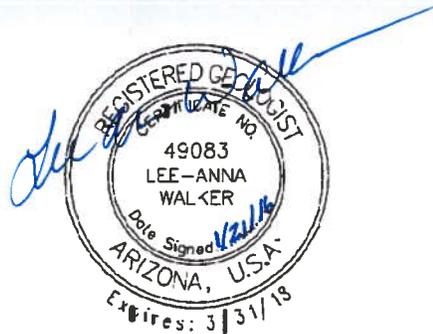




January 13, 2016

Mr. Richard Byrd
City of Tucson, Environmental Services
4004 South Park Avenue, Building 1
Tucson, Arizona 85726



Re: Project Completion Letter for the Landfill Gas Monitoring Probe and Passive Vent Well Installation and Abandonment Project at Congress and Nearmont Landfills in Tucson AZ.

Dear Mr. Byrd,

Engineering and Environmental Consultants, Inc. (EEC) is pleased to submit the attached documentation for the landfill gas monitoring probe and passive vent well installation and abandonment project completed at Congress and Nearmont Landfills located in Tucson, Arizona.

SITE DESCRIPTION AND BRIEF HISTORY

Congress and Nearmont Landfills are on adjacent parcels situated along the west bank of the Santa Cruz River, between the alignments of West Mission Lane and West Cushing Street, in Tucson, Arizona. Each landfill is comprised of a single unlined cell that was active during the 1950s and 1960s. The landfills were part of a "landfill stabilization" project in the early 2000s, which involved installing a network of monitoring probes and passive vent wells. The landfill stabilization project was discontinued due to a lack of funding in October 2008.

In early 2015, EEC evaluated the viability of the remaining wells that had not been previously abandoned. The results and recommendations of EEC's evaluation are provided in the *Landfill Gas Monitoring Probe & Passive Vent Well Inventory and Landfill Gas Monitoring and Migration Control Plan (EEC 2015)*. The findings indicated that many of the remaining passive vent wells were not necessary to control off site methane migration based on their current methane production. EEC identified several passive vent wells that were producing significant concentrations of methane that were damaged and needed replacement. Finally, EEC identified deficiencies in the quantity and placement of landfill gas monitoring probes around the perimeter of the landfills.

SCOPE OF SERVICES

The following scope of work was completed at Congress and Nearmont Landfills to fulfill the recommendations for monitoring probe and passive vent well modifications, installations, and abandonments outlined, by EEC, in the *Landfill Gas Monitoring Probe & Passive Vent Well Inventory and Landfill Gas Monitoring and Migration Control Plan (EEC 2015)*. The current configuration of landfill gas monitoring probe and passive vent wells remaining at the site is shown on Figure 1,

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Attachment 1. Figure 2 shows what wells were abandoned, capped, installed, or replaced as part of this scope of work.

Set Up and Health and Safety

Prior to actual field work, EEC met with local public utility providers to familiarize them with the project area. Following the meeting, a formal Blue Stake ticket was submitted to identify public underground utilities. A second meeting was conducted and new Blue Stake ticket issued when three of the monitoring probes along Cushing Street needed to be relocated to the north side of the street, which was outside the original Blue Staked area. As an additional precaution, EEC also had a private utility locator locate underground utilities in proximity to the Sun Link power substation in the north-central portion of the project.

EEC also prepared a Health and Safety Plan (HASP) for the project. The HASP outlined mandatory safe working practices for on-site employees and subcontract personnel in accordance with 29 CFR 1910.120. EEC and subcontract personnel were required to read, understand, and acknowledge the requirements of the HASP prior to work commencement (Attachment 2).

Field Activities

Field work was completed using the services of Geomechanics Southwest, Inc. of Tucson (GSI) to install, modify, and abandon landfill gas wells as per the recommendations of the Landfill Gas Control Plan (EEC 2015). The following scope of work was completed:

- On June 30, 2015, eight (8) monitoring probe well installations that were identified as being within the waste footprint were abandoned by pulling the casings from the ground with the winch line of a CME-75 drill rig and grouting the upper portion of the remaining hole(s) (photograph 1, Attachment 3). Figure 2, Attachment 1 shows which monitoring probe wells were abandoned during this project.
- On June 30, July 8, and July 29, 2015, 12 combination monitoring probe/perched groundwater well installations and nine (9) (including five (5) that were replaced) passive vent wells with subsurface obstructions were abandoned by removing the upper casings from the ground and grouting a portion of the remaining hole (photographs 2 through 4). When the casings could not be pulled from the ground, the upper five feet of the installation was drilled out with a Texoma drill rig (photograph 5). The bottom 1-2 feet of the 5-foot Texoma boring was grouted and the remaining borehole backfilled with clean soil. Figure 2, Attachment 1 shows the location of the abandoned wells.
- Sixteen (16) new triple phase landfill gas monitoring probe wells were installed along the west, north and east boundaries of the property (photographs 6 through 9). The eleven landfill gas monitoring probes that had no utility conflicts were installed July 9 through 20, 2015. Two more monitoring probe wells (CNM-17 and CNM-14) were installed on July 28 and 30, respectively, due to potential underground utility conflicts in proximity to the Sun Link substation and the Pima County sewer main that runs north-south through the east-

central portion of the site. The three remaining monitoring probe wells were moved off the property and installed on August 3, 2015, in the City of Tucson's (City) easements along the north side of Cushing Street; one (CNM-11) due to the presence of buried trash in the original location, two (CNM-15 and CNM-16) due to utility conflicts (photograph 7). Depending on the location of the probe wells, they were completed in either an above grade steel monument vault (photographs 10 and 11) or a traffic rated flush-mount vault (photograph 12). Generalized monitoring probe well schematics are shown in Attachment 4; well specific schematics are included on the boring logs in Attachment 5. Soils encountered during drilling were logged using the Unified Soil Classification System (USCS). The current configuration of monitoring probe wells is shown on Figure 1, Attachment 1).

- Eight (8) new landfill gas passive vent wells, including five (5) replacement wells, were installed on July 21, 23, and 27, 2015. Each new passive vent well was secured in a locking, vented monument vault (photographs 13 through 17). A generalized passive vent well schematic is provided Attachment 6; well specific schematics are included on the boring logs in Attachment 7. Soils and landfilled materials encountered during drilling were recorded on the boring logs as shown in Attachment 7. The current configuration of passive vent wells on the property is shown on Figure 1, Attachment 1.
- Two (2) existing passive vent wells were upgraded with locking, vented monument vaults on August 3, 2015 (photographs 16 and 17, Attachment 3).
- On July 31 and August 5, 2015, 16 existing passive vent wells that are not producing significant concentrations of methane were capped and secured in flush mounted vaults. This was done to allow the passive vent well to be used in the future if methane levels were to increase (photographs 12 and 18). The locations of capped (inactive) passive vent wells are shown on Figures 1 and 2.

Additional Work

During the completion of the above scope of work, EEC discovered additional well casings and piping that were used as part of the former landfill stabilization project. The additional items were brought to the attention of City of Tucson Environmental Services (COT-ES) and, at the request of the project manager, were also addressed by EEC and GSI. The additional work was completed on October 7 and 9, 2015, under a change order to the existing scope of work and included the following:

- Seven (7) additional unregulated wells of varying diameters and depths were abandoned by removing the upper casings with a drill rig or backhoe and grouting the upper portion of the remaining holes (Photographs 19 and 20). When the casings could not be pulled from the ground the upper five feet of the installation was drilled out with a Texoma drill rig. In these cases, the bottom 1-2 feet of the 5-foot Texoma boring was grouted and the remaining borehole backfilled with clean soil. The seven wells consisted of two 4-inch leachate wells (dry) co-located with two ½-inch vapor probes (WR-426A and WR-427A); one

leachate well with an installed pump; and four (two 2-inch and two 4-inch) well casings assumed to be part of the previous remedial efforts at the site.

- One (1) additional landfill gas vent well was capped and completed in a 12-inch traffic-rated flush-grade vault.
- EEC abandoned, removed, and disposed of 2-inch and 4-inch PVC lateral piping south of the former treatment compound.

Waste Handling and Disposal

Waste generated as part of the field activities outlined above was disposed of in an on-site roll-off bin supplied by COT-ES. Upon completion of the project the waste materials were transported by COT-ES to Los Reales Landfill for disposal.

EEC appreciates the opportunity to assist COT-ES with this project. Should you have any questions or require additional information, please contact me at (520) 321-4625 (office) or (520) 488-9205 (cell).

Respectfully submitted,
ENGINEERING AND ENVIRONMENTAL CONSULTANTS, INC.



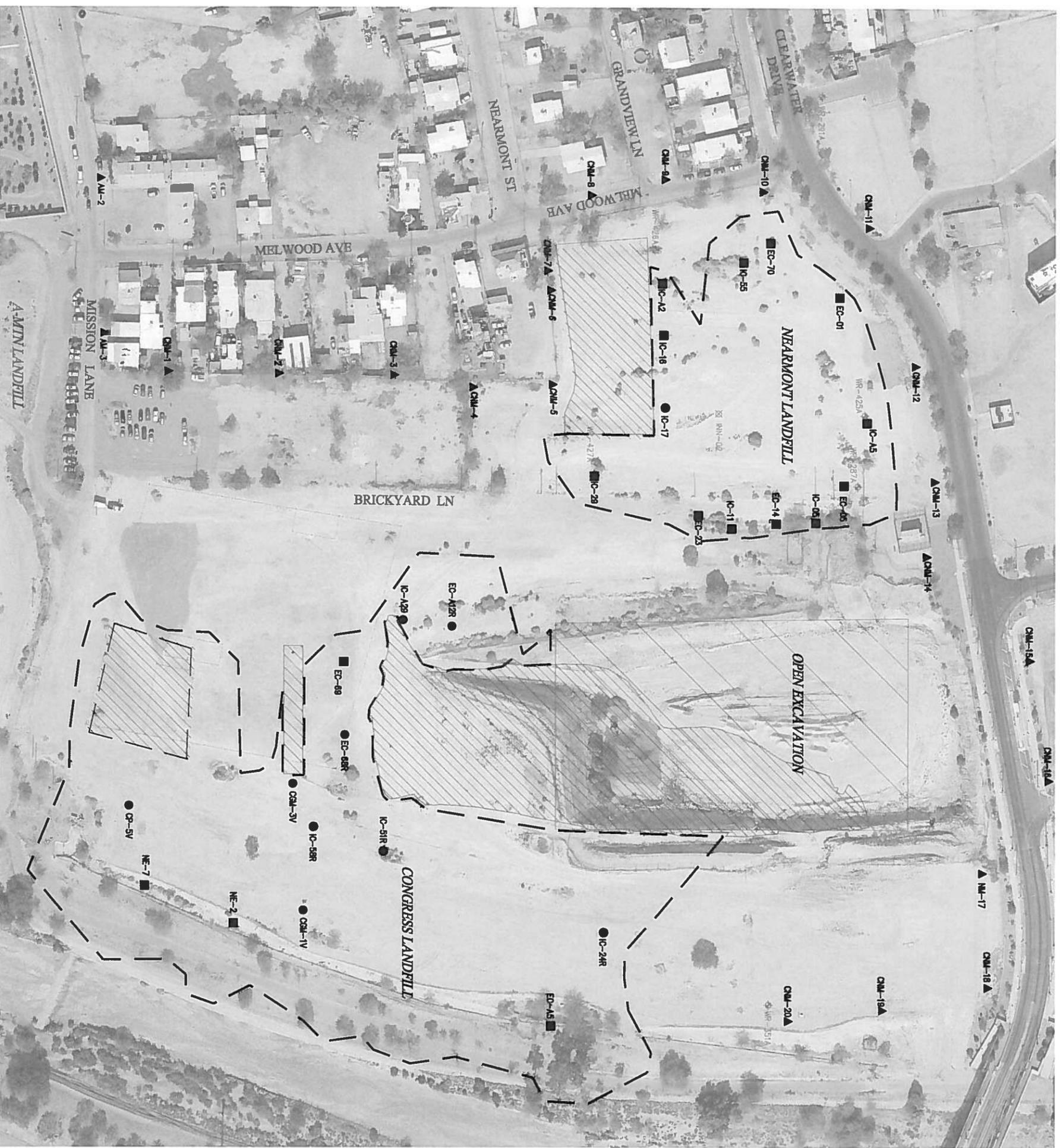
Chad S. Hancock
Field Services Manager

Attachments:

- 1: Site Maps
- 2: Signed Tailgate Safety Meeting Sheet
- 3: Site Photographs
- 4: Generalized Monitoring Probe Well Schematics
- 5: Monitoring Probe Well Boring Logs and Well Specific Schematics
- 6: Generalized Passive Vent Well Schematic
- 7: Passive Vent Well Boring Logs and Well Specific Schematics

ATTACHMENT 1:

SITE MAPS



1" = 150'

LEGEND

- ACTIVE LANDFILL GAS (LFG) PASSIVE VENT WELL
- CAPPED LANDFILL GAS (LFG) PASSIVE WELL
- ▲ LFG MONITORING PROBE WELL
- ⊕ EXISTING REGIONAL GROUNDWATER MONITORING
- - - APPROXIMATE WASTE LIMIT
- ▨ PREVIOUS WASTE EXCAVATION

EEC 11032.31

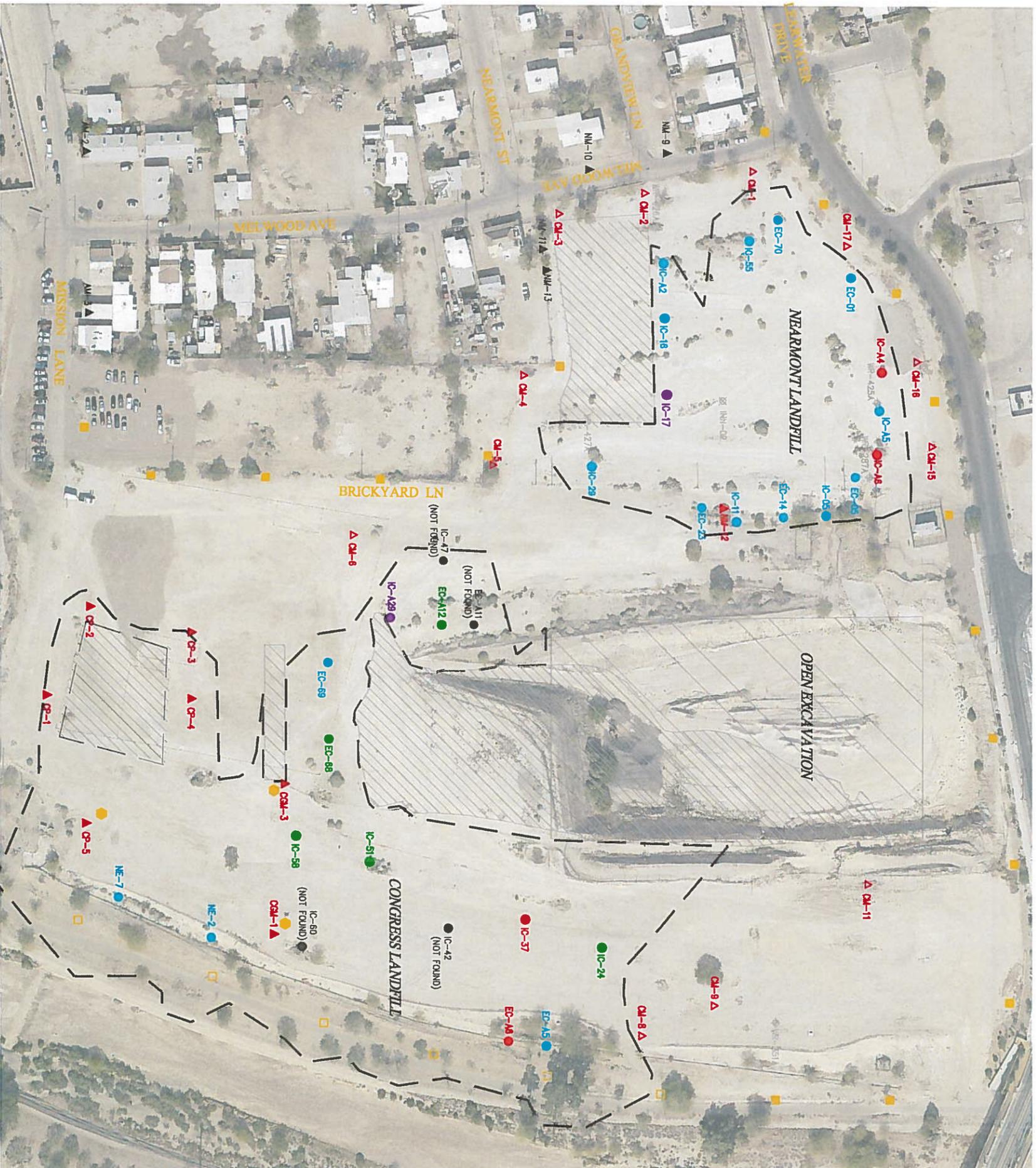
SHEET 1/1

FIGURE 1
CONGRESS/NEARMONT LANDFILLS
LFG MONITORING PROBE
AND PASSIVE VENT WELL CONFIGURATION
TUCSON, ARIZONA



Engineering and Environmental Consultants, Inc.
 4685 E. FT. LOVELL RD.
 TUCSON, ARIZONA

