1265520 - R8 SDMS

Remedial Action Completion Report

Record of Preparation, Review and Approval

California Gulch Superfund Site

OU6 – Stray Horse Gulch

Repository

This report has been prepared in accordance with EPA OSWER Directive 9320.2-09A. The California Gulch Superfund Site consists of 12 Operable Units (OUs). This Remedial Action Completion Report (RACR) addresses Operable Unit 6 (OU6), Stray Horse Gulch.

Remedial Action Completion Report prepared by:

Linda Kiefer — June 12, 2013

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Environmental Protection Agency, Region 8

Date

Remedial Action Completion Report approved by:

Bill Murray, Director — 6/13/13

Bill Murray, Director
Superfund Remedial Program
Environmental Protection Agency, Region 8

Date

California Gulch Superfund Site - Remedial Action Completion Report
Operable Unit 6 (OU6) – Stray Horse Gulch

I. INTRODUCTION

The California Gulch Superfund Site (Site) consists of an approximately 18.5 square mile area that is part of the historic Leadville Mining District in Lake County, Colorado. This site is located in the Colorado Mineral Belt, a highly mineralized area of the Colorado Rocky Mountains. The Leadville area was the site of extensive mining, milling, and smelting operations beginning about 1860. Most of the facilities ceased operations around 1900, although several facilities continued operations into the 1920s (Western Zinc) and the 1960s (AV Smelter). Nearly all of the mines within the Site boundaries are presently inactive, and all of the mills and smelters have been demolished.

The U.S. Environmental Protection Agency (EPA) placed the Site on the National Priorities List (NPL) in 1983 primarily due to concern over the impact of mine drainage on surface waters in the California Gulch and the Arkansas River. Subsequent site investigations revealed the presence of heavy metals in soils and in mine tailing and mine waste piles in and around Leadville. Numerous investigations have been conducted at the Site. These include remedial investigations conducted by the EPA, the State of Colorado, and potentially responsible parties (i.e., Resurrection Mining Company, and ASARCO) beginning as early as 1986. Remedial investigations included determination of nature and extent of contamination in the following media: surface water, ground water, air, tailing (both fluvial and impounded), waste rock, slag, and soils.

In August of 1994, the EPA, State of Colorado, Resurrection Mining Company, and ASARCO entered into a consent decree settlement (1994 CD). Pursuant to the 1994 CD, the Site was divided into 12 operable units. With the exception of Operable Unit 1, additional remedial investigation work and feasibility studies were completed for each of the other eleven operable units since entry of the 1994 CD.

This Remedial Action Completion Report applies to the California Gulch Superfund Site-wide repository (Repository) in OU6, Stray Horse Gulch. To facilitate the cleanup of properties within the Site, the repository was designed and constructed as an on-Site facility where soils with elevated-metal levels and other related materials removed from properties within the Site can be disposed.

The primary purpose of the Repository is to provide an on-Site location for disposal of soil from within the Site that contains elevated levels of lead, cadmium, arsenic, or zinc. The EPA, the State of Colorado, Lake County, and the City of Leadville expect that the majority of the contaminated soil will be generated by residential yard clean-ups and by residential, commercial, and industrial property development activities within the Site.

A secondary purpose of the Repository is to provide an on-Site location for the disposal of materials generated from within the Site by the EPA, the State of Colorado, Lake County, and the City of Leadville during clean-out and maintenance of areas and facilities that have accumulated materials that contain elevated levels of lead, cadmium, arsenic, or zinc.

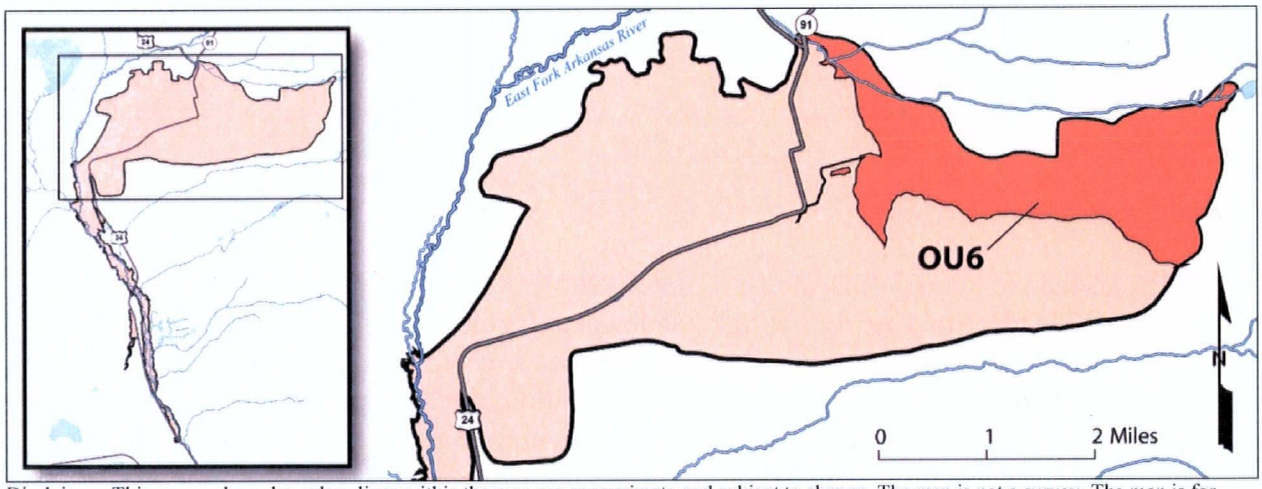
II. OPERABLE UNIT 6 (OU6)

Background

OU6 is located to the east of the City of Leadville and is 3.4 square miles in size (Figure 1). OU6 consists of several consolidated mine waste piles (including Hamm's Tailing Impoundment and the Penrose Mine Waste Pile) and approximately 2,200 acres of mining wastes in Stray Horse Gulch, the upper portion and headwaters of Evans Gulch, and the lower portion of Evans Creek. On its western boundary, OU6 also includes some residential areas in the City of Leadville and a drainage corridor along 5th Street and Starr Ditch downstream of the confluence with the Stray Horse drainage.

Maps of the site of the repository are found in Appendix A.

Figure 1: OU6 Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site, and is not intended for any other purpose.

The headwaters of Stray Horse Gulch are located east of Leadville in the area of Breece Hill and the Ibex/Irene Milling/Mining Complex. This water flows through Leadville via the 5th Street drain and Starr Ditch and eventually discharges to Lower California Gulch.

Historically, during heavy periods of precipitation or snow melt, tailing materials from both Hamm's Tailing Impoundment and Penrose Mine Waste Pile have been eroded and suspended in surface waters moving downslope through residential areas of Leadville. This surface water is collected by Starr Ditch and is conveyed by the ditch to California Gulch and the Arkansas River. In addition, metals leached from the multiple other mine wastes present in OU6 and were transported to California Gulch via the portion of a portion of Starr Ditch on the south side of 5th Street.

Most of OU6 is currently zoned by Lake County as Industrial Mining. Other current land uses for smaller areas of OU6 include recreation, commercial activities, mine tourism and residential.

The Leadville area contains several famous historic mines including the Matchless Mine previously owned by Baby Doe and Horace Tabor.

The site-wide final baseline risk assessment evaluated soil, slag, waste rock and tailing in upland areas, as well as fluvial tailing and sediments in riparian areas. Contaminants evaluated included arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium and zinc. The EPA selected lead and arsenic as indicator chemicals for cleanup based on the human health risk posed by these two contaminants at the Site. Table 1 depicts the contaminated media in OU6.

Table 1: OU6 Contaminated Media

Media	Contamination
Sediment	Based on data from the 1997 Engineering Estimate/Cost Analysis (EE/CA) for Stray Horse Gulch, elevated metals contamination was found in the sampling stations located along Stray Horse Gulch.
Mine Tailing and Waste Rock Piles	The Stray Horse Gulch tailing and waste rock piles were analyzed by X-ray fluorescence for lead and arsenic concentrations as part of the mine waste piles remedial investigation (RI). Surface soils demonstrated elevated arsenic, lead, cadmium and zinc levels. Subsurface and foundation soils contained elevated to significantly elevated arsenic, cadmium, lead and zinc levels, as defined in the RI.

Remedial Action Objectives

The EPA issued the Record of Decision for OU6 (2003 OU6 ROD) on September 25, 2003. The 2003 OU6 ROD identified the following remedial action objectives (RAOs) for OU6:

- Control erosion of mine waste rock and deposition into local water courses.
- Control leaching and migration of metals from mine waste rock into surface water.
- Control leaching of metals from mine waste rock into ground water.
- Prevent direct unacceptable exposures to elevated concentrations of contaminants in the soil and waste rock.

Remedy Elements

The selected remedy consisted of the following elements:

- Maintenance of the existing Response Actions implemented prior to the ROD.
- Installation of a bulkhead in the Leadville Mine Drainage Tunnel (LMDT). Pumping Acid Rock Drainage (ARD) impounded behind the bulkhead to the surface with conveyance to the U.S. Bureau of Reclamation (USBR) treatment plant via a gravity pipeline.
- Removal of the Ponsardine mine waste pile with on-site disposal.
- Repair of unstable cribbing associated with the Robert Emmett mine site.
- Institutional controls (ICs) on future changes in land use.

Since the release of the 2003 OU6 ROD the following remedy elements have been implemented:

- Maintenance of the existing response actions implemented prior to the ROD.
- Removal of the Ponsardine mine waste pile with on-Site disposal.
- Repair of unstable cribbing associated with the Robert Emmett mine site.
- Multiple tracer and other studies to investigate the existence and quality of a hydraulic connection between the Marion shaft and the LMDT. These studies were performed to assess the effectiveness of the 2000 Removal Action that diverted ARD discharged by surface water control structures to the subsurface for conveyance to the USBR water treatment facility.
- Remedial design activities.
- Installation of monitoring wells in the LMDT as part of data collection to support remedial design.
- A Non-Time Critical Removal Action in 2005 to construct an engineered outlet for the Gaw Shaft. The Gaw Shaft is believed to be a relief point for the mine pool impounded behind suspected blockages in the LMDT.
- Negotiation with the USBR for treatment of ARD to be extracted from behind the LMDT bulkhead once constructed.
- Installation of a relief well during the 2008 State of Emergency due to high water levels and a blockage in the LMDT.
- Pumping the water in the Mikado Pond to the Marion Pond in 2011 so that an uncontrolled release into Stray Horse Gulch was prevented.
- Removal of sediment in the Marion, Greenback, Mikado and Adelaide Ponds and addition of signage and fencing in 2012.

The original 2003 OU6 ROD was modified in an amendment to the ROD (2010 OU6 AROD) on September 28, 2010, to make the following changes in the remedy:

- Improve the clean water diversion systems along the Mahala, Pyrenees, Greenback, RAM, Old and New Mikado, and Adelaide-Ward Waste Rock Piles.
- Selectively cap additional mine waste rock piles to decrease the volume of acid rock drainage generated.
- Enlarge and enhance the current acid rock drainage collection system and retention ponds.
- Eliminate the use of the LMDT and USBR LMDT Treatment Plant from the OU6 remedy, except in the case of emergencies.
- Shift the monitoring of ground water and water levels in the LMDT to the OU12 site-wide surface water and ground water remedy.
- Site and construct a site-wide repository in OU6.
- Remove implementation of the LMDT bulkhead from the remedy.
- Implement ICs to protect engineered remedies and to reduce exposure to contaminants that will remain.

This Remedial Action Completion report discusses the design and construction of the site-wide repository.

Funding and Implementation

As agreed upon by the Lake County Commissioners, the State of Colorado, and EPA, the design and construction of the repository was funded through the special account established through Asarco (70 %) and the Lake County Community Health Plan Trust (30 %). The funding mechanism was a grant by EPA to the State. The State then granted the monies to the County who administered and managed the contracts with Camp Dresser and McKee, Inc. (CDM Smith) and American Civil Constructors (ACC).

