

AFIN: 72-00144

PMT#: 0290-S1-R4

Received

By Haley Griffith at 8:25 am, Jan 2, 2024

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TO: BS>FILE <HG

Haley Griffith (adpce.ad)

From: Steve Jett <steve.jett@jettenviro.com>
Sent: Thursday, December 28, 2023 8:19 AM
To: gwreports
Cc: Travis Doll; Ciara Childers Beavers; Reynolds, Jodi; Conrad, David; Michael Caldwell
Subject: Monitoring Point Installation & Abandonment Report, Eco-Vista Landfill, Solid Waste Permit Nos. 0290-S1-R4 & 0290-S4-R2
Attachments: 2023-12-28 Eco-Vista - Well Installs & Abandonments Report.pdf

On behalf of Eco-Vista, LLC, Jett Environmental Consulting is submitting the attached Monitoring Point Installation & Abandonment Report.

If you have any questions or comments regarding this submittal, please do not hesitate to contact us.

Sincerely,

Steve Jett, P.G.
Owner
Jett Environmental Consulting
18 Lexington Oaks Court
Foristell, MO 63348
314-496-4654
steve.jett@jettenviro.com
www.jettenviro.com



December 28, 2023

Submitted via Electronic Mail

Mr. Aaron Baggett, Geologist
Arkansas Department of Energy and Environment
Division of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118

**Re: Monitoring Point Installation & Abandonment Report
Eco-Vista, LLC,
Class 4 Landfill (Permit No. 0290-S4-R2) and Class 1 Landfill (Permit 0290-S1-R4)
AFIN: 72-00144**

Dear Mr. Baggett:

On behalf of Eco Vista, LLC, Jett Environmental Consulting is pleased to submit this Monitoring Point Installation and Abandonment Report to the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ), for work conducted in October and November 2023 at the Eco-Vista Landfill. The Report documents the installation of groundwater monitoring wells (MW-22 through MW-25) and out-of-waste gas extraction wells (OW-204 through OW-208), and abandonment of piezometers (PZ-1D, PZ-2D, PZ-3S, and PZ-3D), out-of-waste gas extraction wells (OW-5 through OW-10 and OW-19 through OW-21) and one groundwater monitoring well (MW-1) (**see Figure 1**).

1.0 BACKGROUND

On behalf of Eco Vista, LLC, Jett Environmental Consulting submitted the following work plans for this project:

(1) Installation of four groundwater monitoring wells (MW-22 through MW-25) for the Class 4 landfill (DIN 83983, dated May 10, 2023). DEQ conditional approval of the work plan was received on May 22, 2023 (DIN 84043). An October 3, 2023 email from Jett Environmental Consulting to DEQ requested approval to slightly move the proposed locations of three of the four wells to accommodate existing site conditions that would not allow proper well placement. In correspondence dated October 3, 2023, DEQ approved the proposed well location adjustments.

(2) Installation of out-of-waste gas extraction wells (OW-204 through OW-208), and abandonment of piezometers (PZ-1D, PZ-2D, PZ-3S, and PZ-3D) and out-of-waste gas extraction wells (OW-5 through OW-10 and OW-19 through OW-21) for the Class 1 landfill (DIN 84235, dated June 19, 2023). DEQ approval of the out-of-waste well installations/abandonments portion of the work plan was received on August 28, 2023 (DIN 84489). DEQ approval of the piezometer abandonments portion of the work plan was received on October 2, 2023 (DIN 84699). In addition, one groundwater monitoring well (MW-1) was discovered between OW-7 and OW-8 during the field activities. It was believed that this well had been previously abandoned back in the 1990s. On October 4, 2023, Jett Environmental Consulting notified DEQ of the discovered well and requested permission to abandon MW-1. In correspondence dated October 4, 2023, DEQ approved the abandonment of MW-1 utilizing the same methods outlined in the approved work plan for out-of-waste well abandonments.

The well installations and abandonments were performed by Environmental Works, Inc. (EWI), an Arkansas-licensed driller. The wells were installed/abandoned in general conformance with American Society for Testing and Materials (ASTM) D5299-99, US Environmental Protection Agency (EPA) (160014-891034), and Arkansas Water Well Construction Commission (AWWCC) guidance documents.

Field activities associated with the above items are described in the following sections.

2.0 OUT-OF-WASTE GAS EXTRACTION WELL INSTALLATION

Drilling activities associated with the installations were conducted on October 3-7, 2023. A Promus Engineering geologist provided field oversight and documentation of the installation activities. A track-mounted Boart Longyear LS250 MiniSonic rotary drilling rig was used for installing the wells.

To install the wells, the driller advanced borings and installed the wells using sonic (rotary vibratory) drilling methods. Each boring was continuously sampled using core barrels. Soils were logged and classified according to the Unified Soil Classification System by a field geologist. The equipment used for the well installations were cleaned and decontaminated prior to the first boring and between drilling locations.

The target zone for the screened interval of the out-of-waste gas extraction wells was the epikarst zone, which generally has consisted of silty/sandy gravel and weathered chert/limestone lying above competent limestone bedrock. The epikarst zone would be the ideal pathway for landfill gas to migrate, if present.

Each out-of-waste gas extraction well (OW-204 through OW-208) had the following design components:

- The well borings were advanced using sonic core barrels utilizing a sufficient diameter to maintain a minimum of 2 inches of annular space between the well casing and borehole wall.
- Each well was secured at the surface with a locking, protective steel or aluminum casing; concrete pad; and protective pipe bollards. A weep hole was drilled in the protective casing approximately 6 inches above ground surface to allow for drainage.
- The well identifications were clearly marked on the outside protective casings.
- Well casings and screens were constructed of 4-inch-diameter, Schedule 80 PVC with flush-threaded casing; a 20-ft long, 10-slot (i.e., 0.010-inch) well screen; and a bottom end cap.
- A filter pack consisting of well-rounded, 3/8-inch washed pea gravel was placed in the annular space to a minimum distance of 3 ft above the top of the screen.
- The annular space above the filter pack was completed with a sealant consisting of a minimum of 3 ft of bentonite chips. The bentonite seal was followed by a well-mixed bentonite grout filled to the ground surface and installed using tremie methodology.

Attachment A provides a copy of the out-of-waste gas extraction well construction diagrams and boring logs.

3.0 GROUNDWATER MONITORING WELL INSTALLATION

Drilling activities associated with the installations were conducted on October 30-31 and November 1-2, 2023. A Jett Environmental Consulting geologist provided field oversight and documentation of the installation activities. A track-mounted Boart Longyear LS250 MiniSonic rotary drilling rig was used for installing the wells.

Per Condition No. 16 of the Class 4 Landfill Permit, two wells (MW-22 and MW-23) were located between current monitoring wells MW-20 and MW-3N and two monitoring wells (MW-24 and MW-25) were located to the north and northwest of the new Class 4 expansion area. The target zone for the screened interval of the monitoring wells was the epikarst zone overlying the bedrock and the top portion of the bedrock zone. For wells installed at least ten feet into bedrock, 20-foot screens were utilized per a May 22, 2023 request by DEQ (DIN 84043). Generally, water was encountered at the bottom five to ten feet of the epikarst; therefore, the wells were screened at the bottom five to ten feet of the epikarst and extended ten to fifteen feet into the bedrock (limestone). For well MW-25, the screened interval also encompassed the same zone (and elevation) as the target zone of the dye injection test that was previously conducted nearby.

To install the wells, the driller advanced borings and installed the monitoring wells using sonic (rotary vibratory) drilling methods. Each boring was continuously sampled using core barrels. Soils were logged and classified according to the Unified Soil Classification System by a field geologist. The equipment to be used for well installation were cleaned and decontaminated prior to the first boring and between drilling locations.

Each groundwater monitoring well has the following design components:

- The well borings were advanced using sonic core barrels utilizing a sufficient diameter to maintain a minimum of 2 inches of annular space between the well casing and borehole wall.
- The PVC well casing at each well has a locking cap, which is vented to allow equilibration of water levels with atmospheric pressure.
- Each monitoring well was secured at the surface with a locking, protective steel or aluminum casing; concrete pad; and protective pipe bollards. A weep hole was drilled in the protective casing approximately 6 inches above ground surface to allow for drainage.
- The monitoring well identifications were clearly marked on the outside protective casings.
- Well casings and screens were constructed of 2-inch-diameter, Schedule 40 PVC with flush-threaded casing; a 20-ft long, 10-slot (i.e., 0.010-inch) well screen; and a bottom end cap.
- A filter pack consisting of well-rounded silica sand was placed in the annular space to a minimum distance of 3 ft above the top of the screen.
- The annular space above the filter pack was completed with a sealant consisting of a minimum of 3 ft of bentonite pellets/chips. The bentonite seal was tremie grouted to the ground surface with high solids bentonite grout.

Attachment B provides a copy of the out-of-waste gas extraction well construction diagrams and boring logs.

4.0 ABANDONMENTS

Drilling activities associated with the abandonments of PZ-1D, PZ-2D, OW-5 through OW-10, OW-19 through OW-21, and MW-1 were conducted on October 2-12, 2023. Personnel from Jett Environmental Consulting or Promus Engineering provided field oversight and documentation of the abandonment activities.

Drilling activities associated with the abandonment of PZ-3S and PZ-3D were conducted on November 2-3, 2023. Personnel from Promus Engineering provided field oversight and documentation of the abandonment activities.

A track-mounted Boart Longyear LS250 MiniSonic rotary drilling rig was used for abandonment activities. The abandonments were accomplished by overdrilling the well/piezometers with 6-inch outer diameter core barrels. EWI removed any protective outer casing, pipe bollards, and concrete pads at each location. An attempt was made to overdrill each location to its total installed depth using sonic core barrels and was tremie grouted to the ground surface with high solids bentonite grout. Bentonite grout was used to backfill the boreholes due to their location in the future Class 1 cell, where a portion of the backfilled material may have to be removed.

A piezometer abandonment form for each location was compiled by EWI and are included in **Attachment C**.

Modifications

Piezometer PZ-2D was overdrilled using a 6-inch core barrel to 80 feet below ground surface (ft bgs). Due to the original boring (101 ft bgs) being slightly out of plumb and formation collapse encountered near 80 ft bgs, the core barrel and drilling rods were locking within the borehole. The PZ-2D boring was advanced to bedrock (80 ft bgs) then grouted to surface.

Piezometer PZ-3S was overdrilled using a 6-inch core barrel to 37 ft bgs. An attempt was made to overdrill the original boring to 71 ft bgs, but it became apparent the original piezometer was installed slightly out of plumb; therefore, the original piezometer construction materials ceased being removed from the boring at approximately 37 ft bgs. The PZ-3S boring was grouted from 37 ft bgs to the surface. According to cell construction design drawings, the 37 ft bgs corresponds to approximately 30 feet below the future bottom cell design depth at this location.

Piezometer PZ-3D was overdrilled using a 6-inch core barrel to 34 ft bgs. An attempt was made to overdrill the original boring to 89 ft bgs, but it became apparent the original piezometer was installed slightly out of plumb; therefore, the original piezometer construction materials ceased being removed from the boring at approximately 34 ft bgs. The PZ-3S boring was grouted from 34 ft bgs to the surface. According to cell construction design drawings, the 34 ft bgs corresponds to approximately 27 feet below the future bottom cell design depth at this location.

According to the well construction diagram for monitoring well MW-1, bedrock was encountered at 40 ft bgs and the well was installed as an open hole completion from 50 ft bgs to 125 ft bgs (total depth). During abandonment, MW-1 was grouted from 124 ft bgs up to 40 ft bgs on October 11, 2023. The grout was allowed to cure overnight. On October 12, 2023, MW-1 was overdrilled down to 40 feet and subsequently grouted from 40 ft bgs to the ground surface.

Total drilling depth adjustments were required in the field due to recent excavation of surface material at the various wellheads. The following summarizes the approximate depth of material that had been removed from the original ground surface prior to beginning of the overdrill efforts:

OW-8: 8 feet;
OW-9: 9 feet;
OW-10: 10 feet;
OW-19: 16 feet;
OW-20: 15 feet;
OW-21: 15 feet; and
PZ-1D: 16 feet.

5.0 WELL DEVELOPMENT

The four new groundwater monitoring wells were developed to the degree necessary to restore formation hydraulic conductivity and to yield low-turbidity samples that are representative of formation groundwater quality. Each well was developed by means of mechanical surging using a bailer mechanically surged up and down via a crane and over-pumping using a submersible pump. Groundwater was monitored visually and for depth to water and turbidity. Development continued until the water removed was visibly free of silt and sand, where practical, or the well was purged dry and allowed to recharge, multiple times. The well development form for each location is included in **Attachment D**.

6.0 WELL SURVEY

An Arkansas-licensed surveyor surveyed the horizontal and vertical location of each new monitoring point. The vertical and horizontal locations of each water-level-measurement reference point on the top of PVC casing were surveyed to the nearest 0.01 ft. The vertical locations of the top of concrete and nearest ground surface were also surveyed to the nearest 0.01 ft. **Attachment E** provides a copy of the survey reports.

If you have any questions or comments regarding this Report, or require additional information, please contact me at steve.jett@jettenviro.com or 314-496-4654.

Sincerely,



Steve Jett, P.G. No. 1826
Owner

A handwritten signature in blue ink that reads "Travis Doll".