DESIGNED BY	KP
DRAWN BY	BDB
CHECKED BY	KP
DATE	11/24/2015
SCALE	1" = 150'



1" = 150'

LEGEND

- EXISTING LANDFILL GAS (LFG) PASSIVE VENT WELL
- △ EXISTING LFG MONITORING PROBE WELL
CO-LOCATED WITH PERCHED
GROUNDWATER MONITORING WELL
- ▲ EXISTING LFG MONITORING PROBE WELL
- PROPOSED LFG MONITORING PROBE WELL
- ◆ PROPOSED LFG PASSIVE VENT WELL
- POSSIBLE LFG MONITORING PROBE WELL LOCATION
PENDING GEOPHYSICAL SURVEY
- ⊗ EXISTING PERCHED GROUNDWATER
MONITORING WELL
- ⊕ EXISTING REGIONAL
GROUNDWATER MONITORING
- APPROXIMATE WASTE LIMIT
- ▨ PREVIOUS WASTE EXCAVATION
- EXISTING LFG MONITORING PROBE WELLS AND
PASSIVE VENT WELLS TO BE ABANDONED
- PROPOSED LFG MONITORING PROBE WELLS
AND PASSIVE VENT WELLS
- EXISTING LFG PASSIVE VENT WELLS TO BE CAPPED
- EXISTING LFG PASSIVE VENT WELLS TO BE REPLACED
- EXISTING LFG PASSIVE VENT WELLS TO BE USED AS IS

ECC 11032.31

SHEET 1/1

FIGURE 2
CONGRESS/NEARMONT LANDFILLS
PROPOSED LFG MONITORING PROBE
AND PASSIVE VENT WELL CONFIGURATION
TUCSON, ARIZONA

<p>Engineering and Environmental Consultants, Inc. 4825 E. FT. LOWELL RD. TUCSON, ARIZONA</p>	DESIGNED BY	KP
	DRAWN BY	BDB
	CHECKED BY	KP
DATE	04/28/2015	
SCALE	1"=150'	

ATTACHMENT 2:

SIGNED TAILGATE SAFETY MEETING SHEET

EEC Tailgate Safety Meeting

Client: COT-ES Location: Congress / Newmont
Job Number: _____ Date: 6/30/15 Time: 0700
Type of Work: Well abandonment and Install
Project Manager: Kevin Pierce Site Safety Officer: Chad Hancock

Safety Topics Covered

Protective Clothing Required: Level D

Chemical Hazards: Potential for Methane gas

Physical Hazards: Rig and equipment, Heat

Special Equipment Required: Drill rig

Emergency Procedures: On site first Aid and transport to hospital / call

Hospital: St. Mary's Hospital

Hospital Address: 1601 St. Mary's Rd

Emergency Phone: () 911 Hospital Phone: ()

Other: _____

Attendees

Printed Name	Signature	Company/Organization
<u>Eric Schaefer</u>	<u>[Signature]</u>	<u>GSI</u>
<u>Sebastian Kee</u>	<u>[Signature]</u>	<u>GSI</u>
<u>Chad Hancock</u>	<u>[Signature]</u>	<u>GSI</u>
<u>Chuck Friesler</u>	<u>[Signature]</u>	<u>GSI</u>
<u>Brian Parks</u>	<u>[Signature]</u>	<u>GSI</u>
<u>Ellis Coggins</u>	<u>[Signature]</u>	<u>GSI</u>

Meeting Conducted By: Chad Hancock Signature: [Signature]

ATTACHMENT 3:

SITE PHOTOGRAPHS



Photograph 1: Removing ½" PVC casings from an old probe well



Photograph 2: Removing 2" PVC casing from a damaged passive vent well installation



Photograph 3: Removing 2" steel casing from a damaged passive vent well installation



Photograph 4: Removing 2" PVC casing from an old combination leachate-probe well installation



Photograph 5: Drilling out 2" combination leachate-probe well installation



Photograph 6: Drilling for new monitoring probe installation on landfill property



Photograph 7: Installing monitoring probe well north of Cushing



Photograph 8: Typical perforated casing and cap for monitoring probe well



Photograph 9: Installing monitoring probe



Photograph 10: Installing monument style vault for monitoring probe well



Photograph 11: Typical monument style vault completion for monitoring probe well



Photograph 12: Typical flush grade completion for monitoring probe wells and capped passive vent wells



Photograph 13: Drilling in waste to install a passive vent well



Photograph 14: Typical perforated casing and end cap for passive vent well installation



Photograph 15: Installing 2" PVC casing and gravel pack for new passive vent well



Photograph 16: Typical 2" ball valve installed on new and existing passive vent wells



Photograph 17: Typical vented monument style vault for new and existing active passive vent wells



Photograph 18: Installing cap and flush mount completion on inactive passive vent wells



Photograph 19: Using backhoe to remove additional combination leachate/monitoring probe wells

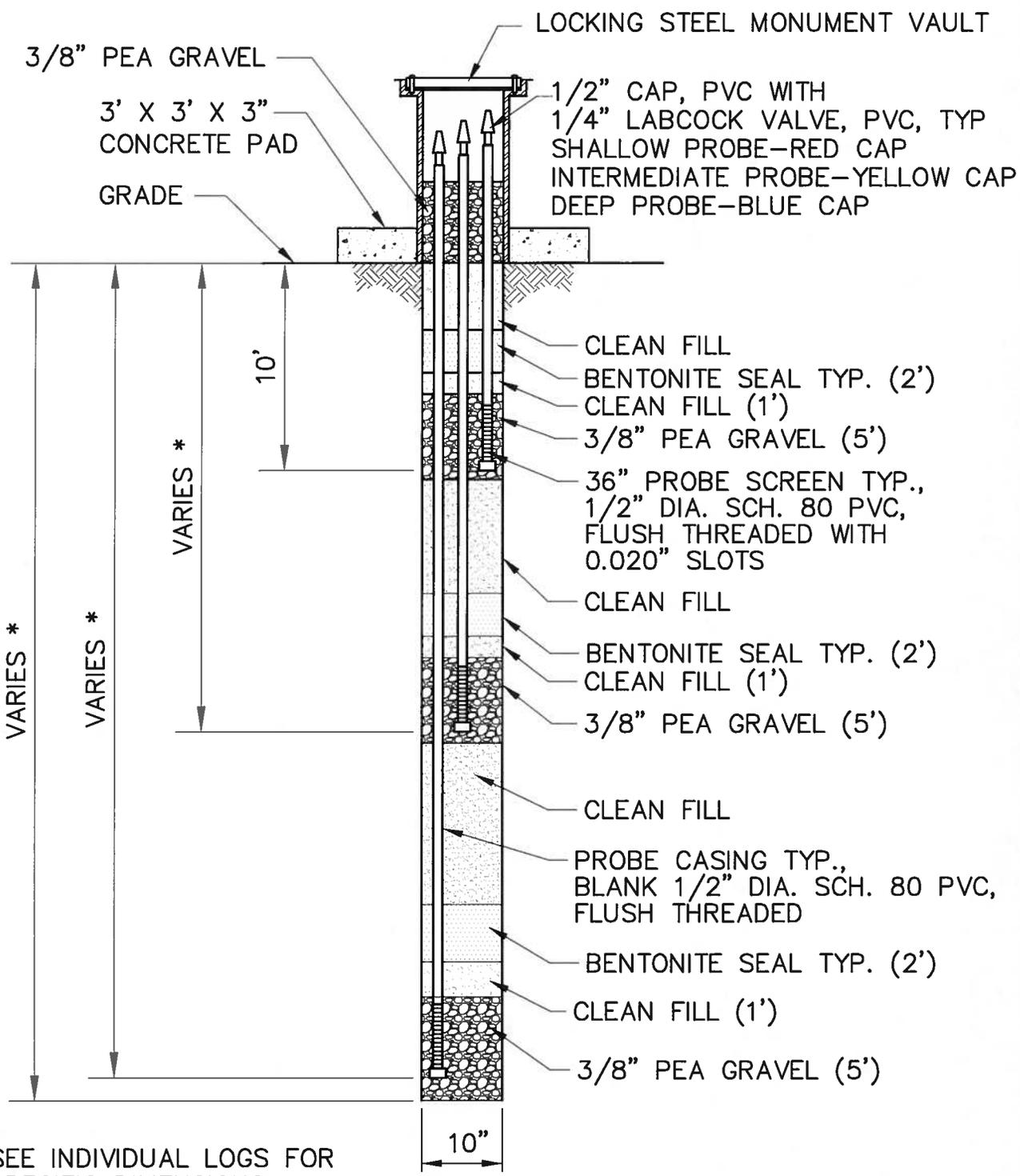


Photograph 20: Using backhoe to remove additional well casings from landfill

ATTACHMENT 4:

GENERALIZED MONITORING PROBE WELL SCHEMATICS

N:\11032_31 - Nearmont_Congress_LE_Gas_Monitoring\400_Reports & Report_Preparation\440_Maps\WELL_SCHEMATIC-41FT-REV.dwg Plotter: Nov 23, 2015 - 5:11pm bbo



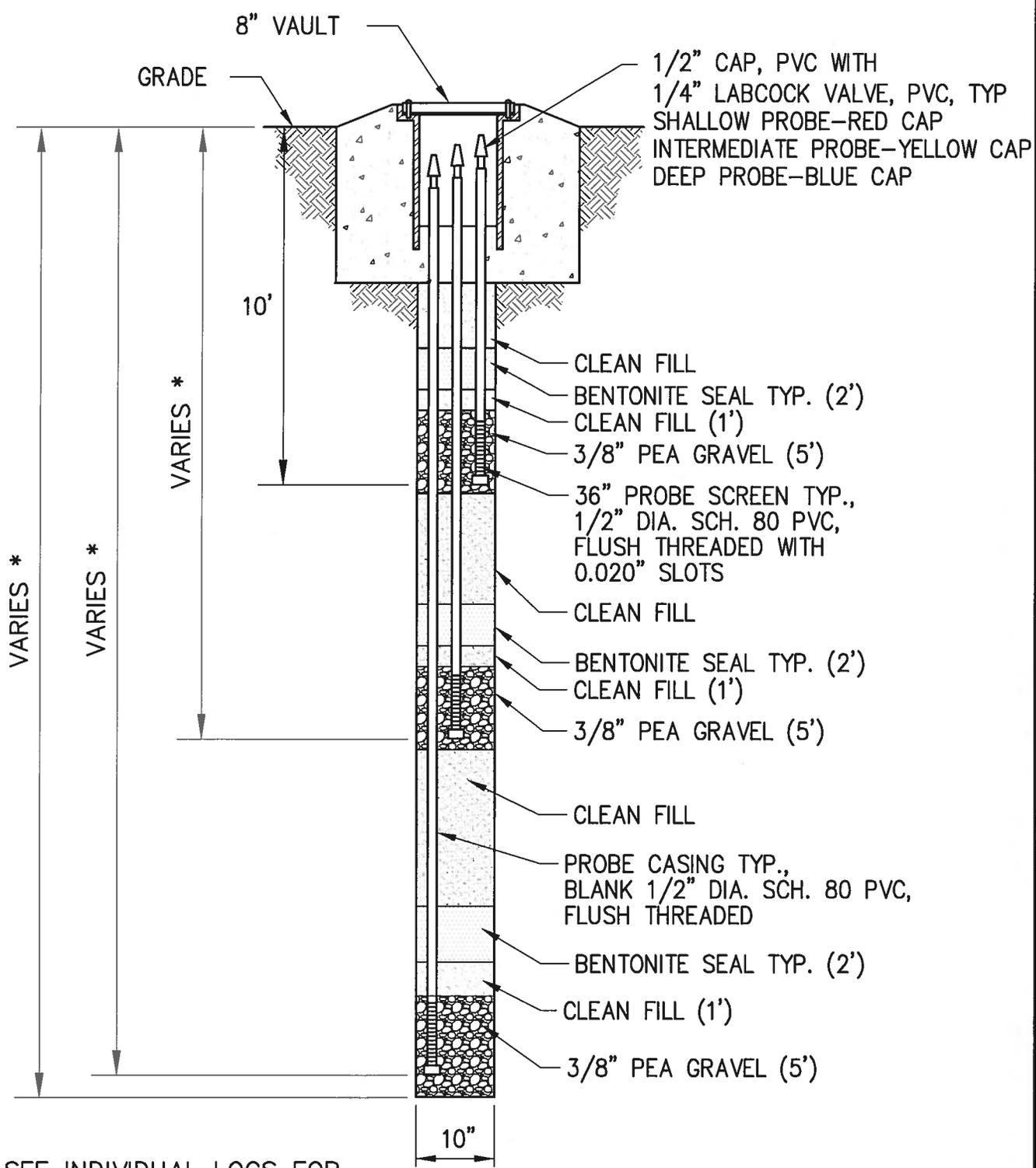
* SEE INDIVIDUAL LOGS FOR SPECIFIC DIMENSIONS

EEC 11032.31

SHEET 1/1

CONGRESS/NEARMONT LANDFILLS PROBE WELL WITH RANCH-STYLE VAULT TUCSON, ARIZONA	DESIGNED BY KP
	DRAWN BY BDB
	CHECKED BY KP
 Engineering and Environmental Consultants, Inc. 4626 E. FT. LOWELL RD. TUCSON, ARIZONA	DATE 11/24/2015
	SCALE NTS

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* SEE INDIVIDUAL LOGS FOR SPECIFIC DIMENSIONS

EEC 11032.31

SHEET 1/1

<p>CONGRESS/NEARMONT LANDFILLS PROBE WELL WITH FLUSH-GRADE VAULT TUCSON, ARIZONA</p>	DESIGNED BY KP
	DRAWN BY BDB
	CHECKED BY KP
	DATE 11/24/2015
	SCALE NTS

EEC Engineering and Environmental Consultants, Inc.
4626 E. FT. LOWELL RD.
TUCSON, ARIZONA

ATTACHMENT 5:

MONITORING PROBE WELL BORING LOGS AND WELL SPECIFIC SCHEMATICS

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

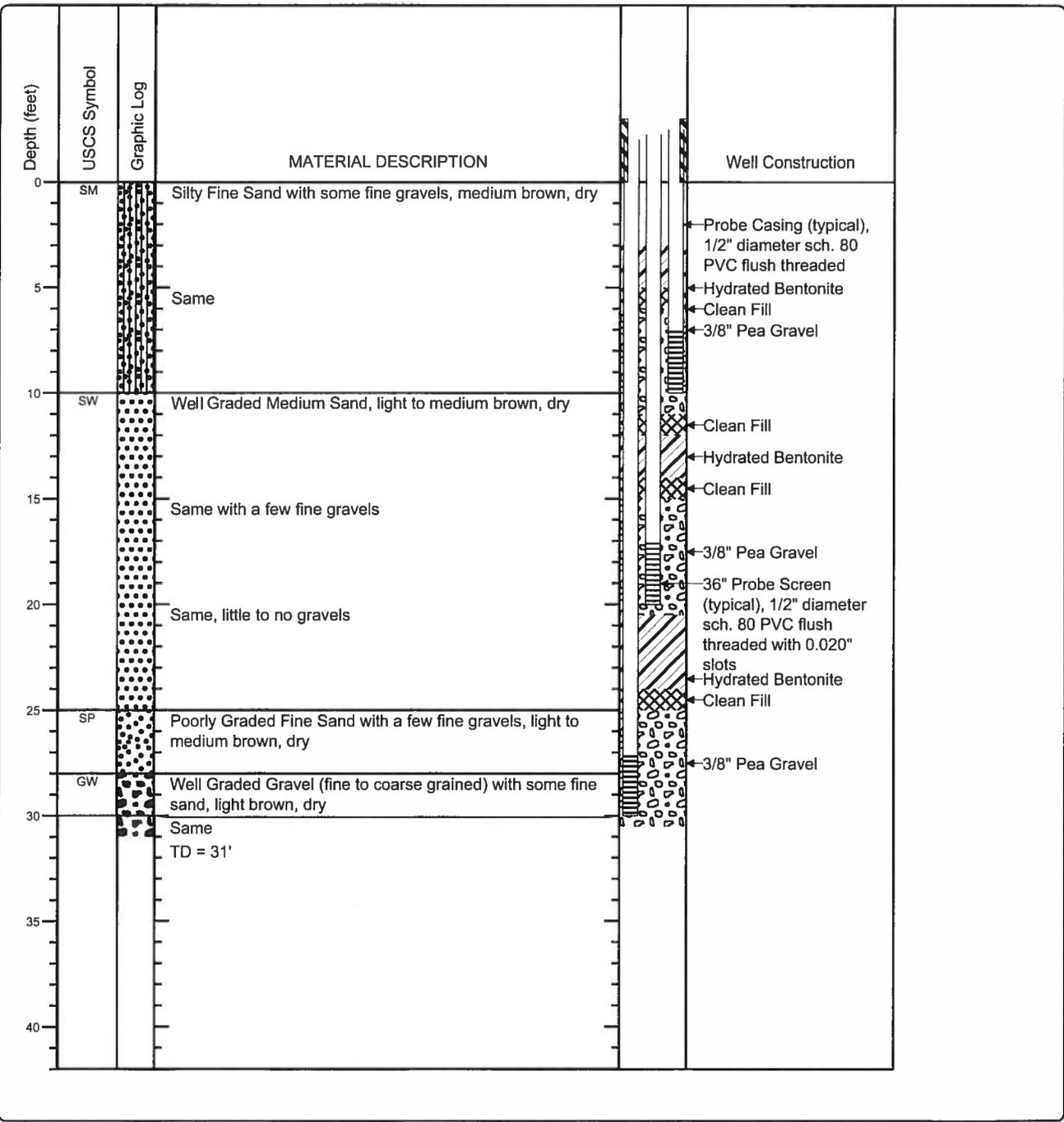
Log of Boring CNM-1

Sheet 1 of 1



Date(s) Drilled: 7/9/2015	Logged By: CH	Checked By: KP
Drilling Method: HSA	Drill Bit Size/Type: 8" Hollow Stem Auger	Total Depth of Borehole: 31'
Drill Rig Type: CME-75	Drilling Contractor: GSI	Approximate Surface Elevation: ~2359 above msl
Groundwater Level and Date Measured: NA	Sampling Method(s): NA	Hammer Data: NA
Borehole Backfill: Well Materials	Location: Perimeter of Congress/Nearmont Landfills	

N:\11032.39 - Nearmont, Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Format Logs\log1 (HARRISON).ipf



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-2

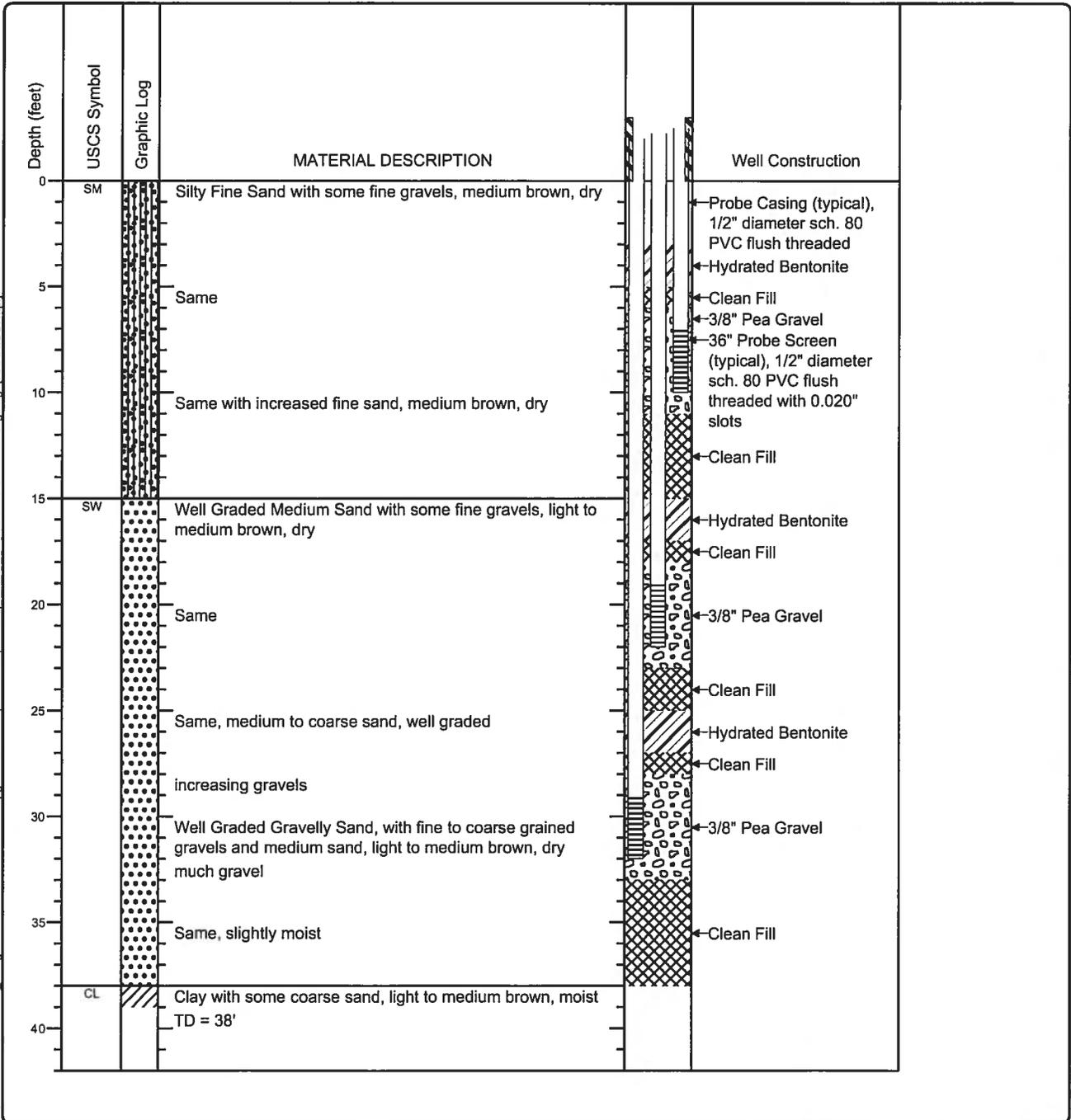
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/9/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2359 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

N:\11032.39 - Nearmont - Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\4.15 Field Data\Format Logs\log1\HARRISON.lpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

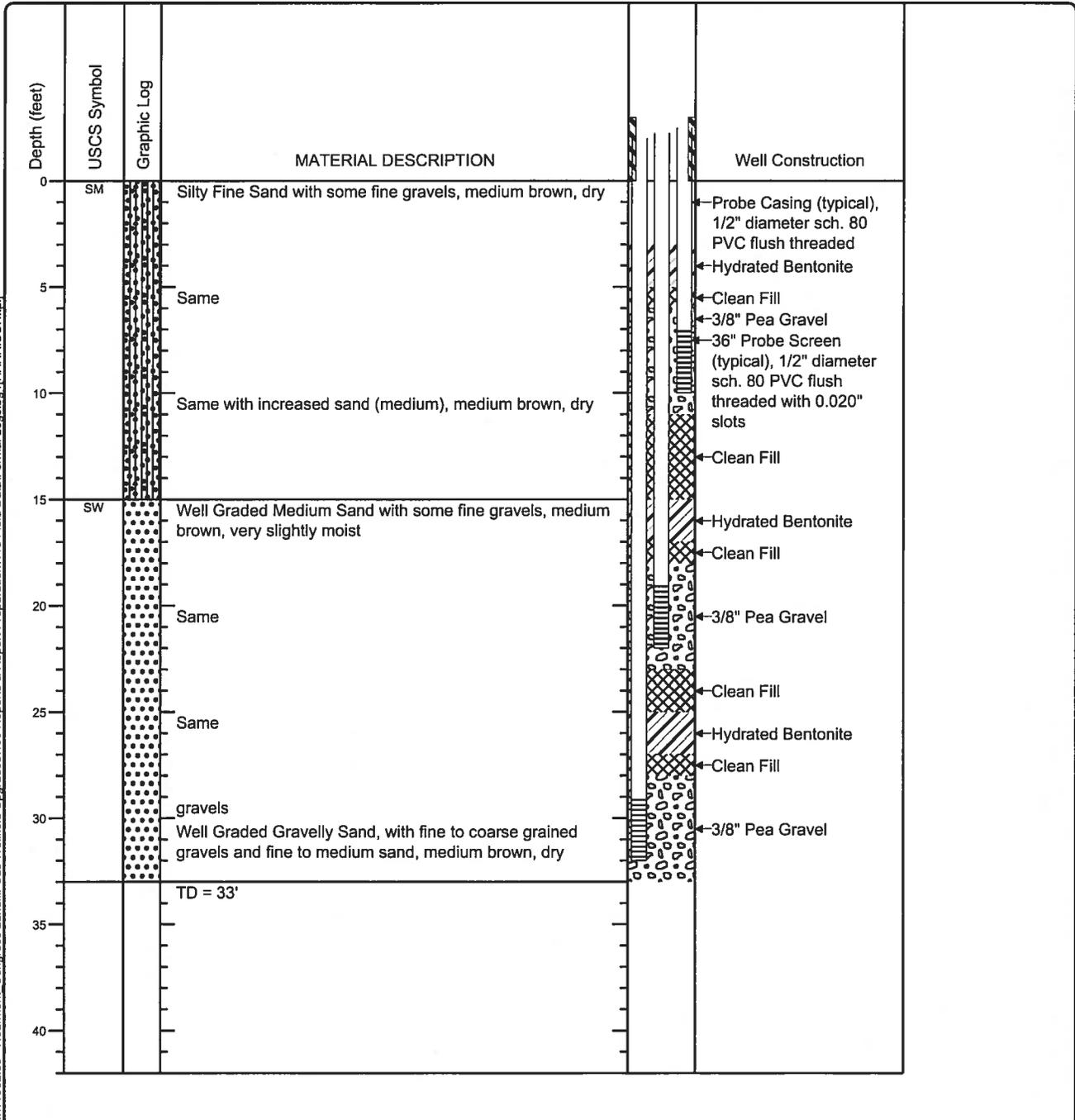
Log of Boring CNM-3

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled	7/10/2015	Logged By	CH	Checked By	KP
Drilling Method	HSA	Drill Bit Size/Type	8" Hollow Stem Auger	Total Depth of Borehole	33'
Drill Rig Type	CME-75	Drilling Contractor	GSI	Approximate Surface Elevation	~2359 above msl
Groundwater Level and Date Measured	NA	Sampling Method(s)	NA	Hammer Data	NA
Borehole Backfill	Well Materials	Location	Perimeter of Congress/Nearmont Landfills		



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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

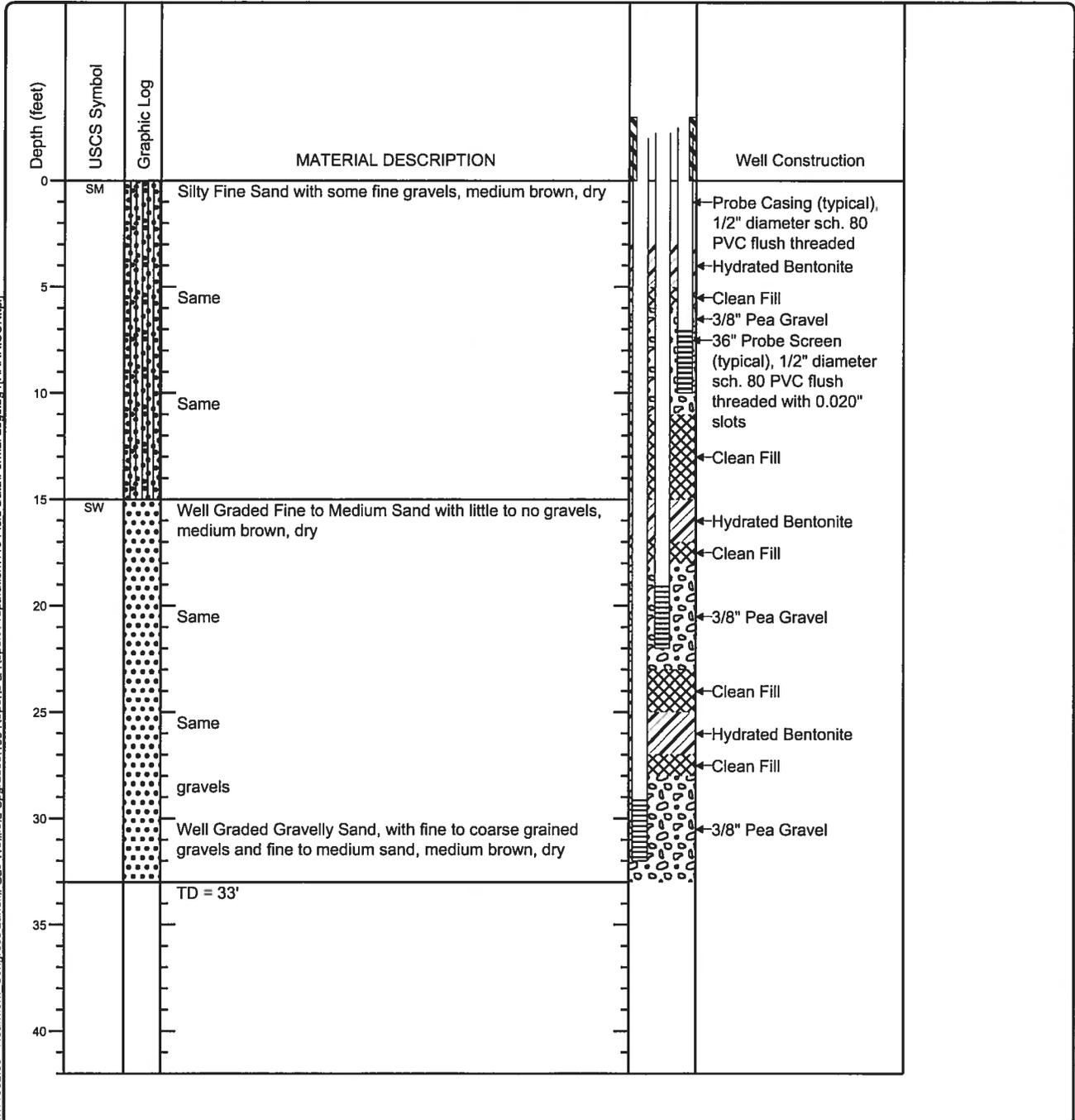
Log of Boring CNM-4

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/10/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 33'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2356 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	



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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