CDM Smith was contracted to design the repository. Remedial design started on July 28, 2011 and design was completed on September 6, 2012. CDM Smith also provided oversight of the construction. Remedial action began on April 23, 2012. ACC won the bid and began construction in July 2012. The construction field work was completed on October 24, 2012. Final construction closeout documents were received on January 22, 2013.

III. CONSTRUCTION ACTIVITIES

The construction components of the repository included the following activities:

- Improve temporary access
- Install construction erosion controls at repository site and clay-borrow site
- Clear and grub repository site and clay-borrow site
- Excavate overburden at repository site and clay-borrow site
- Screen excavated repository site overburden to create appropriately sized materials for repository construction
- Grade and compact repository and leachate collection pond sub-grades
- Excavate clay at clay-borrow site
- Place and compact clay liner in repository and leachate collection pond
- Install a leachate collection and removal system consisting of strip drain arrays with protective gravel, an oversize rock drainage layer, a geo-textile layer, and a soil protective layer
- Install run-on and run-off diversions at repository
- Restore road/runoff channel at clay-borrow site
- Backfill overburden, re-grade and spread topsoil at clay-borrow site
- Amend topsoil and seed the clay-borrow site and the repository material stockpiles
- Install access control signs and fencing

A couple of problems were encountered during construction. A re-survey of the clay borrow site revealed property boundaries that varied from previous maps, requiring modification of contracts with clay owners. The clay source was discovered to contain too many large rocks, so the source area had to be expanded in area to obtain sufficient non-rocky clay.

IV. CHRONOLOGY OF OU6 EVENTS

OU6 Event	Date
ROD.	9/25/2003
ROD Amendment.	9/28/2010
Start of the Remedial Design of the repository (Lake County/CDM Smith contract signed)	10/13/2011
Start of the Remedial Action of the repository (Lake County-ACC contract signed).	7/3/2012
Mobilization and start of construction by ACC.	7/2012
Completion of Remedial Design.	9/6/2012
Field Construction complete and demobilization	10/24/12
Final construction closeout documents received	1/22/13
Start of Post-construction Operations and Maintenance	2013

V. PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL

The purpose of this project was to construct a Site-wide repository using Site-derived soils, clay and rock. Therefore, all excavated material met site risk based health standards based on previous information, and therefore, was not chemically tested during construction. Volumes of excavated materials included the following: topsoil - 1,506 cubic yards; overburden - 23,960 cubic yards; clay - 4,599 cubic yards. The topsoil excavated from the clay borrow site was replaced after removal of the clay, and the topsoil from the repository site was placed in a stockpile for future use during repository final closure. The overburden from the clay borrow site was replaced after removal of the clay, and the overburden from the repository site was either screened and used as construction material or placed in stockpiles for future use during repository final closure. The excavated clay was placed and compacted on the prepared floor of the repository to serve as the liner.

The clay source was discovered to contain too many large rocks, so the source area had to be expanded in area to obtain sufficient non-rocky clay.

ACC's Quality Control Plan dated August 16, 2012 was approved by the CDM Smith engineer on August 27, 2012. ACC's Quality Control Plan was approved by CDM Smith on August 27, 2012. Quality control included the following items:

- Pre- and post-excavation surveying to determine excavated quantities of topsoil, overburden and clay
- Survey to verify correct repository subgrade configuration
- Compaction testing of prepared repository subgrade

- Clay testing for particle size, liquid limit, Atterberg limits, plasticity index, compaction and hydraulic conductivity
- Liner testing for thickness, moisture content, compaction, density and hydraulic conductivity
- Testing granular fill materials for correct grain size ranges

All quality control data was reviewed and approved by CDM Smith.

VI. FINAL INSPECTION AND CERTIFICATION

The pre-final inspection occurred on October 23, 2012. Punch list items included:

- Install signage
- Anchor geo-textile in channel
- Smooth ruts and tracks
- Move tree stumps to the approved area
- Overlap and stake erosion control blankets
- Move toe of 2"-12"rock stockpile
- Complete grading at culvert
- Install fence and gate

All punch list items were completed before the close of business on October 24, 2012.

ACC's Health and Safety Plan dated July 23, 2012was approved by the CDM Smith engineer on August 14, 2012. The contractor did not report any lost-time injuries during this project.

VII. OPERATION AND MAINTENANCE

Information on the various warranties, which typically run one year, can be found in the document titled Operation and Maintenance Manual found in Appendix D. Institutional controls will be implemented as part of the remaining remedy components for OU6 contained in the 2010 OU6 AROD.

A Memorandum of Understanding between the EPA, the State of Colorado, and Lake County is being prepared to memorialize the agencies respective responsibilities regarding the future operation, maintenance, closure and post-closure maintenance of the repository.

VIII. SUMMARY OF PROJECT COSTS

Estimated Capital Cost: $1,055,000 RA
Estimated O & M: $250,000 (20 years operation then closure)
Estimated Total Cost: $1,305,000

IX. OBSERVATIONS AND LESSONS LEARNED

Local involvement is vital.

X. CONTACT INFORMATION

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XI. Appendices

Appendix A

Repository Location Maps

Appendix B

Project Records November 28, 2012

Sections

1. Testing Tracking Table
2. Clay Temperature Readings
3. Laboratory Analytical Results
4. Stormwater Field Inspection Report
5. Daily Construction Reports and All Site Work
6. SPCC Plan and Safety Reports
7. Health and Safety Plan
8. Environmental Protection Plan
9. Quality Control Plan
10. Construction Site Plan
11. Material Handling Plan
12. Progress Photos
13. Official Change Order #1

Appendix C

Field Thickness Test
Soil Tracking Report
All Tests Results

Appendix D

Operation and Maintenance Manual (Warranty Information)

Appendix A

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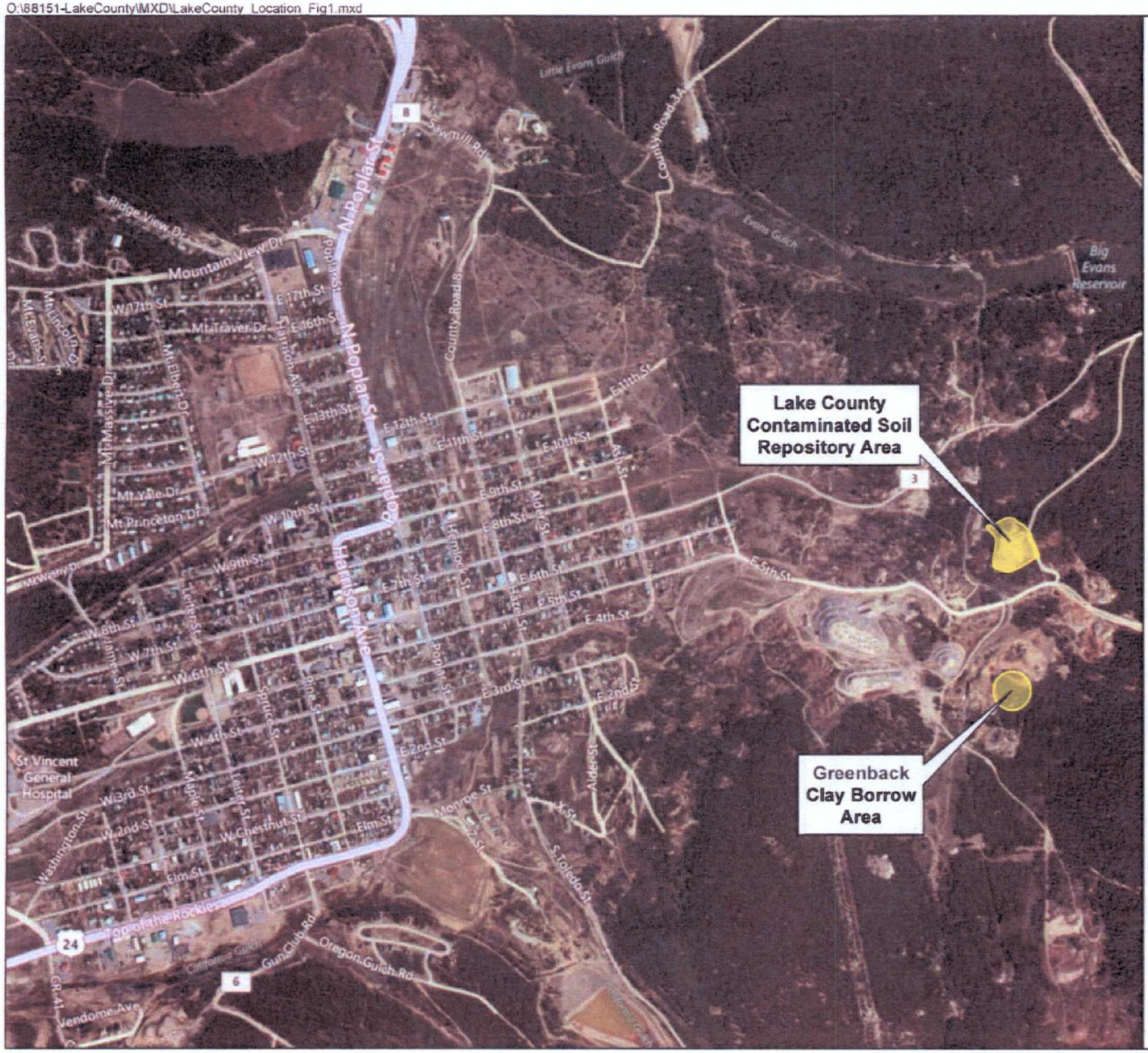

LAKE COUNTY CONTAMINATED SOIL REPOSITORY

Figure 1

CDM Smith

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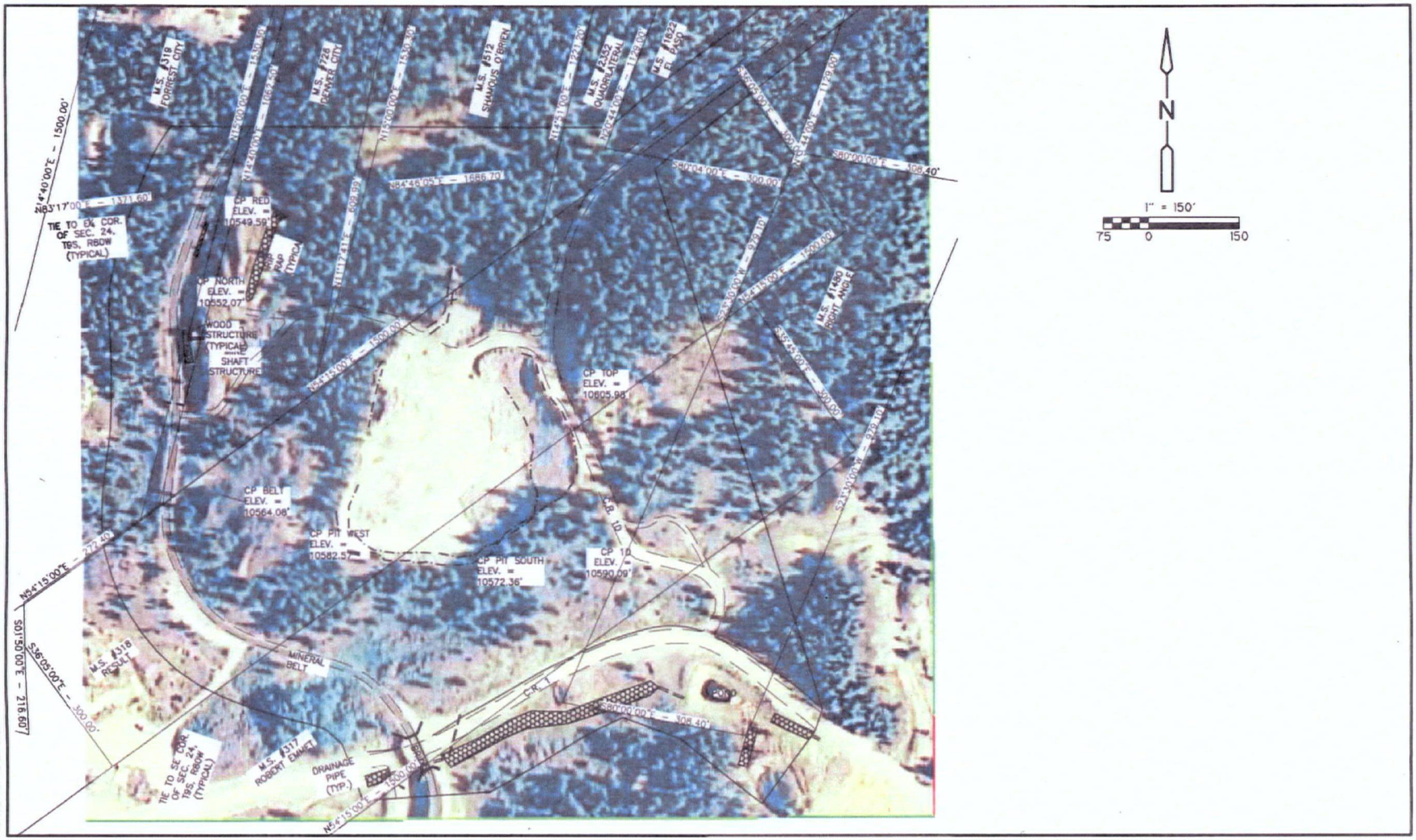