Travis Doll
Senior Geologist

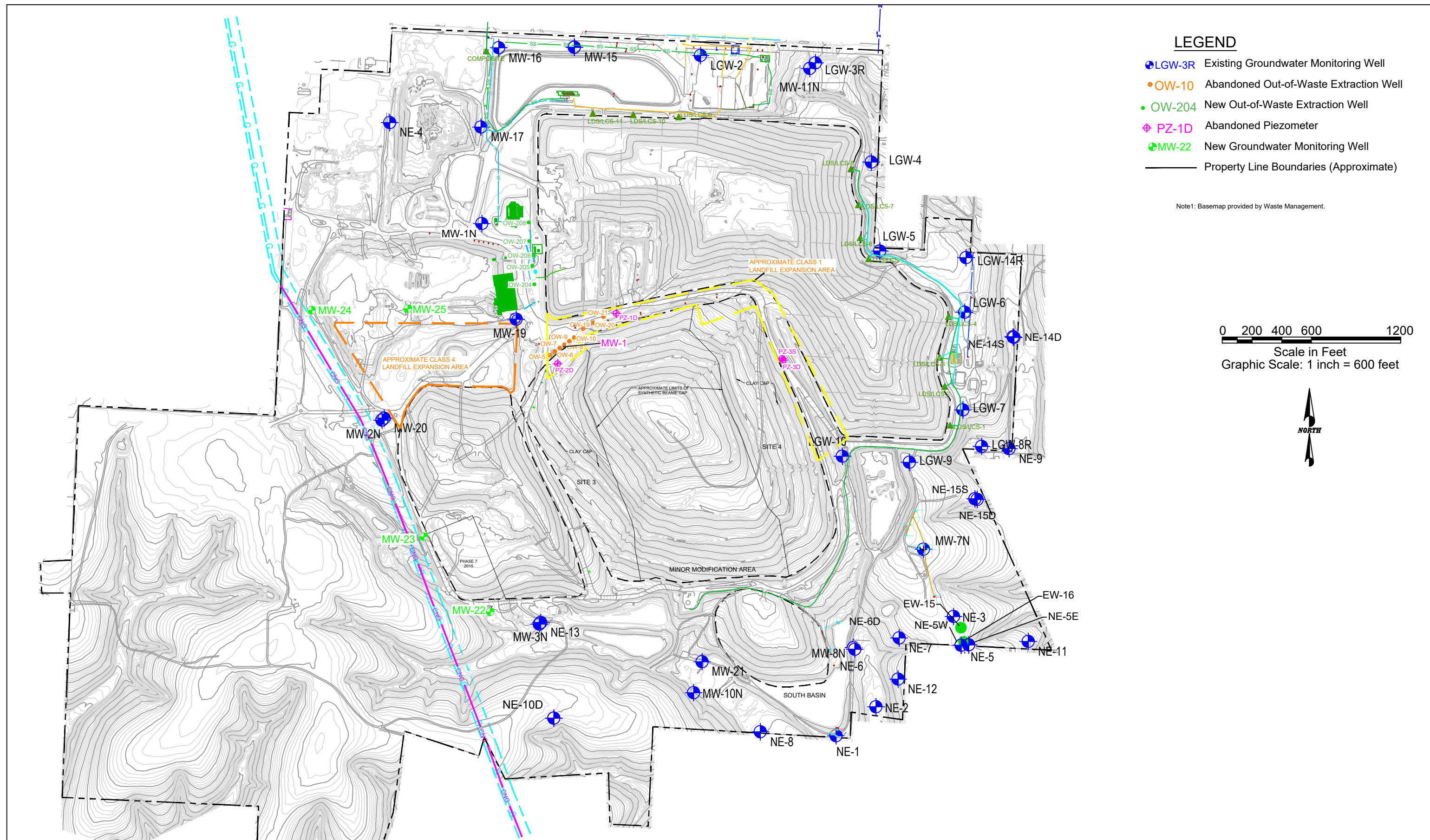
Attachments:

- Figure 1 – Site Layout & Drilling Locations*
- Attachment A – Out-of-Waste Well Construction Diagrams & Boring Logs*
- Attachment B – Monitoring Well Construction Diagrams & Boring Logs*
- Attachment C – Abandonment Forms*
- Attachment D – Well Development Forms*
- Attachment E – Survey Data*

cc:

- Jodi Reynolds – WM (PDF via Email)*
- Dave Conrad – WM (PDF via Email)*
- Michael Caldwell – WM (PDF via Email)*

FIGURES



LEGEND

- LGW-3R Existing Groundwater Monitoring Well
- OW-10 Abandoned Out-of-Waste Extraction Well
- OW-204 New Out-of-Waste Extraction Well
- ◆ PZ-1D Abandoned Piezometer
- MW-22 New Groundwater Monitoring Well
- Property Line Boundaries (Approximate)

Note1: Basemap provided by Waste Management.

0 200 400 600 1200

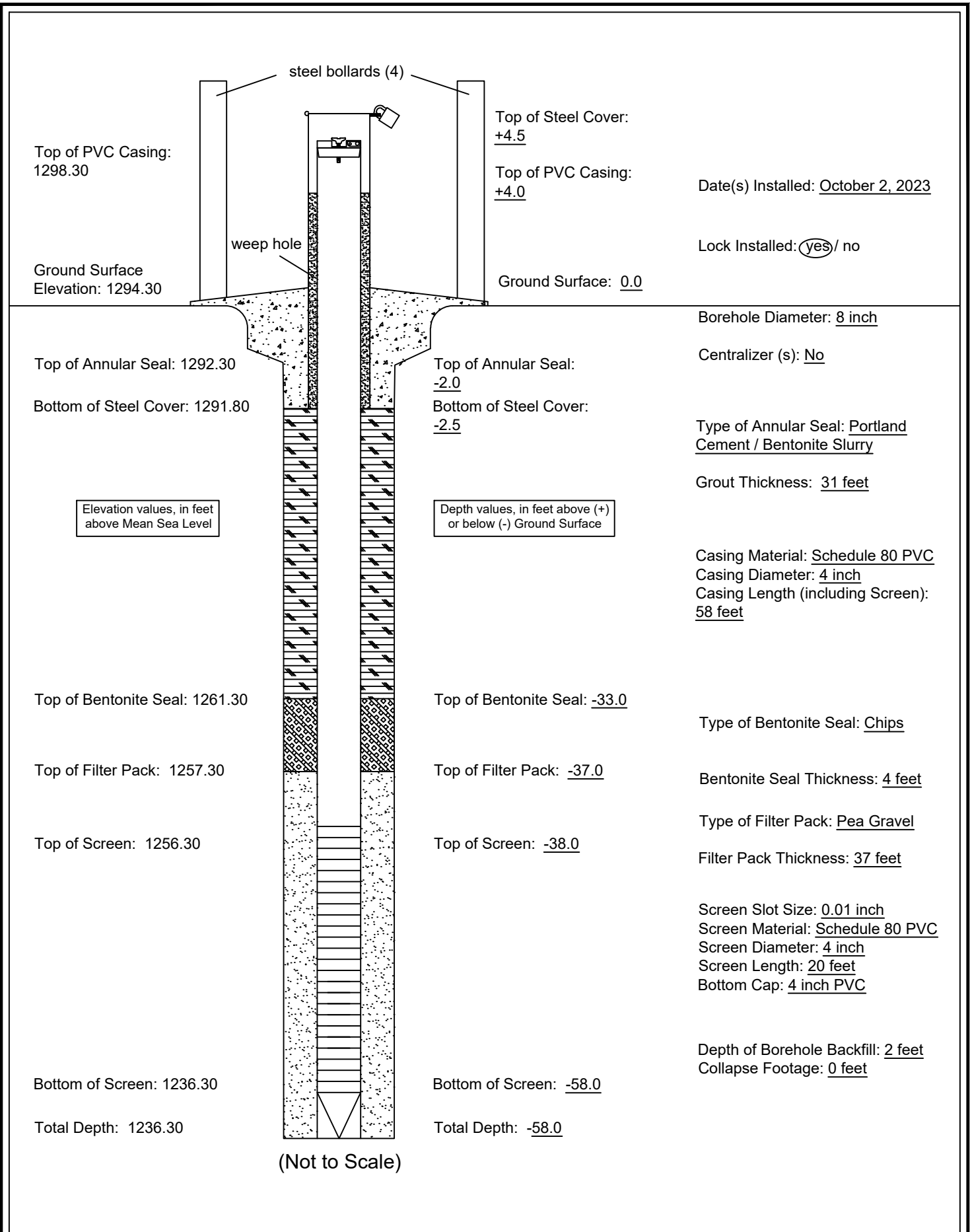
Scale in Feet
Graphic Scale: 1 inch = 600 feet



Figure 1
Site Layout & New/Abandoned Well Locations
Eco-Vista Landfill, Springdale, Arkansas

ATTACHMENTS

Attachment A



JETT
ENVIRONMENTAL
CONSULTING

18 Lexington Oaks Court
 Foristell, MO 63348
 314-496-4654
 www.jettenviro.com

Eco-Vista Landfill
Springdale, Arkansas

OW-204
Well Construction Diagram

Local Site Coordinates: N 665102.22, E 645278.03

Ground Surface Elevation: 1294.30 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic				Rig Type: LS 250 Minisonic			
Project No.: N/A	Drilling Date(s): 10/2/23				R6- Extremely Strong			
Site Location: Springdale, AR	J-Joint	PL-Planar	P-Polished	Fe-Iron	FR-Fresh	R5- Very Strong		
	F-Fault	C-Curved	K-Slickensided	CL-Clay	SW-Slightly Weathered	R4- Strong		
	S-Shear	U-Undulating	SM-Smooth	CaCO3-Calcite	MW-Moderately Weathered	R3- Medium Strong		
	B-Bedding	ST-Stepped	R-Rough		HW-Highly Weathered	R2- Weak		
	F-Foliation	I-Irregular	VR-Very Rough		CW-Completely Weathered	R1- Very Weak		
						R0- Extremely Weak		


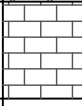
Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0	0.0 to 5.0 ft., gravelly, clayey, likely FILL material					8-inch boring
5.0	5.0 to 7.5 ft., reddish-brown with gray SAND, with chert gravel, loose, dry					
	7.5 to 10.0 ft., dark reddish-brown with gray SAND, with chert gravel, loose, dry					
10.0	10.0 to 13.0 ft., silty CLAY, with sand and gravel, firm, moderately plastic					
	13.0 to 15.0 ft., silty CLAY, with sand and gravel, firm, moderately plastic					
15.0	15.0 to 16.0 ft., SAND, gravelly, with weathered CHERT					
	16.0 to 18.0 ft., reddish-brown silty CLAY, with sand and gravel, firm, wet interval from 17.5-18.0 ft.					
	18.0 to 21.0 ft., lighter reddish-brown clayey GRAVEL, weathered CHERT					
20.0	21.0 to 22.0 ft., white to gray clayey GRAVEL, friable LIMESTONE and CHERT					
	22.0 to 27.5 ft., light reddish-brown clayey GRAVEL, weathered CHERT					
25.0	27.5 to 32.0 ft., light reddish-brown sandy CLAY, with gravel, loose, dry					
30.0	32.0 to 35.0 ft., clayey GRAVEL, weathered CHERT zone					
35.0	35.0 to 40.0 ft., reddish-brown and tan sandy CLAY, mottled, moderately plastic, with gravel, moist					
40.0	40.0 to 42.5 ft., sandy GRAVEL, with clay and white CHERT, weathered					
	42.5 to 44.5 ft., reddish-brown CLAY, gravelly					
45.0	44.5 to 45.0 ft., weathered LIMESTONE and CHERT gravel					
	45.0 to 47.5 ft., reddish-brown and tan clayey GRAVEL, loose and mottled, moist					
	47.5 to 49.0 ft., reddish-brown CLAY, gravelly, with weathered LIMESTONE					
	49.0 to 50.0 ft., tan SAND, gravelly, loose, dry					

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.

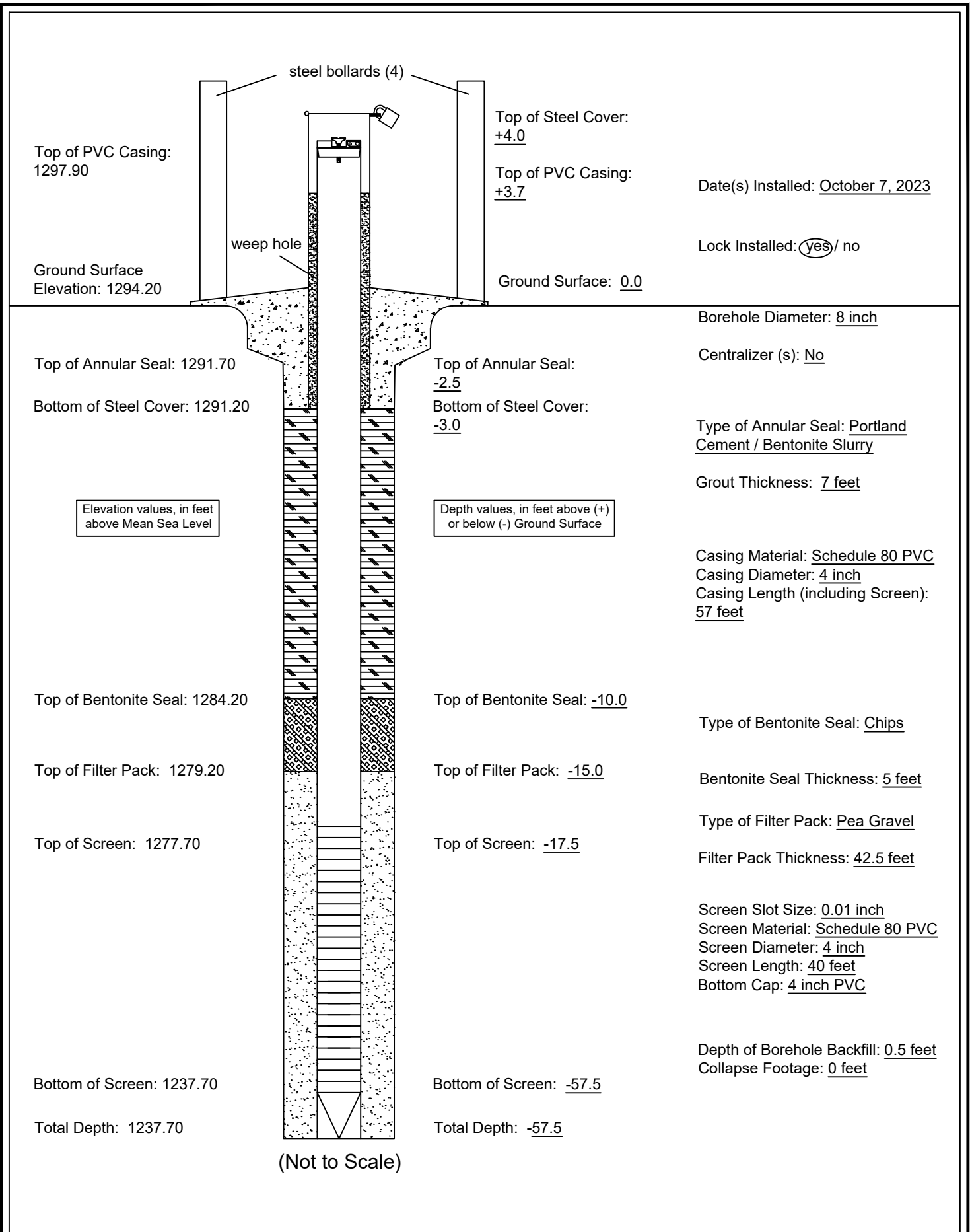
Local Site Coordinates: N 665102.22, E 645278.03

Ground Surface Elevation: 1294.30 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/2/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
55.0	50.0 to 56.5 ft., tan CHERT, clayey, gravelly, loose, weathered					8-inch boring
60.0	56.5 to 57.0 ft., gray LIMESTONE, weathered, friable 57.0 to 60.0 ft., light gray LIMESTONE, fossils					wet below 55 ft. no natural fractures Total Depth = 60.0 ft.
65.0						
70.0						
75.0						
80.0						
85.0						
90.0						
95.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.



Local Site Coordinates: N 665225.51, E 645264.21

Ground Surface Elevation: 1294.20 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/7/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough	R2- Weak
	F-Foliation I-Irregular VR-Very Rough	R1- Very Weak
		R0- Extremely Weak


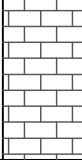

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0	0.0 to 5.0 ft., gravelly, clayey, likely FILL material					8-inch boring
5.0	5.0 to 15.0 ft., reddish-brown CLAY, sandy, gravelly, stiff; softer and more plastic from 10.0 to 19.0 ft.					
10.0	19.0 to 20.0 ft., LIMESTONE, weathered, friable					
15.0	20.0 to 22.5 ft., reddish-brown and tan CLAY, gravelly, with silt and sand, mottled, soft, moist					
20.0	22.5 to 30.0 ft., reddish-brown and tan LIMESTONE and CHERT, interbedded, weathered, friable, limestone weathered to clayey material 29.0 to 30.0 ft.					
25.0	30.0 to 38.0 ft., reddish-brown CLAY, gravelly, sandy, soft, moist to wet					
30.0	38.0 to 40.0 ft., reddish-brown and tan CHERT, weathered, mottled, moist to wet					
35.0	40.0 to 43.0 ft., reddish-brown CLAY, gravelly, sandy, soft, moist to wet					
40.0	43.0 to 45.0 ft., CHERT, weathered, white and drier from 44.5 to 45.0 ft.					
45.0	45.0 to 48.0 ft., tan CLAY, sandy, soft, moist, with gravelly CHERT					
	48.0 to 50.0 ft., reddish-brown and tan LIMESTONE and CHERT, interbedded, weathered, friable, moist to wet					

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.

