NM1 - ___30____

BORING PLAN

Jan. 2013

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

January 29, 2013

Mark J. Larson
Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701

RE: Hydrogeologic Investigation Boring Plan
Permit NM1 – 030: Commercial Surface Waste Management Facility
R360 Artesia, LLC – R360 Artesia, LLC Landfarm
Facility Location: Unit A of Section 7, Township 17 South, Range 32 East NMPM
Lea County, New Mexico

Dear Mr. Larson:

The Oil Conservation Division (OCD) has received Larson & Associates, Inc.'s boring plan proposal, dated January 29, 2013 and submitted on the behalf of R360 Artesia, LLC. The plan proposes to investigate and characterize the extent of a shallow water-bearing zone in order to determine the proper placement of waste can within the existing landfarm cells and to determine the extent of documented vadose zone contamination for the development of a release response action plan pursuant to 19.15.36.16.E NMAC for the existing above–referenced OCD permitted commercial surface waste management landfarm facility. OCD has completed the review and determined that the proposal is adequate to proceed with the site investigation.

OCD agrees that the proposed sample/boring/monitoring well locations appear adequate. However, if the hydrogeologic conditions cannot be determined, additional borings or monitoring wells may be needed. It should be understood that if a monitoring well is constructed, it shall be bailed until fully developed.

The OCD appreciates your cooperation in providing a boring plan for review, in order to determine appropriate waste management operations and to address issues associated with the documented vadose zone contamination. If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Brad A. Jones
Environmental Engineer

BAJ/baj

Cc: OCD District I Office, Hobbs
Wayne Crawley, R360 Environmental Solutions, Inc., Houston, TX

Jones, Brad A., EMNRD

From: Jones, Brad A., EMNRD
Sent: Tuesday, January 29, 2013 5:25 PM
To: 'Mark Larson'
Cc: Wayne Crawley; Zach Davis
Subject: RE: R360 Artesia LLC Landfarm Groundwater Delineation Plan, January 29, 2013
Attachments: 2013 0129 R360 Artesia LLC Landfarm Boring Plan approval.pdf

Mark,

Please mail OCD a hardcopy of the boring plan for our records and as an official submittal. Also, please see the attached… it is a copy of your approval. Hardcopies have been placed in the mail. If you have any questions regarding this matter, please do not hesitate to contact me.

Brad

Brad A. Jones
Environmental Engineer
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505
E-mail: brad.a.jones@state.nm.us
Office: (505) 476-3487
Fax: (505) 476-3462

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Tuesday, January 29, 2013 11:36 AM
To: Jones, Brad A., EMNRD
Cc: Wayne Crawley; Zach Davis
Subject: Re: R360 Artesia LLC Landfarm Groundwater Delineation Plan, January 29, 2013

Brad,
Please find the revised plan attached. The earlier version (January 22, 2013) referred Figure 5 for the soil stockpile area. I decided at the last moment to present the soil stack pile area on Figure 4, rather than create another drawing, but did not change the figure numbering in the Waste Management Plan. THe attached document correctly references Figure 4 in the Waste Management Plan (Appendix B). Please contact me if you have questions.
Mark

GROUNDWATER DELINEATION WORK PLAN
R360 ARTESIA LLC LANDFARM
Permit NM-01-30-0
Lea County, New Mexico

LAI Project No. 11-0109-04

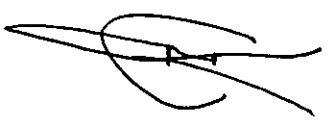
January 29, 2013

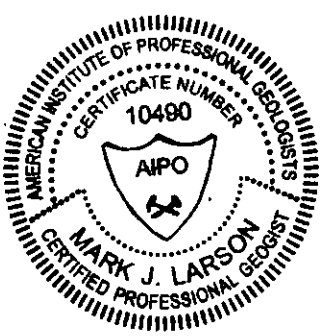
Prepared for:

R360 Environmental Solutions, Inc.
Greenspoint Plaza 4
16945 Northchase Drive, Suite 2200
Houston, TX 77060

Prepared by:

Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701





Mark J. Larson, P.G.
Certified Professional Geologist No. 10490

Table of Contents

List of Figures

List of Appendices

1.0 1NTRODUCTION

This document is submitted to the New Mexico Oil Conservation Division (OCD) on behalf of R360 Artesia LLC, a wholly owned subsidiary of R360 Environmental Solutions, Inc., for delineation of shallow groundwater at the R360 Artesia LLC Landfarm (Facility). The Facility is located in Unit A (NE/4, NE/4), Section 7, Township 17 South, Range 32 East, in Lea County, New Mexico. The geodetic position is 32° 51' 171" north and 103° 47' 56.9" west. The Facility is permitted as a commercial landfarm by the OCD (NM1-30-0) and uses 6 cells (Cell #1 through Cell #6) for surface remediation of soil and drill cuttings contaminated predominantly by petroleum hydrocarbons. Figure 1 a topographic map. Figure 1a presents a detailed topographic map. Figure 2 presents an aerial photograph. Figure 2a presents a detailed aerial photograph.

1.1 Objective

The objective of this work plan is to determine the extent of the shallow groundwater in order to determine where waste can be placed within the landfarm cells. Another objective is to determine the vertical extent of documented vadose zone contamination pursuant to 19.15.36.15.E NMAC.

1.2 Previous Investigations

1.2.1 Safety & Environmental Solutions, Inc.

Safety & Environmental Solutions, Inc. (SESI) installed 3 monitoring wells (MW-1, MW-2 and MW-3). Well MW-1 was drilled near the entrance at the east side of the Facility. The well was drilled with hollowstem augers to an elevation of approximately 3,990 feet above MSL or about 35 feet below ground surface (bgs). Clay was encountered at an elevation of approximately 4,000 feet above MSL or about 25 feet bgs, therefore, the boring was plugged back with native backfill (clay) to approximately 25 feet bgs before installing the well. The well is constructed with 2-inch schedule 40 PVC and screened in sandy silt, silty sand and sand between approximately 4,010 and 4,000 feet above MSL or between approximately 15 and 25 feet bgs. Well MW-1 is dry.

Well MW-2 was drilled on May 27, 2005, near the south side of the Facility between cell #5 and cell #6. The boring was drilled with hollowstem augers to approximately 3,964 feet above MSL or about 40 bgs. Clay was encountered at approximately 3,977 feet above MSL or about 27 feet bgs. The boring was plugged back with bentonite powder to about 27 feet bgs before installing the well. Well MW-2 is constructed with 2-inch schedule 40 PVC and is screened between approximately 3,989 and 3,979 feet above MSL. The well is screened in gravelly sand, sand, clayey sand and gravelly silty and sandy clay between about 15 and 25 feet bgs. Groundwater occurs in MW-2 at approximately 3,982.5 feet above MSL or about 21.5 feet bgs.

On December 13, 2007, SESI supervised drilling monitoring well MW-3 near the northwest corner of the property. The boring was advanced with continuous air coring to an elevation of approximately 3,851 feet above MSL or about 160 feet bgs. The boring was plugged back with bentonite to approximately 3,871 feet above MSL or about 140 feet bgs before installing the well. Well MW-3 is constructed with 2-inch schedule 40 PVC and is screened in clay and claystone (redbeds) between approximately 3,882 and 3,872 feet above MSL or from about 129 to 139 feet bgs. Well MW-3 is dry. The investigation results were reported to the OCD in January 2008 in a report titled, "*Groundwater Investigation Report, Artesia Aeration, Section 7, Township 17 South, Range 32 East, Lea County, New Mexico*". Figure 3 presents the SESI well locations.

1.2.2 Artesia Aeration, LLC

During February and March 2008, the previous facility owner, Artesia Aeration, LLC, excavated 12 exploratory trenches to delineate the shallow groundwater observed at monitoring well MW-2. The trenches were excavated between about 3962 and 3972 feet above MSL. Trenches 1, 2, 3, 4 and 7 encountered moist soil at approximately 37 feet and were deepened to approximately 40 feet. Approximately 1.5 feet of water accumulated in trenches 1, 2, 3; 4 and 7. Approximately 1.5 feet of water accumulated in trench 8 after about 2 days. The groundwater elevation in trenches 1, 2, 3, 4, 7 and 8 ranged between approximately 3963 and 3967 feet above MSL. Trenches 5, 9, 10, 11 and 12 were dry. Figure 3a presents the trench locations.