CDM Smith

Figure No. 2
PROPERTY BOUNDARIES
LAKE COUNTY CONTAMINATED SOIL REPOSITORY

Appendix B

Project Records

11/28/2012

Owner: Lake County Government

Project: California Gulch Superfund Site, Contaminated Soil Repository Construction

Written by:

Tony Gregorich

American Civil Constructors

Sections

1. Testing Tracking Table
2. Clay Temperature Readings
3. Laboratory Analytical Results
4. Stormwater Field Inspection Report
5. Daily Construction Reports and All Site Work
6. SPCC Plan and Safety Reports (See Closure Report Submittal # 55 C)
7. Health and Safety Plan (Submittal # 1 B)
8. Environmental Protection Plan (Submittal # 2 C)
9. Quality Control Plan (Submittal # 5 A)
10. Construction Site Plan (Submittal # 6 B)
11. Material Handling Plan (Submittal # 10 B)
12. Progress Photos
13. Official Change Order # 1

Section 1

Testing Tracking Table

Soil Tracking for California Gulch

*All locations of the samples will be identified by a stake for reference, but will only remain there for a few days because of the high traffic of equipment and excavation of clay. However the locations of the samples will be marked on the LSG Repository Plan and when clay samples are taken it will be plotted on the Greenback Clay Borrow Plan.

*LSG Area #1 represents the East Portion of the Contaminated Soil Repository and LSG Area #2 represents the West Portion of the CSR.

*See attachment drawings for all locations of each test. For the daily clay temperature readings refer to the project records submittal (#56 A).

*Please be aware that "N/A" in the Pass/Fail column means that "Not Analyzed." Be aware also that locations may differ from HP Geotech report forms and the tracking table locations. Tracking table locations are based on the drawings provided and all locations are referenced from the point of interest stake on the West slope of the Contaminated Soil Repository.

Test #	Name of Test	Type of Test	Location	Date	Elevation Depth	Pass/Fail	High Temp. F	Low Temp. F	Company Who Performed Test	Location Description	Requirements	Lab Test Result Actual Number	Actual Results
1	Silty, Sandy Gravel with Cobbles	Atterberg, Gradation, Compaction	LSG Onsite Unscreened Overburden	8/8/2012	4 ft	N/A	78	45	H-P Geotech	Stockpile Area	General Samples	HP = 1	(LL = 22% PI = 4% Sand = 31%)
2	Slightly Gravelly, Sandy Clay	Atterberg, Gradation, Compaction	Onsite 2" Minus Screened	8/8/2012	2 ft	N/A	78	45	H-P Geotech	Stockpile Area	General Samples	HP = 2	(LL = 21% PI = 5% Sand = 41%)
3	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	8/8/2012	4 ft	PASS	65	43	ATT and H-P Geotech	65 ft from West Fence and 60 ft from South Fence	1000 CY	CL = 3	(LL = 30% PI = 12% Sand = 29%) (8.1 E-08 cm/s)
4	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	8/31/2012	5 ft	PASS	65	43	ATT and H-P Geotech	125 ft from West Fence and 61 ft from South Fence	1000 CY	CL = 4	(LL = 35% PI = 18% Sand = 42%) (8.1 E-08 cm/s)
5	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	9/6/2012	6 ft	FAILED Liquid Limit, HC PASS	67	42	ATT and H-P Geotech	60 ft from West Fence and 60 ft from South Fence	1000 CY	CL = 5	(LL = 32% PI = 13% Sand = 47%) (6.4 E-06 cm/s)
6	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	9/6/2012	7 ft	FAILED Liquid Limit, HC PASS	67	42	ATT and H-P Geotech	130 ft from West Fence and 62 ft from South Fence	1000 CY	CL = 6	(LL = 33% PI = 15% Sand = 44%) (1.0 E-04 cm/s)
7	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	60 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
8	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	100 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
9	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	100 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
10	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	60 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
11	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	140 ft from West of Point of Interest Stake on Slope and 50 ft South	8500 SF		
12	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	150 ft from West of Point of Interest Stake on Slope and 40 ft North	8500 SF		
13	In Place Clay Liner Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	ATT	Same as Test 12	50000 SF	12 in Place #1	(4.4 E-07 cm/s)
14	Moisture Content First Lift	Moisture Content	LSG Repository Clay Liner Area #1, First Lift	9/17/2012	6 inches	PASS	61	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	50000 SF	Figure 13 Pan # H-2	15.0% Moisture

15	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 20 ft North	10000 SF		
16	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12.5 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	10000 SF		
17	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	13 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 90 ft South	10000 SF		
18	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 90 ft South	10000 SF		
19	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 35 ft South	10000 SF		
20	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 20 ft North	10000 SF		
21	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 20 ft North	8500 SF		
21	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	8500 SF		
22	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 90 ft South	8500 SF		
23	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 90 ft South	8500 SF		
24	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 95 ft South	8500 SF		
25	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 20 ft North	8500 SF		
26	Moisture Content Second Lift	Moisture Content	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 from West of Point of Interest Stake on Slope and 30 ft North	50000 SF	Figure 13 Pan # 8-2	15.9% Moisture
27	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	PASS	61	38	ATT	50 ft from West of Point on Interest Stake on Slope and 20 ft North	Retest	ATT #29 In Place	(5.0 E-07 cm/s)
28	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	FAILED	61	38	ATT	140 from West of Point of Interest Stake on Slope and 90 ft South	50000 SF	ATT #28 In Place	(3.4 E-06 cm/s)
29	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	PASS	61	38	ATT	40 ft from West of Point of Interest Stake on Slope and 90 ft South	Retest	ATT #34 Retest	(4.1 E-07 cm/s)
30	Greenback Clay Borrow Area	Atterberg, Gradation, Compaction	Greenback Imported Clay New Area	10/4/2012	6 ft	PASS	52	36	H-P Geotech	100 ft from West Stake and 200 ft South	1000 CY	CL = ?	(LL = 31% PI = 13%)
31	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay New Area	10/4/2012	4 ft	PASS	52	36	ATT and H-P Geotech	150 ft from West Stake and 300 ft South	1000 CY	CL = 8	(LL = 29% PI = 10%) (2.6 E-04 cm/s)

32	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	10/4/2012	12 inches	PASS	52	36	ATT	40 ft from West of Point of Interest Stake on Slope and 60 ft North	Retest	ATT #33 Retest	(3.8 E-07 cm/s)
33	Moisture Content Pond 1st Lift	Moisture Content	Pond 1st Lift	10/3/2012	6 inches	PASS	54	36	H-P Geotech	180 ft from West of Point of Interest Stake on Slope and 115 ft North	500005F	Figure 14 Pan # S	15.3% Moisture
34	Moisture Content Pond 2nd Lift	Moisture Content	Pond 2nd Lift	10/3/2012	12 inches	PASS	52	36	H-P Geotech	Stockpile Area	500005F	Figure 14 Pan # V	15.2% Moisture
35	Hydraulic Conductivity Second Lift Pond	Hydraulic Conductivity	Pond 2nd lift	10/5/2012	12 inches	PASS	43	34	ATT	135 ft from West of Point of Interest Stake on Slope and 100 ft North	500005F	ATT 35 In Place	(6.0 E-07 cm/s)
36	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	53	27	ATT	195 ft from West of Point of Interest Stake on Slope and 20 ft North	500005F	ATT 37 In Place	(4.5 E-07 cm/s)
37	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	135 ft from West of Point of Interest Stake on Slope and 95 ft North	Contingency		
38	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	140 ft from West of Point of Interest Stake on Slope and 105 ft North	Contingency		
39	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	140 ft from West of Point of Interest Stake on Slope and 95 ft North	Contingency		
40	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	190 ft from West of Point of Interest Stake on Slope and 25 ft North	Contingency		
41	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	200 ft from West of Point of Interest Stake on Slope and 15 ft North	Contingency		
42	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	190 ft from West of Point of Interest Stake on Slope and 5 ft North	Contingency		
43	Hydraulic Conductivity Between both clay lifts	Hydraulic Conductivity	Near Central Berm	10/10/2012	12 inches	PASS	57	30	ATT	150 ft from West of Point of Interest Stake on Slope and 140 ft South	50000SF	#43 Test	(1.9 E-06 cm/s)
44	Moisture Content First Lift	Moisture Content	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	From Stockpile	50000SF	Figure 15 Pan # S	14.7% Moisture
45	Moisture Content Second Lift	Moisture Content	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	41	H-P Geotech	From Stockpile	50000SF	Figure 15 Pan # V	18.4% Moisture
46	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 145 ft North	8500 SF		
47	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 130 ft North	8500 SF		
48	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	120 ft from West of Point of Interest Stake on Slope and 110 ft North	8500 SF		
49	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 120 ft North	8500 SF		
50	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 140 ft North	8500 SF		

51	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 Inches	Moisture Low due to 12+ Hour Delay	52	36	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 110 ft North	8500 SF		
52	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 Inches	PASS	52	36	H-P Geotech	115 ft from West of Point of Interest Stake on Slope and 125 ft North	8500SF		
53	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 35 ft North	8500 SF		
54	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 5 ft South	8500 SF		
55	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	190 ft from West of Point of Interest Stake on Slope and 50 ft South	8500 SF		
56	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 Inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 95 ft South	8500 SF		
57	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 80 ft South	8500 SF		
58	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 55 ft South	8500 SF		
59	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
60	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 45 ft South	8500 SF		
61	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	240 ft from West of Point of Interest Stake on Slope and 15 ft South	8500 SF		
62	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 25 ft North	8500SF		
63	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 Inches	PASS	43	34	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 45 ft South	8500 SF		
64	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 Inches	PASS	43	34	H-P Geotech	195 ft from West of Point of Interest Stake on Slope and 40 ft South	8500 SF		
65	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 Inches	PASS	43	34	H-P Geotech	235 ft from West of Point of Interest Stake on Slope and 35 ft South	8500 SF		
66	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 40 ft North	8500 SF		
67	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 Inches	PASS	51	26	H-P Geotech	160 ft from West of Point of Interest Stake on Slope and 45 ft North	8500 SF		