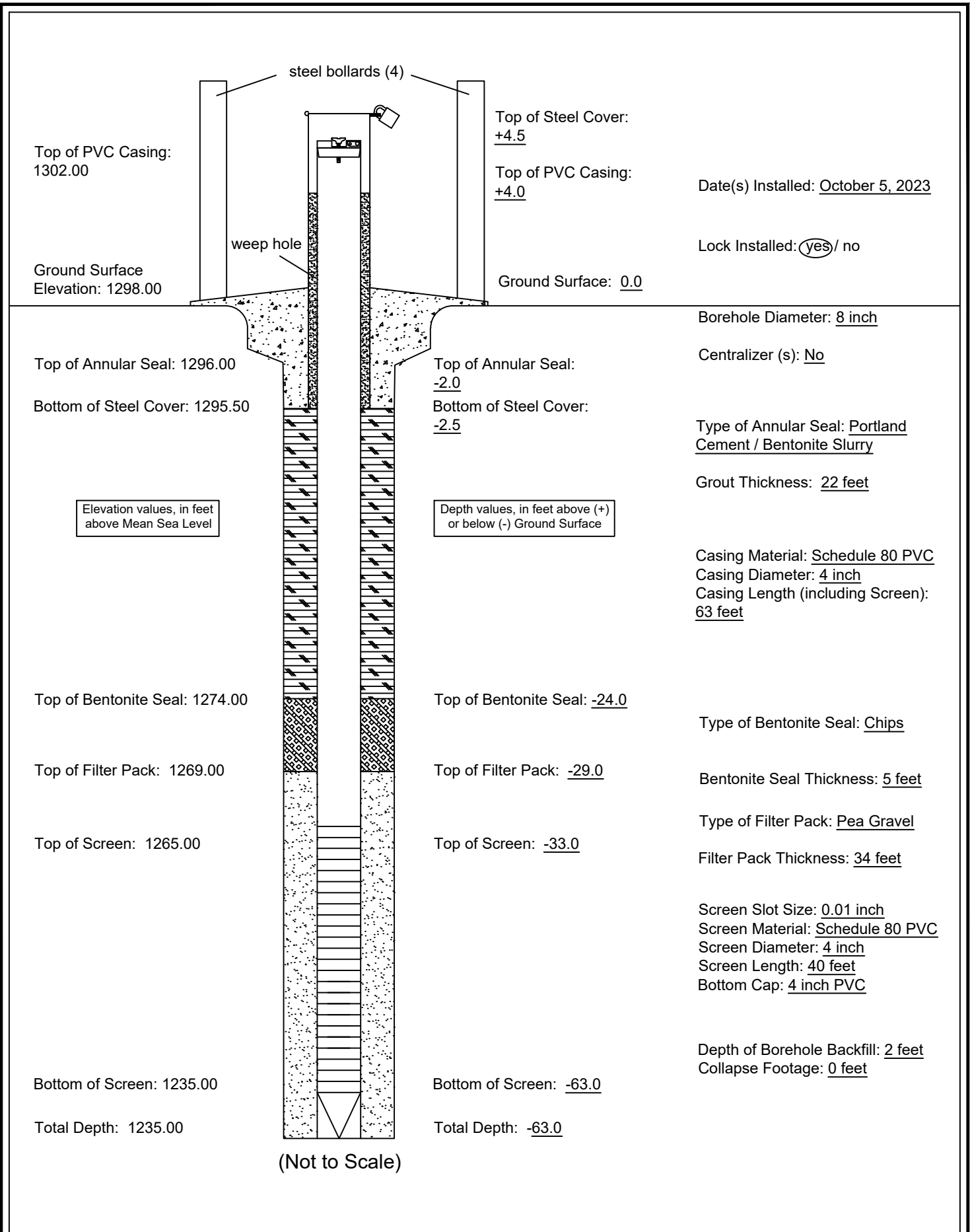
Local Site Coordinates: N 665225.51, E 645264.21

Ground Surface Elevation: 1294.20 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/7/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
	50.0 to 52.0 ft., reddish-brown and tan LIMESTONE and CHERT, interbedded, weathered, friable, moist to wet					8-inch boring
55.0	52.0 to 57.0 ft., tan to gray LIMESTONE, weathered, friable, gravelly					
60.0	57.0 to 58.0 ft., tan to gray LIMESTONE					
65.0						Total Depth = 58.0 ft.
70.0						
75.0						
80.0						
85.0						
90.0						
95.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.



Local Site Coordinates: N 665294.91, E 645274.29

Ground Surface Elevation: 1298.00 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/5/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak



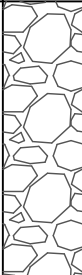
Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
5.0	0.0 to 5.0 ft., gravelly, clayey, likely FILL material					8-inch boring
10.0	5.0 to 9.0 ft., reddish-brown CLAY, sandy, gravelly, firm, dry					
15.0	9.0 to 14.0 ft., reddish-brown and tan CLAY, mottled, gravelly, stiff, dry, with a sandy CLAY interval from 13.0 to 14.0 ft.					
20.0	14.0 to 19.0 ft., reddish-brown CLAY, gravelly, soft, plastic, wet					
25.0	19.0 to 22.0 ft., reddish-brown CLAY, gravelly, soft, plastic, with CHERT gravel, wet					
30.0	22.0 to 22.5 ft., gray CHERT, gravelly, sandy, loose, dry					
35.0	22.5 to 29.0 ft., reddish-brown CLAY, gravelly, sandy, soft, moist					
40.0	29.0 to 30.0 ft., gray CHERT, sandy, gravelly, loose, dry					
45.0	30.0 to 40.0 ft., reddish-brown and tan CLAY, mottled, sandy, gravelly, loose, moist					
50.0	40.0 to 48.0 ft., reddish-brown and tan CLAY, mottled, sandy, gravelly CHERT (up to 4-inch diameter), loose, moist (wet 45.0 to 47.0 ft.)					
	48.0 to 50.0 ft., reddish-brown and tan CHERT, mottled, sandy, gravelly, loose, moist					

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.

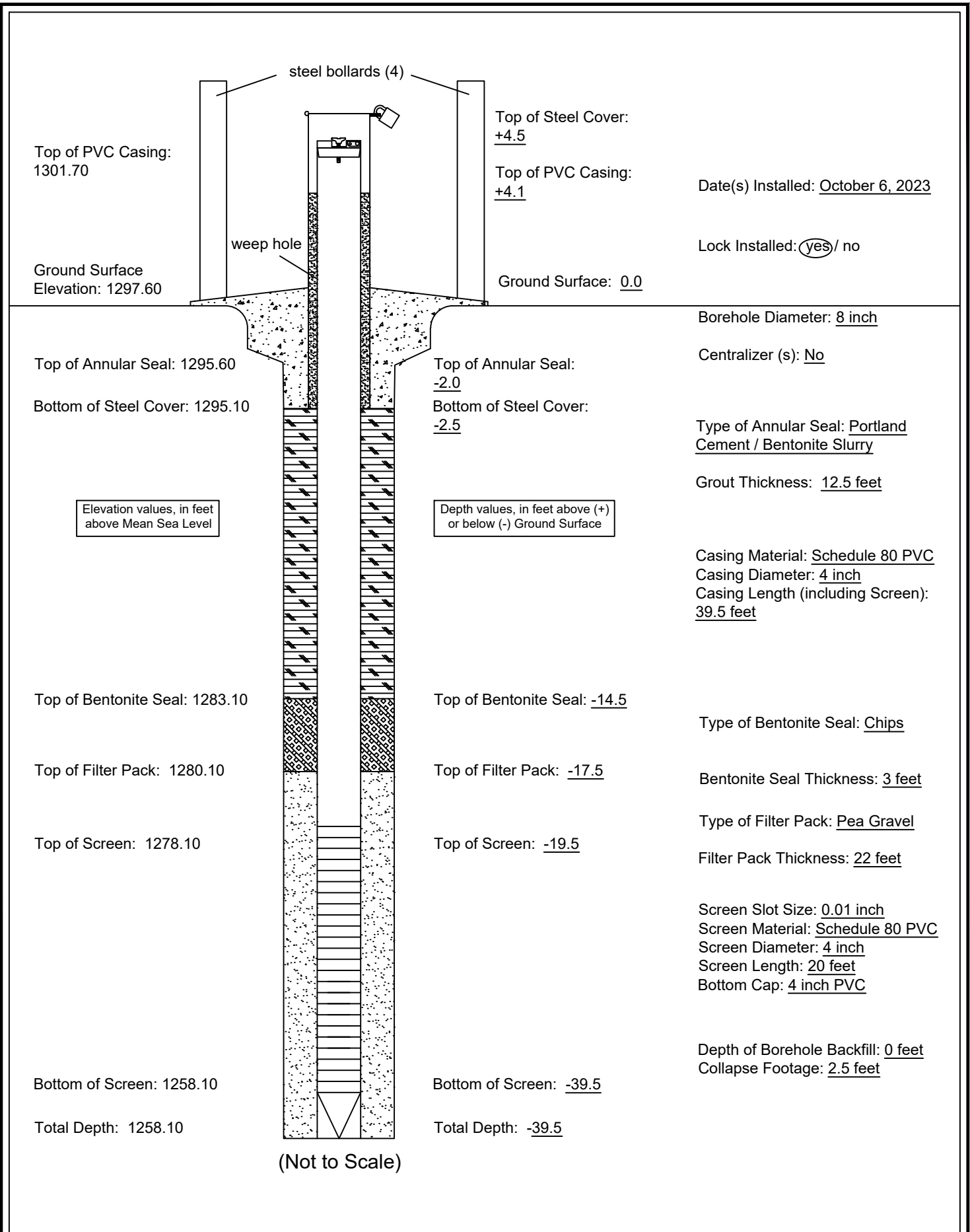
Local Site Coordinates: N 665294.91, E 645274.29

Ground Surface Elevation: 1298.00 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/5/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
	50.0 to 53.0 ft., reddish-brown CLAY, gravelly, loose, moist					8-inch boring
55.0	53.0 to 55.0 ft., CHERT, weathered					
60.0	55.0 to 65.0 ft., tan GRAVEL, sandy, clayey, loose, wet					
65.0						Encountered Limestone bedrock at 65.0 ft., ceased drilling Total Depth = 65.0 ft.
70.0						
75.0						
80.0						
85.0						
90.0						
95.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.



JETT
ENVIRONMENTAL
CONSULTING

18 Lexington Oaks Court
 Foristell, MO 63348
 314-496-4654
 www.jettenviro.com

Eco-Vista Landfill
Springdale, Arkansas

OW-207
Well Construction Diagram

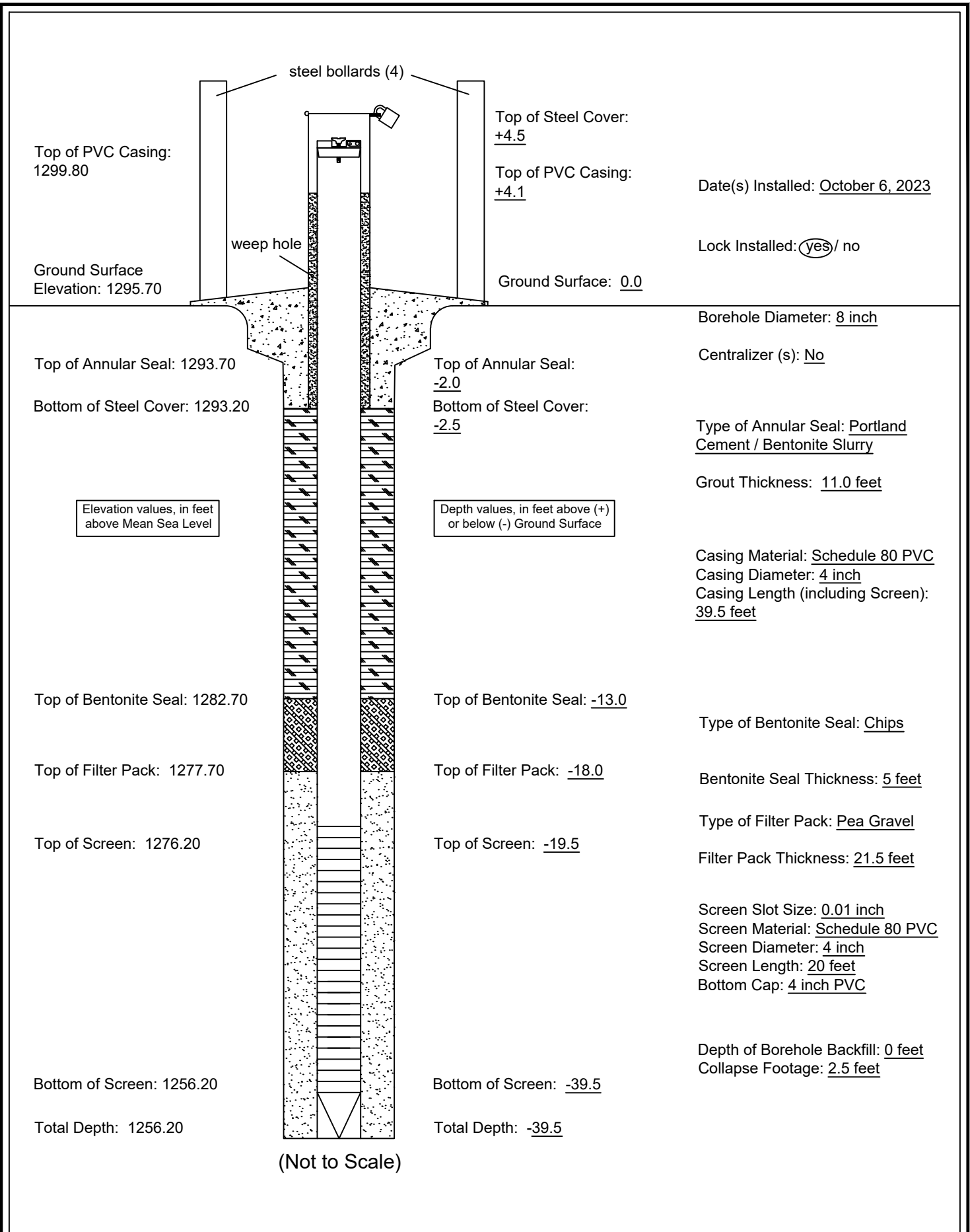
Local Site Coordinates: N 665392.95, E 645242.85

Ground Surface Elevation: 1297.60 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/6/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0	0.0 to 5.0 ft., gravelly, clayey, likely FILL material					8-inch boring
5.0	5.0 to 7.5 ft., reddish-brown SAND, gravelly, with clay/silt, loose, dry					
7.5	7.5 to 10.0 ft., reddish-brown CLAY, with silt/sand, stiff, low plasticity					
10.0	10.0 to 17.5 ft., reddish-brown CLAY, gravelly, stiff dry (10.0 to 13.0 ft.) wet (13.0 to 17.5 ft.)					
15.0	17.5 to 20.0 ft., reddish-brown CLAY, gravelly, soft, dry					
20.0	20.0 to 27.5 ft., reddish-brown and tan CHERT, gravelly, clayey, loose, moist, interbedded with weathered LIMESTONE					
25.0	27.5 to 32.0 ft., gray and tan LIMESTONE, gravelly, weathered, friable, loose					
30.0	32.0 to 33.0 ft., CHERT, weathered					30.0 to 31.0 ft., appears to be clayey material sloughed into boring
35.0	33.0 to 35.0 ft., gray and tan LIMESTONE, gravelly, weathered, friable, loose					
40.0	35.0 to 38.0 ft., LIMESTONE and CHERT, interbedded, weathered					
45.0	38.0 to 42.0 ft., LIMESTONE, weathered					Encountered Limestone bedrock at 42.0 ft., ceased drilling
						Total Depth = 42.0 ft.

