WORK PLAN FOR SUPPLEMENTAL SUBSURFACE INVESTIGATION NABORS LANDFILL

Permit Nos. 0249-S1-R2, 0249-S4
AFIN: 03-00051

LAKESHORE RECYCLING SYSTEMS (LRS)

SCS ENGINEERS

27222323.00 | October 2022

11219 Richardson Drive
North Little Rock, AR 72113
501-812-4551

Professional Geologist Certification

I certify that I am a qualified groundwater scientist who has received a baccalaureate or postgraduate degree in the natural sciences. I have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, which enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport.

I further certify that this report was prepared by me or by a subordinate working under my direction.

12/5/2022

Dan McCullough, P.G. Date

Senior Hydrogeologist #1802

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1.0 INTRODUCTION

The NABORS Landfill (herein referred to as Landfill) originally operated under Solid Waste Disposal Permit number 0249-S, as issued to RLH, Inc. (RLH) by the Arkansas Energy & Environment Division of Environmental Quality (DEQ), formerly the Arkansas Department of Environmental Quality (ADEQ), on June 14, 1988. The solid waste permit was transferred to Northwest Arkansas Regional Solid Waste Management District (District) on August 31, 2005. The Landfill is currently under Solid Waste Disposal Permit 0249-S1-R2 issued by the DEQ on August 10, 2006. Although the permit is considered "open", the Landfill stopped receiving waste on November 30, 2012 and initiated closure of Area 1-2, Cells 1-3 of Area 1-3, and the Class 4 Landfill areas. The District (later named Ozark Mountain Regional Solid Waste Management District) operated the Landfill from 2005 to 2014 at which time DEQ assumed control of operations and closure activities at the Landfill under the Post Closure Trust Fund. DEQ is currently managing post closure of the site.

The purpose of this Work Plan is to present a scope of work to gather additional information concerning the occurrence of fractures and hydraulic conditions of groundwater. This a voluntary investigation on the part of LRS to be performed during the Due Diligence period between LRS and the Ozark Mountain Solid Waste District for the purchase of the NABORS facility. However, DEQ's input will be welcome and LRS intends to keep DEQ apprised of the results as they become available in hopes of accelerating the approval process for future permitting efforts.

2.0 SUBSURFACE INVESTIGATION DETAILS

2.1 DEPTH OF BORINGS

LRS is proposing to drill four (4) borings and an injection well during this investigation. The four borings (EB-1, EB-2, EB-4 and EB-5) will be advanced to determine the size, density, and orientation of fractures within bedrock . See **FIGURE 1** for the location of these borings. The anticipated bottom of boring elevations will be 75 to 90 feet below ground surface (bgs). The plan is to advance each boring a minimum of 10 to 20 feet below the groundwater surface identified from surrounding wells. The boring size for EB-1, EB-2, EB-4, and EB-5 will be 3-inches in diameter. A surface casing will be set to the bedrock surface at each location. The casing will be properly sealed to avoid surface water infiltration. Each boring will be open hole completion with no screen or filter pack.

The location of EB-1 was selected to verify previous boring information from MW-1, BH-534D, BH-509D, and NAB-2 which are located in the vicinity of the Signature Blast Demonstration conducted in August 2008. During the demonstration, a noticeable drop in groundwater levels was recorded in NAB-2. In addition, the elevation of groundwater within these wells varies with levels being deeper in BH-509D and NAB-2, when compared to MW-1, BH-534D, and BH-586-D. As will be discussed later in this plan, additional testing will be performed to determine the fractured and permeable zones in each boring.

Boring EB-2 was also located to verify previous boring information and to be a southerly detection point for the dye test discussed later in this Work Plan. The same information discussed in this Work Plan will also be collected from this boring.

The location of EB-4 was selected to provide subsurface information in Cell 5 of Area 1-3. During previous investigations, borings were not drilled in this area (See attached FIGURE 2 for location of all previous borings drilled). The location of EB-5 will be between MW-509D and NAB-2 to help delineate the effects, if any of the 2008 Blasting Demonstration.

As will be discussed later in the Dye Test Work Plan, the proposed injection location for the dye test will be near MW-1 and MW-1R. A 4-inch open completion well will be drilled at the location presented on FIGURE 1. The surface construction of this injection locations will be include a surface casing that will be grouted into bedrock.