68	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
69	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 90 ft North	8500 SF		
70	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	28	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 15 ft South	8500 SF		
71	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	26	H-P Geotech	225 ft from West of Point of Interest Stake on Slope and 30 ft North	8500 SF		
72	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	26	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 55 ft North	8500 SF		
73	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	PASS	54	32	H-P Geotech	260 ft from West of Point of Interest Stake on Slope	8500 SF		
74	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	250 ft from West of Point of Interest Stake on Slope and 20 ft South	8500 SF		
75	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	245 ft from West of Point of Interest Stake on Slope and 55 ft South	8500 SF		
76	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	PASS	54	32	H-P Geotech	185 ft from West of Point of Interest Stake on Slope and 95 ft South	8500 SF		
77	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	150 ft from West of Point of Interest Stake on Slope and 145 ft South	8500 SF		
78	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 65 ft North	8500 SF		
79	Thickness	Thickness	LSG Repository Clay Liner Area #1, Second Lift	10/15/2012	12 inches	PASS	57	29	ACC	10 ft from West of Point of Interest Stake on Slope and 40 ft North	10000SF		
80	Thickness	Thickness	LSG Repository Clay Liner Area #1, Second Lift	10/15/2012	12.25 inches	PASS	57	29	ACC	70 ft from West of Point of Interest Stake on Slope and 150 ft South	10000SF		
81	Thickness	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/16/2012	12.5 inches	PASS	48	27	ACC	180 ft from West of Point of Interest Stake on Slope and 100 ft South	10000SF		
82	Thickness	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/16/2012	12 inches	PASS	48	27	ACC	240 ft from West of Point of Interest Stake on Slope and 50 ft North	10000SF		
83	Thickness	Thickness	Pond 2nd lift	10/16/2012	13 inches	PASS	48	27	ACC	140 ft from West of Point of Interest Stake on Slope and 105 ft North	10000SF		

46A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	6.5 inches	PASS	54	41	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 145 ft North	10000SF		
47A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 130 ft North	10000SF		
48A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	7 inches	PASS	54	41	H-P Geotech	120 ft from West of Point of Interest Stake on Slope and 110 ft North	10000SF		
49A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	6.5 inches	PASS	54	41	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 120 ft North	10000SF		
50A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 140 ft North	10000SF		
51A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12.5 inches	PASS	52	36	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 110 ft North	10000SF		
52A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	115 ft from West of Point of Interest Stake on Slope and 125 ft North	10000SF		
53A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 35 ft North	10000SF		
54A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 5 ft South	10000SF		
55A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	190 ft from West of Point of Interest Stake on Slope and 50 ft South	10000SF		
56A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	13.5 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 95 ft South	10000SF		
57A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 30 ft South	10000SF		
58A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12.5 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 55 ft South	10000SF		
59A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6.5 inches	PASS	52	36	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 70 ft South	10000SF		
60A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 45 ft South	10000SF		
61A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	240 ft from West of Point of Interest Stake on Slope and 15 ft South	10000SF		
62A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 25 ft North	10000SF		

63A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 45 ft South	10000SF		
64A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12.5 inches	PASS	43	34	H-P Geotech	195 ft from West of Point of Interest Stake on Slope and 40 ft South	10000SF		
65A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	235 ft from West of Point of Interest Stake on Slope and 35 ft South	10000SF		
66A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	7.5 inches	PASS	43	34	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 40 ft North	10000SF		
67A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12.5 inches	PASS	51	26	H-P Geotech	160 ft from West of Point of Interest Stake on Slope and 45 ft North	10000SF		
68A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 50 ft North	10000SF		
69A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 90 ft North	10000SF		
70A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12.5 inches	PASS	52	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 15 ft South	10000SF		
71A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	13 inches	PASS	52	26	H-P Geotech	225 ft from West of Point of Interest Stake on Slope and 30 ft North	10000SF		
72A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	13.5 inches	PASS	52	26	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 55 ft North	10000SF		

Required Testing Frequencies

	Actual Tests Performed
Clay Material Tests During Excavation = 5 tests minimum	5
Moisture Content and Density Tests of In-Place Clay = 26 tests minimum	45
Hydraulic Conductivity and Moisture Content of In-Place Clay = 4 tests minimum	7 (HC) 6 (Moisture)
Thickness Tests of In-Place Clay = 11 tests minimum	33

Section 2

Clay Temperature Readings

Morning Clay Ground Temperatures

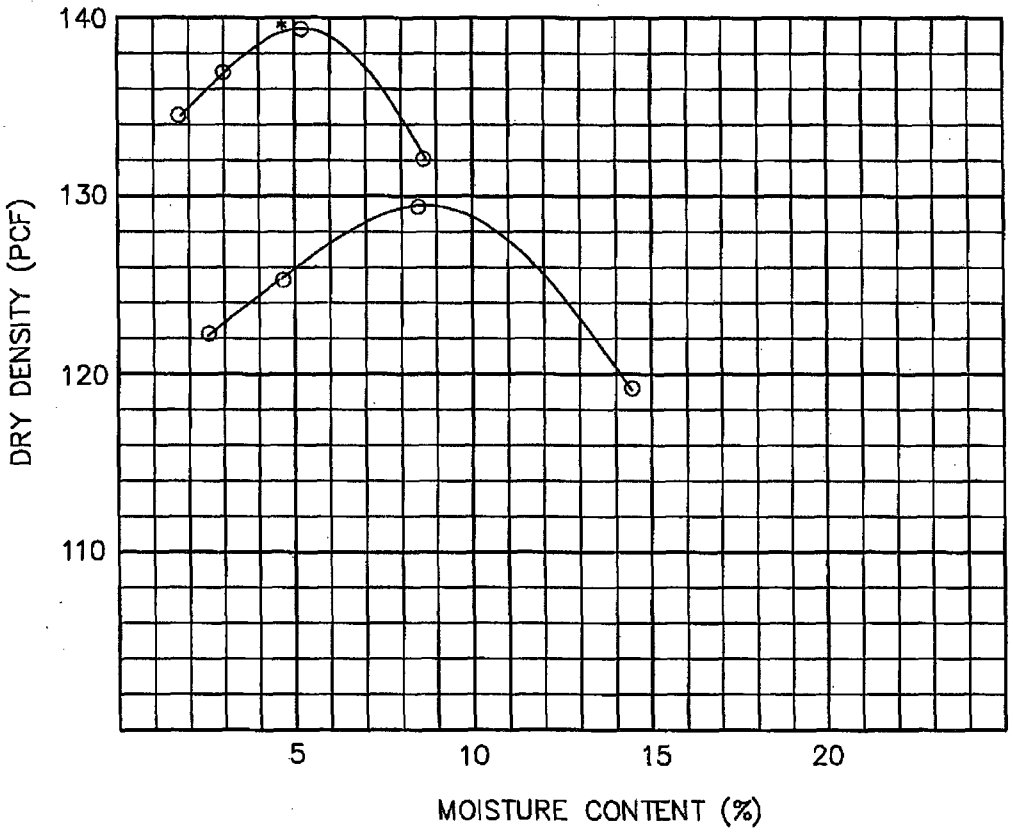
Date	Temp. F
9/19/2012	40
9/20/2012	41
9/21/2012	43
9/22/2012	38.5
9/25/2012	39
9/26/2012	38
9/27/2012	36
9/28/2012	38
9/29/2012	37
10/1/2012	40
10/2/2012	41
10/3/2012	37
10/4/2012	33
10/5/2012	34
10/8/2012	38
10/9/2012	32.5
10/12/2012	24

*Clay was covered and temperature taken from 2" minus protective layer.

Section 3

Laboratory Analytical Results

AUG 29 REC'D



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
1	Onsite Unscreened	Comp.	8/8/12	*139.5 PCF	*5.2 %	ASTM D-698 Method C

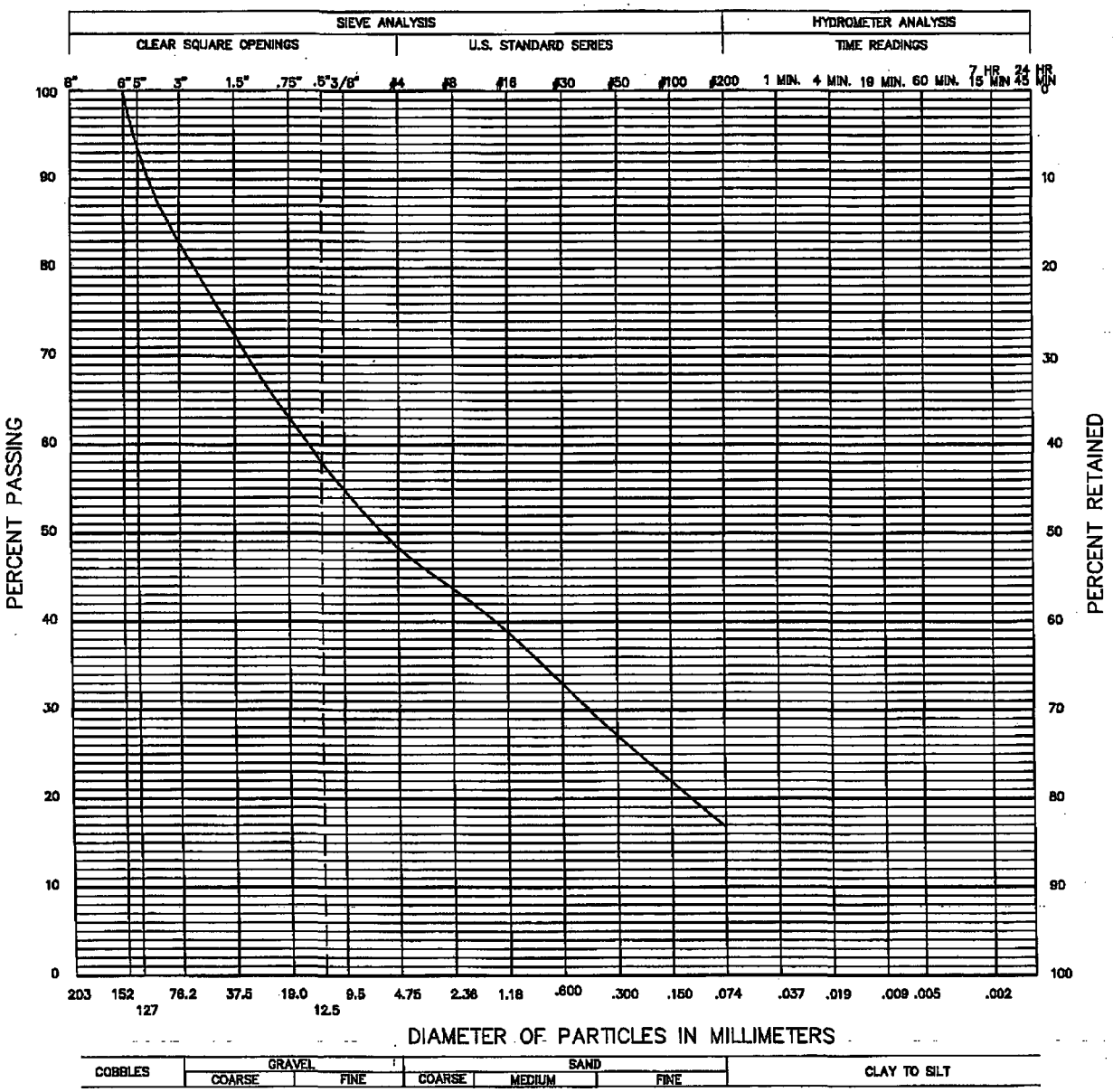
GRAVEL 52 % SAND 31 % SILT AND CLAY 17 %

LIQUID LIMIT 22 % PLASTICITY INDEX 4 %

SAMPLE OF: Silty, Sandy Gravel with Cobbles (GM) LAB NO.: 096

* This material is considered untestable according to ASTM D-698. The optimum moisture and density were corrected using ASTM D-4718 due to oversized particles within sample.