1.2.3 Daniel B Stephens & Associates, Inc.

Between November 3 and 5, 2008, personnel from Daniel B. Stephens & Associates, Inc. (DBS&A) drilled 15 borings (W90, W40, W20, N20, NE20, S20, E20, S65/W25, S40, E40, S140, S80, SE20, SE40 and E80) to delineate the shallow groundwater in the vicinity of MW-2. Three (3) borings (W40, S40 and E40) were completed as monitoring wells (MW-W40, MW-S40 and MW-E40). Monitoring wells MW-S40 and MW-E40 are located about 40 feet southwest and southeast of MW-2, respectively. Monitoring well MW-W40 is located approximately 40 feet north of MW-2. The borings were advanced using direct push methods between approximately 22 (S140) and 32 (SW20) feet bgs. The total depth (TD) elevations ranged from about 3971 and 3980 feet above MSL. Groundwater was observed in MW-W40, MW-E40 and MW-S40 at 17.87, 20.80 and 20.88 feet bgs, respectively or between about 3,982 and 3,985 feet above MSL. DBS&A concluded that groundwater flow was to the south at a gradient of approximately 0.036 feet per foot. The investigation failed to determine the limits for the shallow groundwater beneath the landfarm cells. The investigation results were presented to the OCD on January 26, 2009 in a report titled, *"Groundwater Investigation Report, Artesia Aeration, Lea County, New Mexico"*. Figure 3b presents the DBS&A soil boring and monitoring well locations.

1.2.4 AECOM, Inc.

On February 15, 2011, AECOM, Inc. performed due diligence on behalf of R360 and installed a boring (TMW-1) near the southwest corner of Cell #5. The boring was located about 20 feet north and northwest of MW-2 and was advanced to a depth of approximately 26 feet bgs or approximately 3,979 feet above MSL. Groundwater was not observed and the boring was plugged. Figure 3c presents the boring location. Appendix A presents the lithologic log for TMW-1.

2.0 SCOPE OF WORK

2.1 Soil Borings

R360 proposes to install 13 borings (SB-1 through SB-13) to delineate the shallow groundwater. Figure 4 presents the boring locations. The borings will be drilled to an elevation of at least 3960 feet above MSL or 50 feet bgs if groundwater is not encountered. Drilling will be suspended overnight if moisture or groundwater is observed in soil samples before TD is reached. Figure 4 presents the proposed soil boring locations. The proposed boring depths and TD elevations are shown below:

Boring	Ground Elev. (Feet AMSL)	Boring Depth (Feet BGS)	TD Elev. (Feet AMSL)
SB-1	4001	50	3951
SB-2	4002	50	3952
SB-3	4006	50	3956
SB-4	4009	50	3959
SB-5	4004	50	3954
SB-6	4009	50	3959
SB-7	4006	50	3956
SB-8	4005	50	3955
SB-9	4008	50	3958
SB-10	4008	50	3958
SB-11	4012	52	3960
SB-12	4008	50	3958
SB-13	4013	53	3960

It will be necessary to scrape contaminated soil from each location to prevent vertical transport of contaminated soil into the vadose zone and shallow groundwater during drilling. A tractor with front bucket will be used to remove (scrape) contaminated soil from each location prior to mobilizing the drilling rig. The contaminated soil will be managed according to the waste management plan presented in Appendix B.

Drilling will be performed using hollowstem augers and a 5-foot long continuous sampler. Drilling will switch to continuous air rotary rig using a 5-foot long wire line core barrel and overshot if auger refusal is obtained. The augers will remain in place during air core drilling to prevent borehole sloughing. No water will be introduced into the borings during the drilling process. The drill rig will be cleaned and decontaminated prior to entering the Facility. Drill cuttings will be removed from the borings around the auger flights or flushed using compressed air. The soil cores will be described for lithology according to the Unified Soil Classification System (USCS) and soil samples will be collected for laboratory analysis as discussed in section 2.2. Drill cuttings will be managed according to the waste management plan presented in Appendix B.

The following equipment will be used:

- Tractor with front loading bucket;
- Hollowstem auger rig equipped with continuous sampler and/or air rotary rig equipped with 5-foot long continuous sampler or core barrel with overshot;
- High-pressure hot-water cleaner (steam cleaner);
- Support truck;
- Equipment trailer.

The New Mexico One Call (811) center will be notified to locate underground utilities. A hand augured may be used to auger to a depth of 5 feet bgs, if necessary, to confirm the presence of underground utilities.

The following generalized steps will be used for drilling;

- Scrape contaminated soil from location and manage according to waste management plan presented in Appendix B;
- Mobilize drilling rig to the location;
- Conduct daily safety meeting, and rig up drilling equipment;
- Hand auger to 5' to locate utilities, if necessary;
- Hollowstem auger with continuous sampling at until competent core material is encountered;
- Hollowstem auger will serve as surface casing for air (HQ3) coring operations;
- Air will be used as cutting return and bit lubrication;
- Once coring has commenced samples will be retrieved every 5 feet with an inner barrel and overshot;
- Core will be placed in HQ core boxes as core is recovered;
- Borings not completed as monitoring wells will remain open until completion of the investigation at which time the borings will be plugged to surface with a cement and bentonite slurry or reamed and completed as a monitoring well if groundwater is present.
- Mobilize to additional sites or complete demobilization;

Note: Not all locations may be drilled if the extent of the shallow groundwater is determined by fewer borings shown on Figure 4. Drilling will be suspended overnight to allow groundwater to accumulate in the borehole whenever dampness or groundwater is observed in the core samples. Borings not completed as monitoring wells will remain open until the investigation is complete at which time the borings will be plugged to surface with cement and bentonite grout. If groundwater is observed the borings will be completed as monitoring wells according to procedures in section 2.3.

2.2 Soil Samples and Analysis

Contamination has been documented from soil samples collected from vadose zone at the landfarm, therefore, R360 will collect and analyze soil samples to determine the vertical extent of vadose zone contamination pursuant to 19.15.36.15.E (5) NMAC. Soil samples will be collected from 4 borings in Cell #5 (SB-3, SB-4, B-6 and SB-10) and 4 borings in Cell #6 (SB-1, SB-2, SB-5 and SB-9). Soil samples will be collected from the soil cores the following intervals: 2 to 3, 5 to 6, 8 to 9 and 11 to 12 feet below the base of the cell depending on core recovery. The samples will be collected in clean 4-ounce glass sample jars that will be filled to near zero headspace, labeled, chilled in an ice chest and delivered under chain of custody control to a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory. The laboratory will analyze the samples for benzene, toluene, ethylbenzene, xylenes (BTEX) by method SW-8021B, total petroleum hydrocarbons (TPH) by method 418.1, chloride by method E300 and constituents listed in Subsections A and B of 20.6.2.3013 NMAC, excluding uranium and radioactivity (radium-226 and radium-228). Figure 4b presents the borings for soil sample collection. The 20.6.2.3013 NMAC constituent list is presented in Appendix C.

2.3 Monitoring Wells

Monitoring wells will be installed if groundwater is observed in the borings. The drilling contractor will follow ASTM D5092 Standard Practice for Design and Installation of Groundwater Monitoring Wells when installing unconfined and confined monitoring wells.

The following procedures will be used for installing monitoring wells in an unconfined aquifer:

- Measure static groundwater level in boring using an electronic water level meter;
- Ream boring to a minimum diameter of 5 inches and advanced boring approximately 7 feet below the static groundwater level unless a lower confining layer is encountered at which point drilling will terminate;
- Install monitoring well using 2-inch diameter flush thread schedule 40 PVC casing and screen;
- A 10-foot section of 0.010 inch factory slotted screen will be installed in the borehole with the bottom of the screen positioned near the bottom of the boring;
- Graded silica sand will be placed around the screen to approximately 2 feet above the screen;
- A layer of bentonite chips approximately 3 feet thick will be placed above the sand and hydrated with potable water;
- The annulus above the bentonite chips will be filled with a slurry of cement and bentonite grout to about 1 foot below ground surface;
- The annulus above the cement and bentonite grout will be filled with cement to approximately 1 foot below ground surface;
- The remaining 1 foot of annulus will be filled with aggregate cement;

- A pad measuring approximately 3 x 3 feet will be constructed above ground around the 2 inch PVC casing stickup extending between 2 and 3 feet above ground surface;
- The pad will be filled with cement and sloped for drainage;
- A locking steel sleeve will be placed over the 2 inch PVC casing stickup and will extend into cement about 1 foot;
- The well will be secured with a lock.