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.



Local Site Coordinates: N 665517.74, E 645238.85

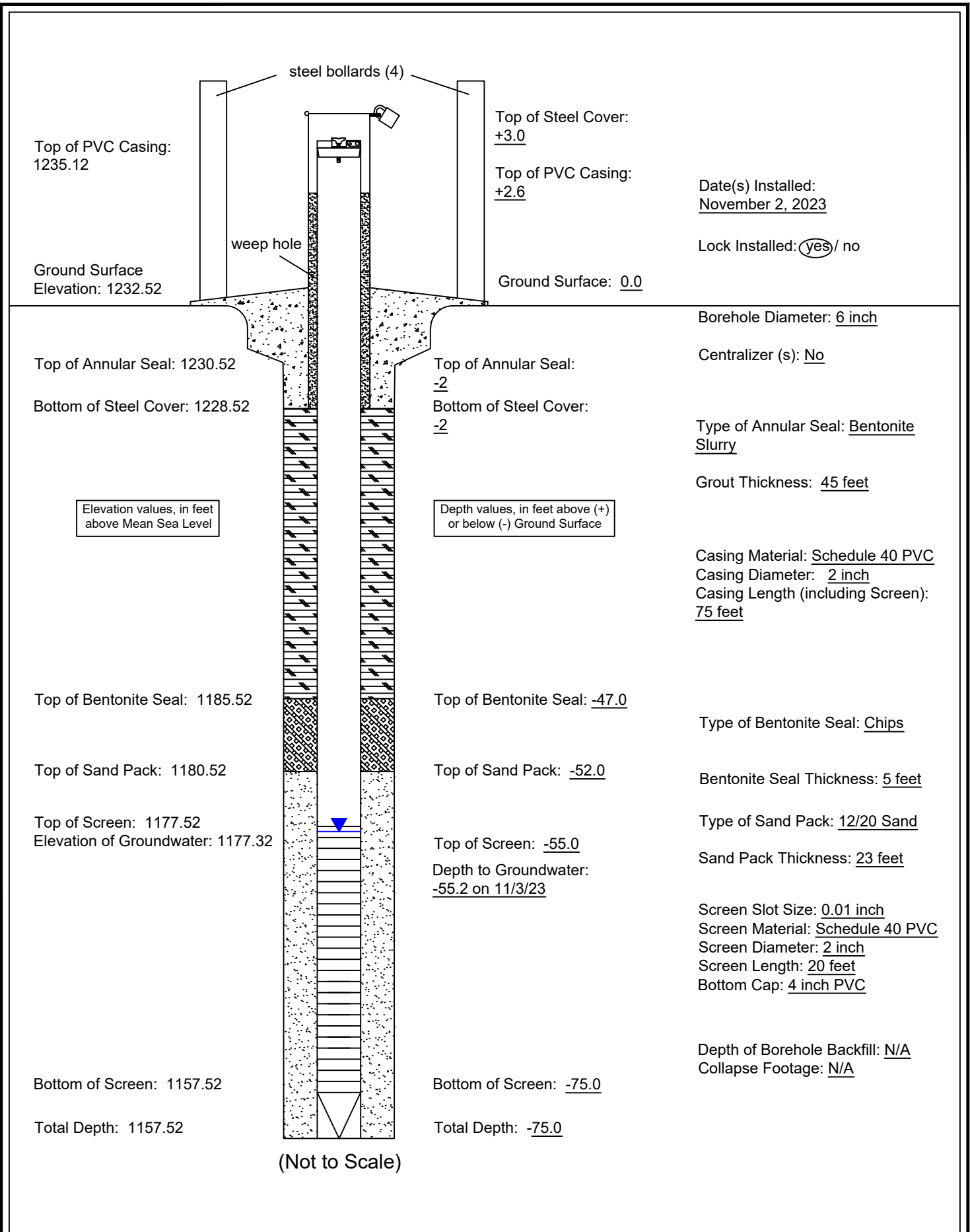
Ground Surface Elevation: 1295.70 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/6/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough	R2- Weak
	F-Foliation I-Irregular VR-Very Rough	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0	0.0 to 5.0 ft., gravelly, clayey, likely FILL material					8-inch boring
5.0	5.0 to 9.5 ft., reddish-brown SILT, gravelly, clayey/sandy, loose, dry	-----				
10.0	9.5 to 10.0 ft., tan GRAVEL, sandy, clayey, loose, dry	X X X X				
	10.0 to 13.0 ft., reddish-brown CHERT, gravelly, silty, loose, moist wet (10.0 to 10.5 ft.)	△ △ △ △				
15.0	13.0 to 23.0 ft., reddish-brown CHERT, gravelly, interbedded with CLAY, silty, loose, moist	△ △ △ △				
20.0		△ △ △ △				
25.0	23.0 to 25.0 ft., tan CHERT, gravelly, weathered, silty, loose, dry	△ △ △ △				
	25.0 to 30.0 ft., no recovery, sample not retrieved					
30.0	30.0 to 33.0 ft., interlayered gray LIMESTONE and white CHERT, weathered, loose, dry	△ △ △ △				
35.0	33.0 to 35.0 ft., LIMESTONE, weathered	△ △ △ △				
	35.0 to 40.0 ft., LIMESTONE bedrock	□ □ □ □				
40.0						Total Depth = 40.0 ft.
45.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Manny Villalobos
 Helper(s): Ryan Vaught, Tui Houston
 Certifying Geologist: Steve Jett
 Logged By: Evan Perry, Promus Engineering, Inc.

Attachment B



Top of PVC Casing:
1235.12

Ground Surface
Elevation: 1232.52

Top of Annular Seal: 1230.52

Bottom of Steel Cover: 1228.52

Elevation values, in feet
above Mean Sea Level

Top of Bentonite Seal: 1185.52

Top of Sand Pack: 1180.52

Top of Screen: 1177.52
Elevation of Groundwater: 1177.32

Bottom of Screen: 1157.52

Total Depth: 1157.52

steel bollards (4)

weep hole

Top of Steel Cover:
+3.0

Top of PVC Casing:
+2.6

Ground Surface: 0.0

Top of Annular Seal:
-2

Bottom of Steel Cover:
-2

Depth values, in feet above (+)
or below (-) Ground Surface

Top of Bentonite Seal: -47.0

Top of Sand Pack: -52.0

Top of Screen: -55.0

Depth to Groundwater:
-55.2 on 11/3/23

Bottom of Screen: -75.0

Total Depth: -75.0

Date(s) Installed:
November 2, 2023

Lock Installed: yes/ no

Borehole Diameter: 6 inch

Centralizer (s): No

Type of Annular Seal: Bentonite Slurry

Grout Thickness: 45 feet

Casing Material: Schedule 40 PVC
Casing Diameter: 2 inch
Casing Length (including Screen):
75 feet

Type of Bentonite Seal: Chips

Bentonite Seal Thickness: 5 feet

Type of Sand Pack: 12/20 Sand

Sand Pack Thickness: 23 feet

Screen Slot Size: 0.01 inch
Screen Material: Schedule 40 PVC
Screen Diameter: 2 inch
Screen Length: 20 feet
Bottom Cap: 4 inch PVC











Depth of Borehole Backfill: N/A
Collapse Footage: N/A

(Not to Scale)

Local Site Coordinates: N 662897.93, E 644981.76

Ground Surface Elevation: 1232.52 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 11/2/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
5.0	0.0 to 13.0 ft., brown to reddish-brown CLAY, with chert gravel, moist					6-inch boring. Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted. VOCs: 1 ppm (16 to 20 ft.)
10.0	13.0 to 15.0 ft., dark-brown to brown CLAY, with chert gravel, moist					
15.0	15.0 to 19.0 ft., dark-brown CLAY, with chert gravel, moist					
20.0	19.0 to 20.0 ft., light brown to brown weathered CHERT, with chert gravel, moist					
25.0	20.0 to 26.0 ft., brown to reddish-brown CLAY, with fine to coarse chert gravel, moist to very moist					
30.0	26.0 to 33.0 ft., light-brown to brown CLAY, with fine to coarse chert gravel, very moist					
35.0	33.0 to 40.0 ft., brown to dark-orange CLAY, with chert gravel and very weathered chert, moist					
40.0	40.0 to 49.0 ft., brown CLAY and weathered CHERT, fine to coarse gravel, very moist					
45.0						
50.0	49.0 to 50.0 ft., light gray CHERT, very weathered, wet					

Drilling Contractor: Environmental Works, Inc.
 Driller: Justen Maples
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett




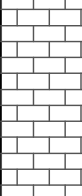
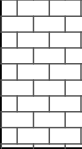
Local Site Coordinates: N 662897.93, E 644981.76

Ground Surface Elevation: 1232.52 fmsl

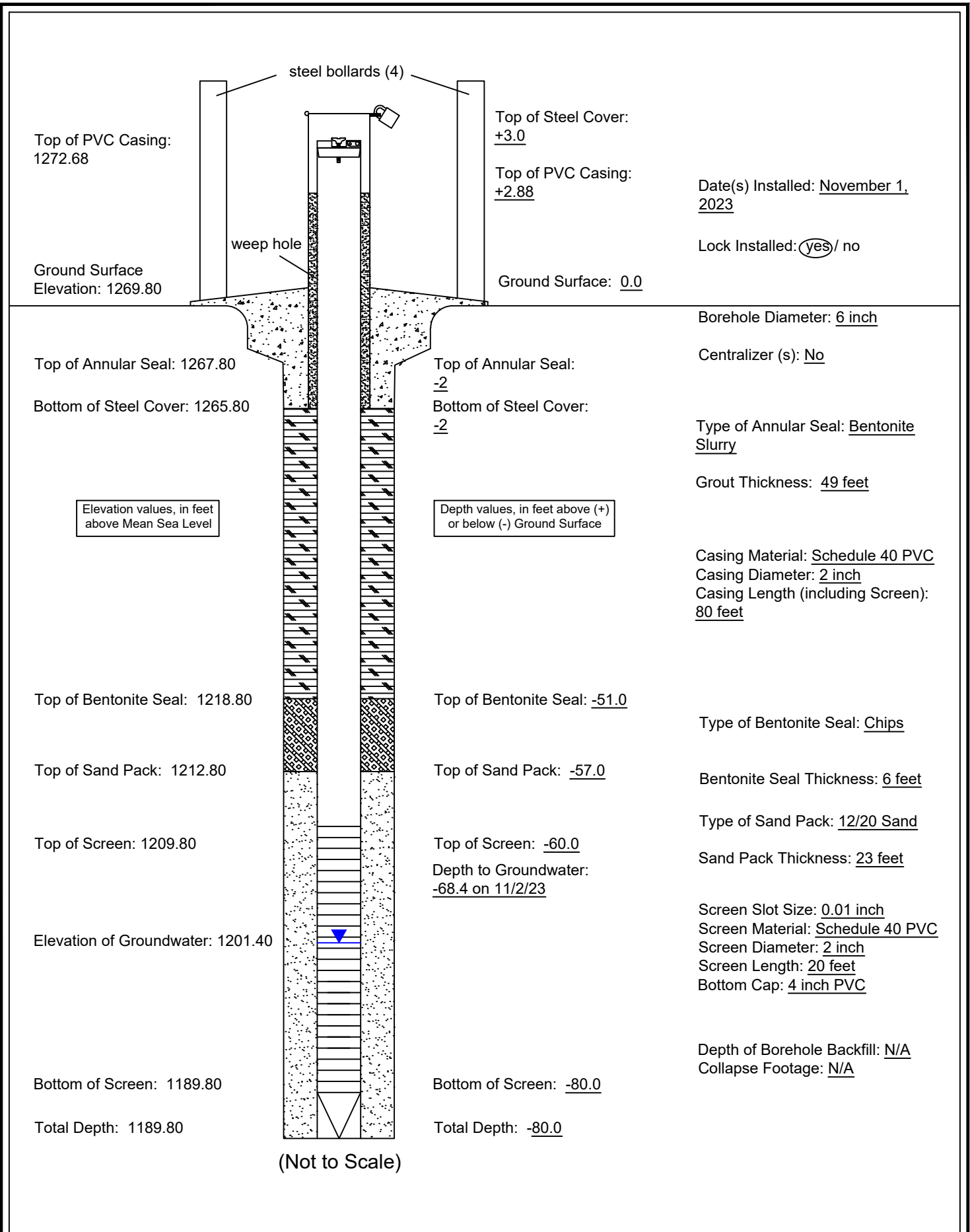
Project: Eco-Vista Landfill Method of Drilling: Rotary Sonic Rig Type: LS 250 Minisonic
 Project No.: N/A Drilling Date(s): 11/2/23
 Site Location: Springdale, AR

J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh
 F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered
 S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered
 B-Bedding ST-Stepped R-Rough HW-Highly Weathered
 F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered

R6- Extremely Strong
 R5- Very Strong
 R4- Strong
 R3- Medium Strong
 R2- Weak
 R1- Very Weak
 R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
50.0 to 52.5 ft.	brown CLAY, with weathered chert, fine to coarse gravel, wet					6-inch boring.
52.5 to 59.0 ft.	white to light brown CHERT, very finely weathered, fine to coarse gravel, very moist to wet					Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
59.0 to 59.5 ft.	brown CHERT, weathered to gravelly, wet					
59.5 to 60.0 ft.	light gray LIMESTONE, weathered to fractured (relatively horizontal), very moist		1	6/10	0%	10 ft. sonic core run, retrieved from core barrel, starting at 60 ft.
60.0 to 73.0 ft.	light gray LIMESTONE, highly fractured (relatively horizontal), gray iron-stained fractured surfaces, very moist to wet					
65.0						
70.0						
73.0 to 75.0 ft.	light gray LIMESTONE, weathered to fine gravel		2	5/5	0%	5 ft. sonic core run, retrieved from core barrel, starting at 70 ft.
75.0						Total Depth = 75.0 ft.
80.0						
85.0						
90.0						
95.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Justen Maples
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett



Top of PVC Casing:
1272.68

Ground Surface
Elevation: 1269.80

Top of Annular Seal: 1267.80

Bottom of Steel Cover: 1265.80

Elevation values, in feet
above Mean Sea Level

Top of Bentonite Seal: 1218.80

Top of Sand Pack: 1212.80

Top of Screen: 1209.80

Elevation of Groundwater: 1201.40

Bottom of Screen: 1189.80

Total Depth: 1189.80

steel bollards (4)

weep hole

Top of Steel Cover:
+3.0

Top of PVC Casing:
+2.88

Ground Surface: 0.0

Top of Annular Seal:
-2

Bottom of Steel Cover:
-2

Depth values, in feet above (+)
or below (-) Ground Surface

Top of Bentonite Seal: -51.0

Top of Sand Pack: -57.0

Top of Screen: -60.0

Depth to Groundwater:
-68.4 on 11/2/23

Bottom of Screen: -80.0

Total Depth: -80.0

Date(s) Installed: November 1, 2023

Lock Installed: yes/ no

Borehole Diameter: 6 inch

Centralizer (s): No

Type of Annular Seal: Bentonite Slurry

Grout Thickness: 49 feet

Casing Material: Schedule 40 PVC
Casing Diameter: 2 inch
Casing Length (including Screen):
80 feet