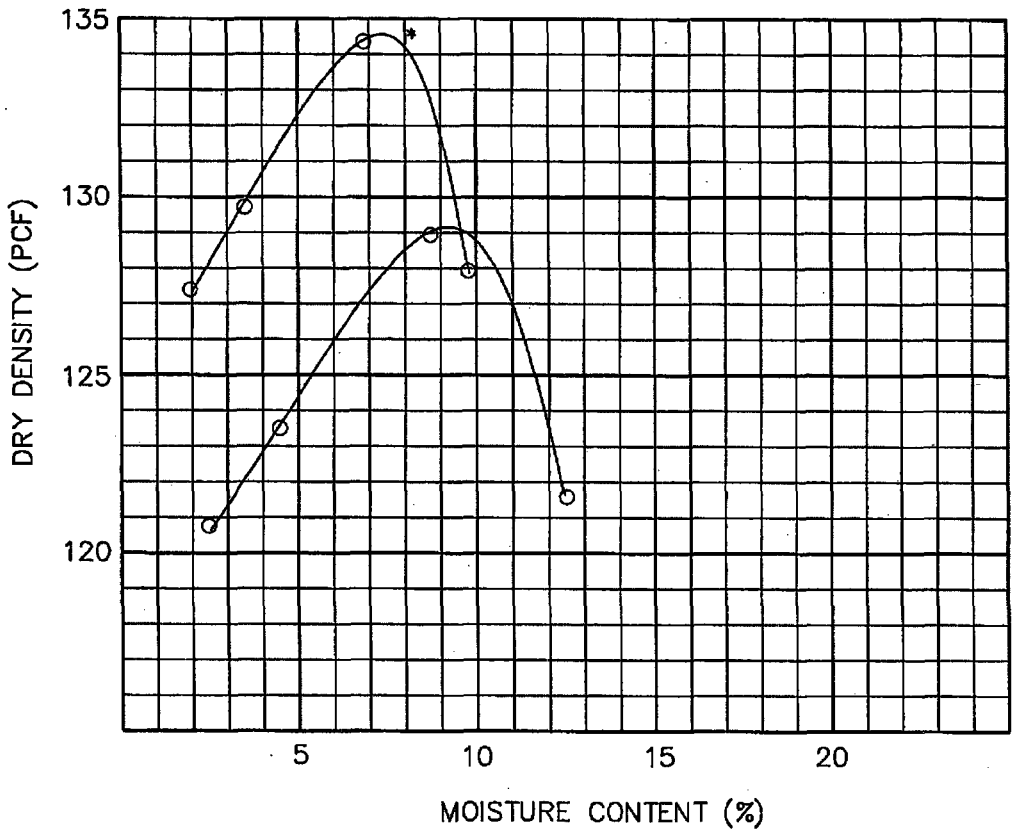
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 1



GRAVEL	52 %	SAND	31 %	SILT AND CLAY	17 %
LIQUID LIMIT	22 %			PLASTICITY INDEX	4 %

SAMPLE OF: Silty, Sandy Gravel with Cobbles (GM) FROM: Onsite Unscreened

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 2



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
2	Onsite Minus 2" Screened	Comp.	8/8/12	*134.5 PCF	*7.4 %	ASTM D-698 Method C

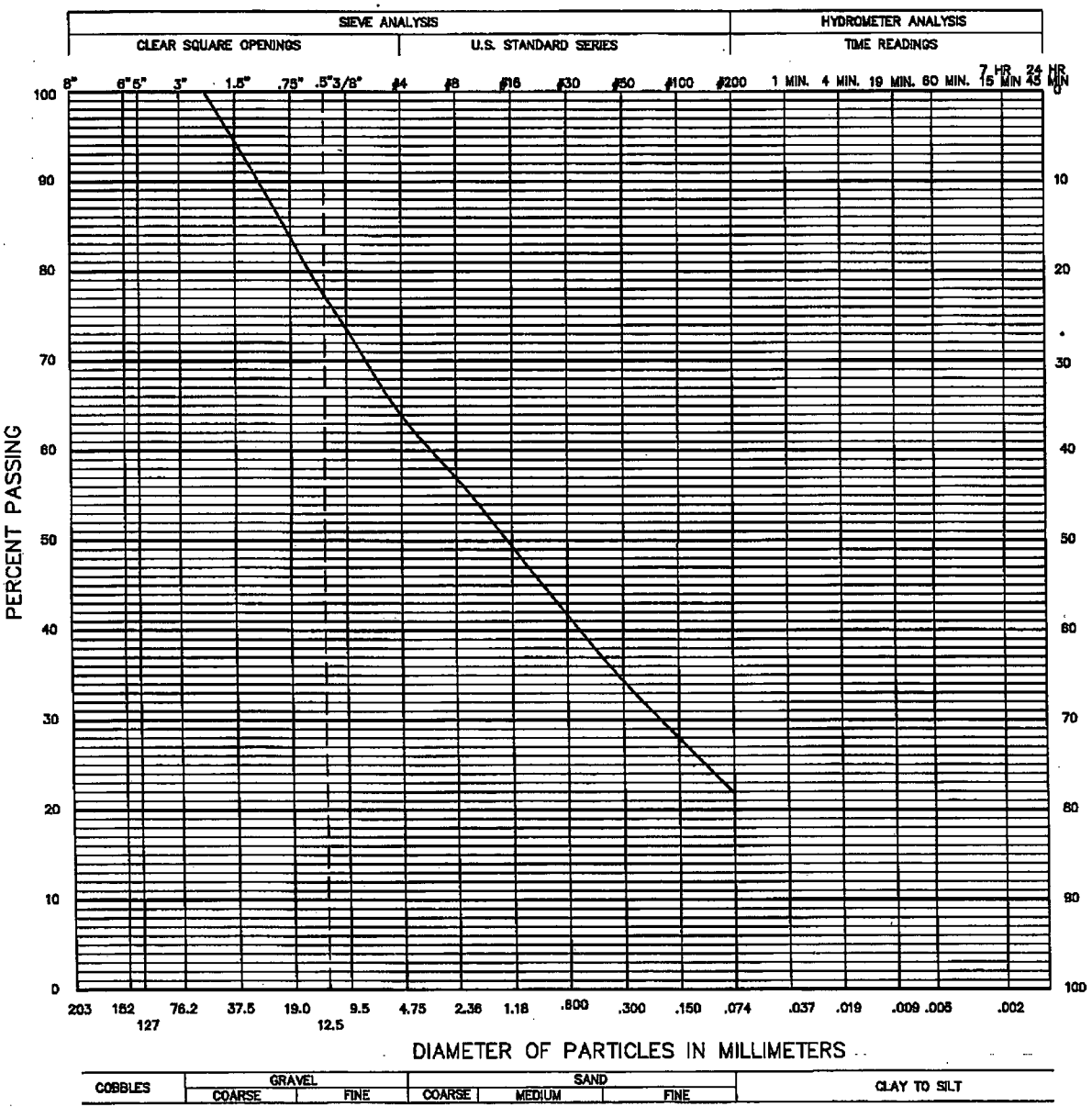
GRAVEL 37 % SAND 41 % SILT AND CLAY 22 %

LIQUID LIMIT 21 % PLASTICITY INDEX 5 %

SAMPLE OF: Silty Sand and Gravel (SM-GM) LAB NO.: 097

* The optimum moisture and density were corrected using ASTM D-4718 due to oversized particles within sample.

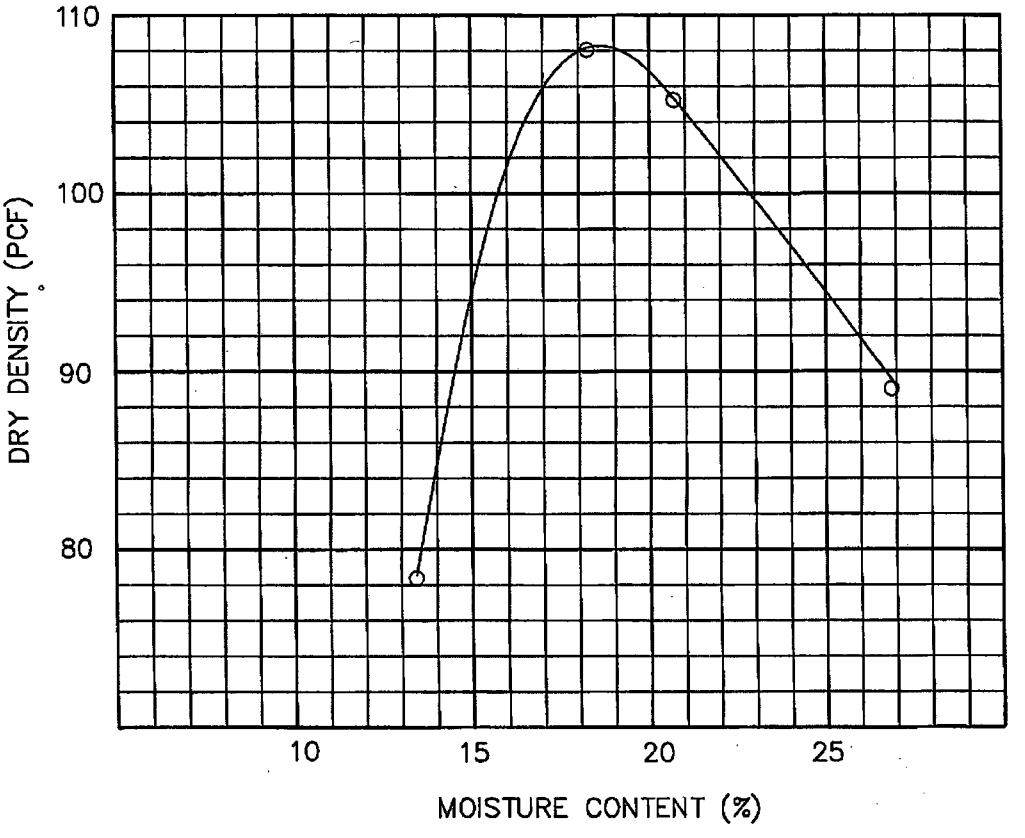
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 3



GRAVEL	37 %	SAND	41 %	SILT AND CLAY	22 %
LIQUID LIMIT	21 %			PLASTICITY INDEX	5 %

SAMPLE OF: Silty Sand and Gravel (SM–GM) FROM: Onsite minus 2" screened

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 4



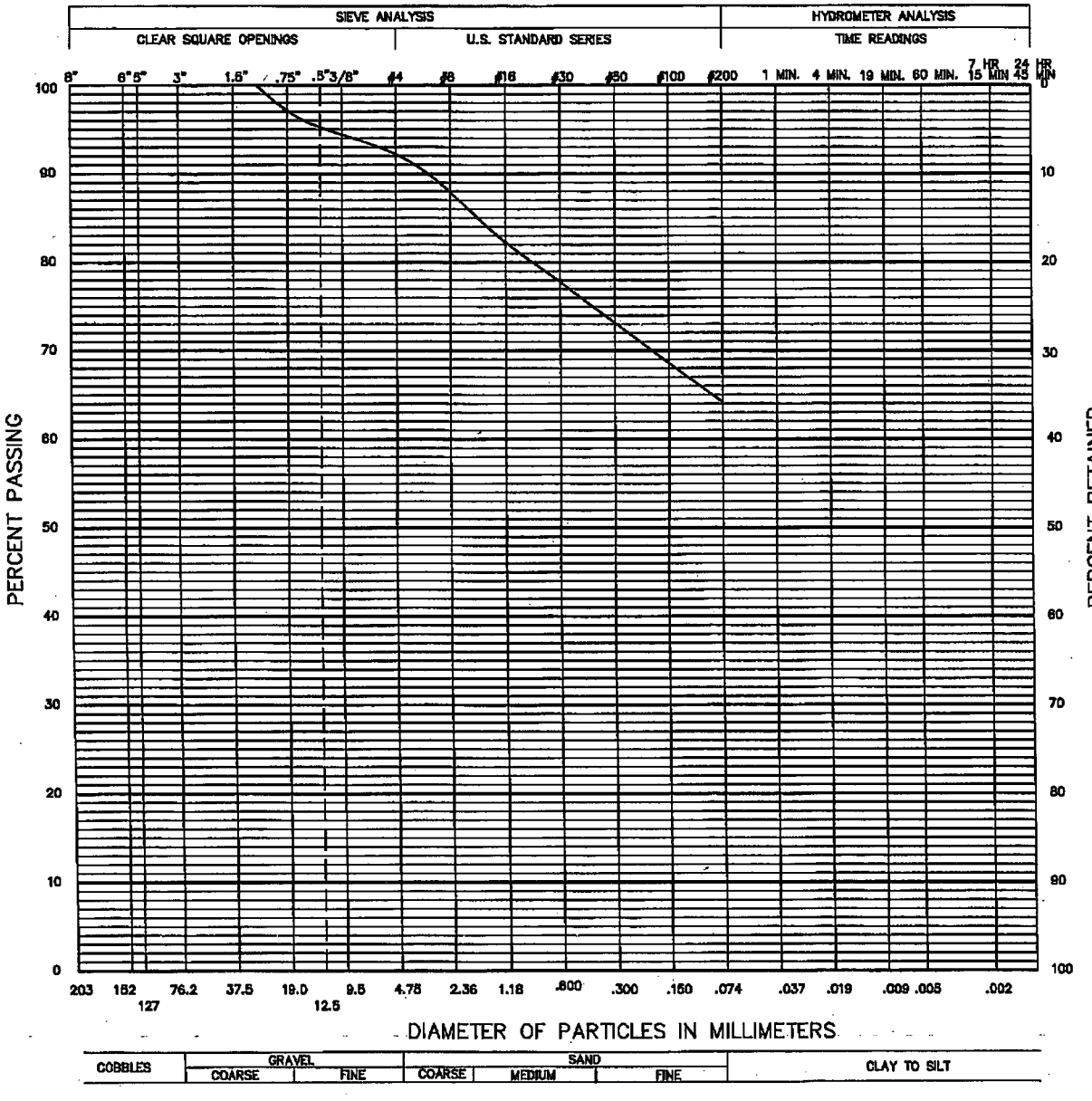
SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
3	Imported Clay	Comp.	8/8/12	108.2 PCF	18.5 %	ASTM D-698 Method A