Appendix D presents a typical unconfined monitoring well construction diagram.

The following procedures will used for installing monitoring wells in a confined aquifer:

- Should confined groundwater be encountered the borehole will be advanced approximately 12 feet below the base of the upper confining layer, as dictated by field conditions;
- The well will be constructed with flush thread 2-inch diameter schedule 40 PVC casing and screen;
- A 10-foot section of 0.010 inch factory slotted screen will be installed in the borehole with the top of the screen approximately 2 feet below the base of the upper confining layer , as dictated by field conditions;
- Graded silica sand will be placed around the well screen through a tremmie pipe to approximately 1 feet above the screen;
- A layer of time-release bentonite chips will be placed above the sand and across the confining layer;
- The annulus above the bentonite chips will be filled through a tremmie pipe with a slurry of cement and bentonite grout to about 1 foot below ground surface;
- The annulus above the cement and bentonite grout will be filled with aggregate cement to ground surface;
- A pad measuring approximately 3 x 3 feet will be constructed above ground around the 2 inch PVC casing stickup between approximately 2 and 3 feet in height;
- The pad will be filled with cement and sloped for drainage;
- A locking steel sleeve will be placed over the 2 inch PVC casing stickup and will extend into the aggregate cement approximately 1 foot below ground surface;
- The well will be secured with a lock.

Appendix D presents a typical confined monitoring well construction diagram.

The following procedures will occur after installing the monitoring wells:

- The monitoring wells will be surveyed by a New Mexico licensed surveyor for top of casing and ground

elevation;

- The wells will be gauged for depth to static groundwater and total well depth prior to developing with an electric submersible or mechanical pump or hand bailed to remove fine grained material disturbed during the drilling process.

2.4 Groundwater Samples

Groundwater samples will be collected from the monitoring wells after the wells are developed to remove at least 3 casing volumes of groundwater prior to collecting groundwater samples, unless the well is purged dry. If a well is purged dry prior to removing 3 casing volumes of groundwater the well will be purged dry 3 times prior to collecting groundwater samples. The wells will be developed by manually bailing with disposable polyethylene bailers or pumped with electric or mechanical pump. Groundwater samples will be collected approximately 24 hours following development using low flow sampling methods. The samples will be collected in laboratory containers, preserved and shipped under chain of custody to a NELAP accredited laboratory. The laboratory will analyze the samples for cations (sodium, calcium, magnesium and potassium), anions (nitrate-N, chloride, sulfate and alkalinity), total dissolved solids (TDS) and constituents listed in Appendix C, excluding uranium and radioactivity (Radium-226 and Radium 228).

2.5 Schedule

Drilling activities for 13 boreholes will occur over approximately 10 days depending on subsurface and weather conditions. The delivery time for the final laboratory report is expected to be 45 days. The delivery time for the investigation report is estimated to be 45 following receipt of the final laboratory report. The total project duration is expected to be up to about 90 days or 3 months.

3.0 RESPONSIBLITIES

3.1 Drilling Contractor

The drilling contractor will be responsible for drilling the borings, collecting core samples and installing monitoring wells according to procedures identified above. The drilling contractor will be responsible for equipment decontamination.

3.2 Laboratory

A NELAP accredited laboratory will perform analysis of groundwater samples. Soil samples will be analyzed for BTEX by method SW-8021B, TPH) by method 418.1 chloride by method E300 and constituents listed in Appendix C, excluding uranium and radioactivity (radium-226 and radium-228). Groundwater samples will be analyzed for cations (sodium, calcium, magnesium and potassium), anions (nitrate-N, chloride, sulfate and alkalinity), total dissolved solids (TDS) and constituents listed in Appendix C, excluding uranium and radioactivity (Radium-226 and Radium 228).

3.3 LAI

LAI personnel will be responsible of project management, supervising drilling and well installation, describing and preserving core, collecting and preserving soil samples, well development, gauging and sampling monitoring wells, data interpretation and report preparation. LAI will also notify the New Mexico One Call Notification for utility locate.

4.0 NOTIFICATION

The following individuals will be notified at least 14 days prior to commencing drilling activities:

- Mr. Wayne Crawley – R360 Permian Basin LLC
- Mr. Brad Jones – NMOCD Santa Fe
- Mr. Geoffrey Leking – NMOCD District 1

5.0 SAFETY CONSIDERATIONS

Possible safety hazards that may be associated with the subsurface investigation involve heavy lifting, inclement and hazardous weather and terrain. Caution will be exercised to mitigate the risks posed by each of these hazards should they arise. Required personal protective equipment (PPE), at a minimum, will include work gloves, latex sampling gloves, hardhats, long-sleeved shirts, safety glasses, hearing protection, and steel-toed boots. The work will be conducted in accordance with R360 safety practices. All contractors will be responsible for adhering to these practices.

Figures

V:\PROJECTS\R360 Environmental\Artesia Aeration Landfarm\11-0109-01 Artesia Landfarm.dwg, 1/22/2013 10:48:54 AM

Figure 1 - Topographic Map

V:\PROJECTS\R360 Environmental\Artesia Aeration Landfarm\11-0109-01 Artesia Landfarm.dwg, 1/22/2013 11:25:10 AM