Type of Bentonite Seal: Chips

Bentonite Seal Thickness: 6 feet

Type of Sand Pack: 12/20 Sand

Sand Pack Thickness: 23 feet

Screen Slot Size: 0.01 inch
Screen Material: Schedule 40 PVC
Screen Diameter: 2 inch
Screen Length: 20 feet
Bottom Cap: 4 inch PVC





Depth of Borehole Backfill: N/A
Collapse Footage: N/A

(Not to Scale)

Local Site Coordinates: N 663403.88, E 644534.27

Ground Surface Elevation: 1269.80 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic				Rig Type: LS 250 Minisonic		
Project No.: N/A	Drilling Date(s): 11/1/23				R6- Extremely Strong		
Site Location: Springdale, AR	J-Joint	PL-Planar	P-Polished	Fe-Iron	FR-Fresh	R5- Very Strong	
	F-Fault	C-Curved	K-Slickensided	CL-Clay	SW-Slightly Weathered	R4- Strong	
	S-Shear	U-Undulating	SM-Smooth	CaCO3-Calcite	MW-Moderately Weathered	R3- Medium Strong	
	B-Bedding	ST-Stepped	R-Rough		HW-Highly Weathered	R2- Weak	
	F-Foliation	I-Irregular	VR-Very Rough		CW-Completely Weathered	R1- Very Weak	
						R0- Extremely Weak	

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
0.0 to 2.0 ft., brown CLAY, with chert fragments, moist						6-inch boring. Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
2.0 to 6.0 ft., dark red CLAY, with chert gravel, moist						
6.0 to 9.0 ft., dark orangish-red CLAY, with chert fragments, moist						
9.0 to 16.0 ft., white CHERT, very weathered, moist						
16.0 to 18.0 ft., light brown to white CHERT, weathered, moist						
18.0 to 20.0 ft., brown CLAY with weathered CHERT, moist						
20.0 to 40.0 ft., dark reddish-brown CLAY, with fine to coarse chert gravel, moist						
40.0 to 47.0 ft., dark reddish-brown CLAY, with fine to coarse chert gravel, very moist (wet from 41.0 to 47.0 ft.)						
47.0 to 48.0 ft., brown to light-brown CLAY, with fine chert gravel, very moist						
48.0 to 50.0 ft., white CHERT, fractured to weathered, very moist to wet						

Drilling Contractor: Environmental Works, Inc.
 Driller: Justen Maples
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett



Boring Log: B-23

Local Site Coordinates: N 663403.88, E 644534.27

Ground Surface Elevation: 1269.80 fmsl

Project: Eco-Vista Landfill
 Project No.: N/A
 Site Location: Springdale, AR

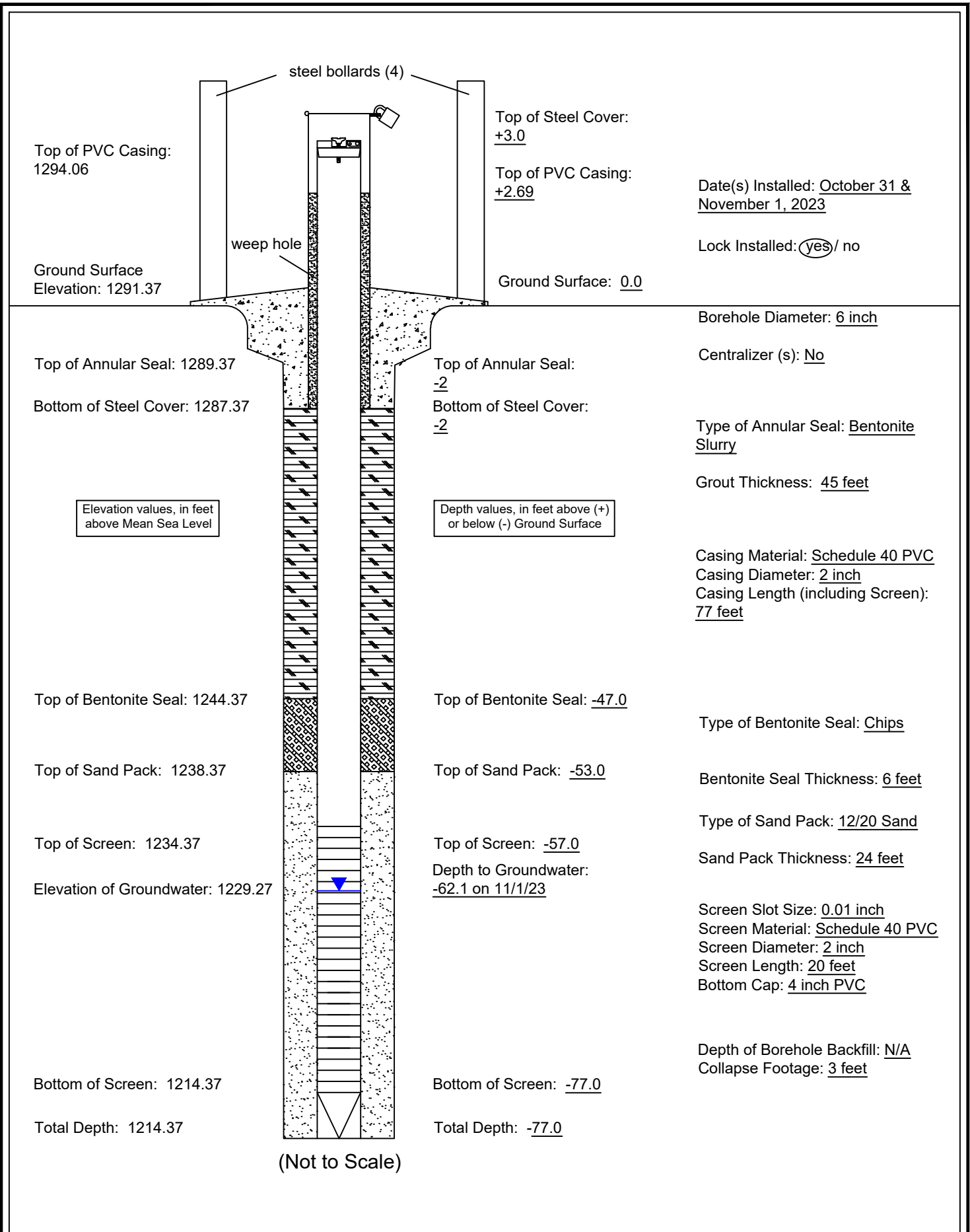
Method of Drilling: Rotary Sonic
 Drilling Date(s): 11/1/23

Rig Type: LS 250 Minisonic

J-Joint	PL-Planar	P-Polished	Fe-Iron	FR-Fresh	R6- Extremely Strong
F-Fault	C-Curved	K-Slickensided	CL-Clay	SW-Slightly Weathered	R5- Very Strong
S-Shear	U-Undulating	SM-Smooth	CaCO3-Calcite	MW-Moderately Weathered	R4- Strong
B-Bedding	ST-Stepped	R-Rough		HW-Highly Weathered	R3- Medium Strong
F-Foliation	I-Irregular	VR-Very Rough		CW-Completely Weathered	R2- Weak
					R1- Very Weak
					R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
	50.0 to 51.0 ft., white CHERT, fractured to weathered, very wet					6-inch boring. Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
55.0	51.0 to 60.0 ft., white CHERT, very weathered to coarse gravel, moist					
60.0	60.0 to 65.0 ft., dark reddish-brown CLAY, with fine to coarse chert gravel, very moist					
65.0	65.0 to 67.5 ft., white to light-brown CHERT, very weathered, very wet					
70.0	67.5 to 75.0 ft., light gray LIMESTONE, very fractured and weathered, 2-inch pieces were largest size, fractures mostly horizontal, iron staining on fracture surface, very wet		1	6/7.5	0%	sonic core retrieved from core barrel, starting at 67.5 ft. Methane detected at 3% LEL during 67.5 to 75.0-ft coring.
75.0	75.0 to 80.0 ft., light gray LIMESTONE, very fractured and weathered, 2-inch pieces were largest size, fractures mostly horizontal, iron staining on fracture surface, moist to dry (wet from 76.0 to 77.0-ft.)		2	5/5	0%	Methane detected at 0% LEL for remainder of coring.
80.0						Total Depth = 80.0 ft.
85.0						
90.0						
95.0						








Drilling Contractor: Environmental Works, Inc.
 Driller: Justen Maples
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett



Local Site Coordinates: N 664926.35, E 643780.47

Ground Surface Elevation: 1291.37 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/31/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
5.0	0.0 to 25.0 ft., dark orange to reddish CLAY, with chert fragments (ranging from weathered pieces to fine to coarse gravel), moist					6-inch boring. Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
10.0						
15.0						
20.0						
25.0	25.0 to 27.5 ft., brown CLAY, with very fine, weathered chert gravel, moist					
30.0	27.5 to 30.5 ft., dark orange-red CLAY, fine to coarse chert gravel, moist					
35.0	30.5 to 34.0 ft., reddish-brown, CHERT, very weathered, with silty clay present, moist					
40.0	34.0 to 35.0 ft., gray CHERT, weathered to fine to coarse gravel, wet					
45.0	35.0 to 37.0 ft., reddish-brown, CHERT, very weathered; and CLAY, moist					
50.0	37.0 to 54.0 ft., gray to brown CHERT, weathered to fine gravel, moist					

Drilling Contractor: Environmental Works, Inc.
 Driller: Josh Parks
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett

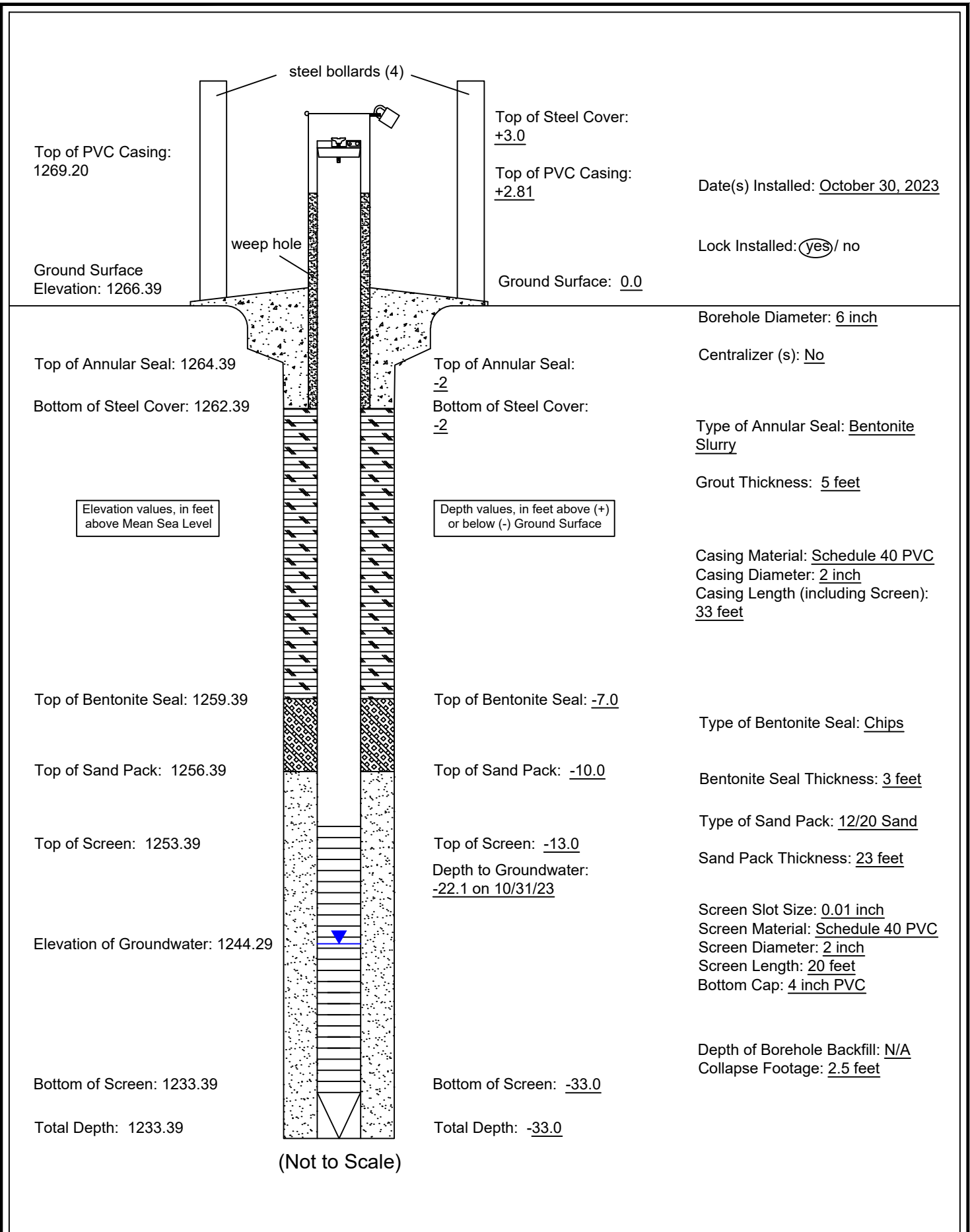
Local Site Coordinates: N 664926.35, E 643780.47

Ground Surface Elevation: 1291.37 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/31/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0		△ △				6-inch boring.
55.0	54.0 to 59.0 ft., gray to bluish gray CHERT and LIMESTONE (90%), fine to coarse gravel, with fine-weathered pieces, brown CLAY (10%), very moist	△ △ △ △ △ △ △ △ △ △ △ △				Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
60.0						59.0 to 62.0 ft., no recovery
65.0	62.0 to 65.0 ft., gray to bluish gray CHERT and LIMESTONE (90%), fine to coarse gravel, with fine-weathered pieces, brown CLAY (10%), very wet	△ △ △ △ △ △ △ △ △ △ △ △				
	65.0 to 66.0 ft., white to gray LIMESTONE, fractures generally horizontal, dry	△ △ △ △				
	66.0 to 67.0 ft., gray to bluish gray CHERT/LIMESTONE, coarse gravel, rounded	△ △ △ △	1	2.7/10	3%	sonic core retrieved from core barrel, starting at 66.0 ft.
70.0	67.0 to 76.0 ft., light gray LIMESTONE, very fractured, fractures mostly horizontal, iron staining on fracture surface, moist to dry	[Brick pattern]				
75.0						
	76.0 to 79.0 ft., light gray LIMESTONE, fine to coarse fractured gravel	[Brick pattern]	2	2.2/4	0%	
80.0	79.0 to 80.0 ft., light to dark gray LIMESTONE, very fractured, fractures mostly horizontal, iron staining on fracture surface, moist to dry	[Brick pattern]				Total Depth = 80.0 ft.
85.0						
90.0						
95.0						





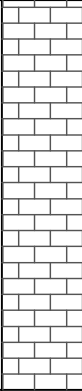
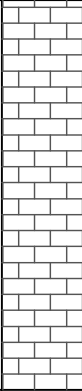
Drilling Contractor: Environmental Works, Inc.
 Driller: Josh Parks
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett



Local Site Coordinates: N 664937.30, E 644426.48

Ground Surface Elevation: 1266.39 fmsl

Project: Eco-Vista Landfill	Method of Drilling: Rotary Sonic	Rig Type: LS 250 Minisonic
Project No.: N/A	Drilling Date(s): 10/30/23	R6- Extremely Strong
Site Location: Springdale, AR	J-Joint PL-Planar P-Polished Fe-Iron FR-Fresh	R5- Very Strong
	F-Fault C-Curved K-Slickensided CL-Clay SW-Slightly Weathered	R4- Strong
	S-Shear U-Undulating SM-Smooth CaCO3-Calcite MW-Moderately Weathered	R3- Medium Strong
	B-Bedding ST-Stepped R-Rough HW-Highly Weathered	R2- Weak
	F-Foliation I-Irregular VR-Very Rough CW-Completely Weathered	R1- Very Weak
		R0- Extremely Weak