GRAVEL 7 % SAND 29 % SILT AND CLAY 64 %

LIQUID LIMIT 30 % PLASTICITY INDEX 12 %

SAMPLE OF: Slightly Gravelly, Sandy Clay (CL) LAB NO.: 098

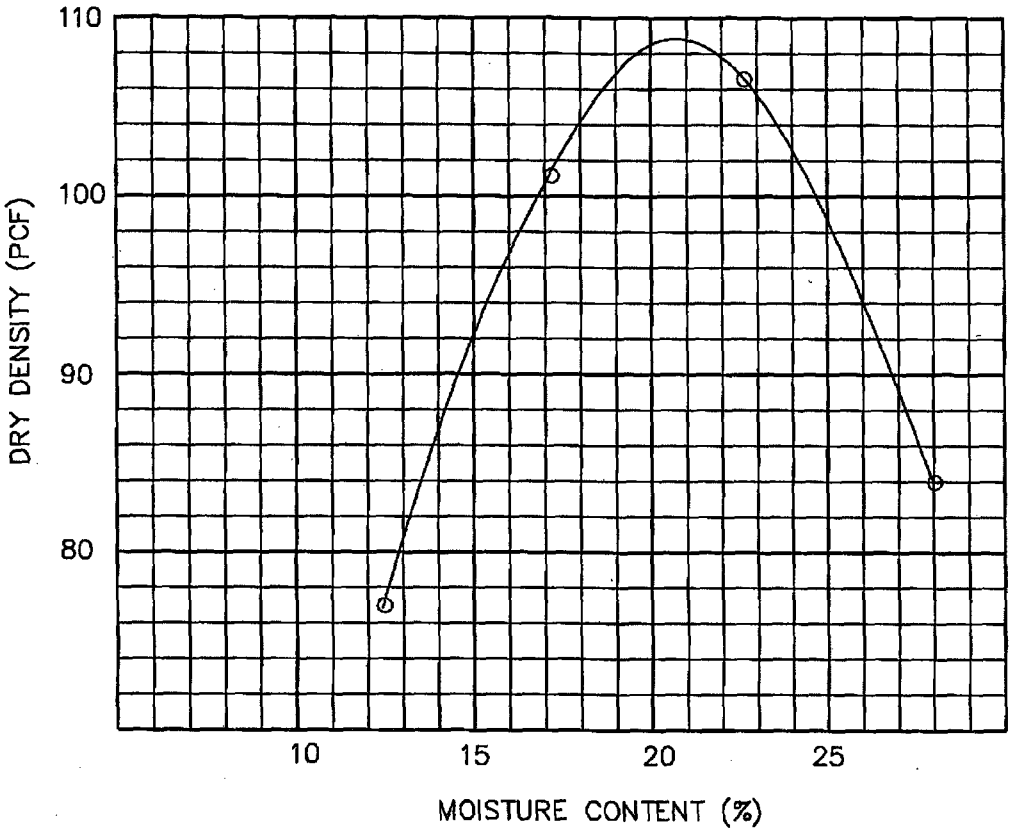
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 5



GRAVEL	7 %	SAND	29 %	SILT AND CLAY	64 %
LIQUID LIMIT	30 %			PLASTICITY INDEX	12 %
SAMPLE OF: Slightly Gravelly, Sandy Clay (CL)				FROM: Imported Clay	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 6

SEP 1 1 REC'D



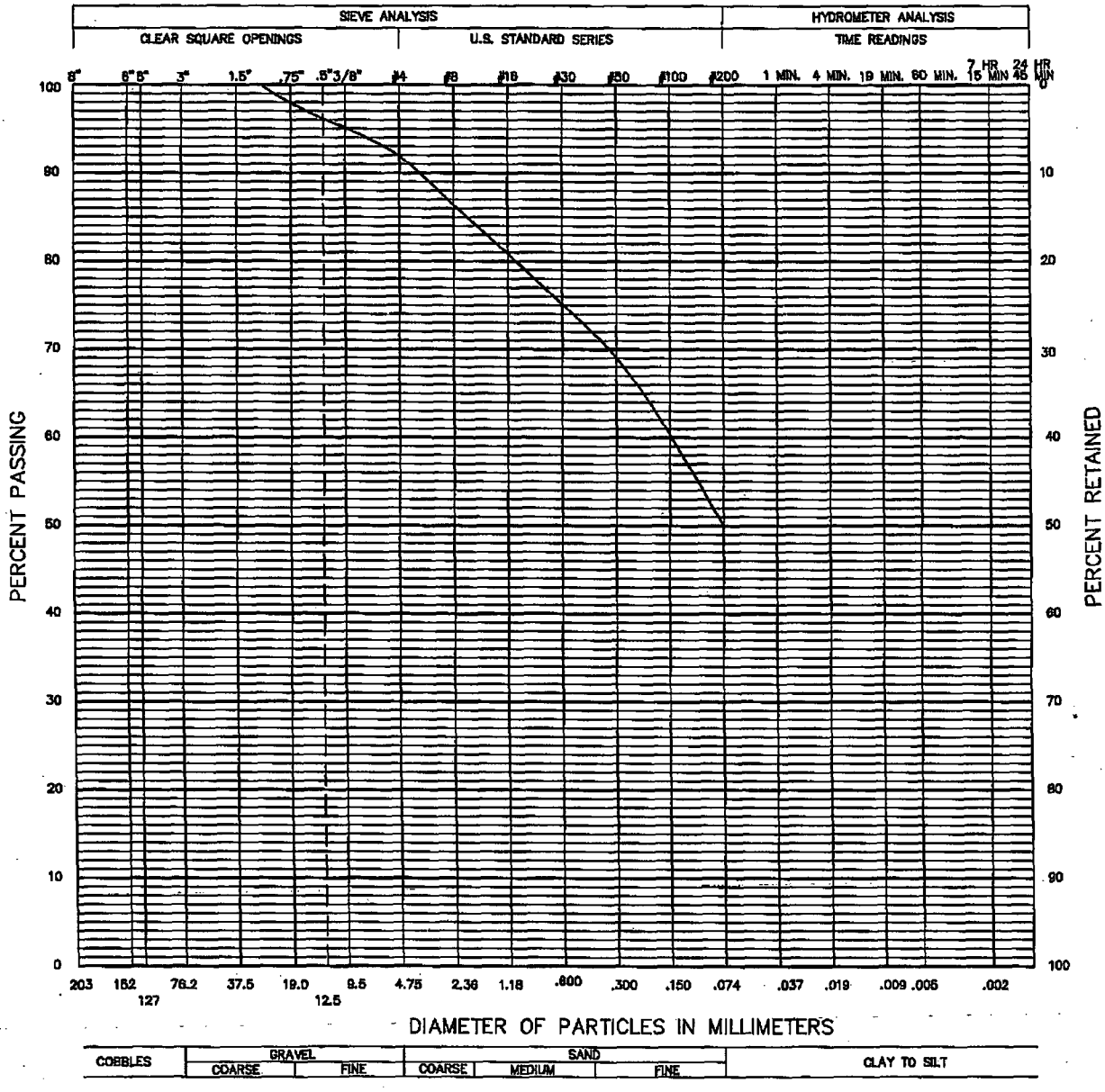
SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
4	Borrow Area Very Sandy Clay	Comp.	8/31/12	109.0 PCF	20.8 %	ASTM D-698 Method A

GRAVEL 8 % SAND 42 % SILT AND CLAY 50 %

LIQUID LIMIT 35 % PLASTICITY INDEX 18 %

SAMPLE OF: Slightly Gravelly, Very Sandy Clay (CL) LAB NO.: 127

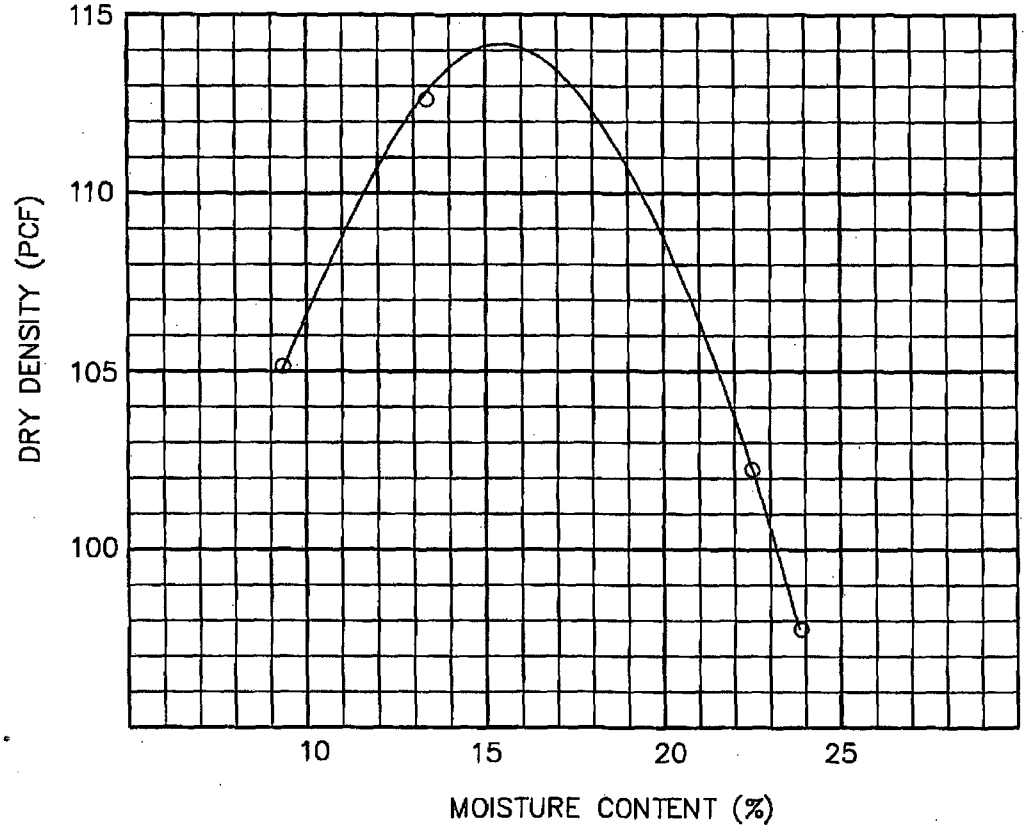
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 7



GRAVEL	8 %	SAND	42 %	SILT AND CLAY	50 %
LIQUID LIMIT	35 %			PLASTICITY INDEX	18 %

SAMPLE OF: Slightly Gravelly, Very Sandy Clay (CL) FROM: Borrow Area – Very Sandy Clay Sample #4

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 8



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
5	Borrow Area	Comp.	9/6/12	114.2 PCF	15.2 %	ASTM D-698 Method A