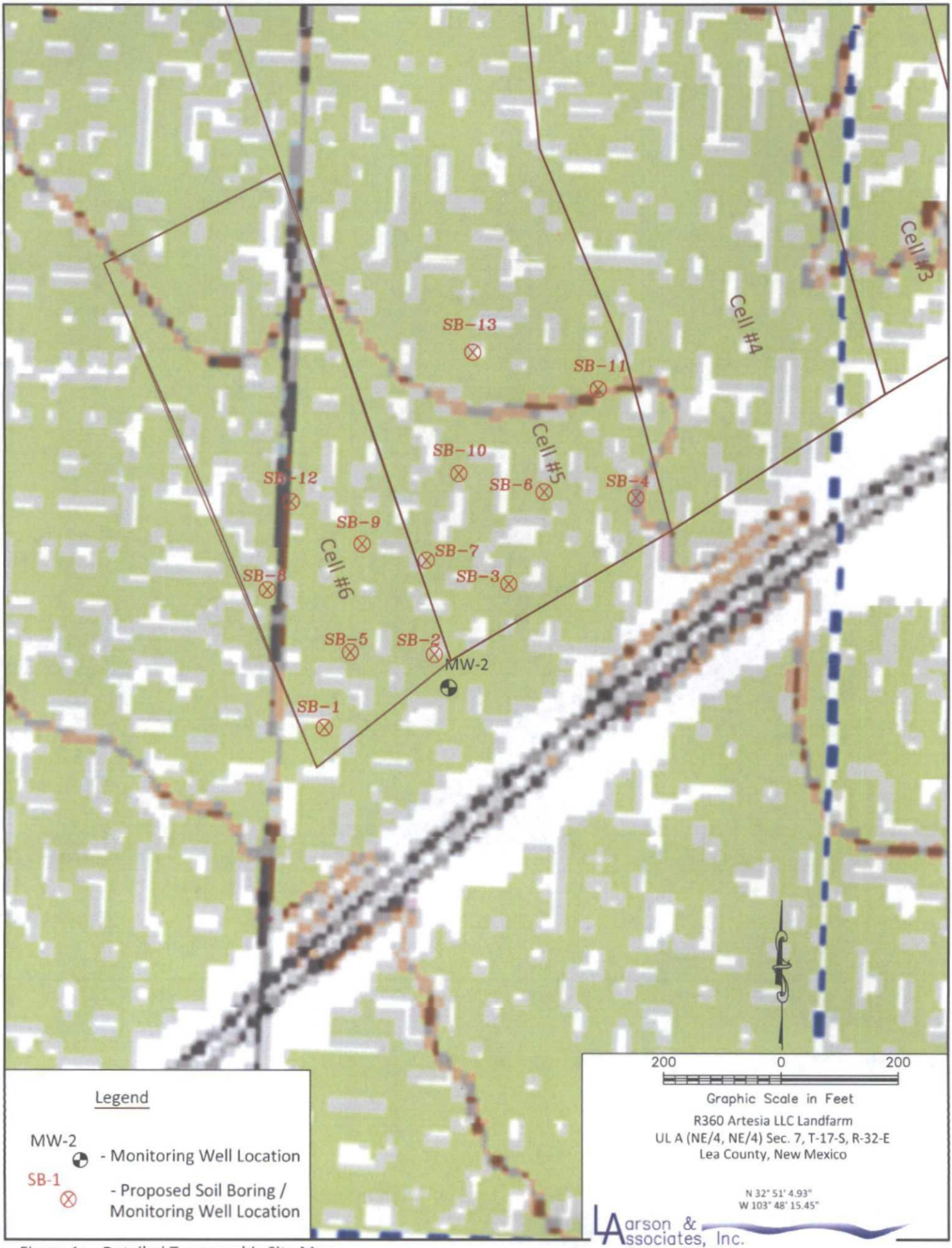


Figure 1a - Detailed Topographic Site Map

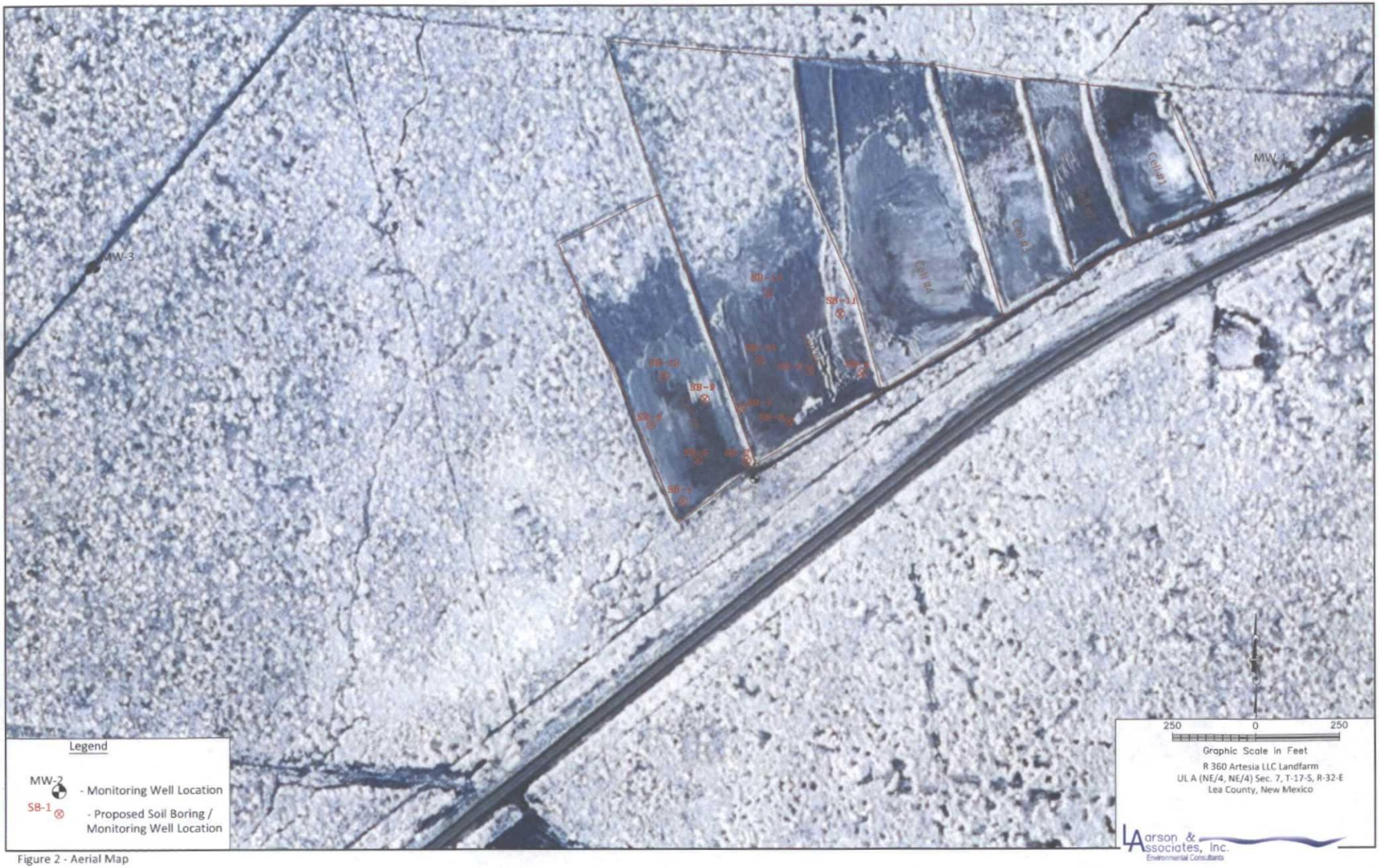


Figure 2 - Aerial Map

V:\PROJECTS\R360 Environmental\Artesia Aeration Landfarm\11-0109-01 Artesia Landfarm.dwg, 1/22/2013 11:34:46 AM