Depth Scale (feet)	Soil/Rock Description	Graphic Log	Run No.	Core Recovery	RQD	Notes
0.0						
5.0	0.0 to 9.0 ft., reddish-brown CLAY, with chert gravel, moist					6-inch boring. Field Meter (Eagle 2): Methane: 0% LEL Oxygen: 20.9% volume VOCs: 0 ppm. Same for each run, unless otherwise noted.
10.0	9.0 to 12.0 ft., light gray CHERT, weathered and gravelly, moist					
15.0	12.0 to 16.0 ft., dark brown, silty CLAY, with chert gravel, moist					
20.0	16.0 to 22.0 ft., light gray CHERT, weathered and gravelly, wet					
25.0	22.0 to 23.0 ft., gray LIMESTONE, cobble-sized weathered pieces (up to 2x fist size) 23.0 to 29.0 ft., white to bluish-gray LIMESTONE, fine crystalline, highly fractured, trace fossils, generally horizontal fracturing, iron staining in various fractures		1	4/6	12.5%	sonic core retrieved from core barrel, starting at 23.0 ft
30.0	29.0 to 30.0 ft., gray LIMESTONE, very weathered, dry 30.0 to 36.0 ft., gray LIMESTONE, fine crystalline, highly fractured, trace fossils, generally horizontal fracturing, iron staining along fracture faces, most pieces 1 to 2-inches long		2	4/6	0%	29.0 to 30.0 ft. Weathered pieces could be from drill rod grinding slowly and not naturally 30.0 to 36.0 ft., sonic core retrieved from core barrel
35.0						Total Depth = 36.0 ft.
40.0						
45.0						

Drilling Contractor: Environmental Works, Inc.
 Driller: Josh Parks
 Helper(s): Ryan Vaught, Zach Slindee
 Certifying Geologist: Steve Jett
 Logged By: Steve Jett

Attachment C



Arkansas Water Well Construction Commission
 10421 W Markham Street
 Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/12/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NW
 Latitude 36 08' 18.14" Longitude 94 15' 31.71"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-05

4. Depth of Well 75 **Diameter of Well** 4"
(feet) (inches)

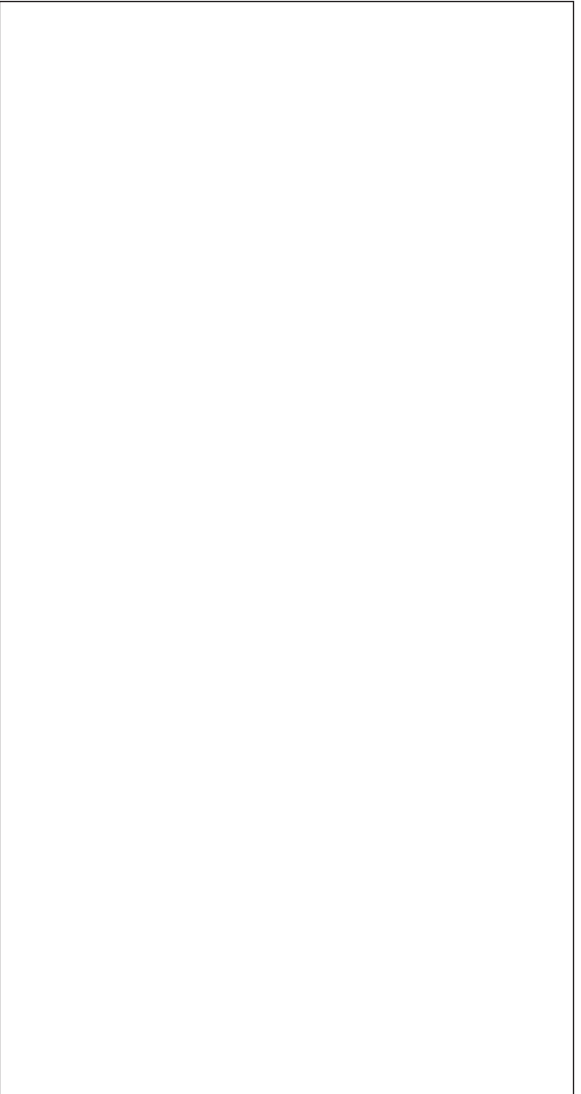
5. Amount of Casing Removed 75 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other	Placement
Bags (94lb)	_____	_____	<u>10</u>	from <u>0</u> to <u>75</u> (feet)
Gallons of Water	_____	_____	<u>240</u>	from _____ to _____ (feet)
Yards of Sand	_____	_____	_____	from _____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/04/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 18.24" Longitude 94 15' 31.59"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well mONITORING WELL
OW-06

4. Depth of Well 67 **Diameter of Well** 4"
(feet) (inches)

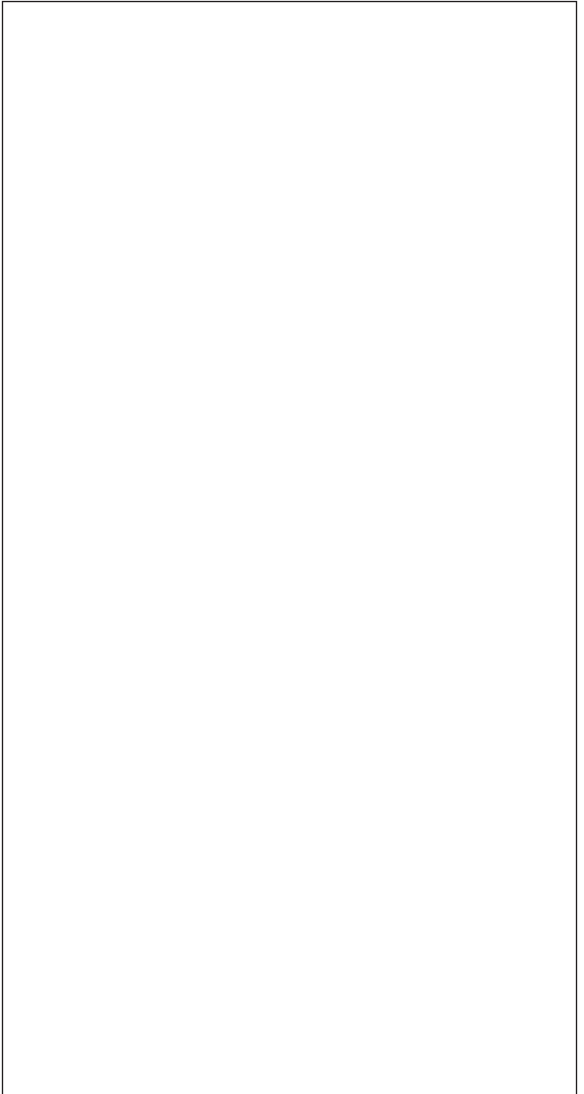
5. Amount of Casing Removed 67 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	30	from	<u>0</u> to <u>67</u> (feet)
Gallons of Water	_____	_____	720	from	_____ to _____ (feet)
Yards of Sand	_____	_____	5	from	<u>20</u> to <u>30</u> (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT
Gravity fall bentonite chips for void

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/05/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 18.37" Longitude 94 15' 31.51"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-07

4. Depth of Well 72 **Diameter of Well** 4"
(feet) (inches)

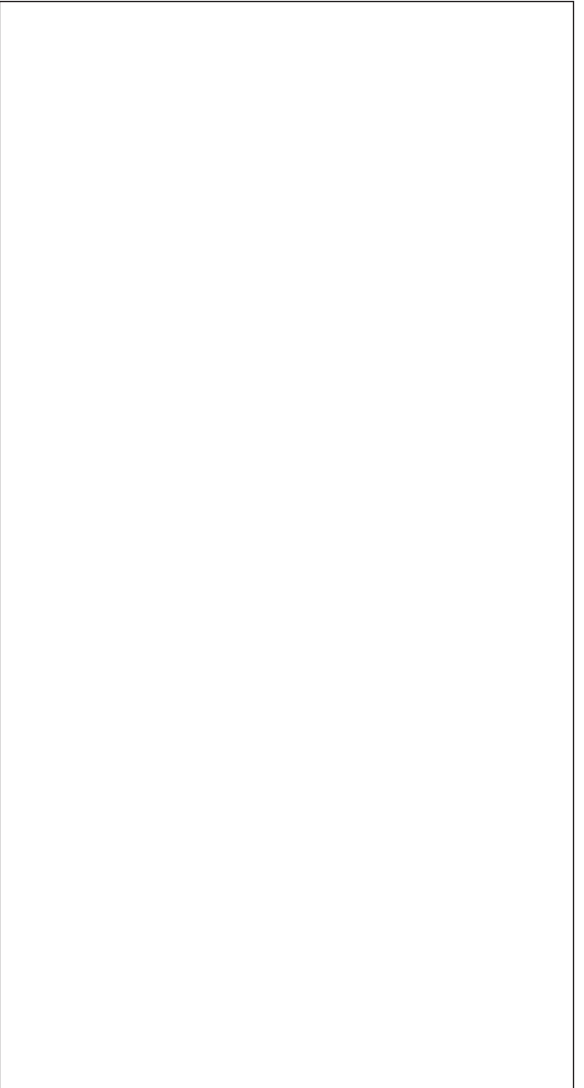
5. Amount of Casing Removed 72 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	<u>7</u>	from	<u>0</u> to <u>72</u> (feet)
Gallons of Water	_____	_____	<u>170</u>	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/11/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 18.78" Longitude 94 15' 31.35"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-08

4. Depth of Well 70 **Diameter of Well** 4"
(feet) (inches)

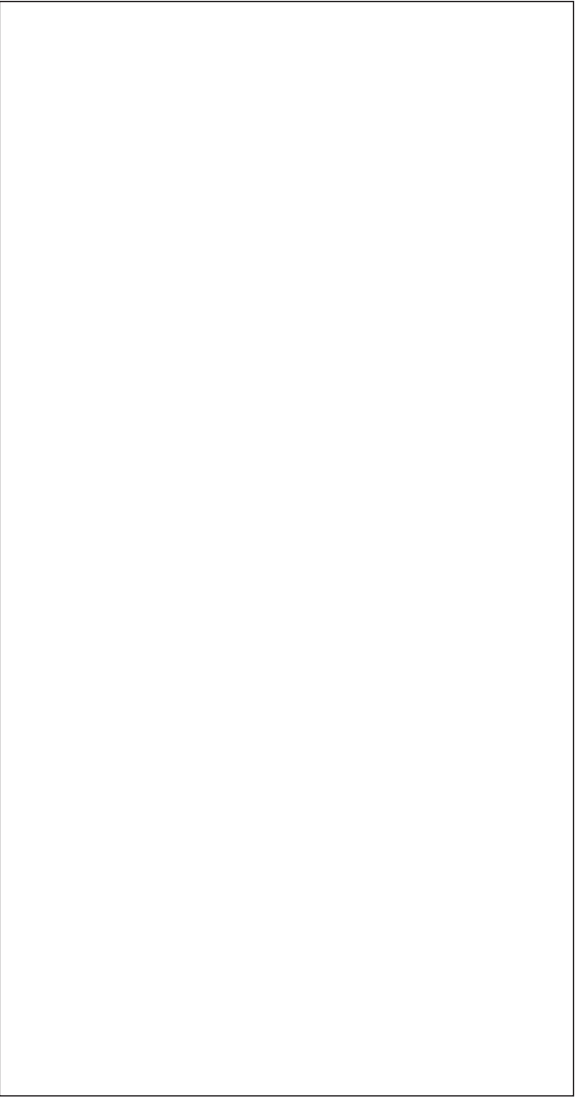
5. Amount of Casing Removed 70 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	8	from	<u>0</u> to <u>70</u> (feet)
Gallons of Water	_____	_____	190	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/10/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 18.97" Longitude 94 15' 31.16"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-09

4. Depth of Well 53 **Diameter of Well** 4"
(feet) (inches)

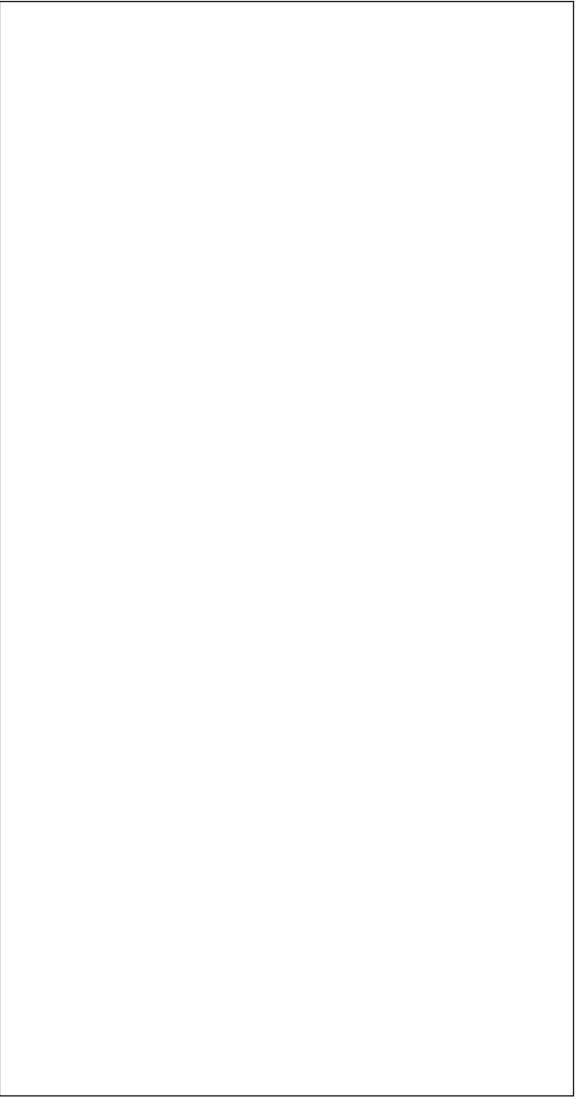
5. Amount of Casing Removed 53 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	<u>7</u>	from	<u>0</u> to <u>53</u> (feet)
Gallons of Water	_____	_____	<u>165</u>	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





NATURAL RESOURCES DIVISION

Arkansas Water Well Construction Commission
10421 W Markham Street
Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/10/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
Latitude 36 08' 19.30" Longitude 94 15' 30.87"

2. Owner ECO-VISTA LANDFILL
Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-10

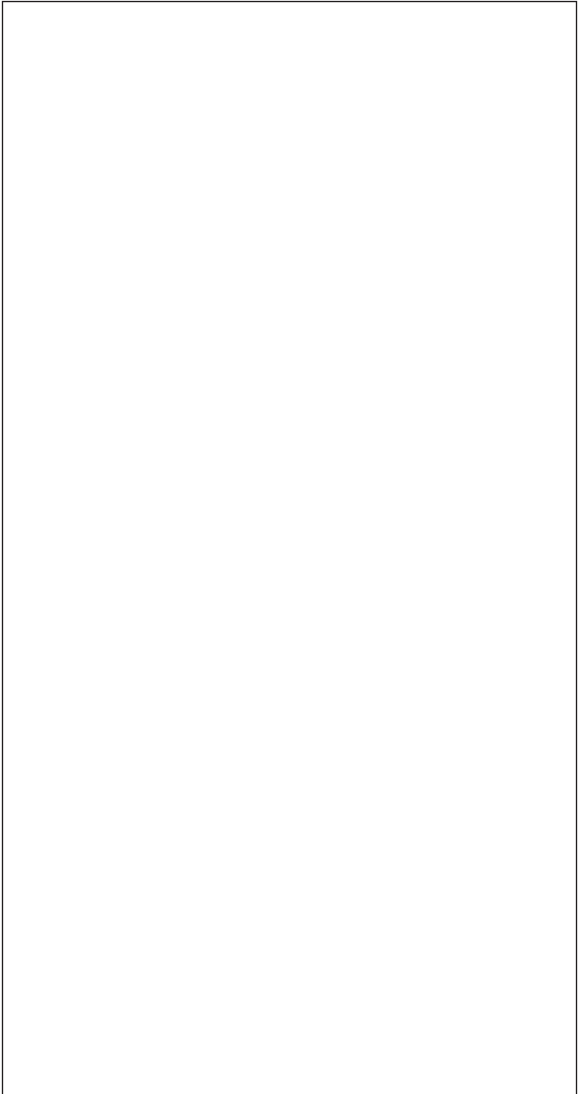
4. Depth of Well 67 Diameter of Well 4"
(feet) (inches)

5. Amount of Casing Removed 67 Diameter 4"
(feet) (inches)

6. Sealing Material and Placement
Neat Cement Sand Cement Other Placement
Bags (94lb) 7 from 0 to 67 (feet)
Gallons of Water 165 from to (feet)
Yards of Sand from to (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

*Well & Formation Diagram:
Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/10/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 19.46" Longitude 94.15' 30.67"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-19

4. Depth of Well 37 **Diameter of Well** 4"
(feet) (inches)

5. Amount of Casing Removed 37 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	<u>6</u>	from	<u>0</u> to <u>37</u> (feet)
Gallons of Water	_____	_____	<u>145</u>	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.