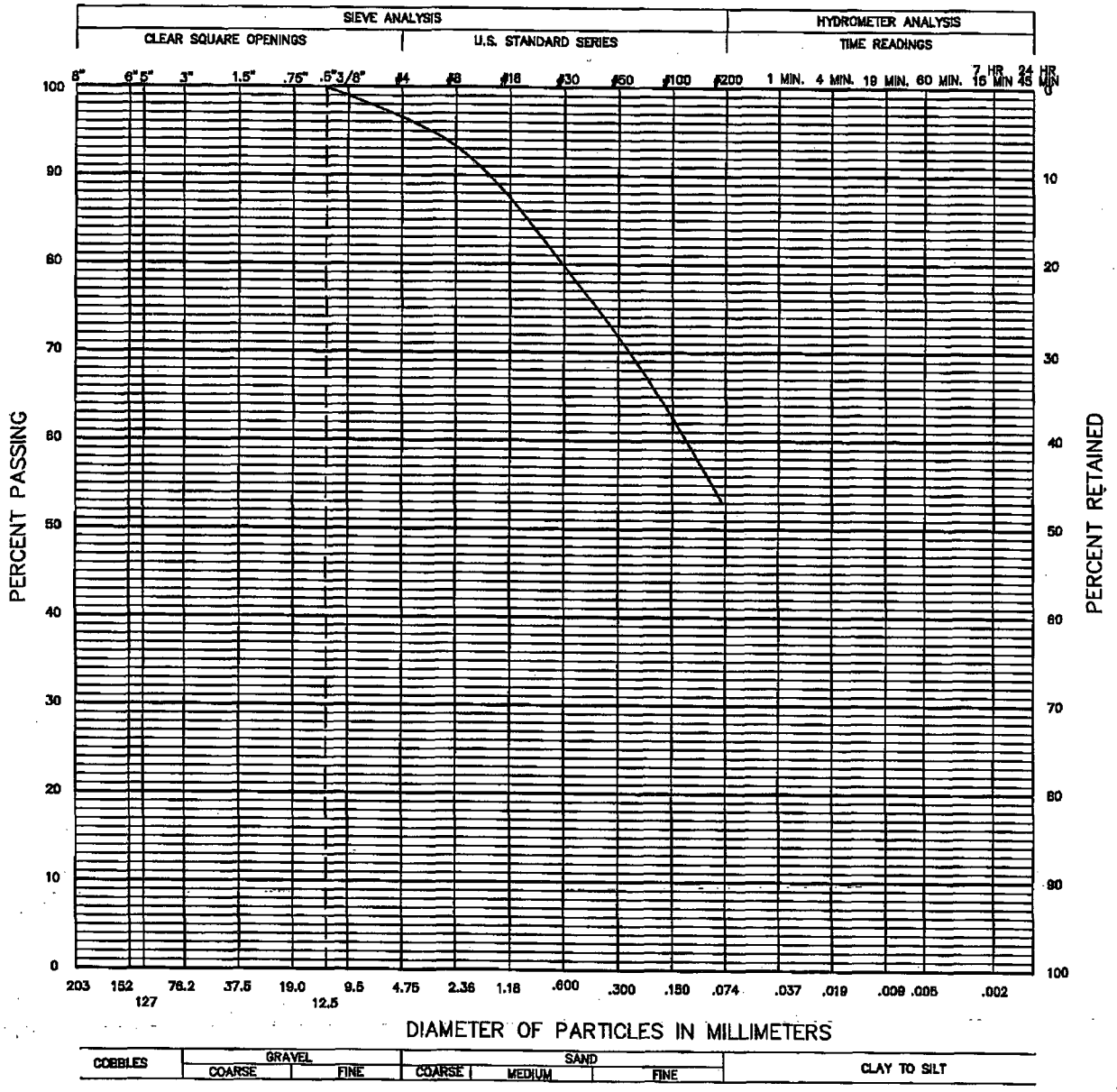
GRAVEL 3 % SAND 44 % SILT AND CLAY 53 %

LIQUID LIMIT 33 % PLASTICITY INDEX 15 %

SAMPLE OF: Very Sandy Clay (CL) LAB NO.: 133

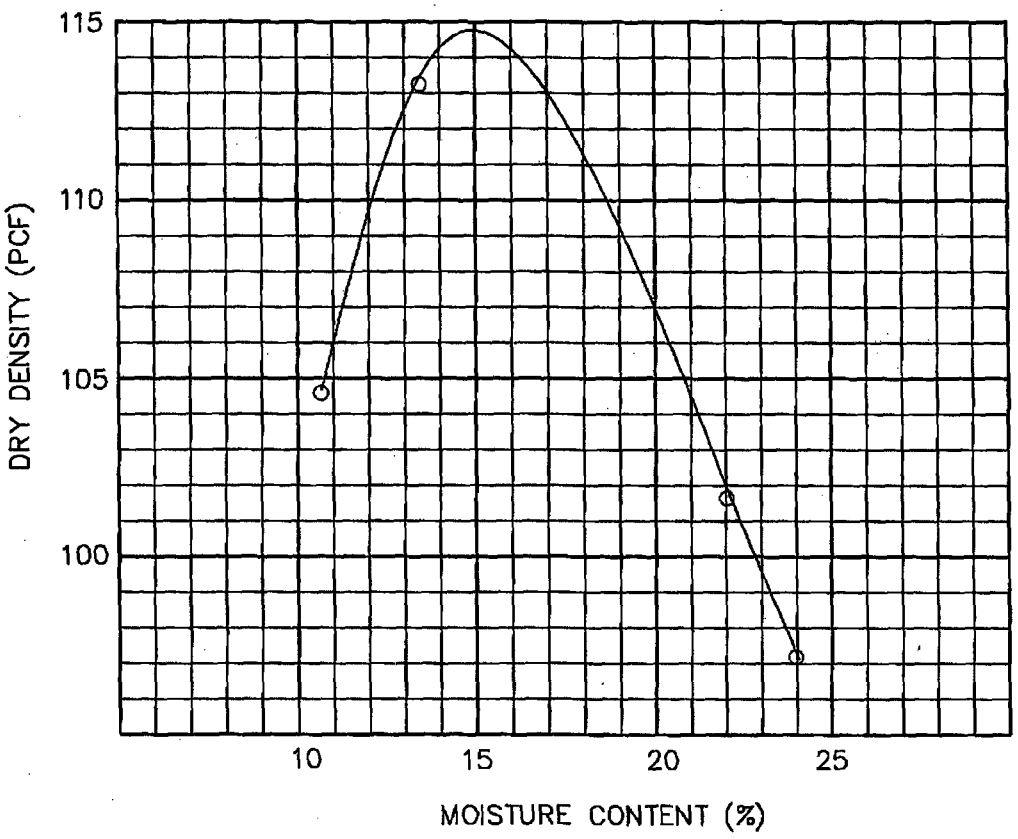
SAMPLE I.D.: ACC CL – 5

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 9



GRAVEL	3 %	SAND	44 %	SILT AND CLAY	53 %
LIQUID LIMIT	33 %			PLASTICITY INDEX	15 %
SAMPLE OF:	Very Sandy Clay (CL)			FROM:	Borrow Area
SAMPLE I.D.:	ACC CL – 5			LAB NO.:	133

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 10



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
6	Borrow Area	Comp.	9/6/12	114.7 PCF	14.9 %	ASTM D-698 Method A

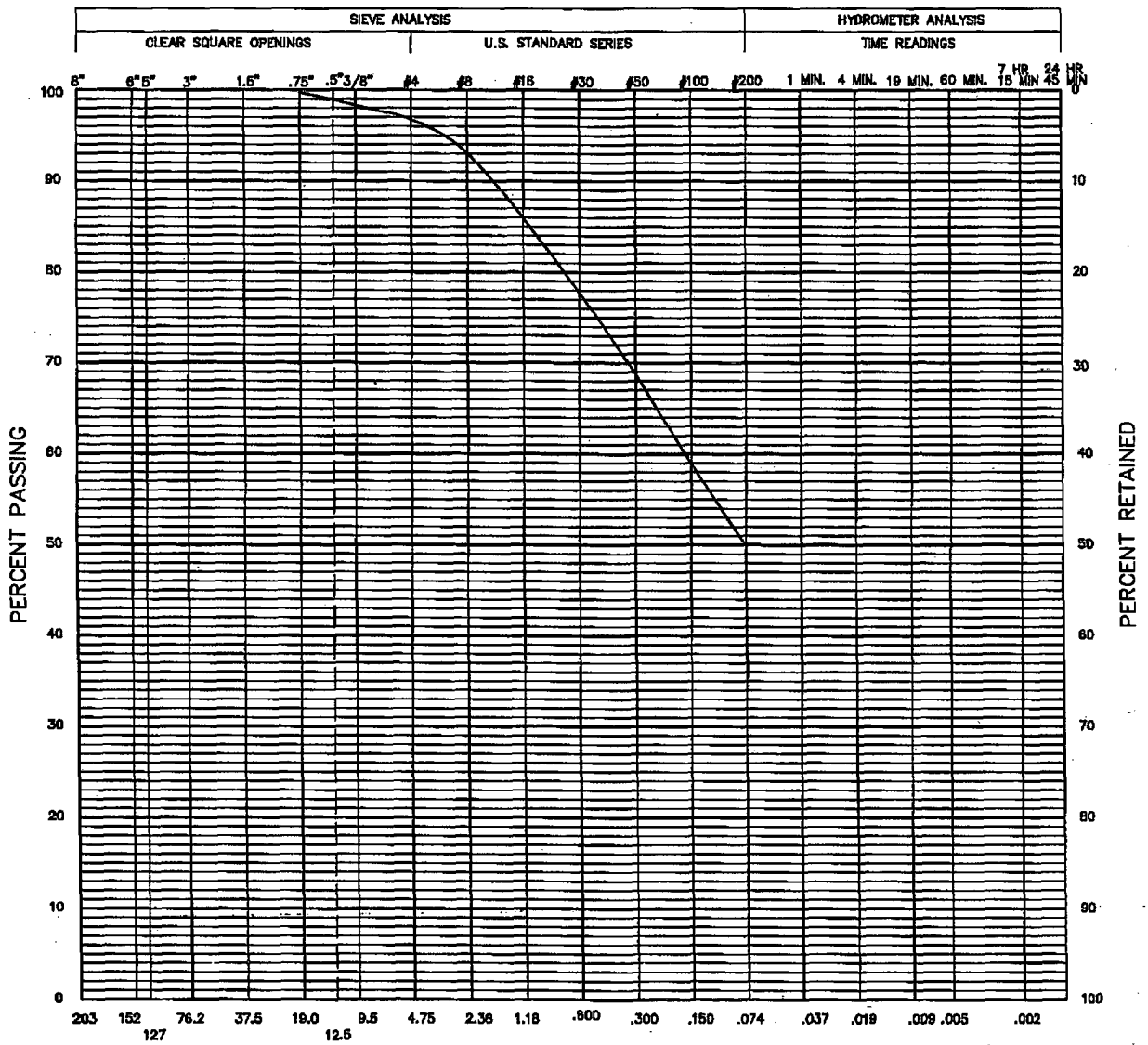
GRAVEL 3 % SAND 47 % SILT AND CLAY 50 %

LIQUID LIMIT 32 % PLASTICITY INDEX 13 %

SAMPLE OF: Very Sandy Clay (CL) LAB NO.: 134

SAMPLE I.D.: ACC CL - 6

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 11



GRAVEL	3 %	SAND	47 %	SILT AND CLAY	50 %
LIQUID LIMIT	32 %			PLASTICITY INDEX	13 %
SAMPLE OF: Very Sandy Clay (CL)				FROM: Borrow Area	
SAMPLE I.D.: ACC CL – 6				LAB NO.: 134	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 12

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

SEP 2 1 REC'D

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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/11/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer. Loader, Haul Trucks

Type & # of Compaction Units: Sheepsfoot Roller, Smooth Drum Roller

Method of Moisture Conditioning: Water Truck, Natural Moisture

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	60 Feet East, 50 Feet North	+6"	114.7	14.9	109.0	17.7	95	95	A
2	100 Feet East, 50 Feet North	+6"	114.7	14.9	114.2	15.0	99	95	A
3	100 Feet East, 70 Feet South	+6"	114.7	14.9	109.2	16.7	95	95	A
4	60 Feet East, 70 Feet South	+6"	114.7	14.9	112.6	14.9	98	95	A
5	140 Feet East, 50 Feet South	+6"	114.7	14.9	109.0	16.1	95	95	A
6	150 Feet East, 40 Feet North	+6"	114.7	14.9	110.5	17.0	96	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope.