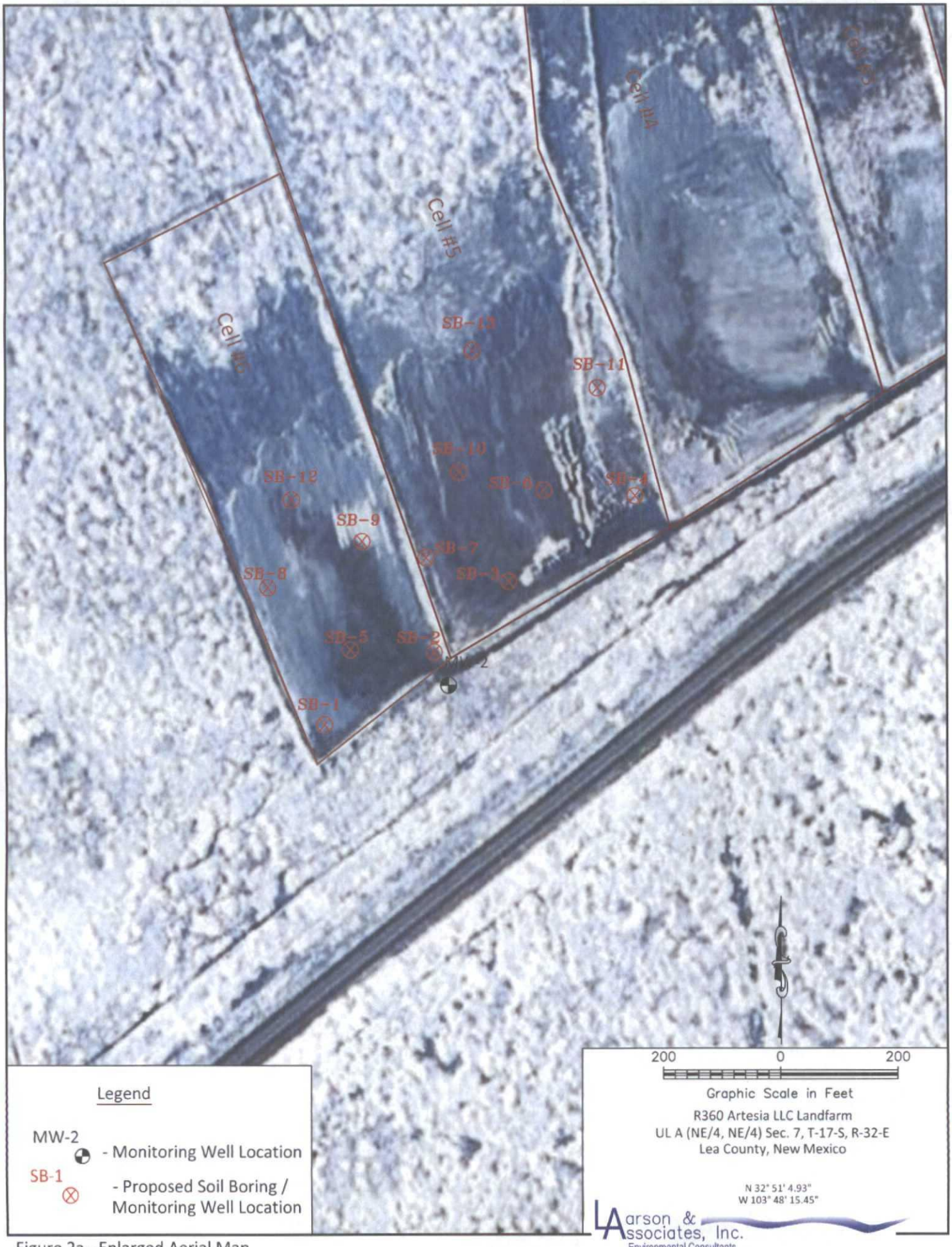


Figure 2a - Enlarged Aerial Map

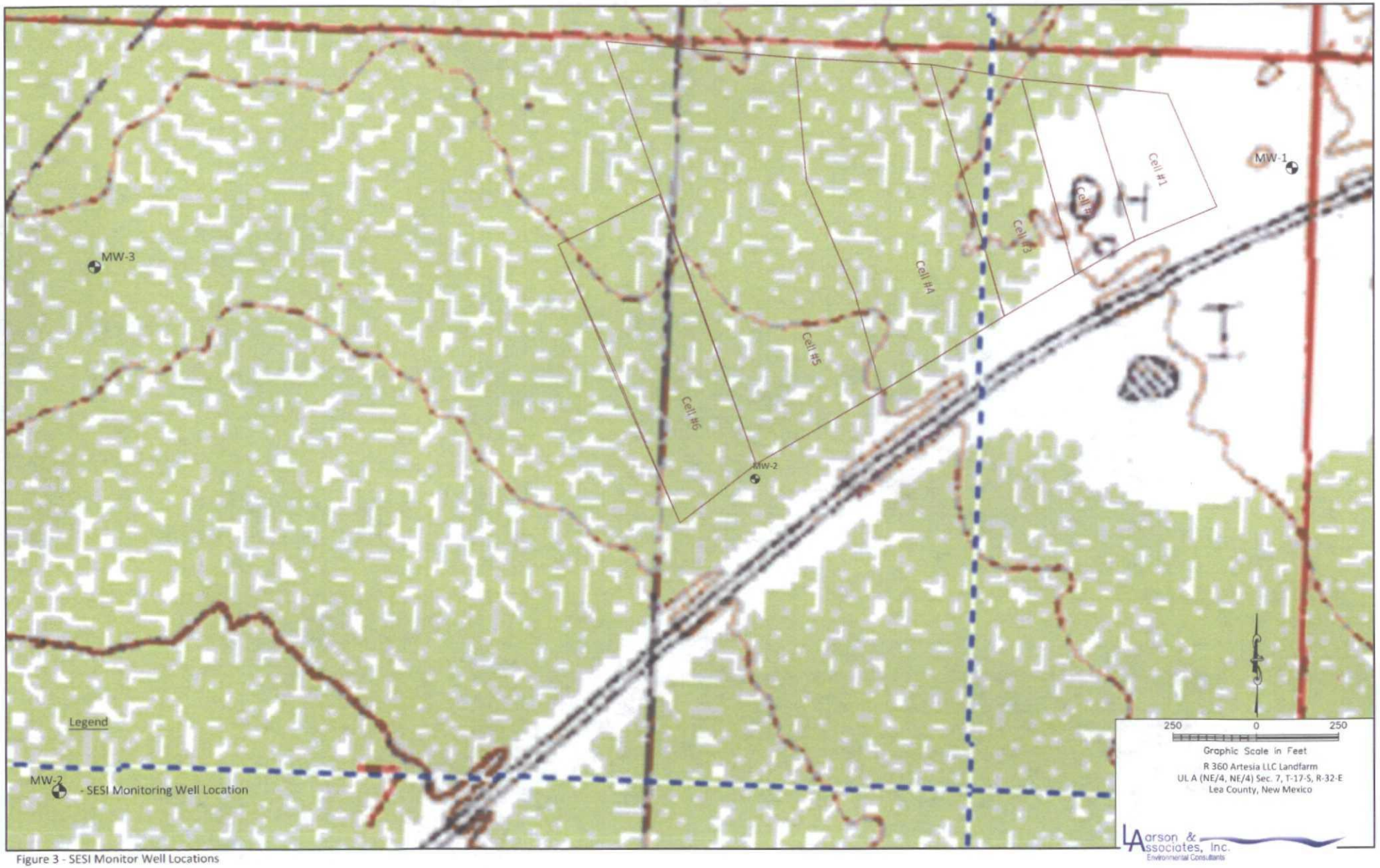


Figure 3 - SESI Monitor Well Locations

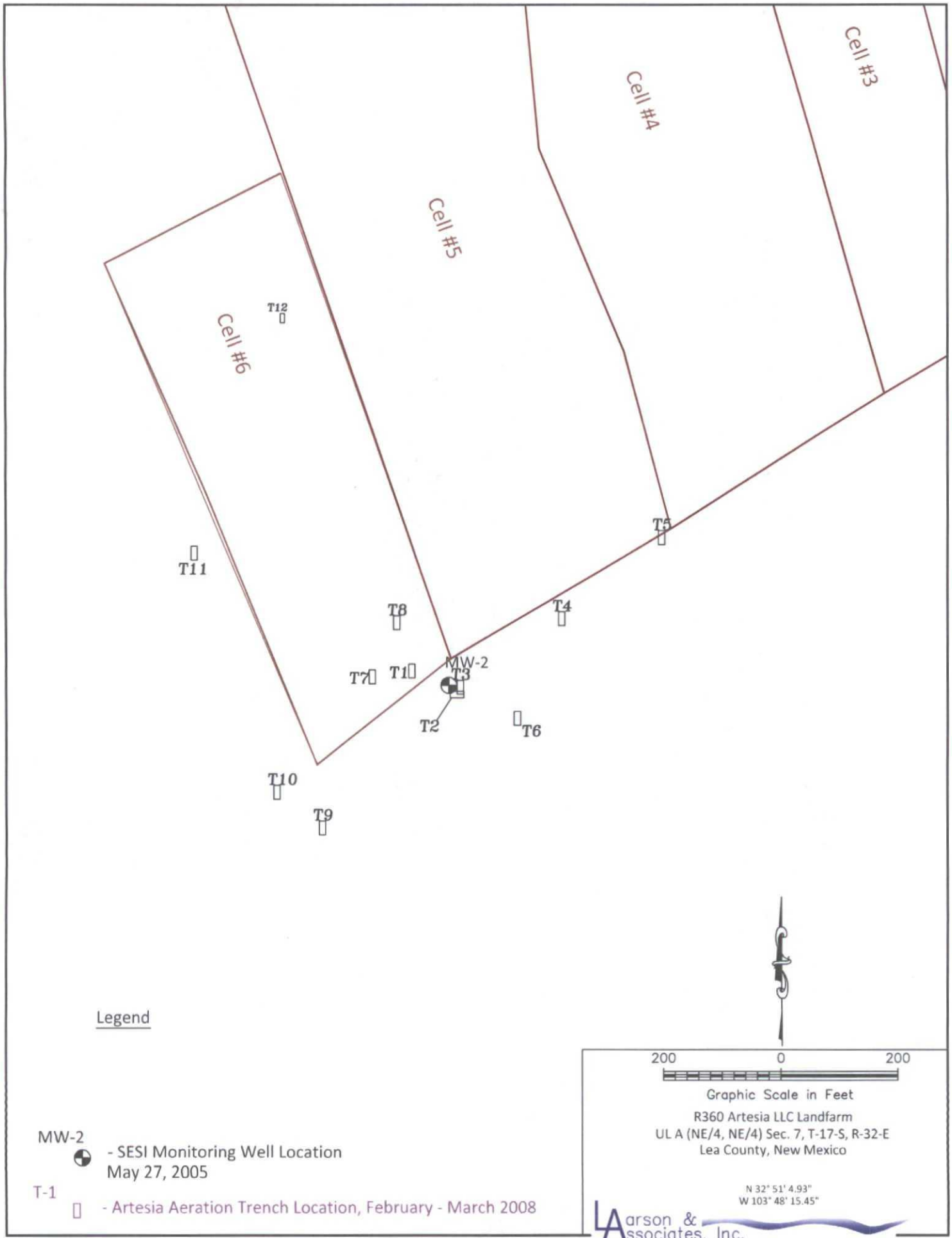


Figure 3a - Artesia Aeration, LLC. Trench Locations

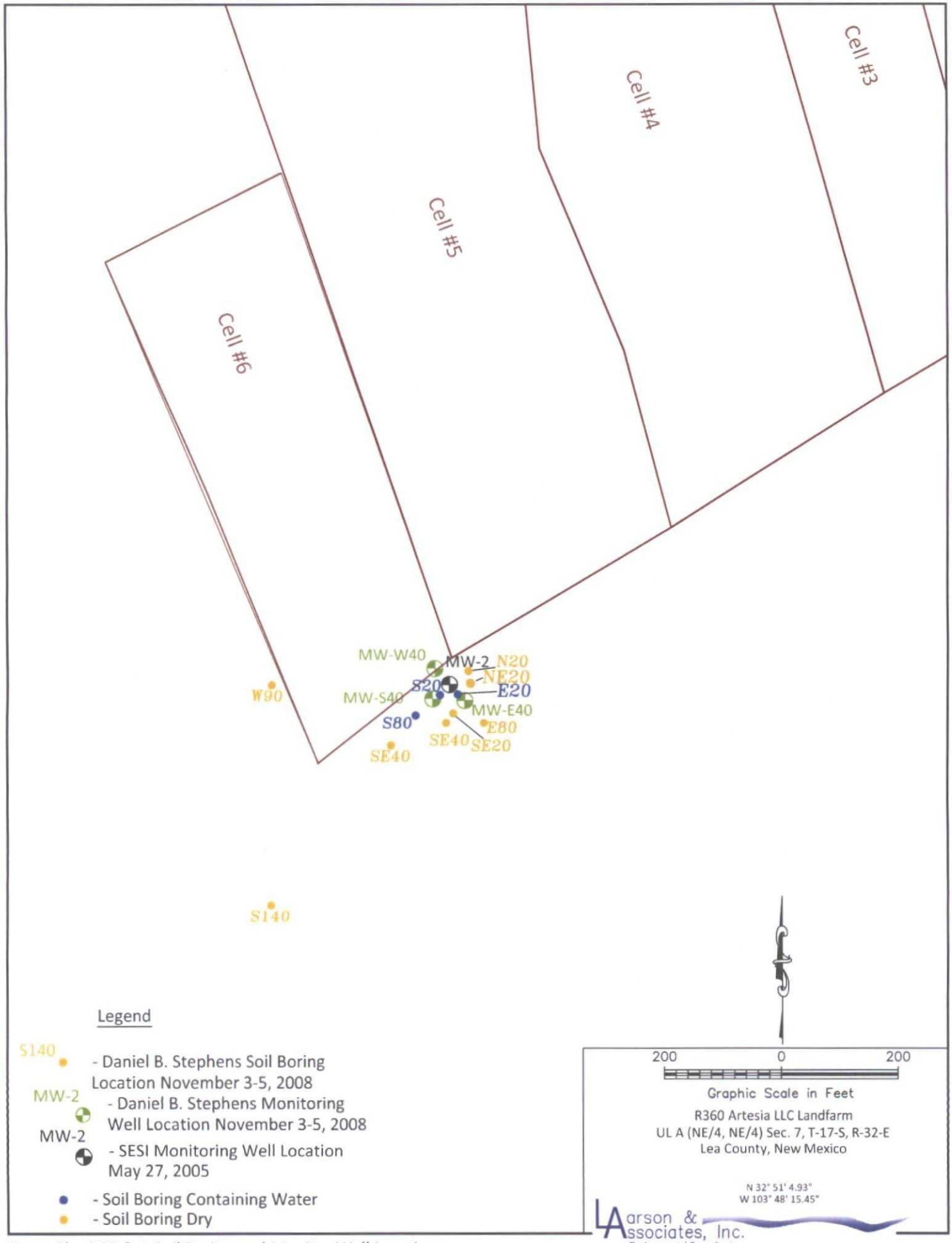


Figure 3b - DBS & A Soil Boring and Monitor Well Locations

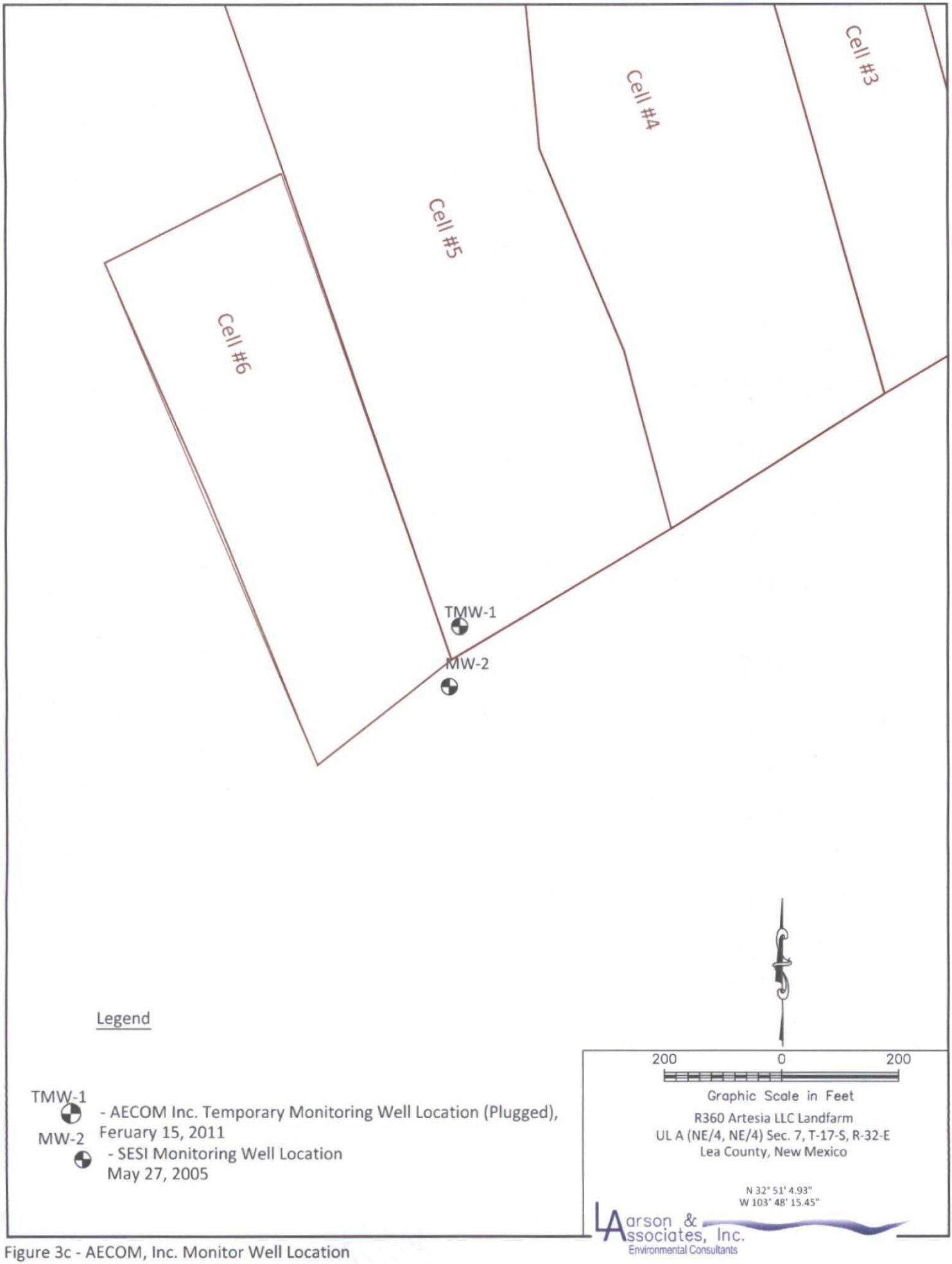


Figure 3c - AECOM, Inc. Monitor Well Location

Figure 4 - Proposed Soil Stockpile and Soil Boring / Monitor Well Locations

APPENDIX A

TMW-1 Lithologic Log

BORING NUMBER TMW-1

AECOM

CLIENT R360 Environmental Solutions Company
PROJECT NAME Artesia Aeration Facility
PROJECT NUMBER 60196502
PROJECT LOCATION Lea County, NM
DATE STARTED 2/15/11 COMPLETED 2/15/11
HOLE SIZE 2"
DRILLING CONTRACTOR Enviro-Drill Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY A. Franklund CHECKED BY W. Gilmore
NOTES Dry hole backfilled with bentonite. No PID screening or samples collect

