITY ID: 84069  
PROGRAM ID: PCS/RAP 36-336-4975

Dear Mr. Buell:

In response to your August 2, 2022, letter regarding the response actions for the Northwest Lagoon, the AltEn Facility Response Group (FRG) is committing to performing the following actions:

1. Continue to drawdown the Northwest Lagoon in a manner that is safe for workers and the community; and,
2. Conduct a groundwater delineation of pesticides and ammonia associated with AltEn-MW5.

Accompanying this letter is the FRG's Groundwater Delineation Work Plan that outlines the activities to be conducted to delineate the lateral and vertical extent of pesticides and ammonia present in groundwater at concentrations above the applicable health-based screening levels. This work includes the installation of three new shallow wells and one deep well.

The work plan provides a schedule for this work. We anticipate initiating the installation of the new wells beginning on September 7, 2022, based on the availability of the drilling contractor. Please let me know if you have any questions regarding this work.

Sincerely,



Donald Gunster  
AltEn Facility Response Project Coordinator

cc: AltEn Facility Response Group

## MEMORANDUM

**DATE:** August 12, 2022

**TO:** Thomas Buell – Nebraska Department of Environment and Energy

**FROM:** AltEn Facility Response Group Technical Committee  
Donald Gunster, Project Coordinator – NewFields  
William Hall, Michael Fiori, PG (G-0487), William Butler – NewFields

**SUBJECT:** Groundwater Delineation Work Plan  
Northwest Lagoon Response Actions  
AltEn Facility – Mead, Nebraska

On behalf of the AltEn Facility Response Group (FRG), NewFields has prepared this work plan to summarize the procedures for performing a groundwater delineation investigation at the AltEn Site. The objective of this investigation is to delineate the lateral and vertical extent of pesticides and ammonia present in groundwater at AltEn-MW5 at concentrations above the applicable health-based screening levels. A summary of the background, investigation procedures, and preliminary schedule are presented in this work plan for the Nebraska Department of Environment and Energy’s (NDEE’s) information.

### BACKGROUND

Monitoring well AltEn-MW5 was installed by the FRG based on the results of a groundwater investigation completed by NDEE in the vicinity of the Northwest Lagoon between March 28 and April 4, 2022. The locations of this monitoring well and other Site monitoring wells are shown in Figure 1.