2.2 DRILLING ACTIVITIES

The borings will be advanced using a drilling rig equipped with hollow stem augers. Once bedrock is encountered, and rock coring with wash rotary will be utilized to total depth. During drilling, The following information will be recorded:

(1.) Rock Quality Designation (RQD);
(2.) Fracture density and fracture orientation; and
(3.) Bit drop and sudden gains or losses in water.

The borings will be logged by a qualified geologist.

Once total depth has been reached, downhole geophysical logs will be obtained from each of the four boreholes and the injection well. The logs will include natural gamma, Acoustic Televiewer for fractures and nuclear density.

Once the downhole geophysical logging has been completed, each open borehole will be utilized for groundwater elevation determination and dye test monitoring as discussed in a separate Work Plan.

Following the completion of field activities, a surveyor will determine the positions of all boring locations. All boring locations will be surveyed horizontally to the nearest 0.1 foot and tied to the State Plane Coordinate System. The ground surface reference elevation will be measured to the nearest 0.1 foot relative to mean sea level (MSL).

3.0 DOWNHOLE GEOPHYSICAL LOGGING

Downhole geophysical logs will be obtained from each of the boreholes. The logs will include ntural gamma, Acoustic Televiewer for fractures and nuclear density. It is anticipated that 4" PVC pipe will be placed in the borehole to the depth that bedrock is encountered, and the borehole logs will be run inside this pipe within the overburden to avoid the borehole bridging.

The Acoustic Televiewer tool takes an oriented "picture" of the borehole using high-resolution sound waves. This acoustic picture is displayed in both amplitude and travel time. This information is used to detect fractures, bedding plane orientation, and other borehole anomalies. Analysis includes fracture dip and strike determination and classification of anomalies, if any.

The nuclear density testing provides formation density by determining the density of electrons in the formation. Gamma rays emitted by the source experience Compton scattering, which involves the transfer of energy from gamma rays to the electrons in the formation via elastic collision. The number of scattered gamma rays that reach the detector is directly related to the number of electrons in the formation, which in turn is related to bulk density. Density logs typically display a gradual increase with depth due to compaction.