DEPTH (ft)	SAMPLE INTERVAL	PID READING (PPM)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				(SP) SAND, brown, moist, well sorted, fine grained
5				(CL) CLAY, gray, moist, low plasticity, hard
10				(SP) SAND, light brown, moist, well sorted, fine grained
				(SC) CLAYEY SAND, light brown, moist, well sorted, fine grained
15				(SP) SAND, light brown, moist, well sorted, fine grained
				(SC) CLAYEY SAND, light brown, moist, well sorted, fine grained, with trace pebbles
20				- reddish brown, no pebbles
				(CL-ML) SILTY CLAY, reddish brown, low plasticity, hard
25				Bottom of borehole at 26.0 feet.

AECOM SOIL BORINGS - GINT STD US.GDT - 3/15/11 16:08 - J:\RCE SECTION\GINT\PROJECTS\ARTESIA AERATION FACILITY.GPJ

APPENDIX B

Waste Management Plan

Waste Management Plan

(January 29, 2013)

The purpose of this plan is to manage waste (i.e., contaminated soil and drill cuttings) during installation of monitoring wells in Cell #5 and Cell#6 at the R360 Artesia LLC Landfarm (Facility). The Facility uses 6 cells (Cell #1 through Cell #6) to treat soil and drill cutting contaminated predominantly with petroleum hydrocarbons. Previous investigations have determined that shallow groundwater at depths which conflict with New Mexico Oil Conservation Division (OCD) rule 19.15.36.13 A (3).

During well installation it will be necessary to remove contaminated soil placed in the landfarm cell for remediation and treatment to prevent contaminating the vadose zone and shallow groundwater during drilling. Prior to mobilizing the drilling rig the contaminated soil will be scraped from the area using the front loading bucket of a tractor. Soil will be scraped to expose native soil beneath at the base of the landfarm cell. The contaminated soil and drill cuttings from Cell #5 and Cell #6 will be temporarily stockpiled in an unused area in Cell #6 until the investigation is completed and a proper location for placement can be determined. A temporary berm approximately 12 inches in height will be constructed around the stockpile. Figure 4 presents the proposed soil stockpile area. Appendix E presents photographs of the soil stockpile area.

APPENDIX C

Soil and Groundwater Sample Constituent List

A. Human Health Standards-Ground water shall meet the standards of Subsection A and B of this section unless otherwise provided. If more than one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants, or the Human Health Standard of Subsection A of Section 20.6.2.3103 NMAC for each contaminant shall apply, whichever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

(1) Arsenic (As).....0.1 mg/l
(2) Barium (Ba).....1.0 mg/l
(3) Cadmium (Cd).....0.01 mg/l
(4) Chromium (Cr).....0.05 mg/l
(5) Cyanide (CN).....0.2 mg/l
(6) Fluoride (F).....1.6 mg/l
(7) Lead (Pb).....0.05 mg/l
(8) Total Mercury (Hg).....0.002 mg/l
(9) Nitrate (NO_3 as N).....10.0 mg/l
(10) Selenium (Se).....0.05 mg/l
(11) Silver (Ag).....0.05 mg/l
(12) Uranium (U).....0.03 mg/l
(13) Radioactivity: Combined Radium-226 & Radium-228.....30 pCi/l
(14) Benzene.....0.01 mg/l
(15) Polychlorinated biphenyls (PCB's).....0.001 mg/l
(16) Toluene.....0.75 mg/l
(17) Carbon Tetrachloride.....0.01 mg/l
(18) 1,2-dichloroethane (EDC).....0.01 mg/l
(19) 1,1-dichloroethylene (1,1-DCE).....0.005 mg/l
(20) 1,1,2,2-tetrachloroethylene (PCE).....0.02 mg/l
(21) 1,1,2-trichloroethylene (TCE).....0.1 mg/l
(22) ethylbenzene.....0.75 mg/l
(23) total xylenes.....0.62 mg/l
(24) methylene chloride.....0.1 mg/l
(25) chloroform.....0.1 mg/l
(26) 1,1-dichloroethane.....0.025 mg/l
(27) ethylene dibromide (EDB).....0.0001 mg/l
(28) 1,1,1-trichloroethane.....0.06 mg/l
(29) 1,1,2-trichloroethane.....0.01 mg/l
(30) 1,1,2,2-tetrachloroethane.....0.01 mg/l
(31) vinyl chloride.....0.001 mg/l
(32) PAHs: total naphthalene plus monomethylnaphthalenes.....0.03 mg/l
(33) benzo-a-pyrene.....0.0007 mg/l

B. Other Standards for Domestic Water Supply

(1) Chloride (Cl).....250.0 mg/l
(2) Copper (Cu).....1.0 mg/l
(3) Iron (Fe).....1.0 mg/l
(4) Manganese (Mn).....0.2 mg/l
(6) Phenols.....0.005 mg/l
(7) Sulfate (SO_4).....600.0 mg/l
(8) Total Dissolved Solids (TDS).....1000.0 mg/l
(9) Zinc (Zn).....10.0 mg/l
(10) pH.....between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

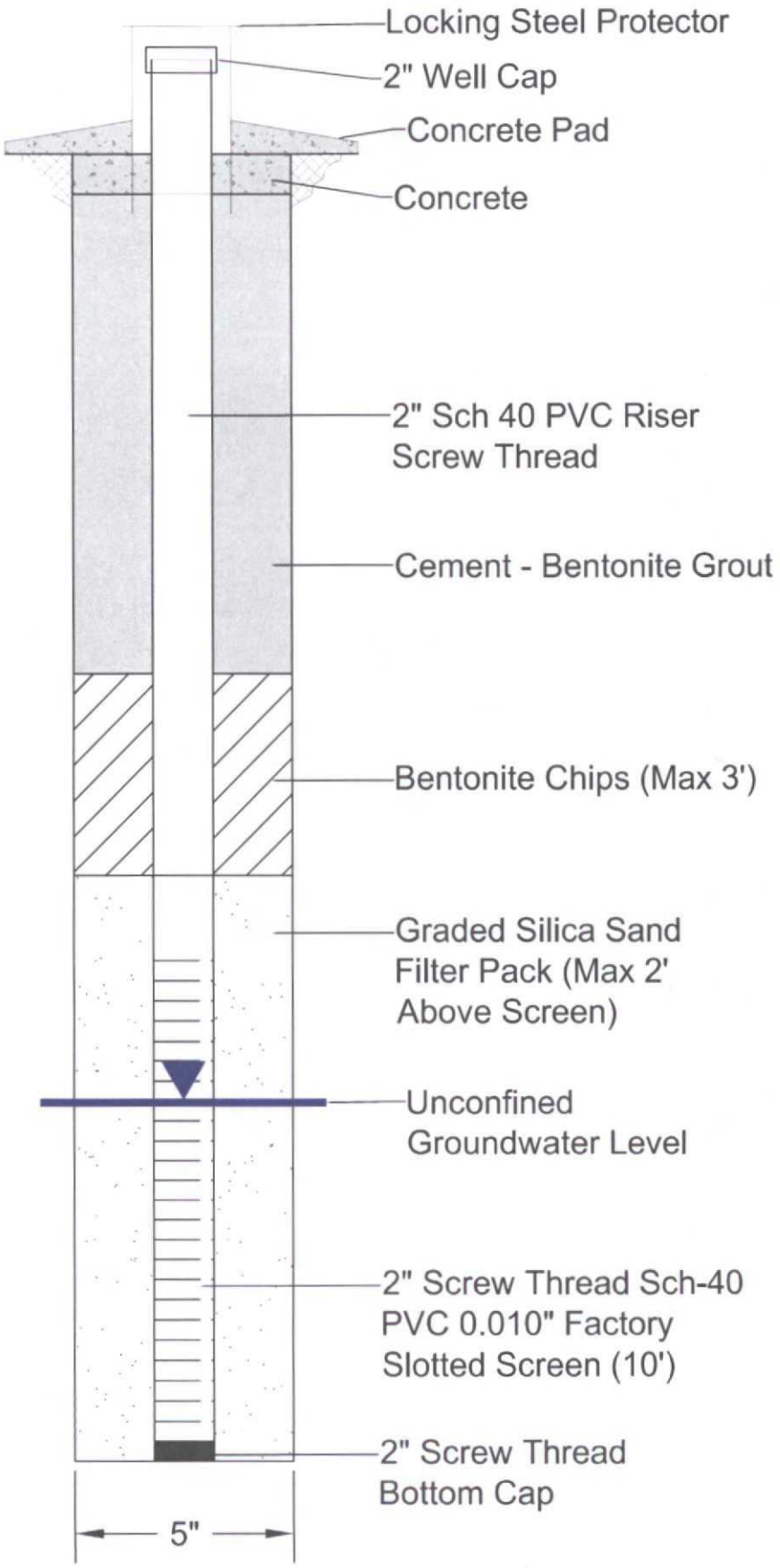
(1) Aluminum (Al).....5.0 mg/l
(2) Boron (B).....0.75 mg/l
(3) Cobalt (Co).....0.05 mg/l
(4) Molybdenum (Mo).....1.0 mg/l
(5) Nickel (Ni).....0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]
[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