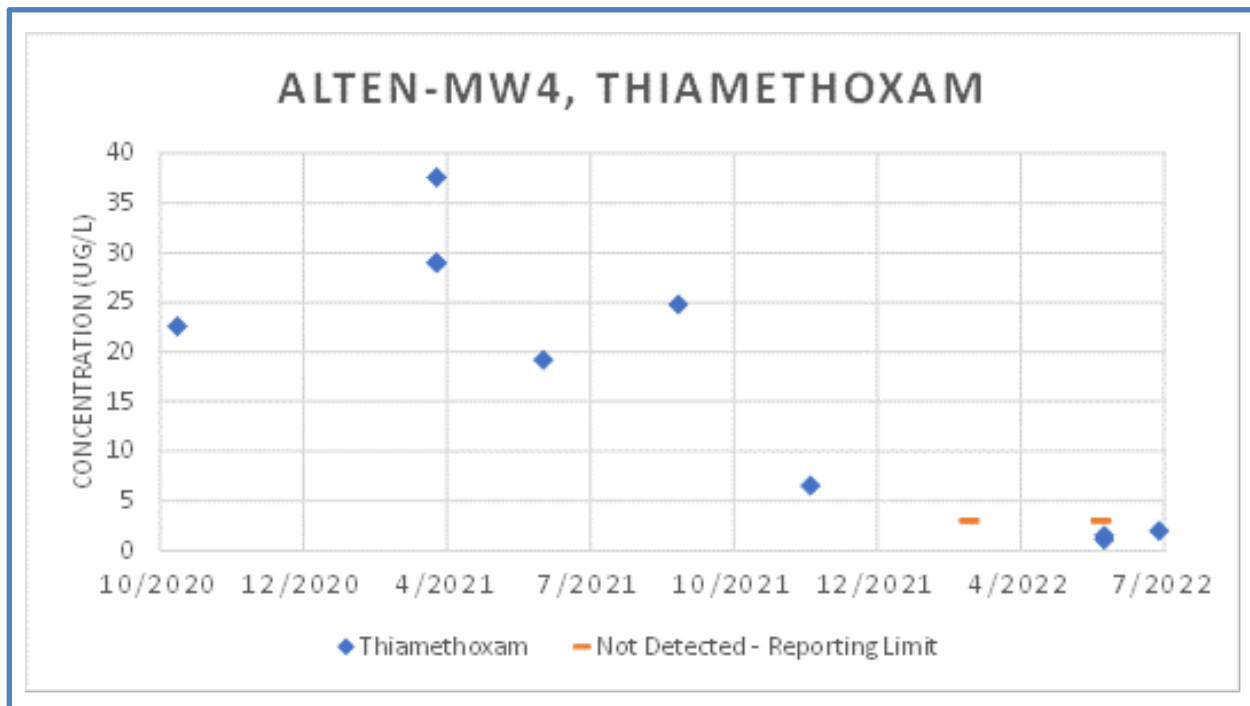


**Figure 1 – Monitoring Well Locations**



AltEn-MW5 was installed in June 2022, and a groundwater sample was collected from this monitoring well on June 30, 2022. The analytical results indicated that two pesticides, metalaxyl/mefenoxam and thiamethoxam are present in concentrations above groundwater screening levels identified by the NDEE as being appropriate for human health exposure.<sup>1</sup> Ammonia was also present in the AltEn-MW5 groundwater sample at a concentration above the applicable Nebraska groundwater standard. Analysis was conducted for nitrate, but nitrate was not detected in this groundwater sample.

All other Site groundwater samples collected in June 2022 were well below these screening levels. Regional groundwater flow direction and the local flow direction, monitored by the Site monitoring wells AltEn-MW1 through MW4 since October 2020, is generally believed to be to the southeast across the Site. The existing AltEn-MW4 well, located southeast of the Northwest Lagoon and AltEn-MW5, is downgradient and has contained pesticides at low concentrations since it was installed in October 2020; however, groundwater concentrations of the detected pesticide thiamethoxam has decreased approximately 95% over the past year (Figure 2).