Arkansas Water Well Construction Commission
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 Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/09/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 19.55" Longitude 94 15' 30.34"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-20

4. Depth of Well 35 **Diameter of Well** 4"
(feet) (inches)

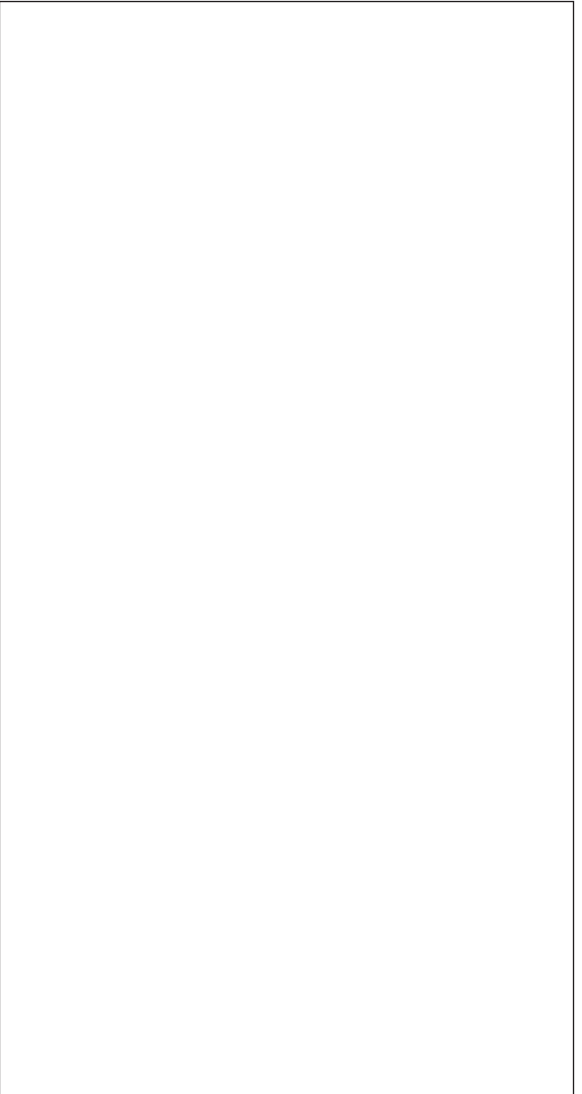
5. Amount of Casing Removed 35 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	<u>6</u>	from	<u>0</u> to <u>36</u> (feet)
Gallons of Water	_____	_____	<u>145</u>	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





Arkansas Water Well Construction Commission
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/09/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 38 08' 19.53" Longitude 94 08' 29.49"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well MONITORING WELL
OW-21

4. Depth of Well 30 **Diameter of Well** 4"
(feet) (inches)

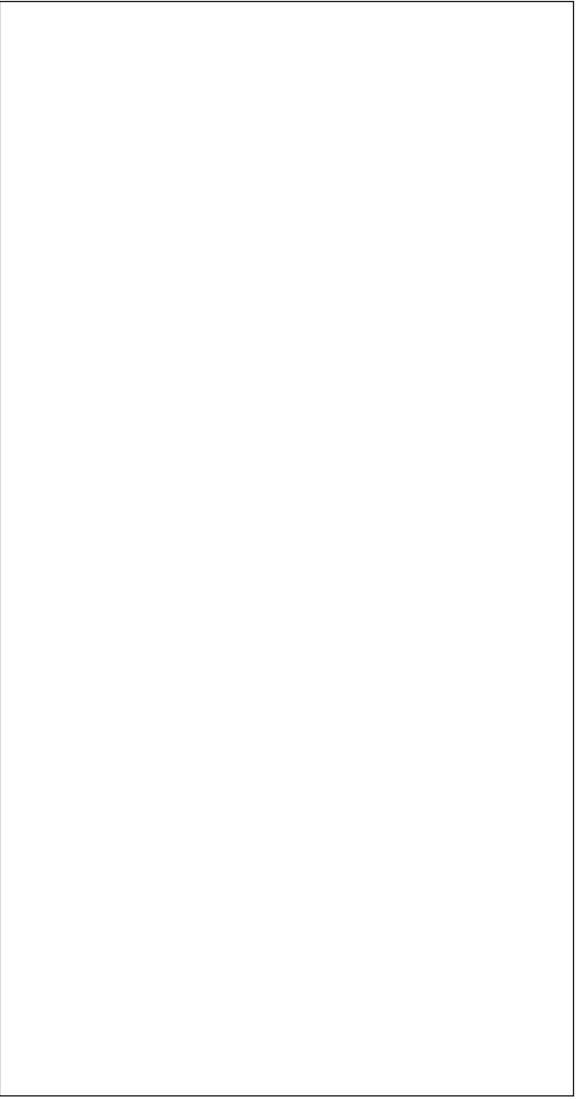
5. Amount of Casing Removed 30 **Diameter** 4"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other	Placement
Bags (94lb)	_____	_____	<u>4</u>	from <u>0</u> to <u>30</u> (feet)
Gallons of Water	_____	_____	<u>100</u>	from _____ to _____ (feet)
Yards of Sand	_____	_____	_____	from _____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/09/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 05 '19.76" Longitude 94 15' 28.22"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well PIEZOMETER
PZ-1D

4. Depth of Well 70 **Diameter of Well** 2
(feet) (inches)

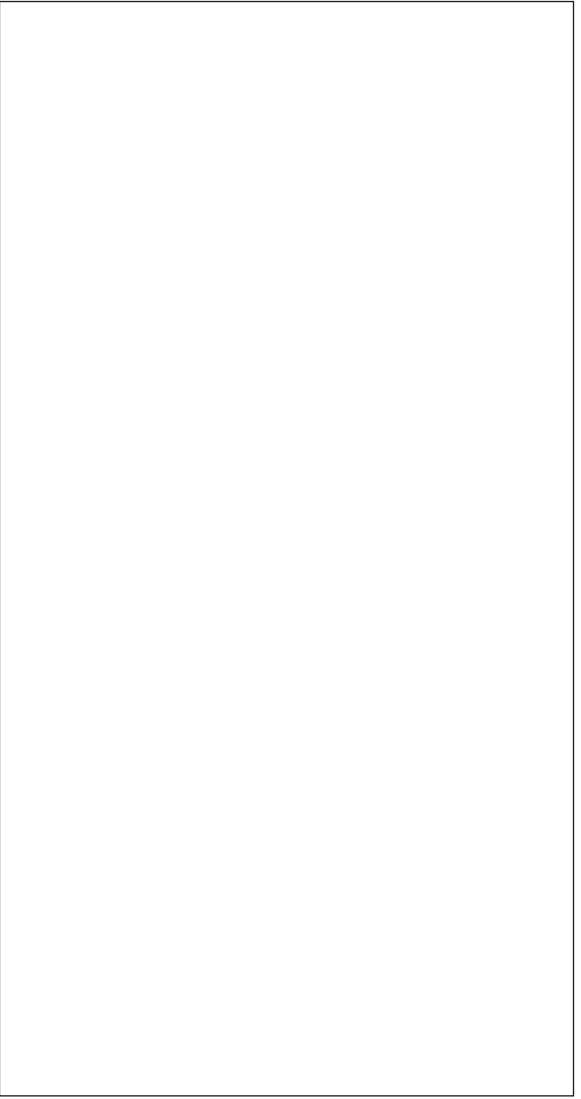
5. Amount of Casing Removed 70 **Diameter** 2
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other		Placement
Bags (94lb)	_____	_____	<u>10</u>	from	<u>0</u> to <u>70</u> (feet)
Gallons of Water	_____	_____	<u>240</u>	from	_____ to _____ (feet)
Yards of Sand	_____	_____	_____	from	_____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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 Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/03/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NW 1/4 NE
 Latitude 36 08' 17.94" Longitude 94 15' 31.87"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well PIEZOMETER
PZ-2D

4. Depth of Well 101 **Diameter of Well** 2
(feet) (inches)

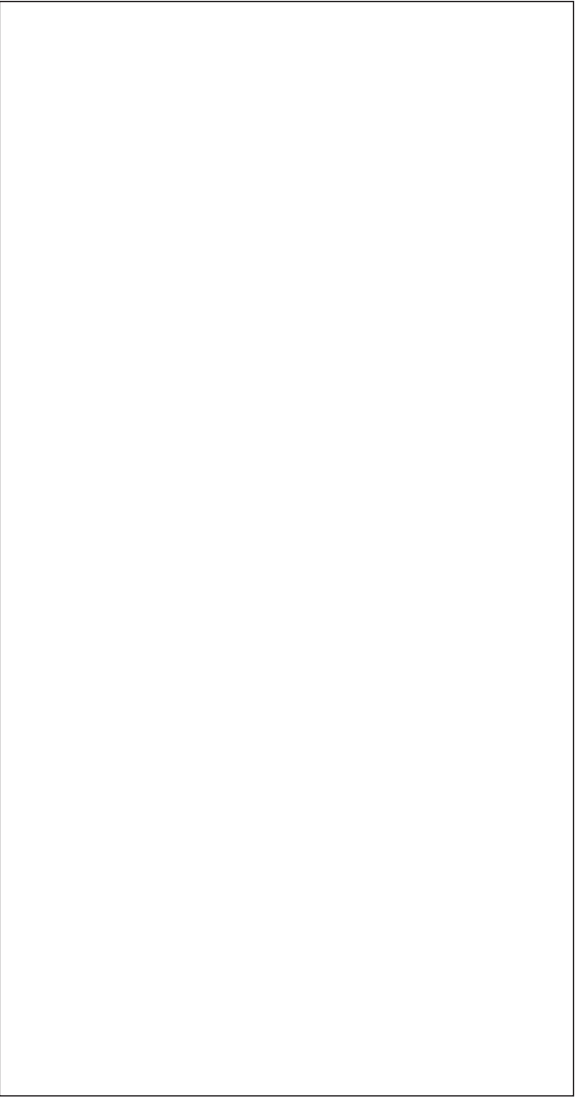
5. Amount of Casing Removed 80 **Diameter** 2
(feet) (inches)
(feet) (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other	Placement
Bags (94lb)	_____	_____	<u>16</u>	from <u>0</u> to <u>80</u> (feet)
Gallons of Water	_____	_____	<u>375</u>	from _____ to _____ (feet)
Yards of Sand	_____	_____	_____	from _____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





Arkansas Water Well Construction Commission
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 Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 11/03/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NE 1/4 NW
 Latitude 36 08' 18.45" Longitude 94 15' 13.95"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well PIEZOMETER
PZ-3D

4. Depth of Well 90 **Diameter of Well** 2"
(feet) (inches)

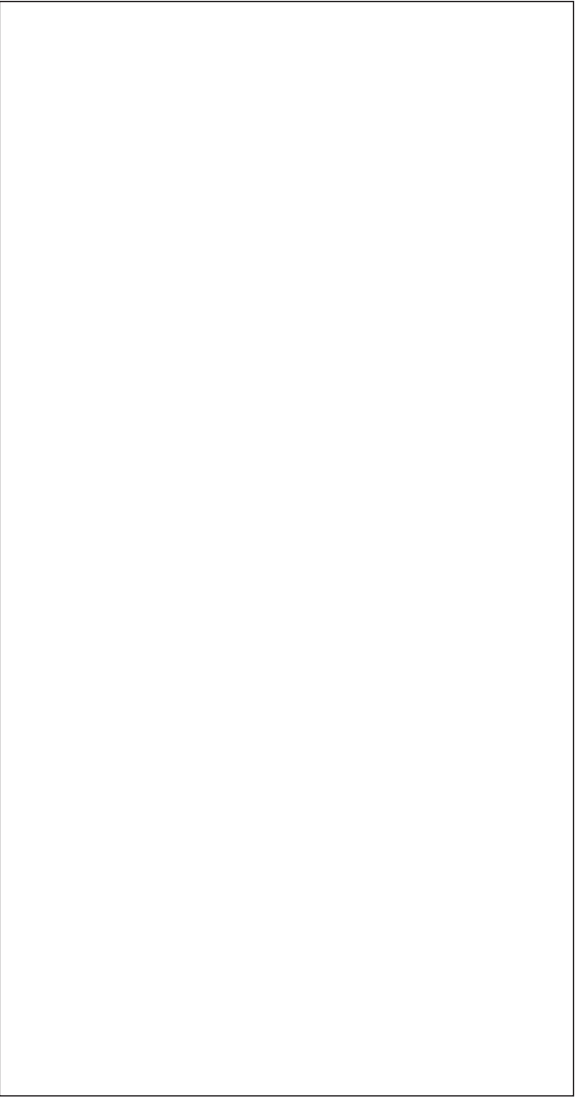
5. Amount of Casing Removed 34 **Diameter** 2"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other	Placement
Bags (94lb)	_____	_____	<u>3</u>	from <u>0</u> to <u>90.8</u> (feet)
Gallons of Water	_____	_____	<u>72</u>	from _____ to _____ (feet)
Yards of Sand	_____	_____	_____	from _____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





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 Little Rock, AR 72205
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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 11/02/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
 Township 17N Range 31W Section (if available) 23 1/4 NE 1/4 NW
 Latitude 38 08' 18.52" Longitude 94 15' 14.17"

