



June 26, 2023

Mr. Keith Abraham
515 Clark Ave
Ames, IA 50010

Dear Mr. Abraham,

The Iowa DNR Private Well Program has completed their assessment for the potential to install a horizontal geothermal system for the future Ames Aquatic Center located at 122 North Oak Avenue, Ames, Iowa. The original idea of a vertical geothermal system is not approved by the DNR due to concerns with contamination from nearby sites migrating downward when drilling through the glacial till and into the underlying sand and gravel aquifer, which is the Ames community water supply source delineated within the 2-year capture zone (Figure 1 – attached). The location is south and west of multiple historical manufacturing, oil, and gas facilities (Figure 2 from LSI by Impact 7G, 06/14/2023). Limited Subsurface Investigations (LSI) were performed on April 2, 2022 and June 7, 2022 by Impact 7G, which revealed petroleum contamination of the groundwater at the northeast corner of the site, including volatile organic compounds (VOCs), total extractable hydrocarbons (TEHs), and polycyclic aromatic hydrocarbons (PAHs). The DNR requested additional borings in order to better delineate the extent and boundaries of contamination in the soil and groundwater. The latest LSI was performed on May 23-24, 2023. In summary of all LSIs, groundwater contamination for petroleum related chemicals above state-wide standards (SWS) has been found at TMW-1 (VOCs), TMW-2 (VOCs and TEHs), Sump #2 (VOCs), Sump #3 (TEHs), TMW-4 (VOCs and PAHs), and TMW-10 (VOCs and SVOCs).

Based on the findings of the LSIs, the DNR gives a limited approval for horizontal geothermal application on the northwest portion of the property (see the marked-up Figure 3 from LSI by Impact 7G, 06/14/2023). This approval is conditional upon the following:

- Story County must approve and permit the geothermal system
- Installation and drilling in the red shaded area of Figure 3 is prohibited
- System depth must not exceed 45 feet or penetrate into the sand and gravel aquifer, whichever is shallower
- If contamination is suspected at anytime during drilling or system installation, the contractor must immediately cease work and notify the DNR Spill Hotline 515-281-8694
- The boreholes must be fully grouted and checked for subsidence 24 and 48 hours upon completion
- Any subsidence must be addressed by grouting back to the ground surface and rechecking in 24 hours

If you have any further questions, please feel free to call me.

Kind regards,

Erik Day
Environmental Specialist Senior
Water Supply Engineering Section
515-402-7981

CC: Carmily Stone – Water Supply Engineering Supervisor – Iowa DNR
Deb Williams – Geologist 3 – Iowa DNR
Kimberly Grandinetti –Environmental Health Director – Story County
Matthew Cory – Environmental Specialist – Story County

Legend

Tools

Details

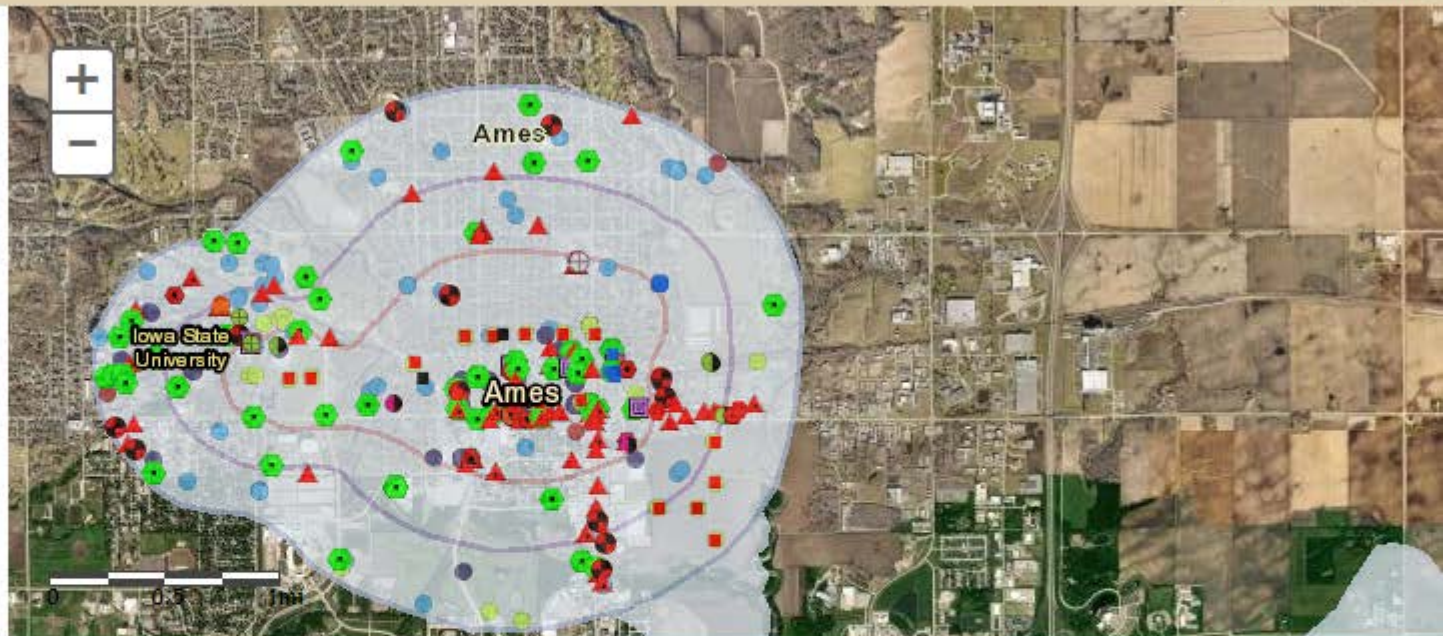
- Wastewater outfall
- ⊕ Wastewater treatment facility