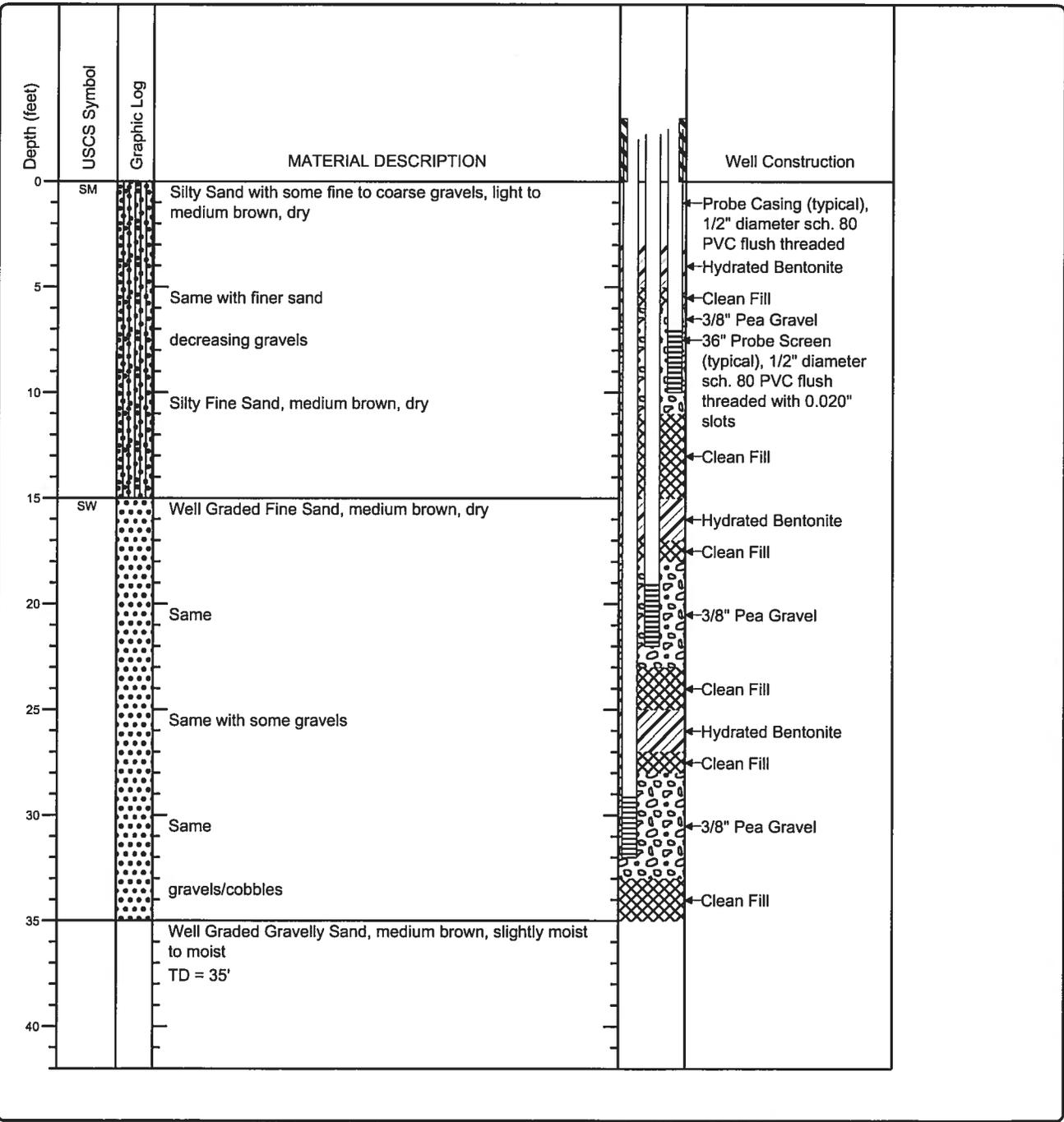
Log of Boring CNM-5

Sheet 1 of 1



Date(s) Drilled: 7/13/2015	Logged By: CH	Checked By: KP
Drilling Method: HSA	Drill Bit Size/Type: 8" Hollow Stem Auger	Total Depth of Borehole: 33'
Drill Rig Type: CME-75	Drilling Contractor: GSI	Approximate Surface Elevation: ~2356 above msl
Groundwater Level and Date Measured: NA	Sampling Method(s): NA	Hammer Data: NA
Borehole Backfill: Well Materials	Location: Perimeter of Congress/Nearmont Landfills	

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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-10

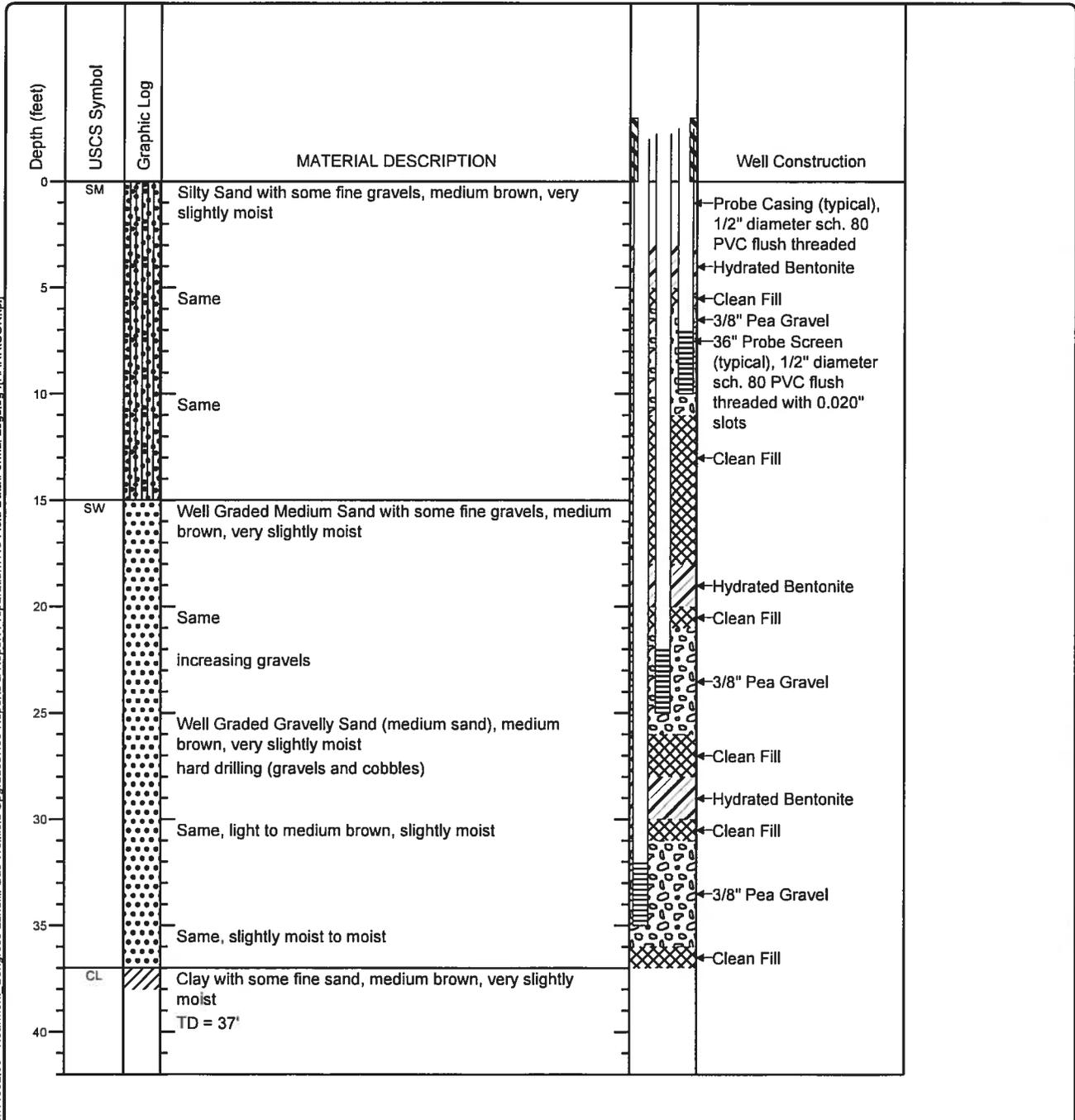
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/14/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 37'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation -2354 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

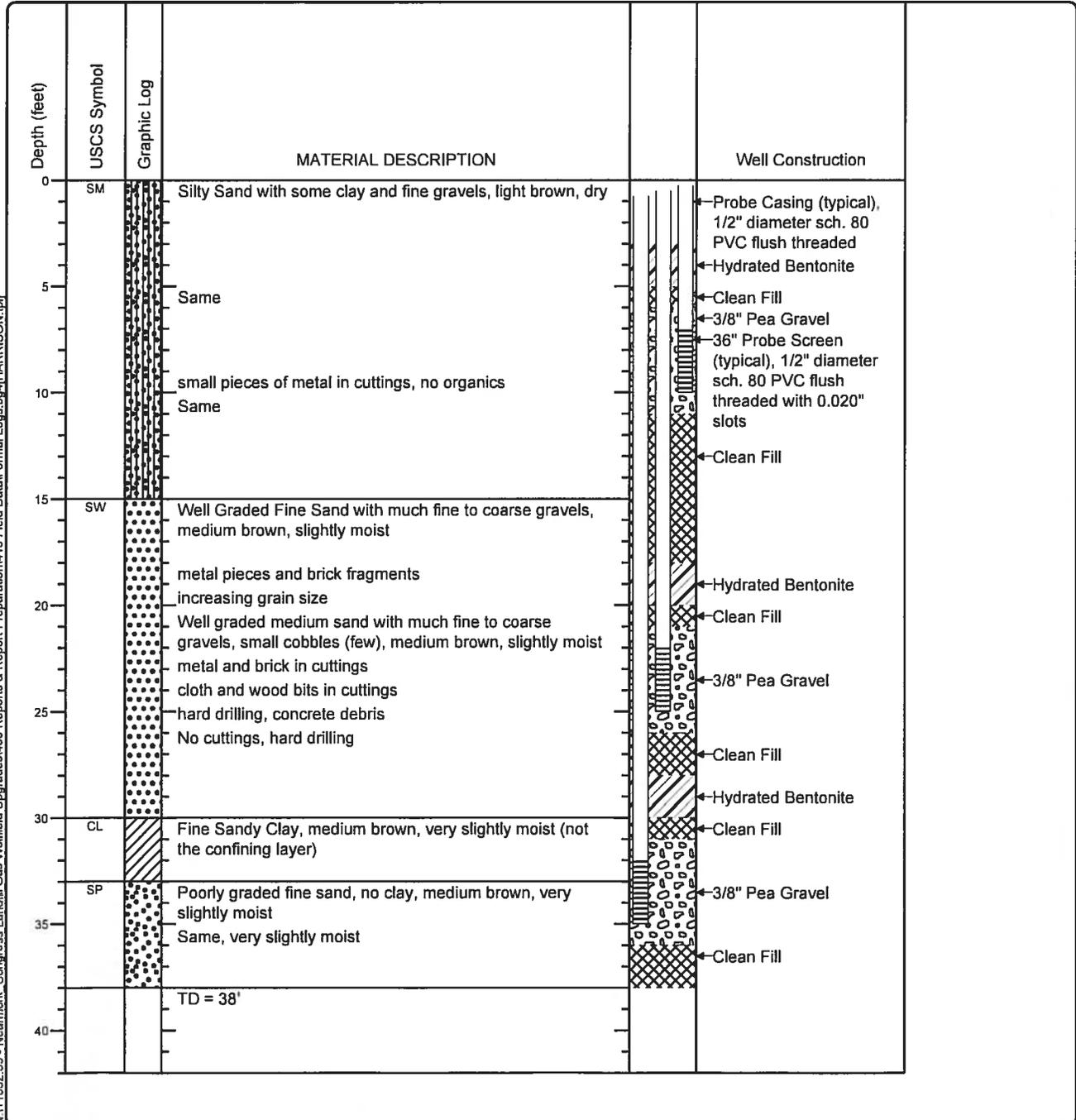
Log of Boring CNM-11

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 8/3/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2352 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	



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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-12

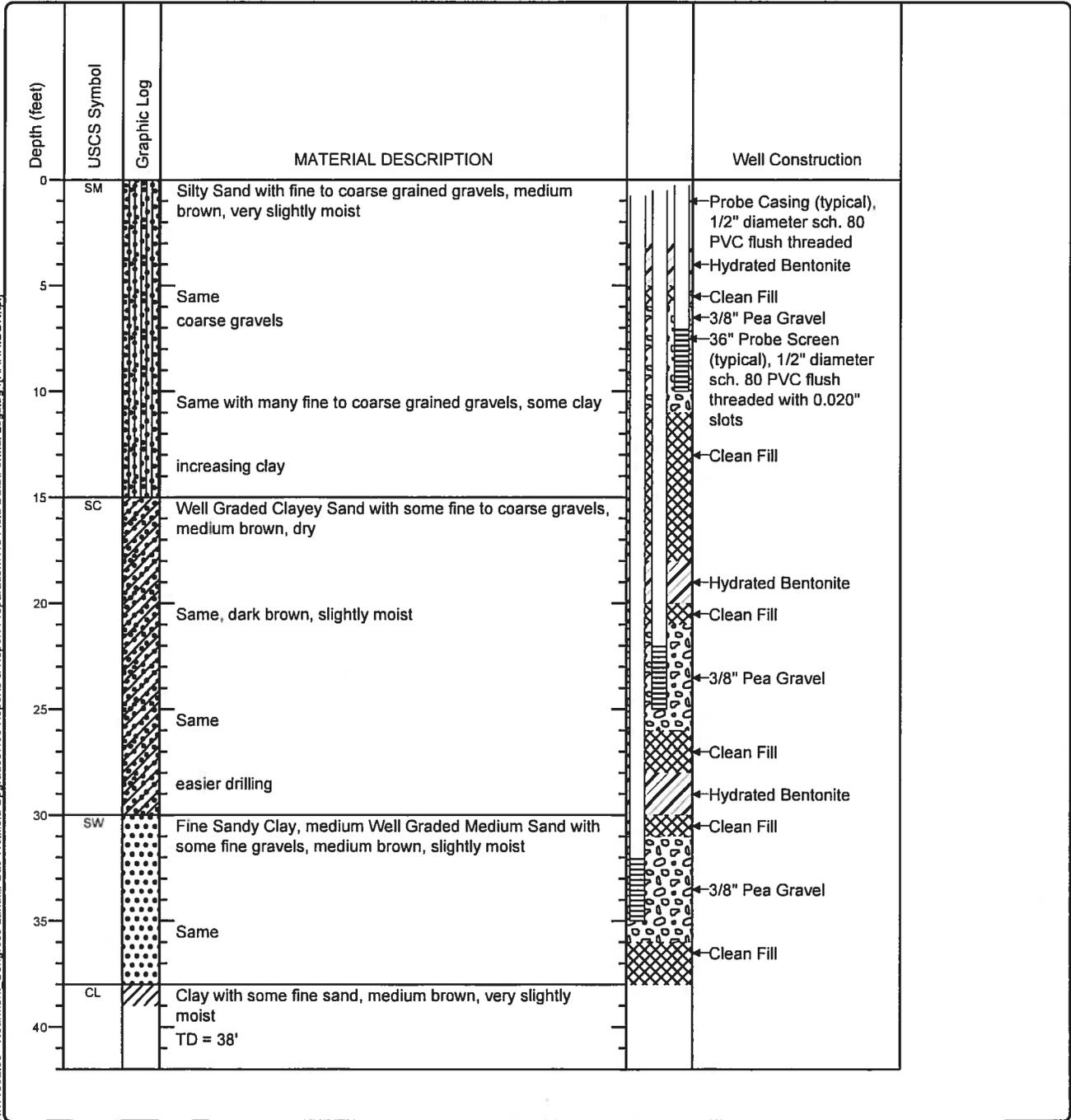
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/15/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2350 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-13

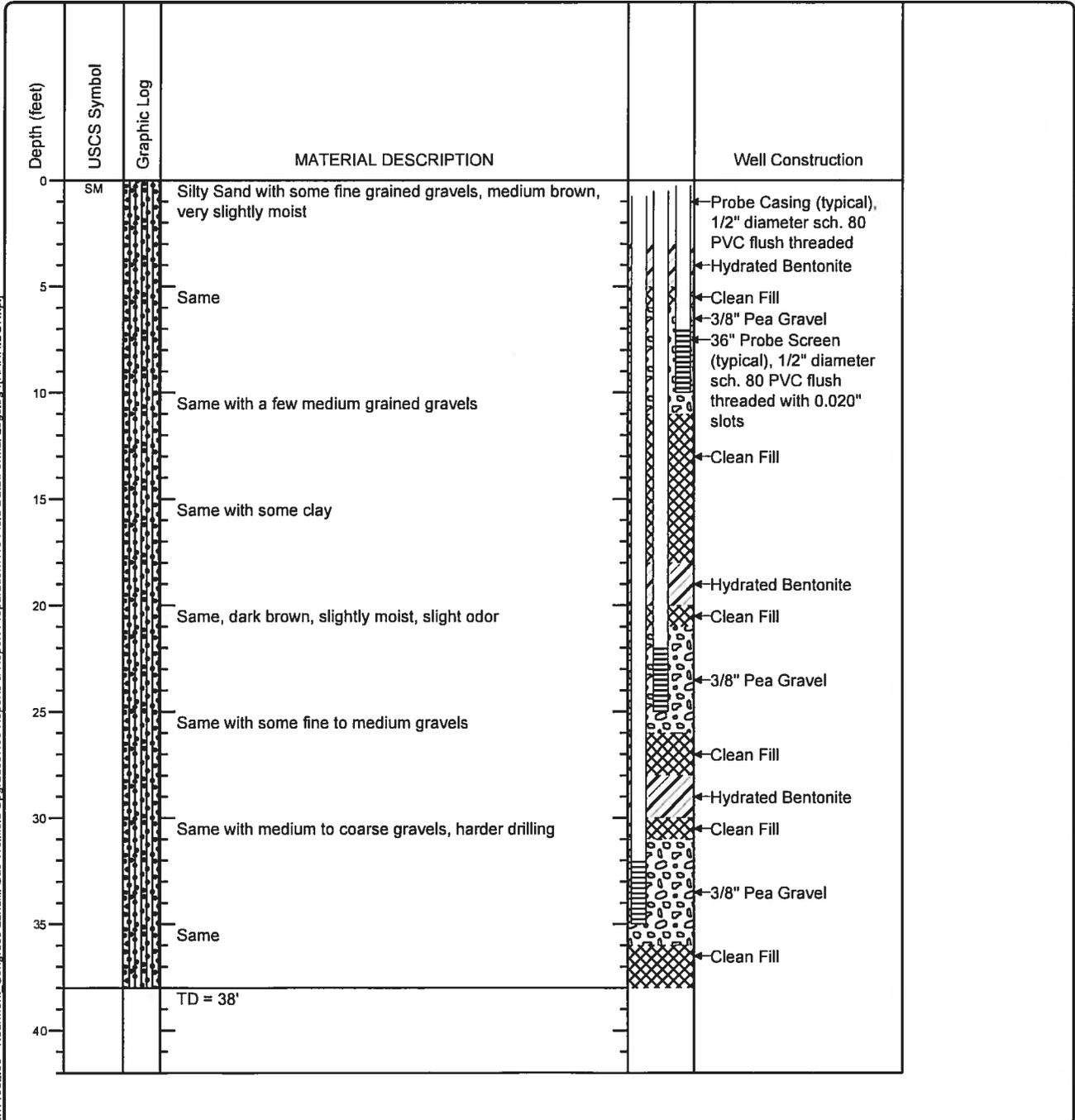
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/15/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2352 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