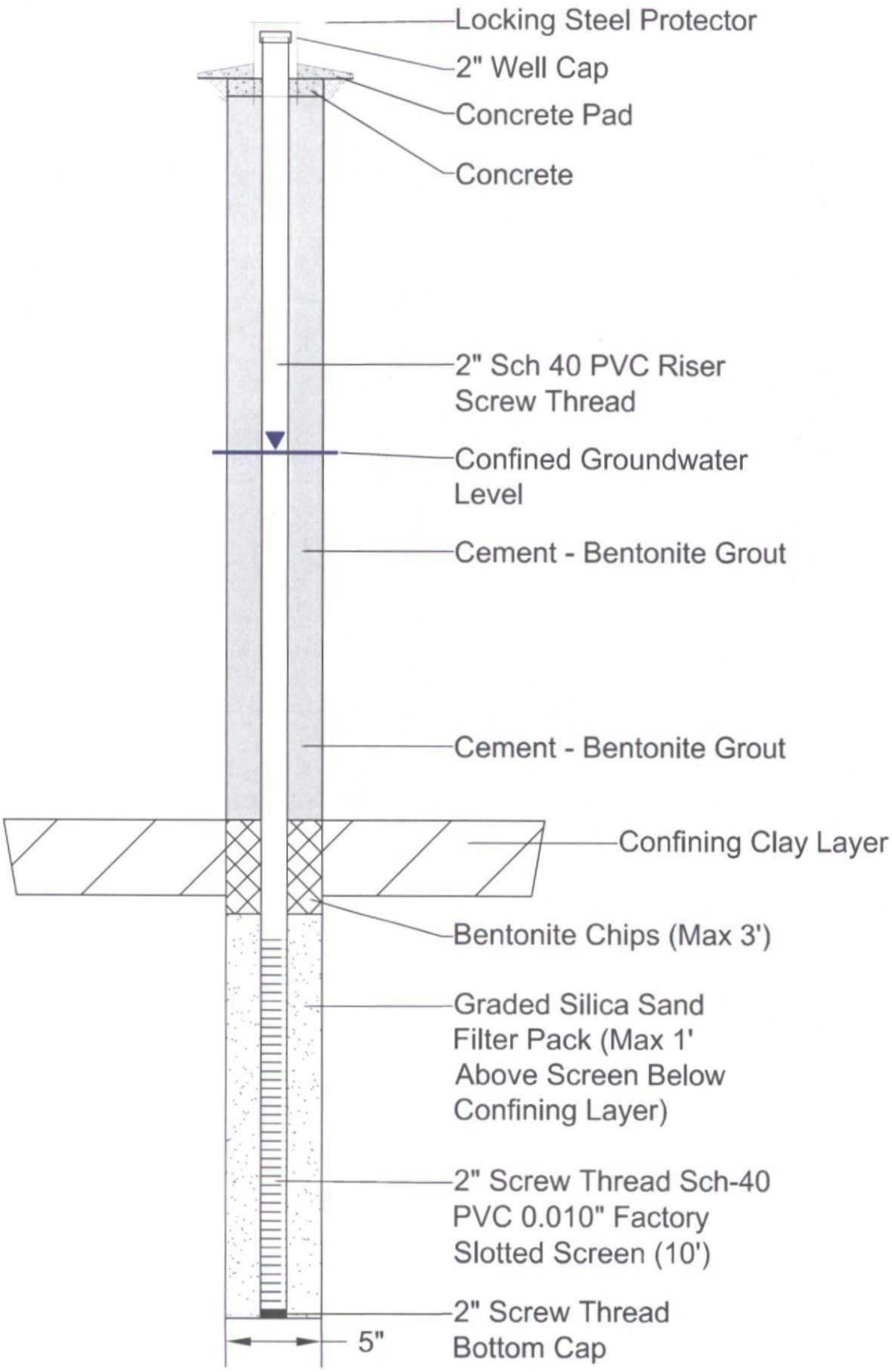
APPENDIX D

Unconfined and Confined Monitoring Well Diagrams

Typical Unconfined Well Schematic



Typical Confined Monitoring Well Diagram

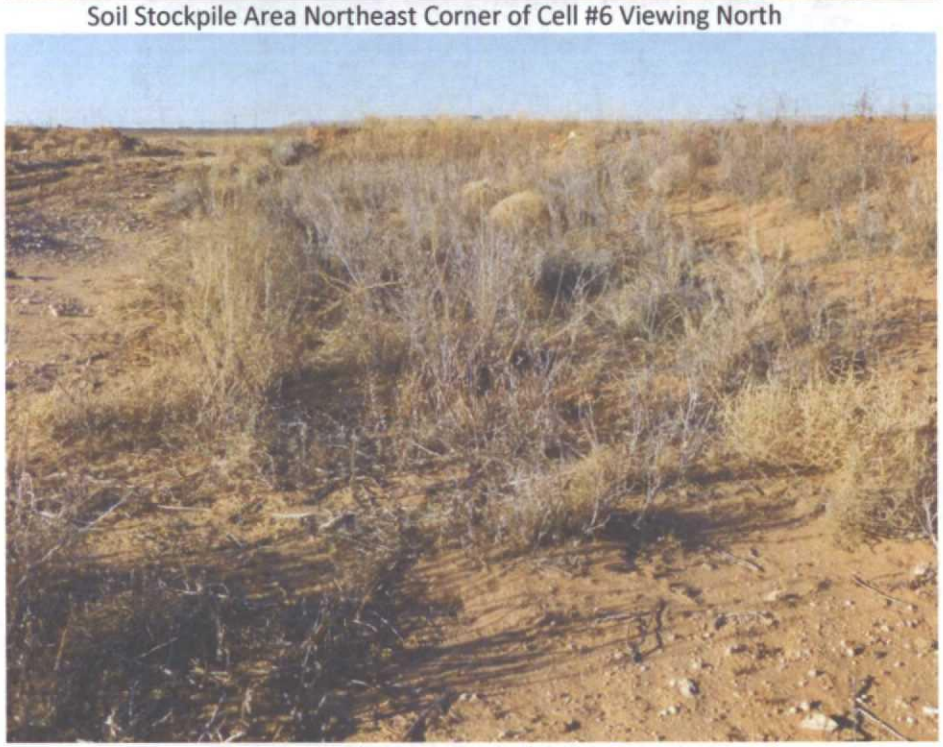


APPENDIX E

Soil Stockpile Area Photographs

PHOTOGRAPHS

Soil Stockpile Area Northeast Corner of Cell #6 Viewing North



Soil Stockpile Area Northeast Corner of Cell #6 Viewing North