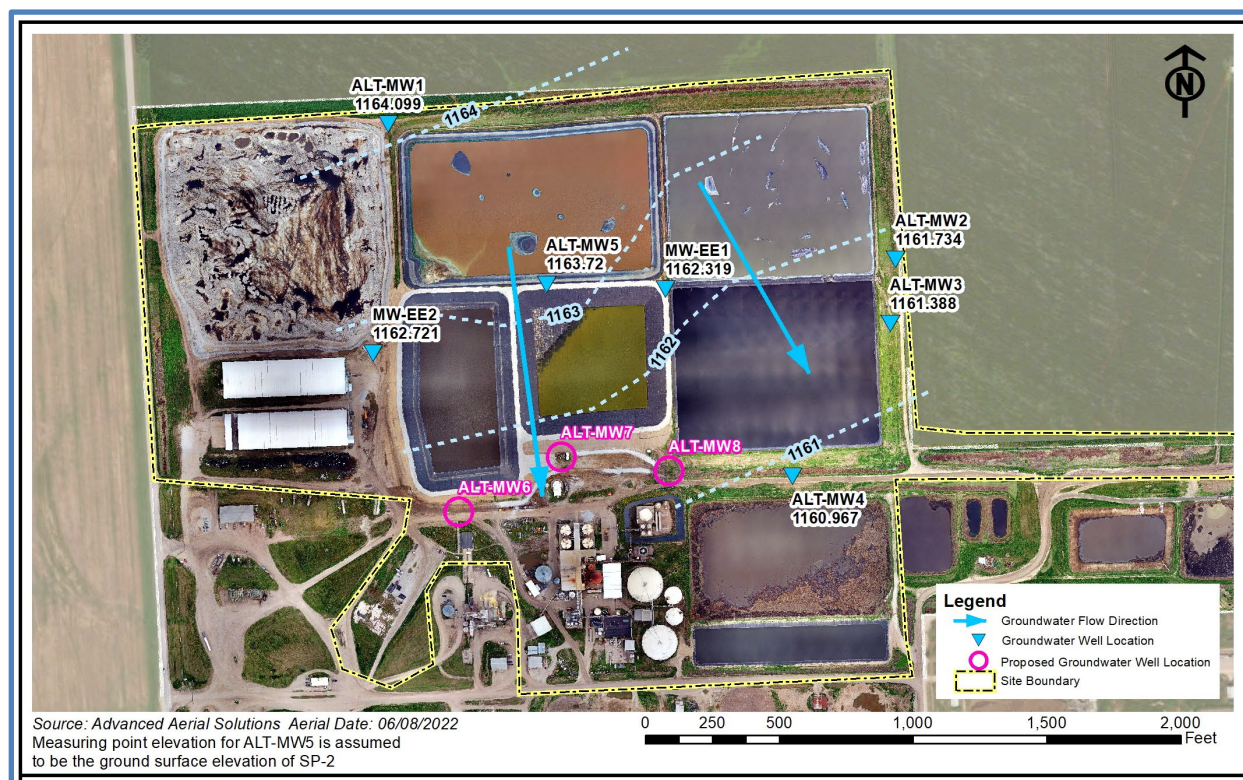


**Figure 2 – Thiamethoxam Trends in Downgradient Well AltEn-MW4**

The Site groundwater elevations measured in June 2022, with the inclusion of AltEn-MW5 in the monitoring network, indicate the groundwater flow direction may be to the south locally in the vicinity of the Northwest Lagoon (see Figure 3). This flow direction was just recently confirmed during the July 2022 sampling event. Based on the local flow direction, the FRG will focus the lateral delineation to the south of the Northwest Lagoon and AltEn-MW5 and to the west of AltEn-MW4.

<sup>1</sup> VCP guidance document (NDEQ 2018) Table A-1 or where pesticide analyte is not on Table A-1, NDEE has been comparing private well sample results to EPA Human Health Benchmark (<https://www.epa.gov/sdwa/2021-human-health-benchmarks-pesticides>) in data transmittal letters to private well owners.





**Figure 3 – June 2022 Groundwater Elevations and Proposed Monitoring Well Locations**

## MONITORING WELL INSTALLATION

NewFields will install three permanent shallow groundwater monitoring wells (AltEn-MW6 through AltEn-MW8) at the downgradient locations shown on Figure 3. The locations were selected based on recent groundwater elevation data indicating that they are potentially downgradient of AltEn-MW5 and that they are the closest accessible downgradient locations due to the presence of the treated water ponds. A single deep monitoring well will be installed based on the analytical results of groundwater samples collected from the shallow monitoring wells, and it would be paired with one of the shallow monitoring wells and identified as AltEn-MW#D.

The monitoring wells will be constructed by a Nebraska-licensed drilling contractor in accordance with Nebraska requirements as follows:

- A 6-inch diameter boring will be advanced at each monitoring well location using a sonic drilling method. Continuous soil cores will be retrieved from the boring to obtain lithological information. The shallow monitoring well boring will be advanced to a depth of approximately 10 feet below the water table, which is expected to occur at a depth of approximately 30-35 feet below the ground surface (ft bgs). The deep monitoring well boring will be advanced to an approximate depth of 130 ft bgs, which is expected to be the bottom of the aquifer and representative of a deeper gravelly zone within the aquifer.
- A 2-inch diameter Schedule 40 PVC monitoring well equipped with 15 feet of 0.010-inch slotted well screen will be constructed within the boring in accordance with Nebraska requirements. Each monitoring wells will be completed as a stick-up monitoring well inside a protective casing set in a 3-foot by 3-foot, 8-inch-thick concrete pad, with 3 to 4 protective bollards.



- The monitoring well will be developed using a surge-and-pump method to remove solids from the well and development will continue until the turbidity of the groundwater is less than 10 NTUs or it stabilizes above 10 NTUs.
- The monitoring well location and top-of-casing elevation will be surveyed to the same reference datum as the other monitoring wells.

