

## Results of Omadi Bedrock Formation Phase III Assessment

The Omadi Formation (Omadi) is a bedrock layer consisting of sandstone with thin layers of shale that underlies the Todd Valley and Platte Valley sands and gravels. The top of the Omadi is found at a depth of approximately 100 feet below ground surface. The main purpose of the Phase III Omadi Assessment was to assess the depth of contamination into the Omadi from the plumes found in the overlying sands and gravels.

Phase III field work took place in the spring and summer of 2019. A total of 69 monitoring wells were installed in the Omadi at 26 locations across the site. New monitoring wells were installed in the Omadi at two or three depths per location. The number of wells installed at each location was determined by the vertical groundwater profiling data and the thickness of the Omadi at that location. Groundwater samples have been collected from all newly installed Omadi monitoring wells on a quarterly basis since November 2019. Monitoring well locations and analytical results are summarized in the Final Assessment of the OU2 Containment System on the Omadi Formation Phase III Technical Memorandum, which can be found online at <https://www.nwk.usace.army.mil/Missions/Environmental/Environmental-Projects/NOP/Project-Documents/>.

During the Phase III fieldwork, the northern extent of LL1 TCE contamination in the Omadi was not defined, therefore additional investigation activities are planned in 2021 to characterize the extent of TCE in the Omadi north of MW-126. This will include the installation of up to four borings with vertical groundwater profiling and possible installation of additional monitoring wells.

## Pre-Design and Design of New Focused Extraction Well-19

USACE has determined that a focused extraction well (FEW)-19 will be added within the LL4 plume to decrease the time frame required to remediate the plume. Groundwater modeling, direct push sampling, and a ground surface geophysical survey are used to determine the optimal location for the new extraction well.

Groundwater modeling was conducted in the summer of 2020 at five potential FEW-19 locations in the LL4 plume. Pumping on the plume at each location was simulated over a 30-year period at different pumping rates. The area near existing monitoring well MW-153 was determined the most effective location based on the modeling. Direct push groundwater sampling was then conducted in September of 2020 at four locations in the vicinity of MW-153 to define the area with the highest TCE concentration in support of identifying the optimal location for FEW-19. This was followed by a ground surface geophysical survey performed in early November 2020 to verify aquifer uniformity and

confirm that there are no fine-grained layers that could negatively impact the FEW-19 pumping rate after it is installed.

After all data are analyzed, a test well, one observation well, and one piezometer will be installed in the selected optimal location for FEW-19. A pump test will be performed to determine the maximum sustainable pumping rate for FEW-19. In addition, aquifer soil samples will be collected and analyzed to assist in the design of FEW-19. The pump test and soil samples are required for the proper design of the groundwater treatment system which will commence in early 2021.

The design includes the FEW-19 well; conveyance piping; architectural, structural, mechanical, electrical, the treatment process, and instrumentation/control elements. Construction of FEW-19 and the associated treatment system will follow. Once operational, analyte concentrations within the LL4 plume are expected to decline to below the Final Target Groundwater Cleanup Goals in 25 to 30 years.

## 2021 Groundwater Profiling Investigation

Groundwater profiling activities will take place in 2021 to refine the horizontal and vertical extent of TCE contamination within the Load Line (LL)2 and LL3 plumes. In addition, the profiling activities will refine the horizontal and vertical extent of RDX contamination near monitoring well MW-11 in LL4 to assist in determining the cause of an elevated RDX detection (55 micrograms per liter [µg/L] during the second quarter of 2019). The profiling activities will include direct push groundwater sampling along transects across the plumes. At each direct push location, groundwater samples will be collected every 10 feet vertically through the water column and sampled for TCE and RDX at LL2, LL3, and near MW-11.

The groundwater samples collected will be analyzed by an on-site laboratory to allow for real time decisions in the field. It is anticipated that approximately 350 groundwater samples will be collected from up to 56 direct push borings along 14 different transects. Based on groundwater analytical results, additional monitoring wells may be installed as part of the groundwater profiling effort. The quantity, locations, and screened intervals for any additional monitoring wells installed will be determined after the direct push groundwater data is acquired and analyzed. All newly installed monitoring wells will be used to obtain reproducible data within the plumes and monitor concentration trends over time.

## Source Area Optimization

Field work was completed at LL1 and the Atlas Missile Area in April 2020. Data validation and reporting are ongoing. Additional investigation is planned in 2021.

## Open House Meeting

The U.S. Army Corps of Engineers will host the Fall Open House on Wednesday, November 18, 2020, from 6:00 p.m. to 7:30 p.m. In light of the current COVID-19 situation and consistent with the United States Center for Disease Control and Prevention guidance for conducting a community event with the lowest risk potential, the Open House will be conducted virtually. USACE technical staff will participate to answer specific questions regarding the former Nebraska Ordnance Plant. Representatives from the U.S. Environmental Protection Agency and Nebraska Department of Environment and Energy are expected to participate as well. The virtual Open House will include brief informational presentations on the 2019 Containment Evaluation, results of the Phase III Omadi Assessment completed in 2019, plans to design a new focused extraction well in load line (LL)4, and plans to collect additional groundwater samples for TCE and RDX analysis in LL2, LL3, and LL4 in 2021. To learn more about the former Nebraska Ordnance Plant, please plan on attending our virtual Open House via the following WebEx link:

<https://baywestllc.my.webex.com/baywestllc.my/j.php?MTID=m1409f7ce9e1f6b1efb0ced4686bb4f0>

Meeting number (access code): 126 721 1434

Meeting Password: 3Je2YCpn7rP (35329276 from phones and video systems)

Or, join by phone: +1-415-655-0001 US Toll

Access code: 126 721 1434

For those unable to participate in person, the virtual Open House will be recorded and posted to the project website at: <http://www.nwk.usace.army.mil/Missions/>



Focused Extraction Well FEW-14 Solar Array

Environmental/EnvironmentalProjects/NOP.aspx. For further information regarding the meeting, contact the U.S. Army Corps of Engineers Project Manager at (816) 389-3307.

## Operation and Maintenance Summary

Operation of the Load Line 1, Advanced Oxidation Process, and Load Line 4 groundwater treatment plants, and the ultraviolet treatment systems have resulted in removal of the following amounts of contaminants of concern from groundwater as of September 30, 2020, since their respective startup:

TCE removed

- Load Line 1 groundwater treatment plant – 2,951 lb
- Advanced Oxidation Process treatment plant – 43,930 lb
- Load Line 4 groundwater treatment plant – 6,131 lb

RDX removed

- Ultraviolet treatment systems – 224 lb

Gallons of water treated since startup:

- Load Line 1 groundwater treatment plant – 3.09 billion gallons
- Advanced Oxidation Process treatment plant – 2.83 billion gallons
- Load Line 4 groundwater treatment plant – 2.96 billion gallons
- Ultraviolet treatment systems – 5.80 billion gallons

## November 2020

For more information or any questions concerning the former Nebraska Ordnance Plant project, please contact:

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or go to the project website at:

<http://www.nwk.usace.army.mil/Missions/Environmental/EnvironmentalProjects/NOP.aspx>

Information repository documents are available for review at:

### Mead Public Library

316 South Vine Street  
Mead, Nebraska 68041  
Phone: (402) 624-6605

### Hours

Tuesday: 10 a.m. - 1 p.m. and 2-6 p.m.  
Wednesday: 4-8 p.m.  
Thursday: 10-11 a.m. and 2-6 p.m.  
Saturday: 10 a.m. - 2 p.m.