3.1 AQUIFER TESTING

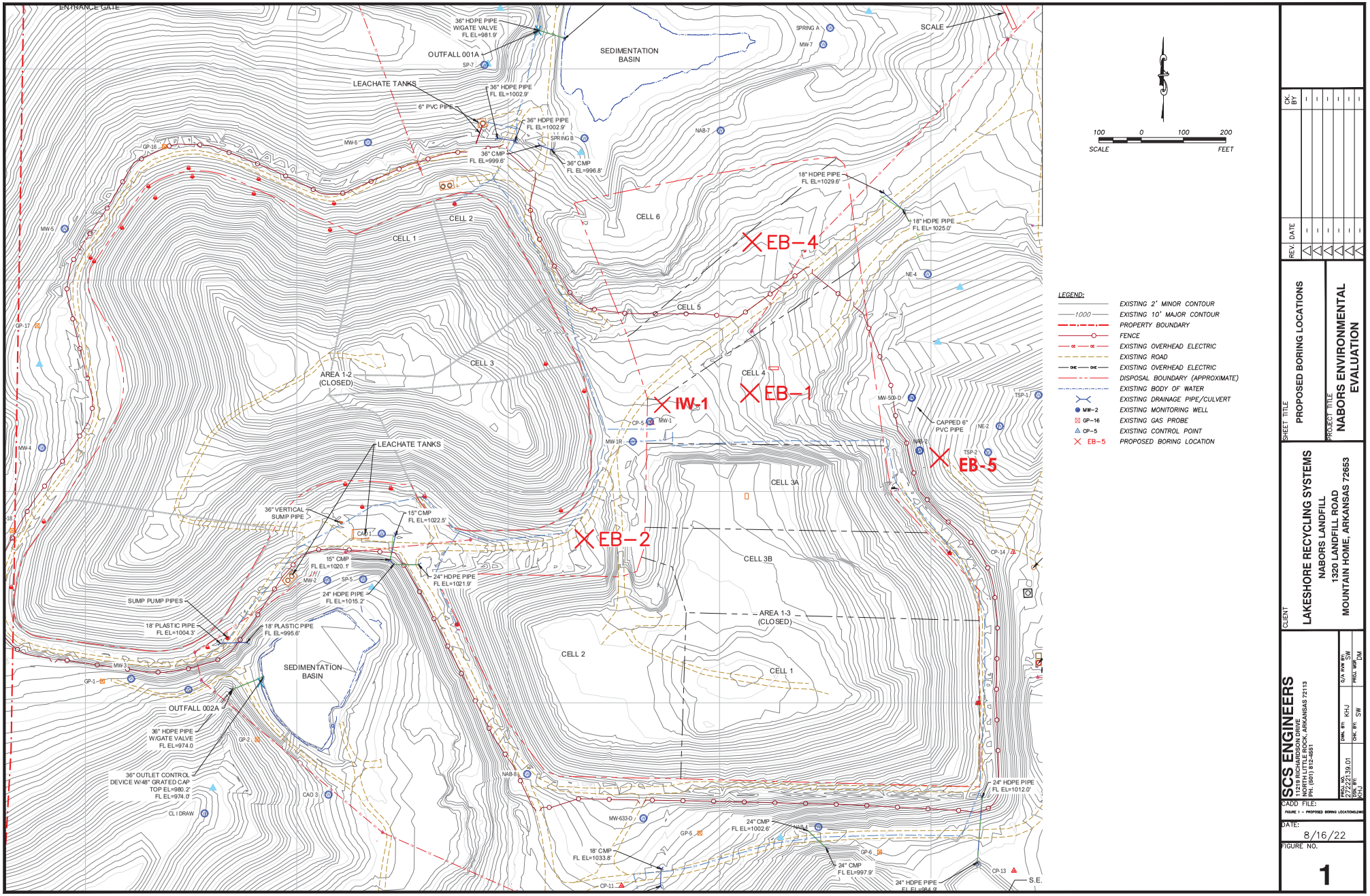
Packer testing will be conducted to measure the permeability of sections of the boreholes. The first phase of the process will involve geophysical logging and flow profiling of the boreholes as discussed in the Section 2.4 of this Work Plan. Detailed borehole logging is essential in visually identifying fractures and possible water producing zones. This information will then be used to select isolation points for a series of packer tests.

This information aids in identifying the various water producing zones and their correlation to the geology across the site. This, in turn, helps to determine the necessary course of action for resolving potential groundwater issues. Monitoring water levels in nearby wells while pumping packed intervals can also identify permeable intervals within the aquifer. Information from these packer tests can be used to properly place the future location of monitoring wells.

4.0 RESULTS

This a voluntary investigation on the part of LRS being performed during a 90-day Due Diligence period prior to the purchase of the NABORS facility from the Ozark Mountain Solid Waste District. However, as previously stated, DEQ's input is welcome and LRS will share results with DEQ as they become available. This study should accelerate future permitting efforts and the approval process to be undertaken at a future date.