N:\11032.39 - Nearmont - Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs.bgd\HARRISON.mpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-14

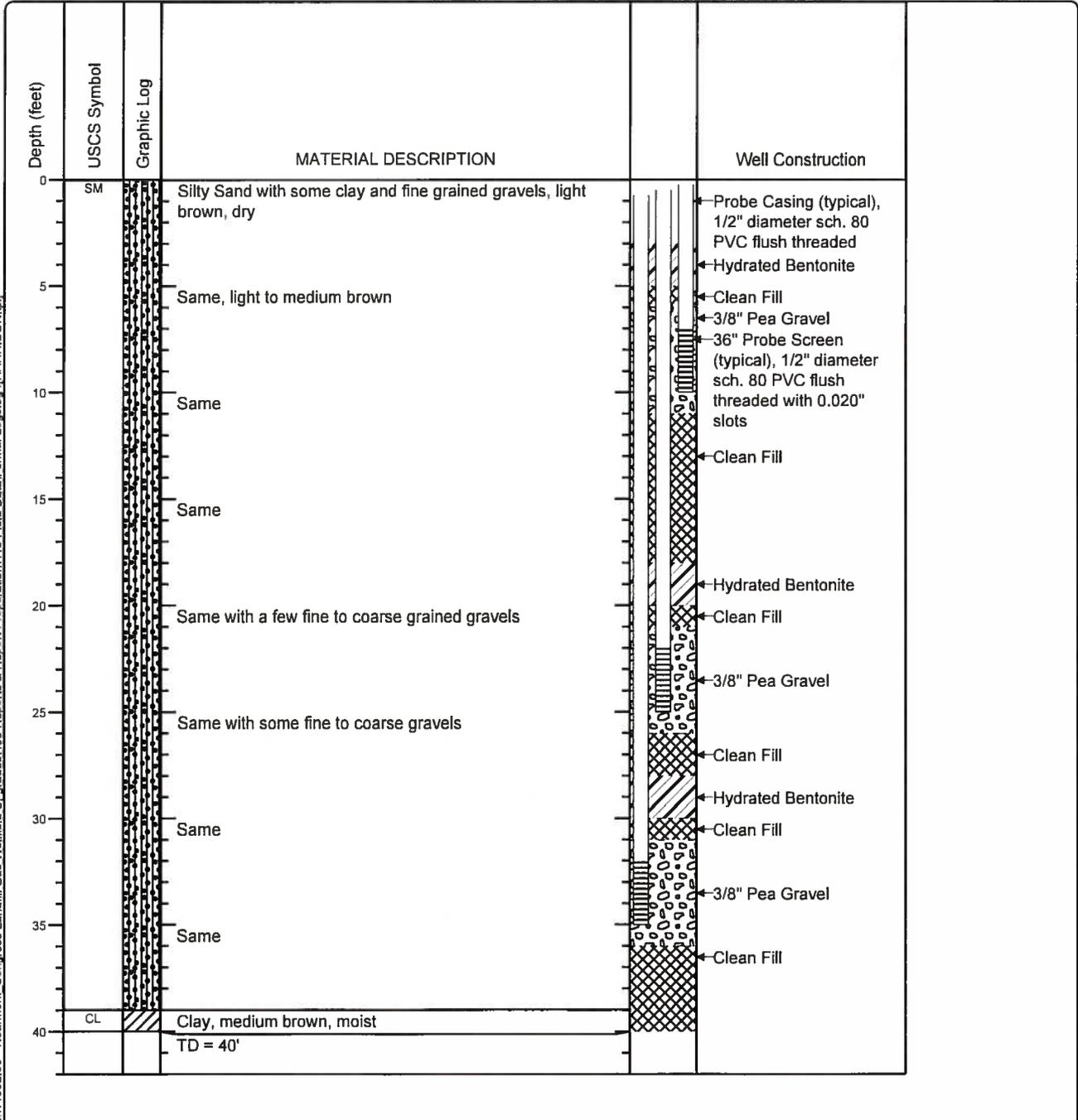
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled	7/30/2015	Logged By	CH	Checked By	KP
Drilling Method	HSA	Drill Bit Size/Type	8" Hollow Stem Auger	Total Depth of Borehole	40'
Drill Rig Type	CME-75	Drilling Contractor	GSI	Approximate Surface Elevation	~2354 above msl
Groundwater Level and Date Measured	NA	Sampling Method(s)	NA	Hammer Data	NA
Borehole Backfill	Well Materials	Location	Perimeter of Congress/Nearmont Landfills		

N:\11032.39 - Nearmont - Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs.bgd\HARRISON.bpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

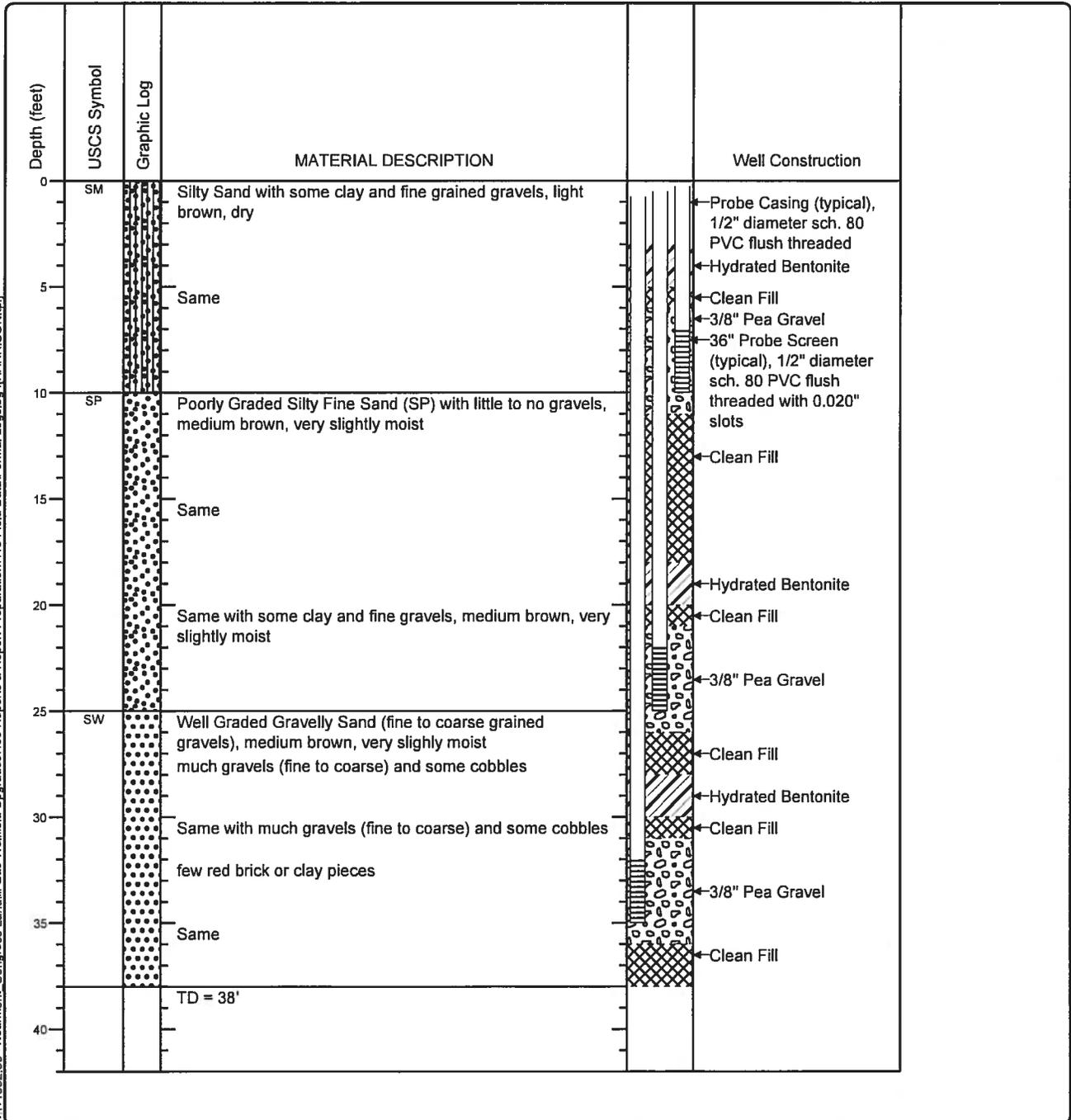
Log of Boring CNM-15

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled	8/3/2015	Logged By	CH	Checked By	KP
Drilling Method	HSA	Drill Bit Size/Type	8" Hollow Stem Auger	Total Depth of Borehole	38'
Drill Rig Type	CME-75	Drilling Contractor	GSI	Approximate Surface Elevation	~2356 above msl
Groundwater Level and Date Measured	NA	Sampling Method(s)	NA	Hammer Data	NA
Borehole Backfill	Well Materials		Location Perimeter of Congress/Nearmont Landfills		



N:\11032.39 - Nearmont - Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\by\HARRISON.L\p1

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

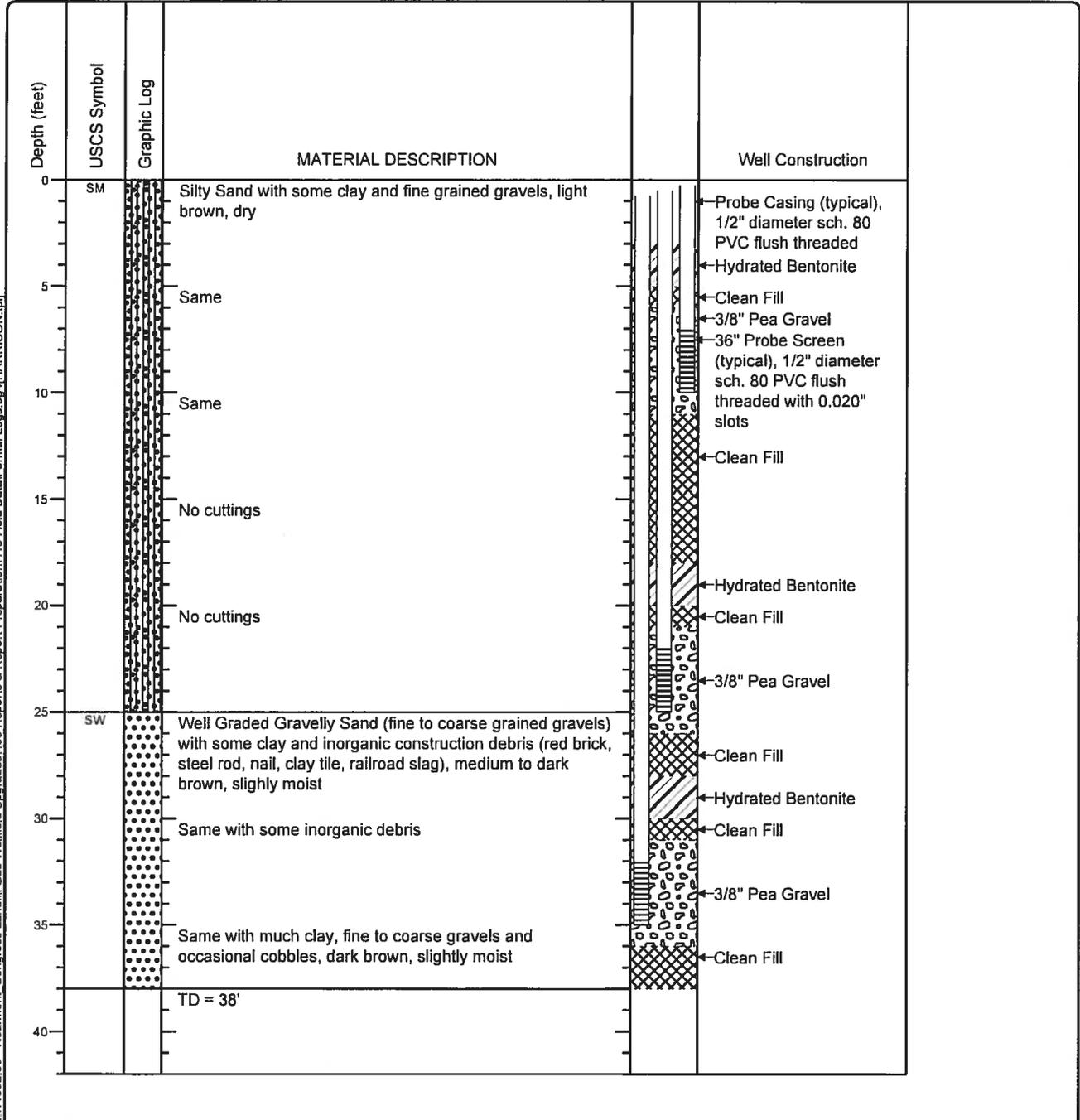
Log of Boring CNM-16

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 8/3/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2358 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	



N:\11032.39 - Nearmont Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\HARRISON.rpt

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-17

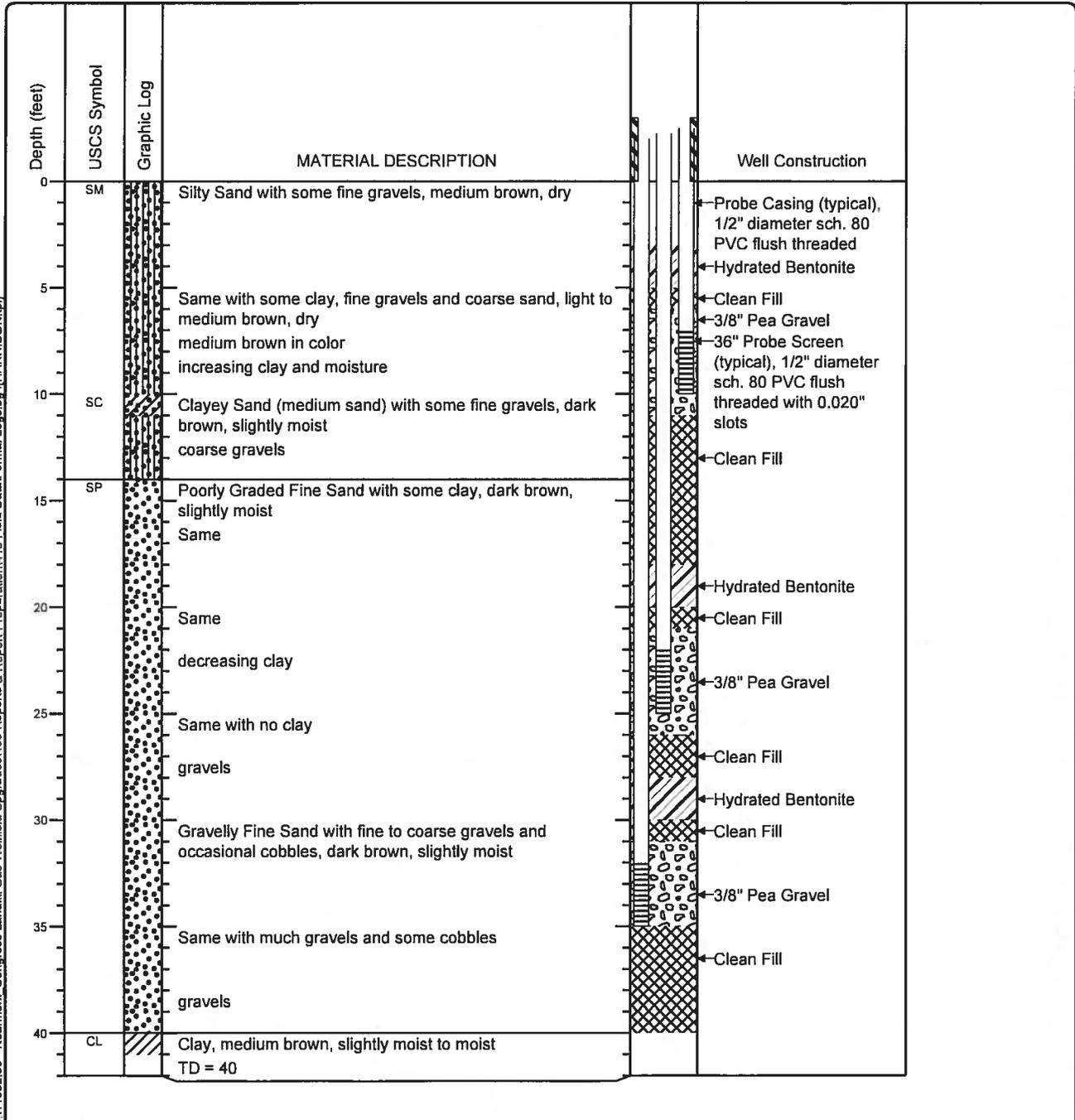
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/28/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 40'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2348 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring CNM-18