2. Owner ECO-VISTA LANDFILL
 Address 2210 N. PRINCE WILLIAMS RD, Springdale AR. 72762

3. Use of Well PIEZOMETER
PZ-3S

4. Depth of Well 71 **Diameter of Well** 2"
(feet) (inches)

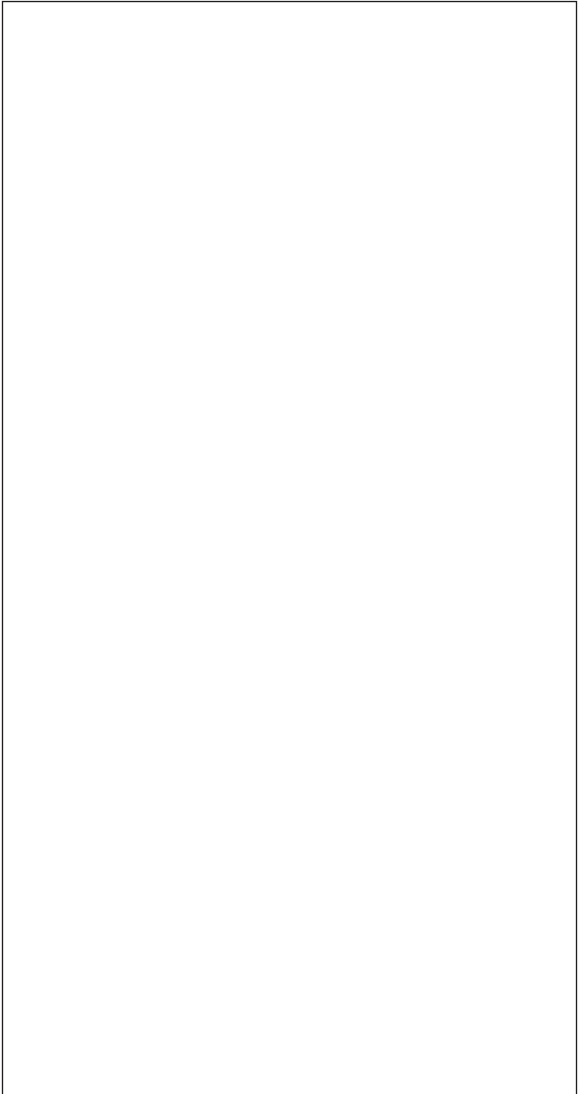
5. Amount of Casing Removed 37 **Diameter** 2"
(feet) (inches)
 _____ (feet) _____ (inches)

6. Sealing Material and Placement

	Neat Cement	Sand Cement	Other	Placement
Bags (94lb)	_____	_____	<u>3</u>	from <u>0</u> to <u>72.9</u> (feet)
Gallons of Water	_____	_____	<u>72</u>	from _____ to _____ (feet)
Yards of Sand	_____	_____	_____	from _____ to _____ (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

***Well & Formation Diagram:**
 Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.





NATURAL RESOURCES DIVISION

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Arkansas Water Well Abandonment Form

Contractor/Owner ENVIRONMENTAL WORKS INC Contractor # 2808 Date 10/12/2023
MM/DD/YYYY

1. Well Location (Provide a sketch in the space provided) County BENTON
Township 17N Range 31W Section (if available) 14 1/4 SW 1/4 SW
Latitude 36 08' 26.25" Longitude 94 15' 37.82"

2. Owner ECO-VISTA LANDFILL
Address 2210 N. PRINCE WILLIAMS RD, Springdale, AR 72762

3. Use of Well PIEZOMETER
MW-01

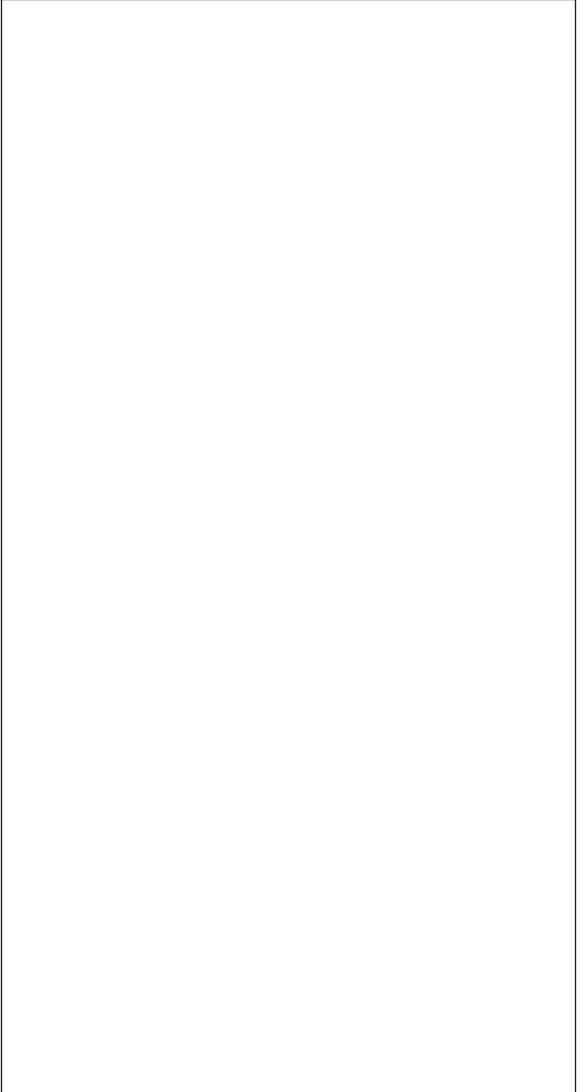
4. Depth of Well 124 Diameter of Well 6"
(feet) (inches)

5. Amount of Casing Removed 124 Diameter 6"
(feet) (inches)

6. Sealing Material and Placement
Neat Cement Sand Cement Other Placement
Bags (94lb) 10 from 0 to 124 (feet)
Gallons of Water 250 from to (feet)
Yards of Sand from to (feet)

7. Explain Method of Placement of Material
OVERDRILL
TREMIE QUIK GROUT

*Well & Formation Diagram:
Sketch a diagram showing depths of well, formations, casing (if present), grouting materials, and placement, etc.



Attachment D



WELL DEVELOPMENT FORM

Well No: MW-22

Project Name: ECO Vista

Date: 11-3-23

Time: 1130

Project No: 232617 B1

Well Type: Monitor Extraction Other: _____

Recorded by: Alsep

Sampled By: Alsep

WELL PURGING

PURGE VOLUME:

Casing Diameter (D in inches): 2"

Total Depth of Well (TD in feet BTOC): 75

Water Level Depth (WL in feet BTOC): 56

Number of Well Volumes to be Purged (# Vols): Continuous

PURGE METHOD:

Bailer-Type: Stainless Steel

Pump - Type: Mensoor

Other: _____

PUMP INTAKE SETTING:

Near bottom Near Top Other: _____

Depth in feet (BTOC): _____

Screen Interval in feet (BTOC): 20"

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{TD (feet)} - \text{WL (feet)}}{12 \text{ (inches)}} \right) \times \left(\frac{\text{D (inches)}}{12} \right)^2 \times 0.0408 = \text{Cal. Purge Volume (gallons)}$$

Purge Time:

Start _____ Stop _____

Purge Rate:

Initial _____ gpm Final _____ gpm

Actual Purge Vol:

_____ gallons

FIELD PARAMETER MEASUREMENTS

Minutes since purging began	pH	Cond. (µmhos/cm)	Temperature C F	Description: Well condition, turbidity, color, etc.
<u>Continuous</u>				<u>Ran until Turbidity of 8.99</u>
				<u># Bailed out sediment from well for about 20-30 mins</u>

Discharge Water Disposal:

Sanitary Sewer Storm Sewer Drum/Retained Onsite

Other (describe): on site



WELL DEVELOPMENT FORM

Well No: MWA 23

Project Name: ecovista

Date: 11-3-2023

Time: 1350-1530

Project No: 232617B1

Well Type: Monitor Extraction Other: _____

Recorded by: ALSEP

Sampled By: ALSEP

WELL PURGING

PURGE VOLUME:

Casing Diameter (D in inches): 2"

Total Depth of Well (TD in feet BTOC): 42

Water Level Depth (WL in feet BTOC): 56

Number of Well Volumes to be Purged (# Vols): 2

PURGE METHOD:

Bailer-Type: Stainless

Pump - Type: Monsoon

Other: _____

PUMP INTAKE SETTING:

Near bottom Near Top Other: _____

Depth in feet (BTOC): _____

Screen Interval in feet (BTOC): _____

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{TD (feet)} - \text{WL (feet)}}{\text{D (inches)}} \right) \times \text{\# vols} \times 0.0408 = \text{Cal. Purge Volume} \text{ gallons}$$

Purge Time:

Start _____ Stop _____

Purge Rate:

Initial _____ gpm Final _____ gpm

Actual Purge Vol:

_____ gallons

FIELD PARAMETER MEASUREMENTS

Minutes since purging began	pH	Cond. (µmhos/cm)	Temperature C F	Description: Well condition, turbidity, color, etc.
0				Run well dry. Muddy from drill cuttings started to clear some turbidity 130
30 min				Run well dry again
				# Bailed out sediment from well with bailer for 20-30 mins

Discharge Water Disposal:

Sanitary Sewer Storm Sewer Drum/Retained Onsite

Other (describe): onsite



WELL DEVELOPMENT FORM

Well No: MW-24

Project Name: CO-USTA

Date: 11-3-23

Time: 1530-1830

Project No: 23261781 Well Type: Monitor Extraction Other: _____

Recorded by: Alsup Sampled By: Alsup

WELL PURGING

PURGE VOLUME:

Casing Diameter (D in inches): 2 1/2

Total Depth of Well (TD in feet BTOC): 60

Water Level Depth (WL in feet BTOC): 57

Number of Well Volumes to be Purged (# Vols): 2

PURGE METHOD:

Bailer-Type: Stainless

Pump - Type: Monsoon

Other: _____

PUMP INTAKE SETTING:

Near bottom Near Top Other: _____

Depth in feet (BTOC): _____

Screen Interval in feet (BTOC): _____

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{TD (feet)} - \text{WL (feet)}}{\text{D (inches)}} \right) \times \text{\# vols} \times 0.0408 = \text{Cal. Purge Volume (gallons)}$$

Purge Time:

Start _____ Stop _____

Purge Rate:

Initial _____ gpm Final _____ gpm

Actual Purge Vol:

_____ gallons

FIELD PARAMETER MEASUREMENTS

Minutes since purging began	pH	Cond. (µmhos/cm)	Temperature C F	Description: Well condition, turbidity, color, etc.
0				Matched with drill cutting for well water
				± Dry
30				More water continue to run till well was dry, Turbidity was 250
				✓ Bailed out settlement from well for 20-30 mins

Discharge Water Disposal:

Sanitary Sewer Storm Sewer Drum/Retained Onsite

Other (describe): onsite



WELL DEVELOPMENT FORM

Well No: MW-25

Project Name: elouista

Date: 11-3-23

Time: 1030

Project No: 232617131

Well Type: Monitor Extraction Other: _____

Recorded by: Alsep

Sampled By: Alsep

WELL PURGING

PURGE VOLUME:

Casing Diameter (D in inches): 2"

Total Depth of Well (TD in feet BTOC): 35'

Water Level Depth (WL in feet BTOC): 27'

Number of Well Volumes to be Purged (# Vols): 2

PURGE METHOD:

Bailer-Type: Stainless

Pump - Type: Mansoon

Other: _____

PUMP INTAKE SETTING:

Near bottom Near Top Other: _____

Depth in feet (BTOC): _____

Screen Interval in feet (BTOC): _____

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{TD (feet)} - \text{WL (feet)}}{\text{D (inches)}} \right) \times \text{\# vols} \times 0.0408 = \text{Cal. Purge Volume} \text{ gallons}$$

Purge Time:

Start _____ Stop _____

Purge Rate:

Initial _____ gpm Final _____ gpm

Actual Purge Vol:

_____ gallons

FIELD PARAMETER MEASUREMENTS

Minutes since purging began	pH	Cond. (µmhos/cm)	Temperature C F	Description: Well condition, turbidity, color, etc.
0	—	—	—	Muddy with drill cuttings
30 min	after Recharge	Recharge		Run dry still Muddy Muddy Run dry Quick Limited Recharge

Discharge Water Disposal:

Sanitary Sewer Storm Sewer Drum/Retained Onsite

Other (describe): onsite

Attachment E

Table 1. Surveyed Locations of Off-Waste Wells (OW)

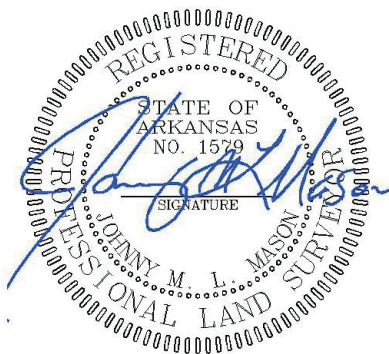
OW ID	Northing ^(1,4)	Easting ^(1,4)	Top of PVC Pipe Elevation ⁽²⁾	Top of Adjacent Ground Elevation ⁽³⁾
OW-204	665,101.22	645,278.03	1298.30	1294.30
OW-205	665,225.51	645,264.21	1297.90	1294.20
OW-206	665,294.91	645,274.29	1302.00	1298.00
OW-207	665,392.95	645,242.85	1301.70	1297.60
OW-208	665,517.74	645,238.85	1299.80	1295.70

Notes:

- Northing and Easting Locations were measured on the lock side at marked location.
- Top of PVC pipe elevation was measured on the lock side at marked location.
- Top of adjacent ground elevation was measured at the lock side of casing just beyond the concrete pad.
- Field measurements were surveyed by MSCI and completed on 10-21-2023 and are based on site specific control data as provided by WM to MSCI. Site specific control datum is scaled and rotated to State Plane Projection NAD83, Arkansas North and NAVD88 as provided to MSCI. No independent survey has been performed by MSCI to verify the correctness of the site control datum to NAD83 and NAVD88. Table 2 below shows site benchmarks used to control the survey.

Table 2. Landfill Permanent Benchmarks

Point	Northing	Easting	Elevation
1	665,349.93	645,326.51	1298.10
2	666,639.51	646,397.86	1299.17
21	662,089.30	647,253.71	1195.31



Johnny M.L. Mason
2023-11-10 09:36-06:00





Table 1. Surveyed Locations of Groundwater Monitoring Wells (MW)

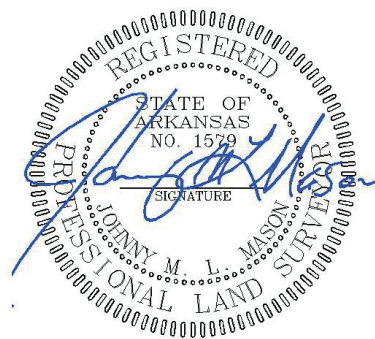
MW ID	Northing ^(1,4)	Easting ^(1,4)	Top of PVC Pipe Elevation ⁽²⁾	Top of Adjacent Ground Elevation ⁽³⁾
MW-22	662897.93	644981.76	1235.12	1232.52
MW-23	663403.88	644534.27	1272.68	1269.80
MW-24	664926.35	643780.47	1294.06	1291.37
MW-25	664937.30	644426.48	1269.20	1266.39

Notes:

- Northing and Easting Locations were measured on the lock side at marked location.
- Top of PVC pipe elevation was measured on the lock side at marked location.
- Top of adjacent ground elevation was measured at the lock side of casing just beyond the concrete pad.
- Field measurements were surveyed by MSCI and completed on 11-08-2023 and are based on site specific control data as provided by WM to MSCI. Site specific control datum is scaled and rotated to State Plane Projection NAD83, Arkansas North and NAVD88 as provided to MSCI. No independent survey has been performed by MSCI to verify the correctness of the site control datum to NAD83 and NAVD88. Table 2 below shows site benchmarks used to control the survey.

Table 2. Landfill Permanent Benchmarks

Point	Northing	Easting	Elevation
1	665349.93	645326.51	1298.10
2	666639.51	646397.86	1299.17
21	662089.30	647253.71	1195.31



Johnny M.L. Mason
2023-11-09 14:32-06:00