The drilling contractor will register the monitoring wells per Nebraska requirements. The public utility locator, Nebraska811, will be contacted at least two business days before drilling commences.

Down-hole drilling equipment will be decontaminated between each use and before leaving the Site. Decontamination will consist of pressure washing to remove visible solids adhered to it.

Investigation-derived wastes (IDW) expected to be generated from the monitoring well installation include soil cuttings, well development water, and decontamination rinse water. IDW are expected to be classified as non-hazardous waste in accordance with the Resource Conservation and Recovery Act (RCRA) based on existing data and knowledge of historical Site operations. Soil cuttings will be containerized. These materials will either be disposed of in a local landfill or managed with other on-site solids (e.g., wet cake, sludge, lagoon solids) as part of a future remedy to be developed for managing these solids. Well development and decontamination rinse water will be discharged to the Southeast Lagoon.

NewFields will prepare a soil boring log documenting the lithology and other soil boring observations and a monitoring well construction log documenting the construction details for each monitoring well.

## **GROUNDWATER SAMPLING AND ANALYSIS**

A single groundwater sampling event will be completed following installation of the three shallow monitoring wells, which will include collecting samples from the following wells:

- New monitoring wells AltEn-MW6, AltEn-MW7, AltEn-MW8
- Existing seven monitoring wells AltEn-MW1 through AltEn-MW5, MW-EE1, and MW-EE2
- The Site water supply well.

This sampling event will be conducted in lieu of the fourth sampling event to be conducted in accordance with the FRG's May 18, 2022, *Supplemental Site Investigation Work Plan*. The events were scheduled to occur within a few weeks of each other, so the decision was made to perform the more comprehensive event proposed in this work plan.

Depth to water (DTW) measurements using an electronic water level meter will be completed at each monitoring well prior to sampling. The DTW within the water supply well cannot be measured because of access limitations.

Monitoring well groundwater samples will be collected using low-flow purging and sampling procedures. The groundwater sample to be collected from the water supply well will be collected from a sample tap on the water supply piping. Purged groundwater will be discharged to the Southeast Lagoon.

The DTW meter and sampling equipment in contact with the groundwater (e.g., pumps, flow-through cell, etc.) will be decontaminated between monitoring wells in accordance with the applicable NDEE Standard Operating Procedure (SOP). Dedicated sampling equipment and materials (e.g., tubing, etc.) will be replaced for each monitoring and water supply well. Sampling personnel will don latex or other gloves that will be changed for each monitoring well and water supply well.



Groundwater samples will be analyzed for the constituents summarized in the table below.

Analyte	Analytical Method	Laboratory
Contemporary Pesticides	EPA 8270E/8321B	Pacific Agricultural Laboratory (PAL)
Ammonia	SM4500	MidWest Labs
Nitrate (as N)	SM4500/NAPT S-8.1	MidWest Labs
Nitrite (as N)	SM4500	MidWest Labs
Total Nitrogen (All N)	SM4500	MidWest Labs
TKN	EPA 1687	MidWest Labs

Quality assurance and quality control (QA/QC) samples will be collected for pesticide and ammonia analysis and will include an equipment rinsate blank, blind duplicate, laboratory duplicate, matrix spike (MS), and matrix spike duplicate (MSD).

A second groundwater sampling event will be performed following installation of the deep monitoring well that will include the deep monitoring well and its paired shallow monitoring well. The samples will be collected and analyzed as described above for the initial groundwater sampling event.

The analytical results from each sampling event will be provided to NDEE.

## SCHEDULE

The schedule is summarized below. The schedule may need to be adjusted for reasons beyond the FRG's and NewFields' control, and NDEE would be notified of any such changes as soon as possible.

Subtask	Dates	Comments
Shallow Monitoring Well Installation	September 7-9, 2022	
Groundwater Sampling Event	September 13-15, 2022	Week following well installation
Deep Monitoring Well Installation	October 11-13, 2022	Current schedule with driller availability
Groundwater Sampling Event	October 18, 2022	Week following well installation

NewFields will notify NDEE within at least seven (7) days prior to commencing monitoring well installation and sampling.