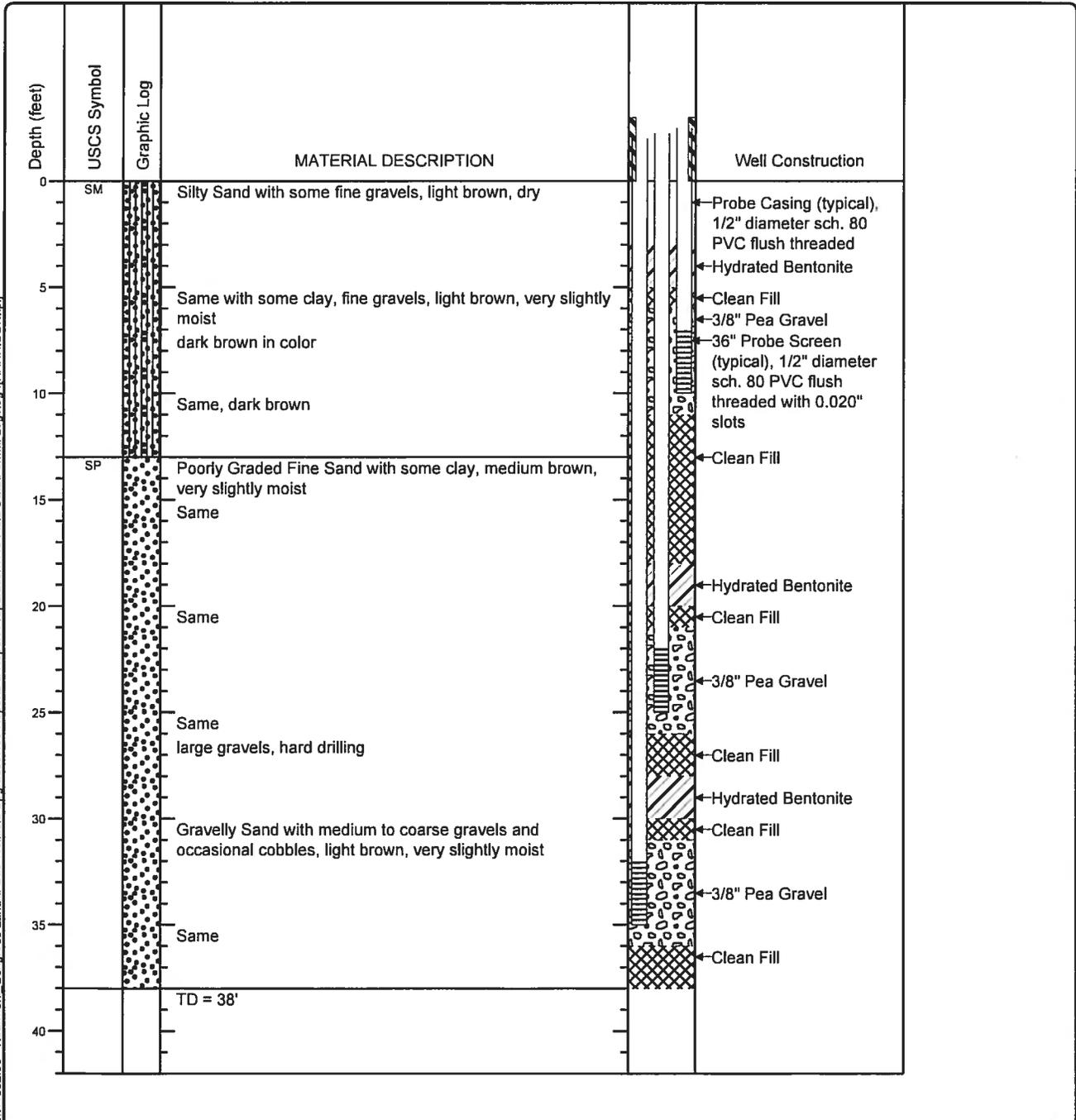
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/16/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2348 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Format Logs.bgd\HARRISON.bpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

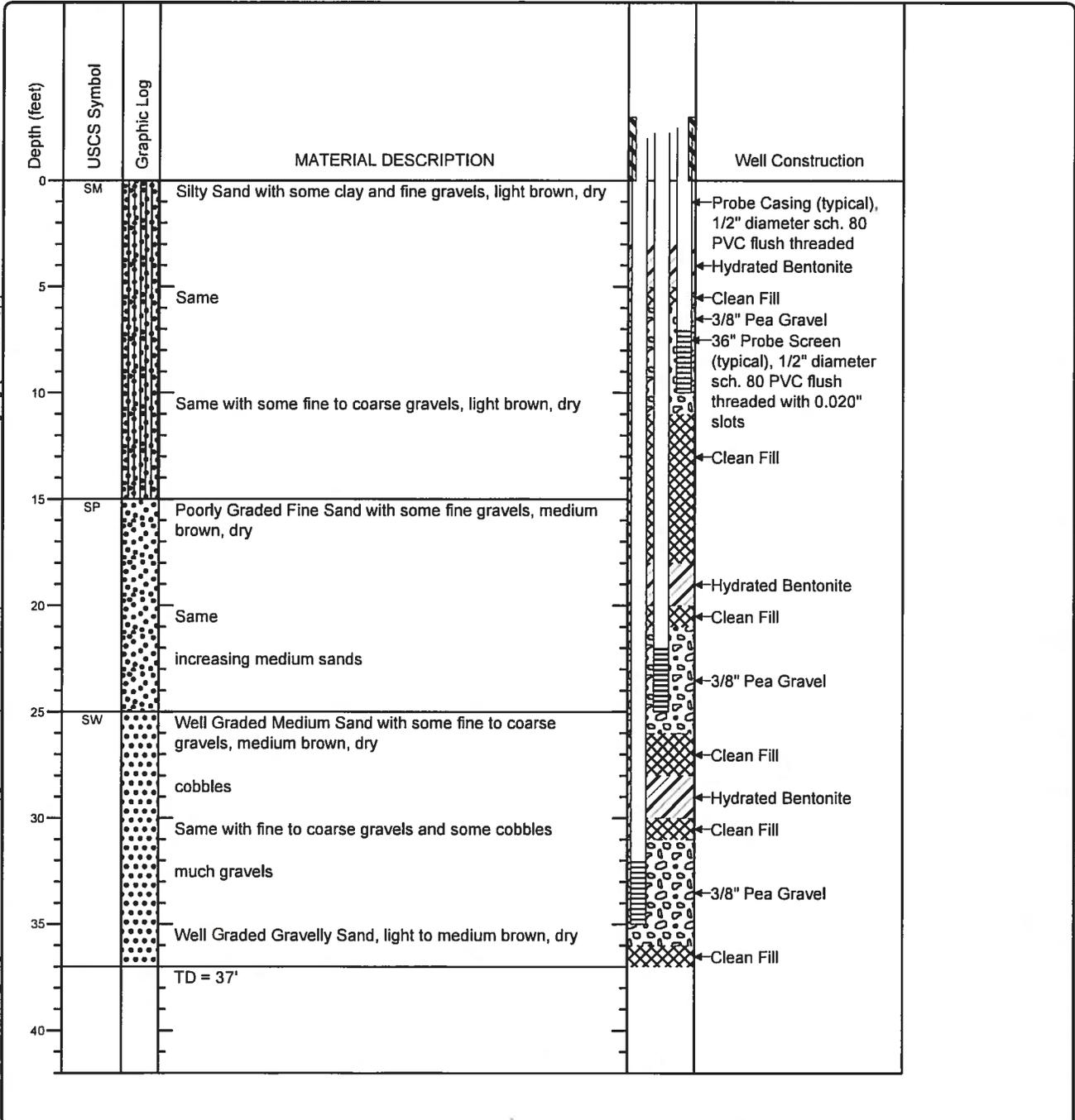
Log of Boring CNM-19

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/17/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2346 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	



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Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

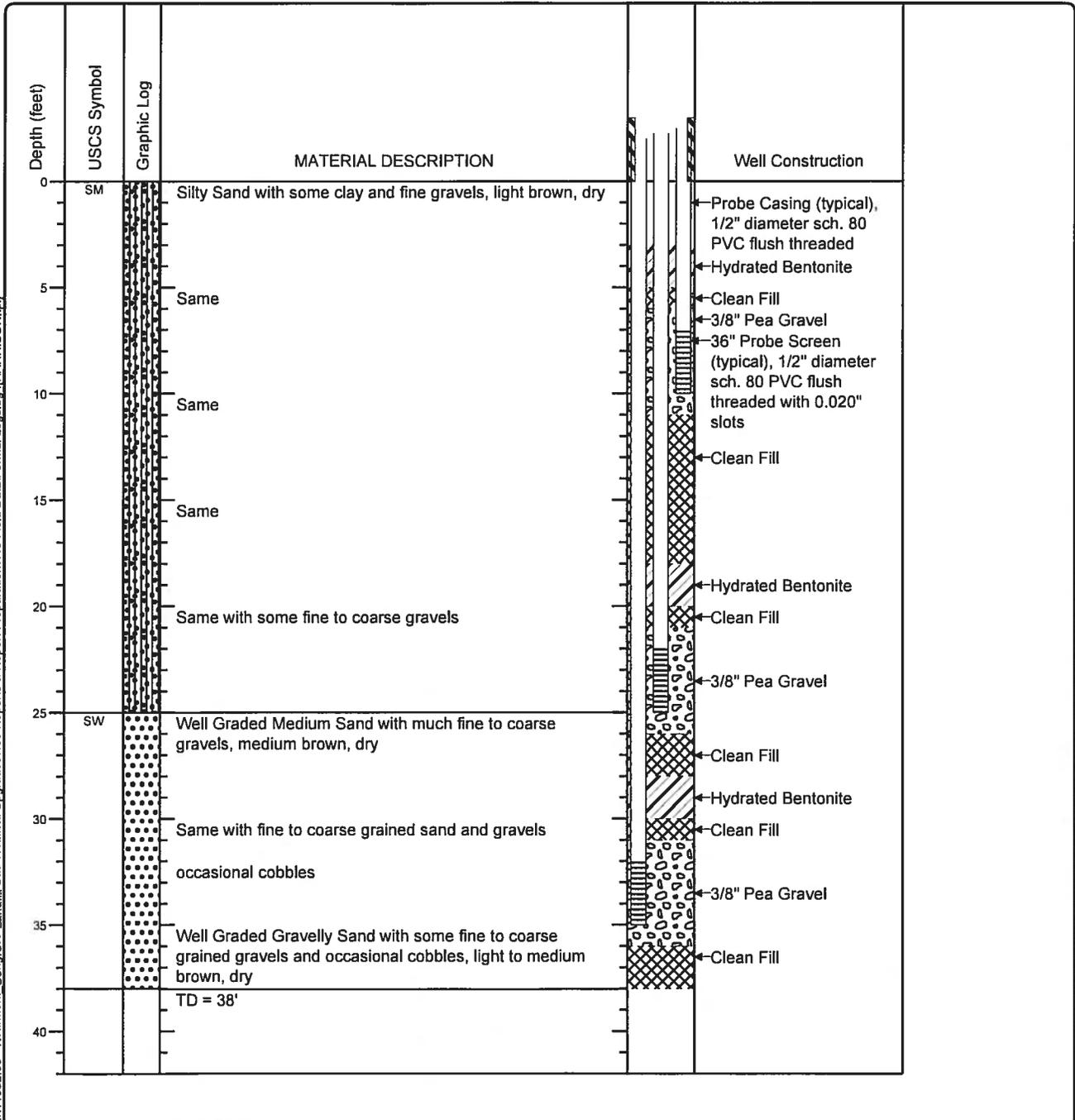
Log of Boring CNM-20

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/20/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 38'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2344 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Perimeter of Congress/Nearmont Landfills	

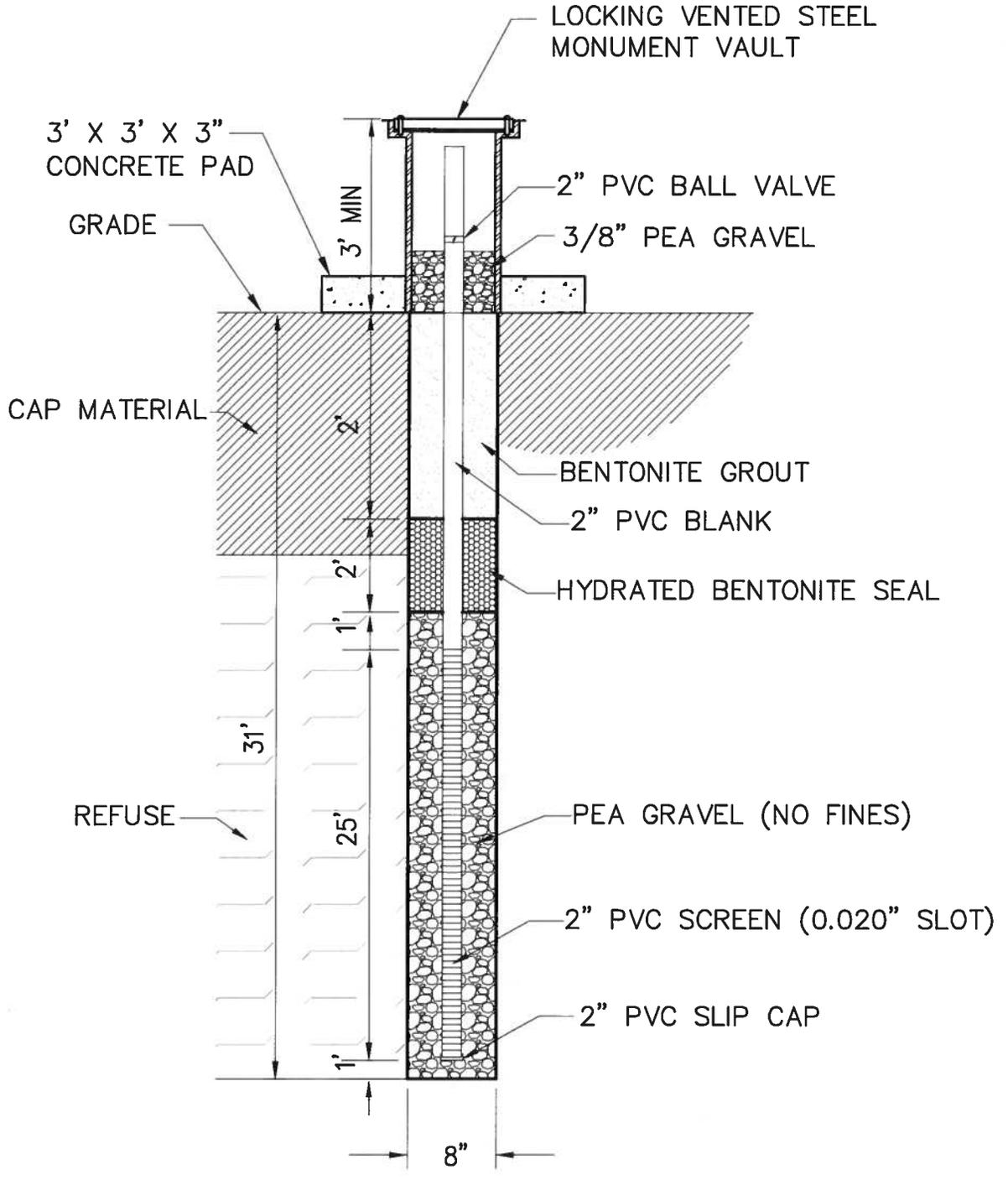


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ATTACHMENT 6:

GENERALIZED PASSIVE VENT WELL SCHEMATIC

N:\11032.31 - Nearmoni_Congress LF Gas Monitoring\400 Reports & Report Preparation\440 Maps\PASSIVE_WELL_SCHEMATIC-REV.dwg Plotted: Nov 24, 2015 - 9:40am ebox



EEC 11032.31

SHEET 1/1

CONGRESS/NEARMONT LANDFILLS PASSIVE VENT WELLS TUCSON, ARIZONA	DESIGNED BY KP
	DRAWN BY BDB
	CHECKED BY KP
Engineering and Environmental Consultants, Inc. 4835 E. FT. LOWELL RD. TUCSON, ARIZONA	DATE 11/24/2015
	SCALE NTS

ATTACHMENT 7:

PASSIVE VENT WELL BORING LOGS AND WELL SPECIFIC SCHEMATICS

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring IC-24R

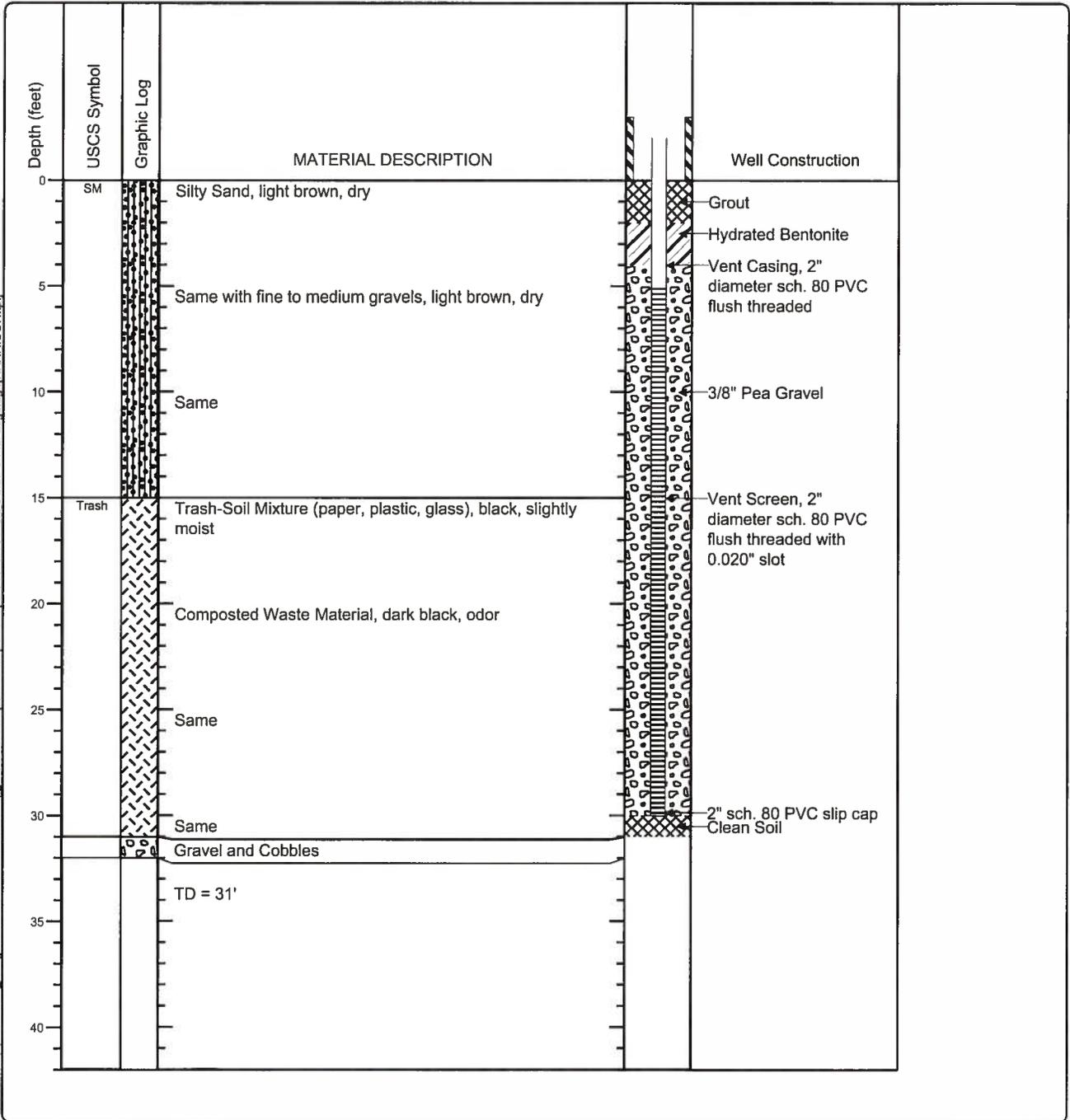
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/21/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 31'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2354 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	

N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparations\415 Field Data\Format Logs\b04\HARRISON.lpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

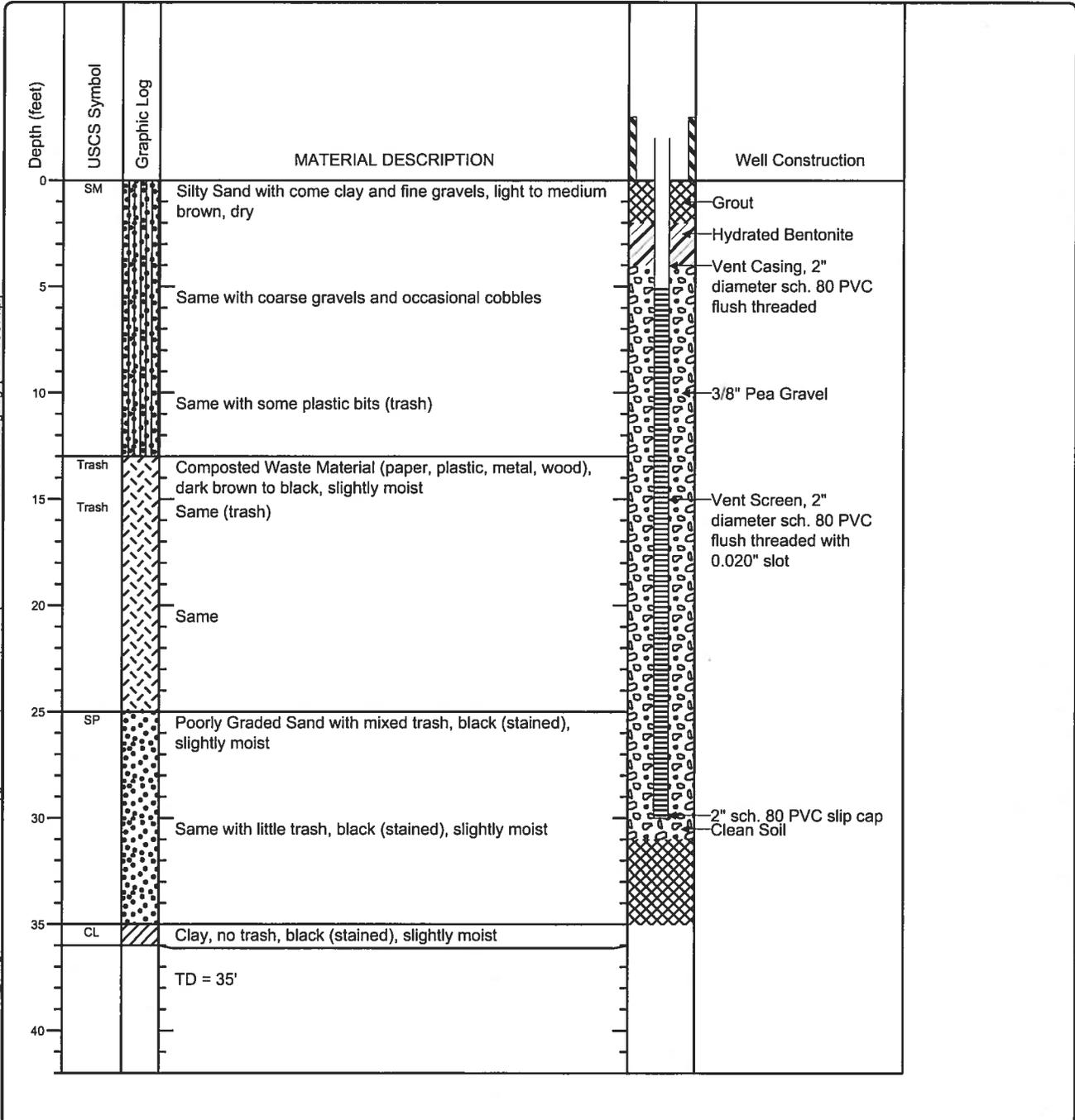
Log of Boring CP-5V

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/27/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation -2360 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	



N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Format Logs\bg4[HARRISON].ipj

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring EC-68R

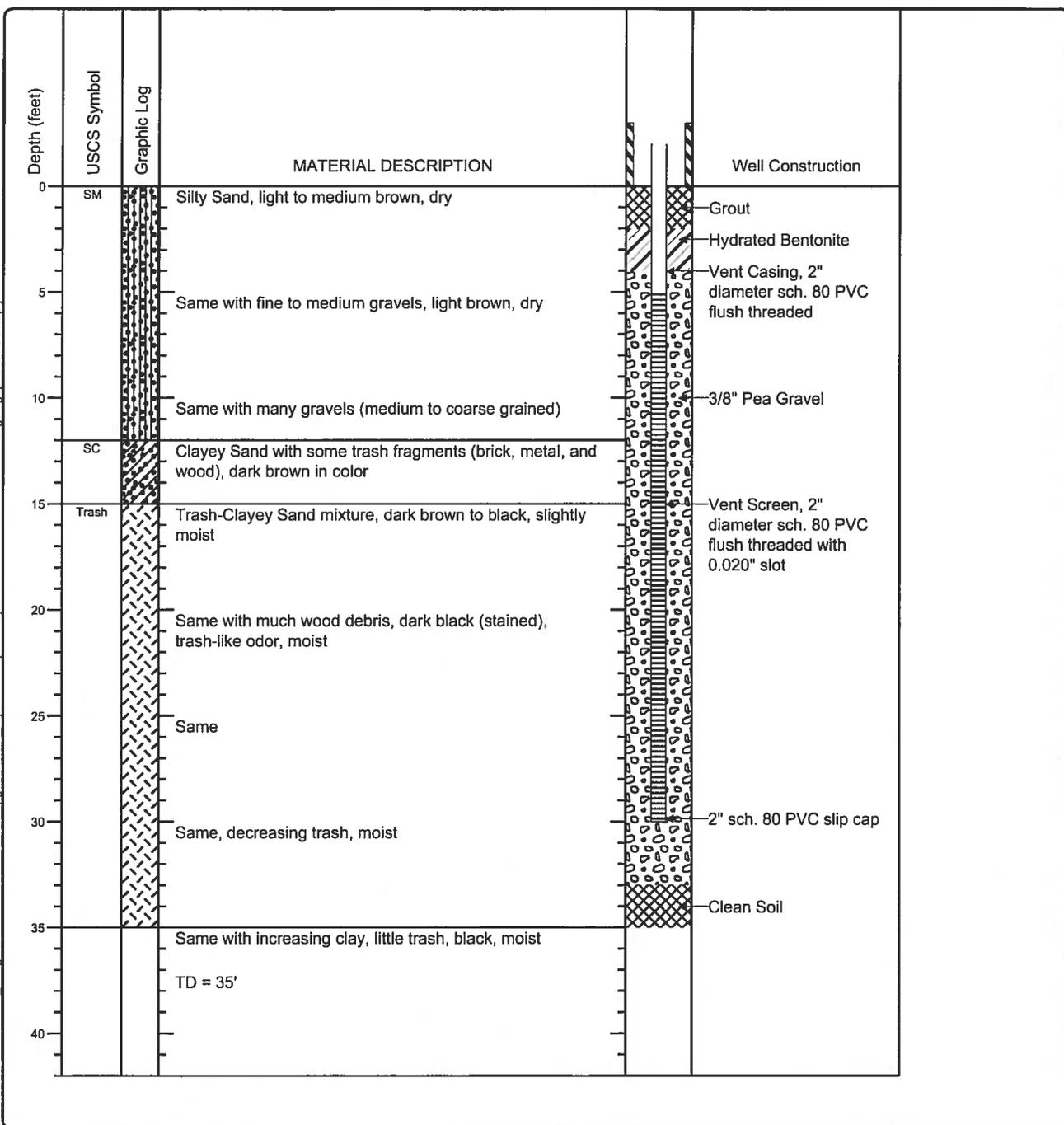
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/23/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2356 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	

N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\bof\HARRISON.lpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

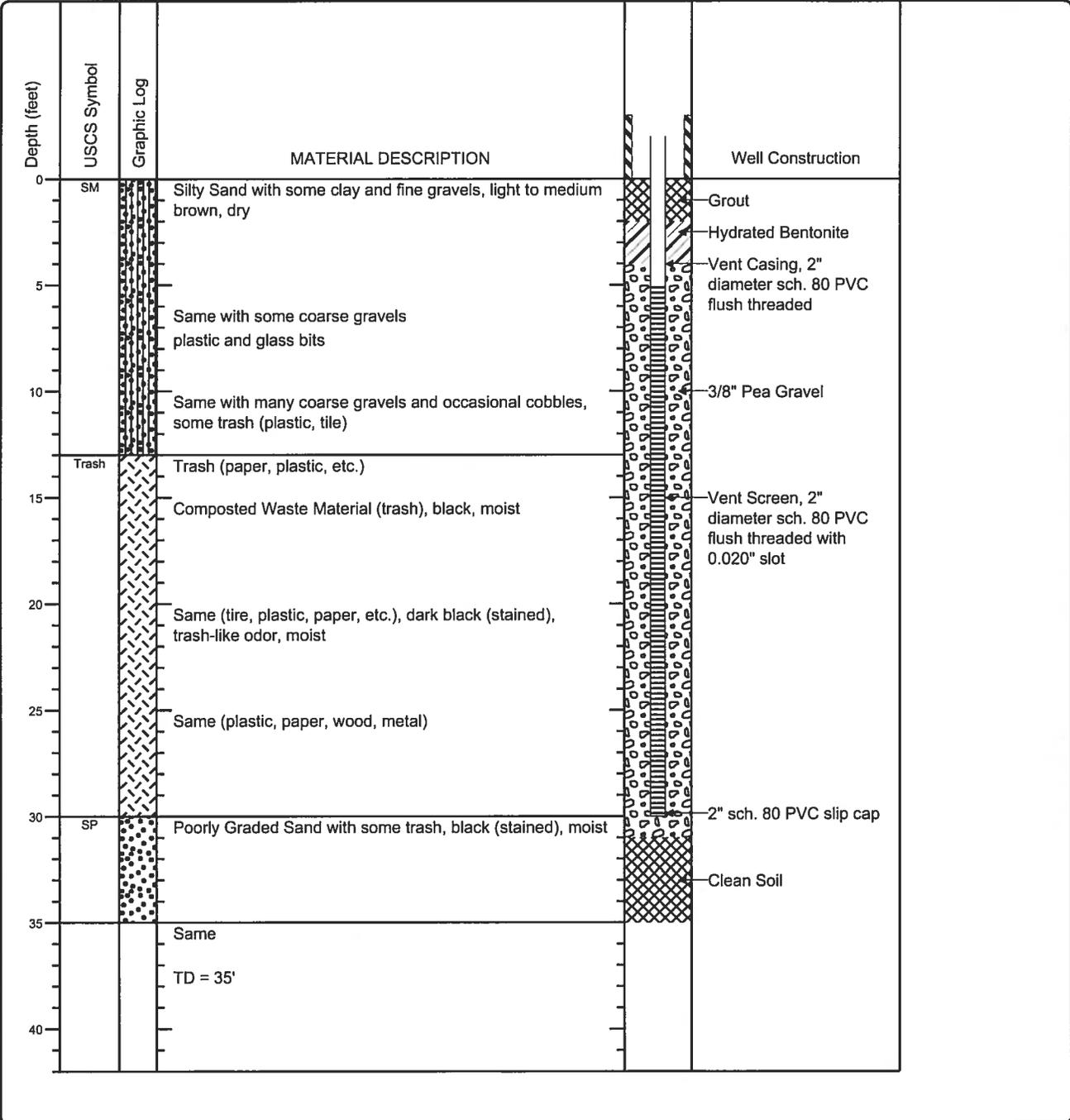
Log of Boring CGM-1V

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/23/2015	Logged By CH	Checked By KP
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2358 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	



N:\11032.39 - Nearmont. Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Format Logs.bgl\4[HARRISON.lpl]