Other Wells

- Permitted private wells
- Private well tracking system
- Registered abandoned wells
- Water Use Permit Wells

Groundwater Capture Zones

- 2-Year Capture Zone
- 5-Year Capture Zone
- 10-Year Capture Zone



Source Water Wells

Contaminant Sources

Other Wells

GeoSamID ▲	Local name	Status	Depth (ft)	Constr. date	Aquifer	Aqfr. Thk. (ft)	S (
2268	Ames #4	Not Used	124	02/28/1935	Buried Sand and Gravel	90	0
3173	Ames #5	Not Used	135	09/05/1947	Buried Sand and Gravel	54	59
13706	Ames #8	Plugged	126	12/31/1961	Buried Sand and Gravel	50	0
14427	Ames #7	Active	110	12/31/1961	Buried Sand and Gravel	45	0
18638	Ames #10	Active	126	12/31/1965	Buried Sand and Gravel	0	0
18802	Ames #9	Active	134	12/31/1965	Buried Sand and Gravel	67	0

Property Location Map



Figure 2. Property Location Map

Iowa DOT Property
122 N. Oak Avenue
Ames, Iowa 50010

0 90 180 360 Feet



Sample Location Map



North

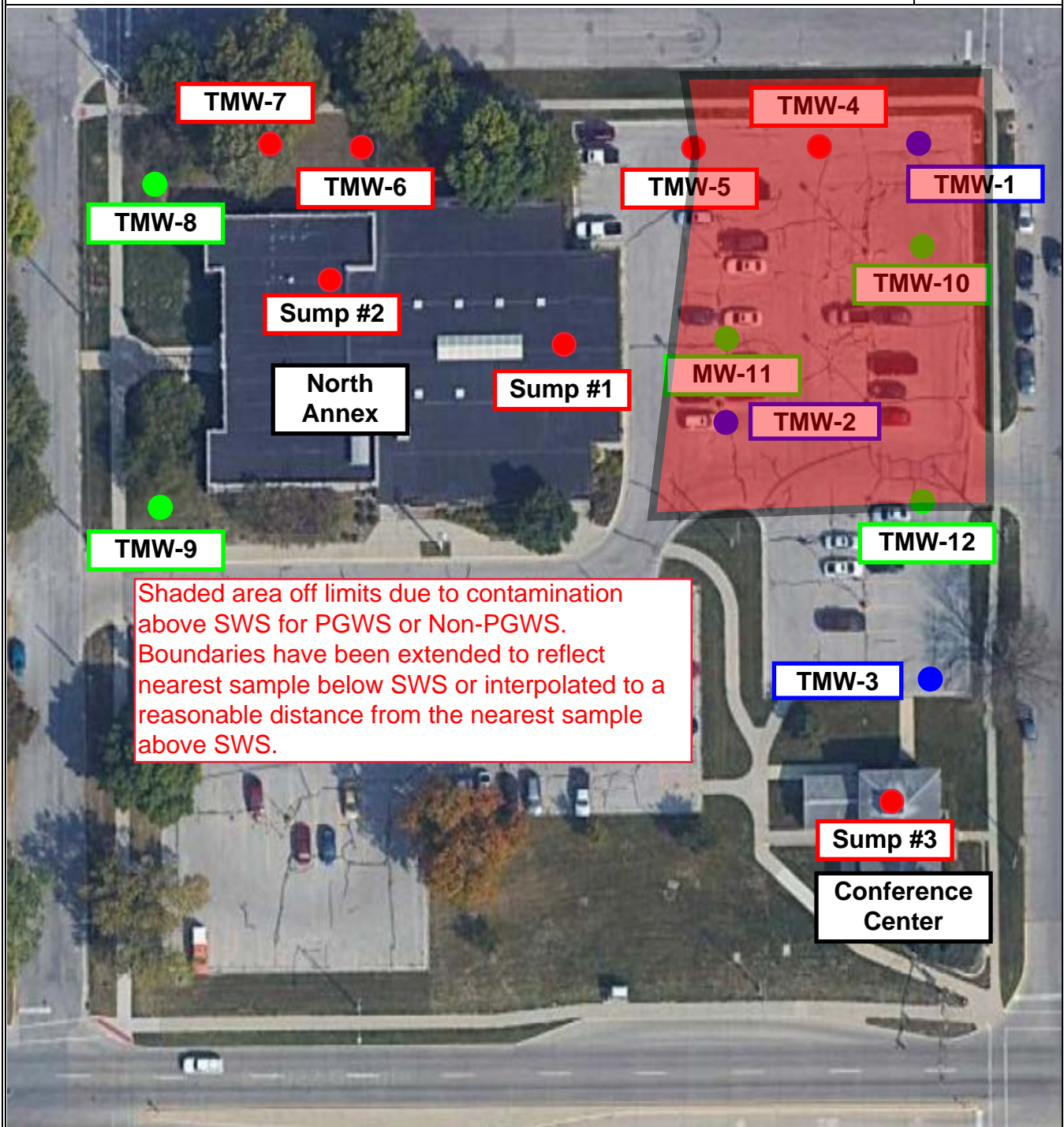


Fig. 3 Sample Location Map
The City of Ames

122 N. Oak Avenue Ames,
 Iowa 50010

- 1st Round LSI Borings
- 2nd Round LSI Boring/Sump Locations
- 3rd Round Borings for Geothermal