Figures



REV.	DATE	CK BY

SHEET TITLE
PROPOSED BORING LOCATIONS

PROJECT TITLE
NABORS ENVIRONMENTAL EVALUATION

CLIENT
LAKESHORE RECYCLING SYSTEMS
NABORS LANDFILL
1320 LANDFILL ROAD
MOUNTAIN HOME, ARKANSAS 72653

SCS ENGINEERS
11219 RICHARDSON DRIVE
NORTH LITTLE ROCK, ARKANSAS 72113
PH. (501) 812-4851

PROJ. NO. 27213139.01
DSN. BY: KHJ
DWN. BY: KHJ
CHK. BY: SW
QA/QC BY: SW
PROJ. MGR: DM

CADD FILE:
FIGURE 1 – PROPOSED BORING LOCATIONS.DWG

DATE:
8/16/22

FIGURE NO.
1

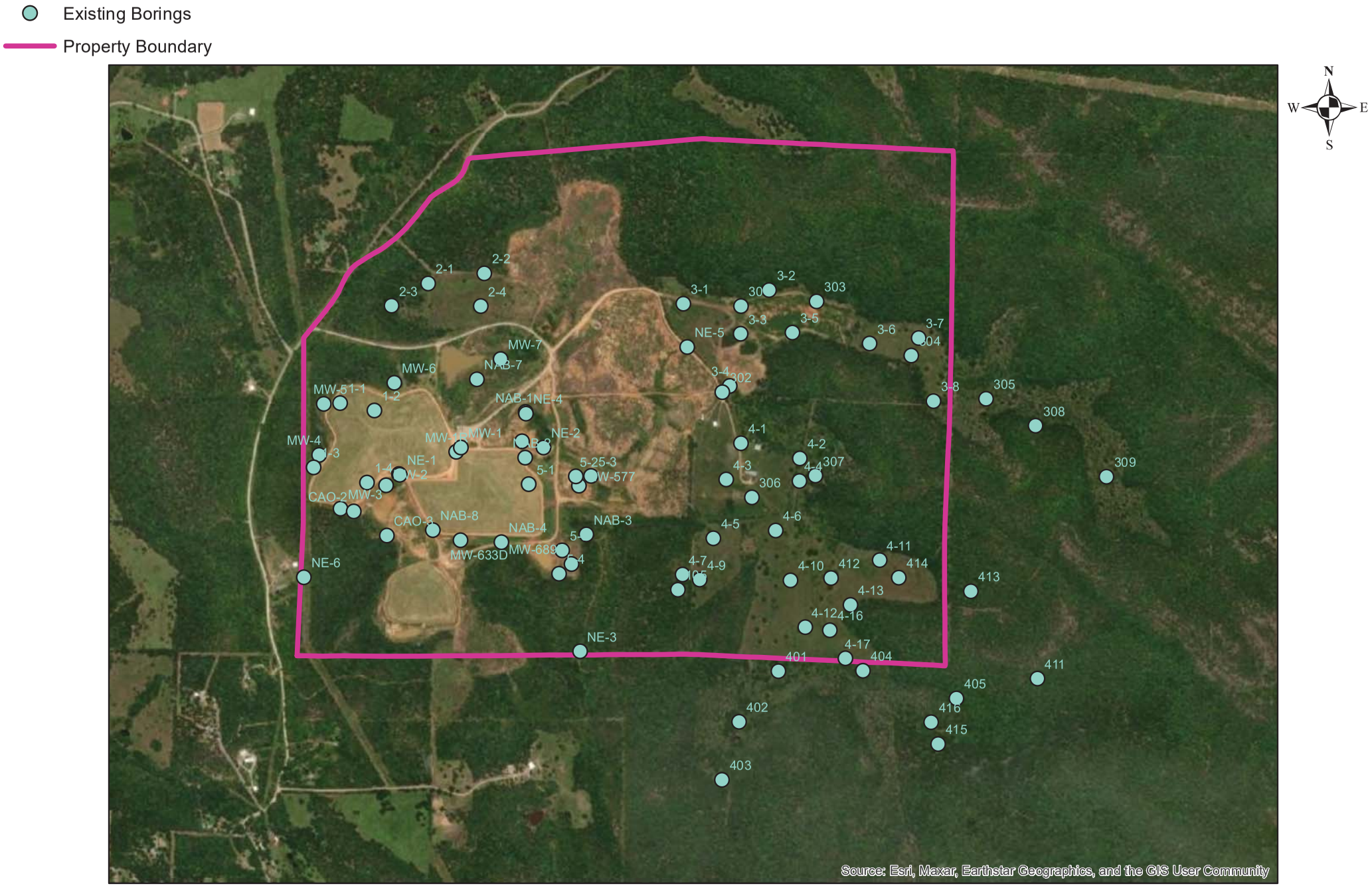

Legend
Existing Borings
Property Boundary
N
W
E
S
2-1
2-2
2-3
2-4
3-1
3-2
303
3-3
3-5
3-6
3-7
NE-5
MW-7
MW-6
NAB-7
MW-51-1
1-2
NAB-1
NE-4
3-4
302
3-8
305
308
MW-4
MW-1
NE-2
4-1
4-2
NE-1
1-4
5-1
5-25-3
4-3
307
309
306
CAO-2
MW-3
CAO-3
NAB-8
NAB-4
NAB-3
4-5
4-6
MW-633D
4-11
NE-6
4-7
4-9
4-10
412
414
413
4-13
4-12
4-16
NE-3
4-17
401
404
411
405
402
416
415
403
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
580
290
0
580 Meters

FIGURE 2