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

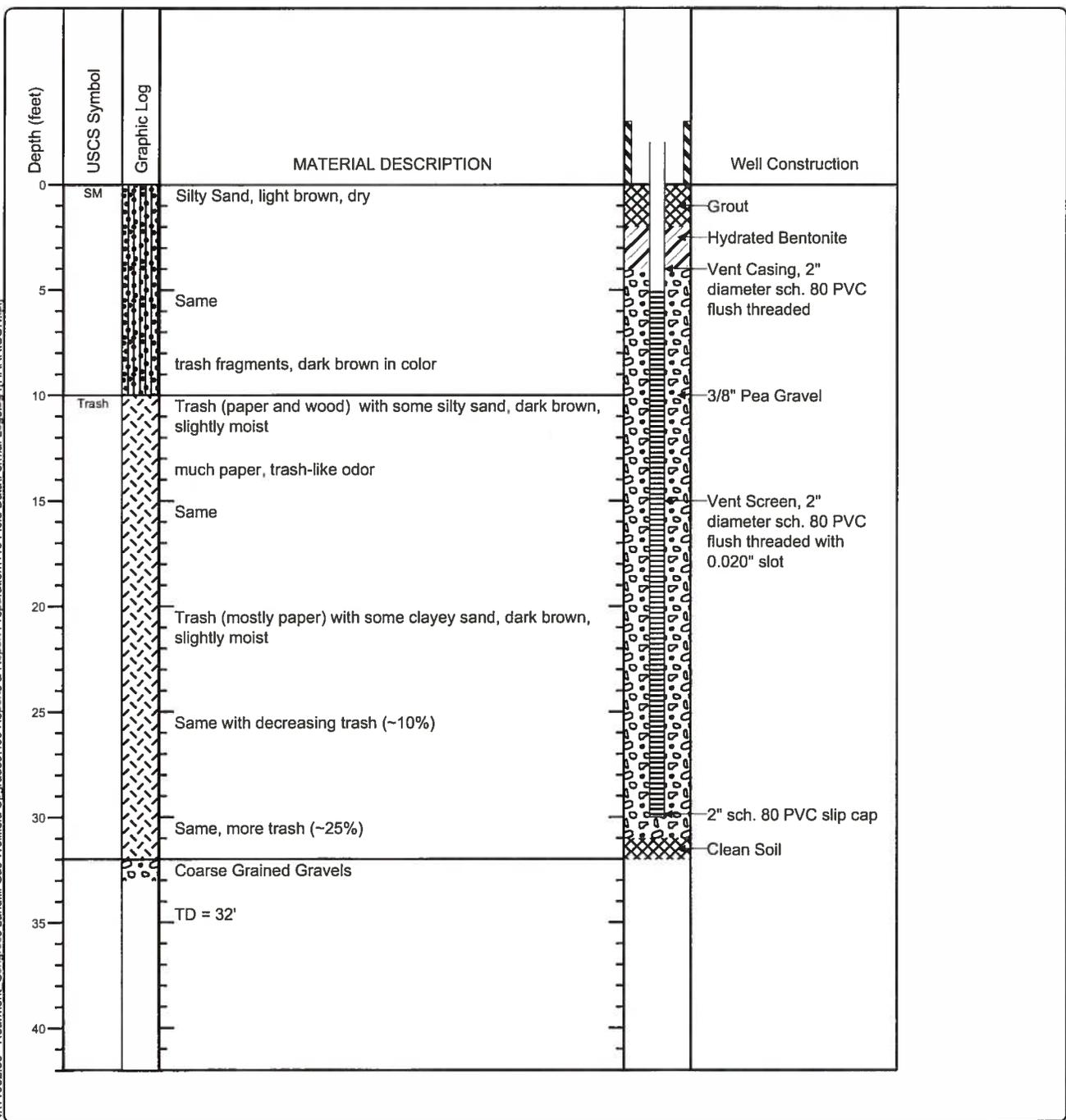
Log of Boring CGM-3V



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Sheet 1 of 1

Date(s) Drilled 7/23/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2356 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	



N:\11032.39 - Nearmont, Congress Landfill, Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\be4\HARRISON.icpl

Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring EC-A12R

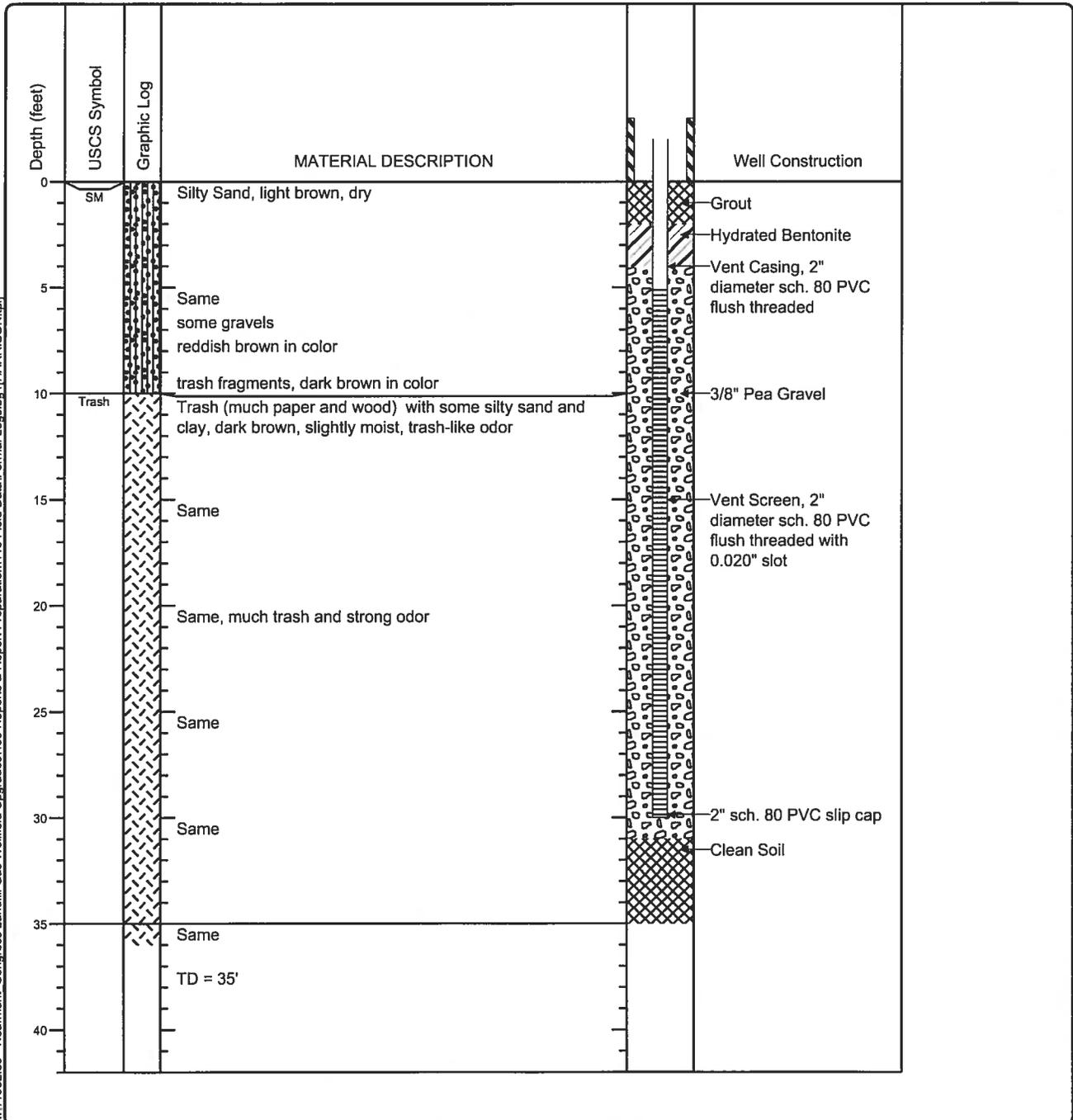


Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Sheet 1 of 1

Date(s) Drilled 7/23/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2356 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	

N:\11032.39 - Nearmont. Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\bg4\HARRISON.lp1



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

Log of Boring IC-58R

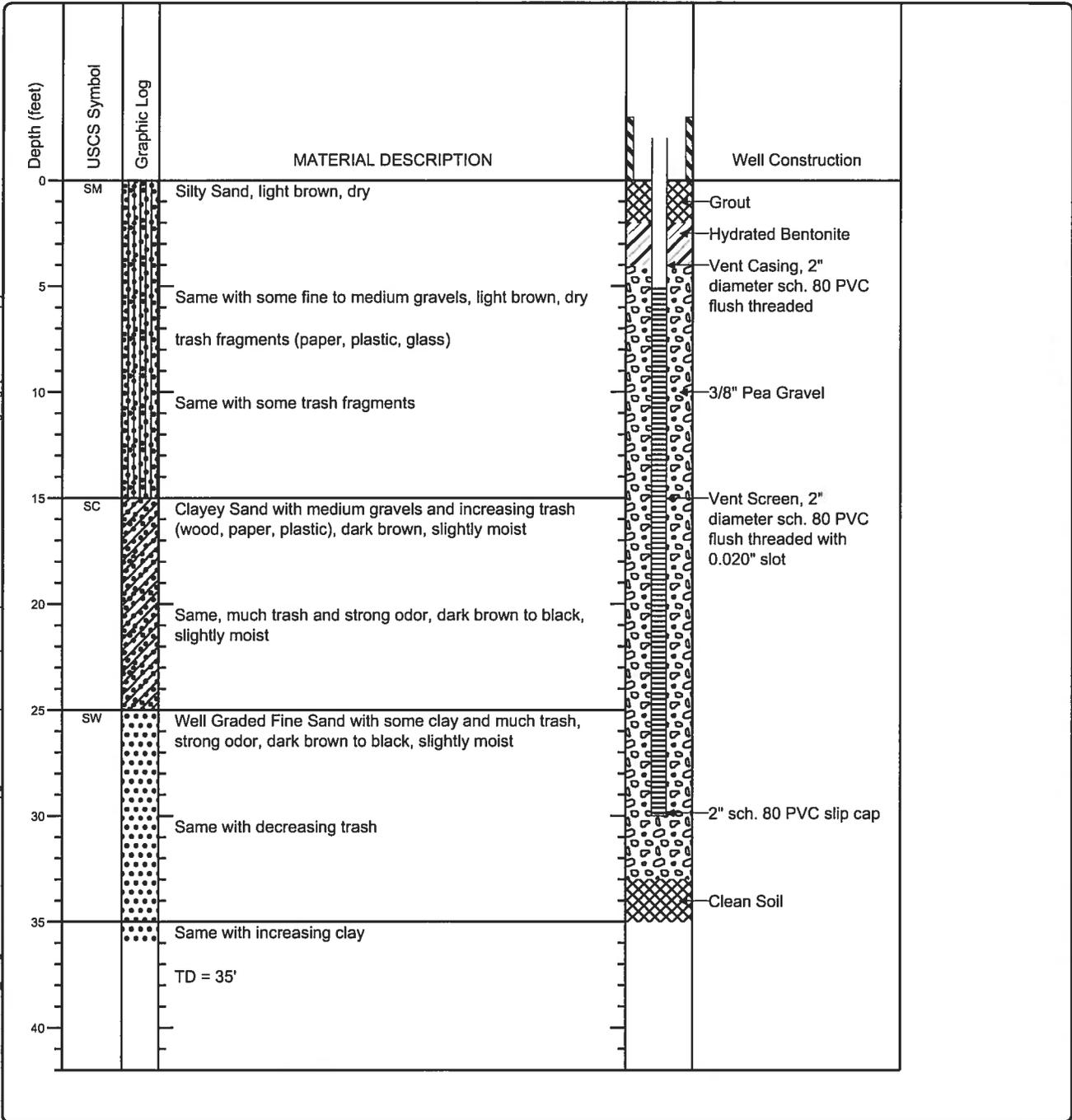
Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/23/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2357 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	

N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\log4\HARRISON.lpl



Project: Congress/Nearmont LFG Improvements
 Project Location: Congress/Nearmont Landfills
 South Brickyard Lane
 Tucson, AZ 85745
 Project Number: 11032.39

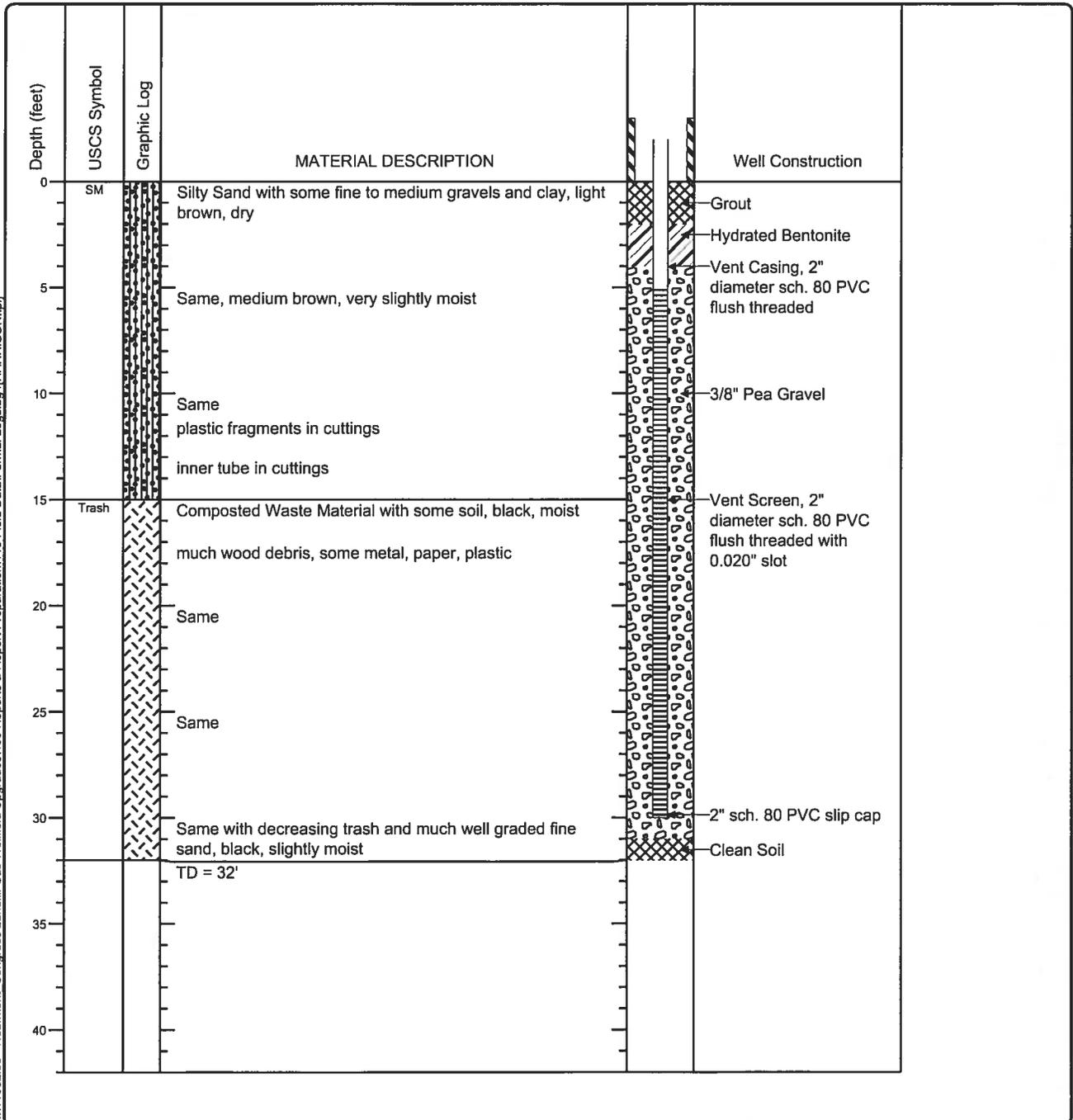
Log of Boring IC-51R

Sheet 1 of 1



Engineering and Environmental Consultants, Inc.
 4625 East Fort Lowell Road Tucson, AZ 85712

Date(s) Drilled 7/21/2015	Logged By KP	Checked By CH
Drilling Method HSA	Drill Bit Size/Type 8" Hollow Stem Auger	Total Depth of Borehole 35'
Drill Rig Type CME-75	Drilling Contractor GSI	Approximate Surface Elevation ~2357 above msl
Groundwater Level and Date Measured NA	Sampling Method(s) NA	Hammer Data NA
Borehole Backfill Well Materials	Location Interior Vent Well for Congress/Nearmont Landfills	



N:\11032.39 - Nearmont Congress Landfill Gas Wellfield Upgrades\400 Reports & Report Preparation\415 Field Data\Formal Logs\bg4[HARRISON.lpj]