Testing depths represent approximate compacted clay fill thickness. Nuclear density testing was performed in backscatter mode with no probe penetration.

At the time of our site visit the contractor was beginning with the placement of the second 6-inch clay fill lift. Varying amounts of gravel and cobble were observed in the material being placed. The contractor informed us that this material had been approved.

Obtained a sample of proposed clay fill soils from the borrow area from roughly -8 feet. Gravel and cobbles were observed in the material in excess of previously obtained and laboratory tested samples. H-P Geotech recommended not placing until material could be approved for oversize aggregate.

Jared Cohen — **Field Observer**

Chad Bringle — **Reviewed By**

HP Geotech
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Report of Construction Activities

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/17/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

Weather Conditions and Temperature: Partly Cloudy, 45° F

Major Equipment on Site: (2) Dozer, Loader, Smooth Drum Roller, Sheepsfoot Roller

Contractor's Construction Activities:
Final grading and compaction efforts for the western portion of the basin.

Screening and placing on site rip rap soils along the southern reclamation basin slope; western portion.

H-P Geotech's Site Activities:
As requested, H-P Geotech was on site to test and observe clay fill placements for the base of the reclamation basin. While on site we observed the second clay lift placement for the western portion of the basin where the contractor was working.

In place rapid nuclear moisture density testing was performed yielding satisfactory results (Page 2 of 2).

Infrared temperature reading were performed encompassing the area of placed clay fill yielding temperature readings between 50° to 52° F at the ground surface (1:00 pm).

Representative clay fill samples were obtained for both 6-inch lift placements and returned to our laboratory for moisture content determination (Figure 13).

Lift thickness estimation testing was performed in 6 locations encompassing the western portion placement area. Due to the varying amount of gravel and cobble within the placed soils, hand drive core sampling for depth verification was not completed successfully. In place of hand drive coring, t-probe penetration depths were utilized to estimate the clay fill thickness. We requested that the contractor repair the probe penetration locations. Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope:

1) 130 Feet East, 20 Feet North = 12"
2) 130 Feet East, 35 Feet South = 12.5"
3) 130 Feet East, 90 Feet South = 13"
4) 50 Feet East, 90 Feet South = 12"
5) 50 Feet East, 35 Feet South = 12"
6) 50 Feet East, 20 Feet North = 12"

Verbal Communication With: Tony Gregorich with ACC

Jared Cohen	Chad Bringle
Field Observer	**Reviewed By**

HP Geotech
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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/17/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, Loader, Haul Trucks

Type & # of Compaction Units: Sheepsfoot Roller, Smooth Drum Roller

Method of Moisture Conditioning: Water Truck, Natural Moisture

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	130 Feet East, 20 Feet North	+12"	114.7	14.9	109.5	15.8	95	95	A
2	130 Feet East, 35 Feet South	+12"	114.7	14.9	113.7	15.6	99	95	A
3	130 Feet East, 90 Feet South	+12"	114.7	14.9	109.6	15.6	96	95	A
4	50 Feet East, 90 Feet South	+12"	114.7	14.9	112.8	15.5	98	95	A
5	50 Feet East, 35 Feet South	+12"	114.7	14.9	114.0	15.0	99	95	A
6	50 Feet East, 20 Feet North	+12"	114.7	14.9	113.8	16.6	99	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope.

Testing depths represent approximate compacted clay fill thickness.

Nuclear moisture density testing was performed in the backscatter mode with no probe penetration.

Jared Cohen — **Field Observer**

Chad Bringle — **Reviewed By**

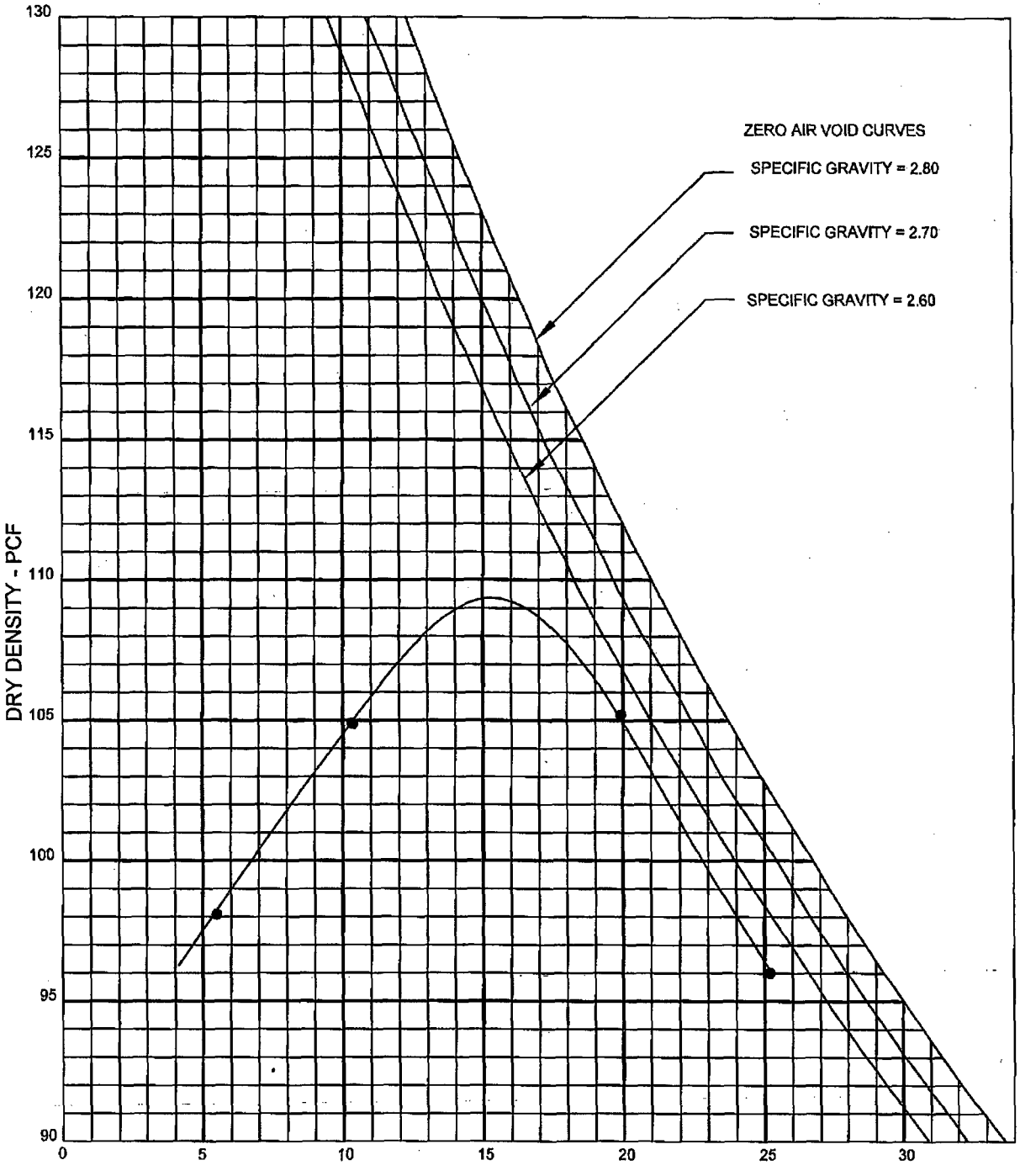
HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

Project Name: California Gulch, Leadville, Colorado.

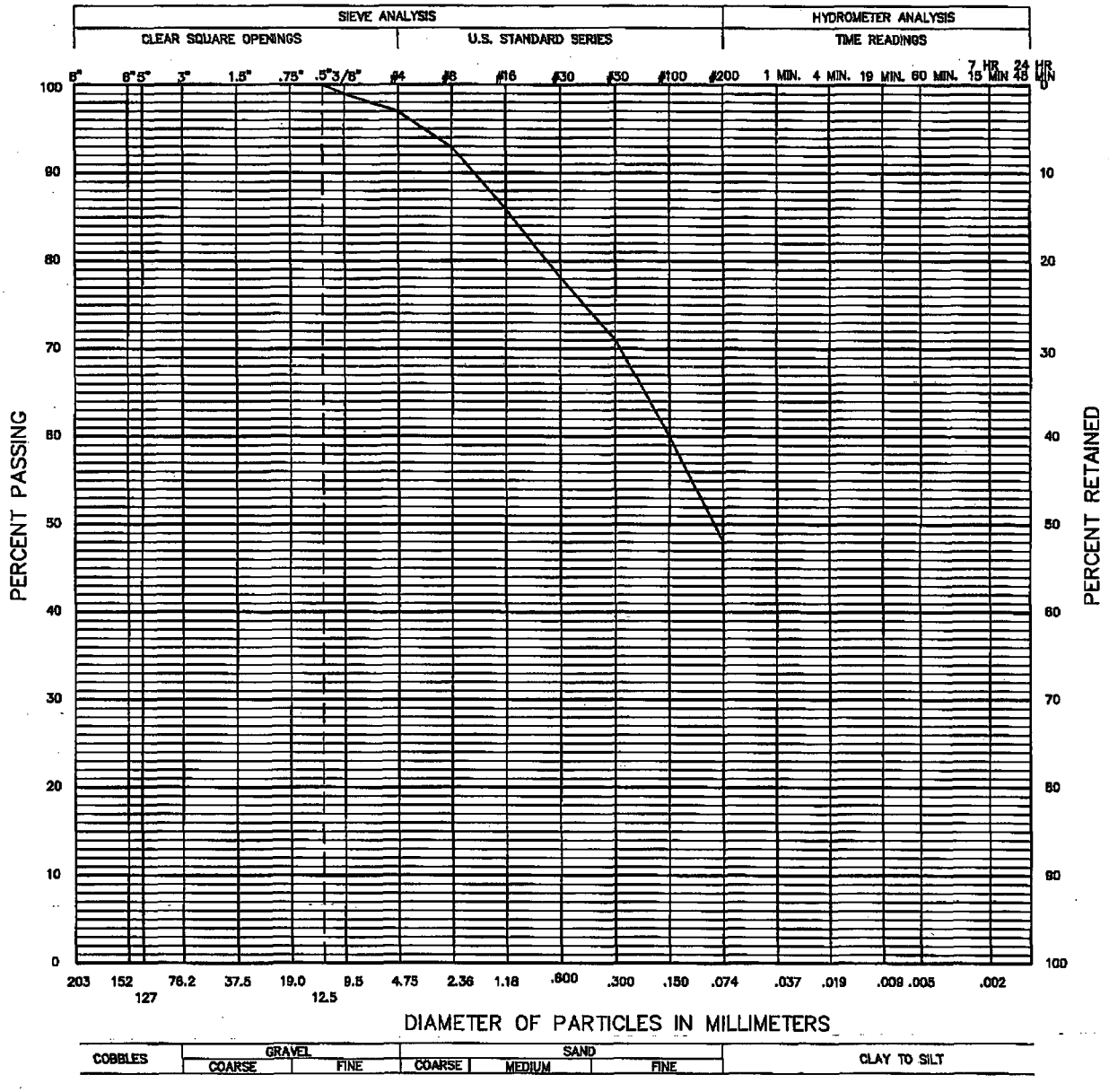
Project Number: 412 147A **Date: 09/17/2012** **Figure: 13**

Moisture Content		Moisture Content	
Location	130' East, 35' South Of Control Point #49	Location	130' East, 30' North Of Control Point #49
Depth	@ +6 Inches	Depth	@ +12 Inches
Pan #	H-2	Pan #	B-2
Pan Wt. (g)	163.3	Pan Wt. (g)	162.3
Wet Soil & Pan (g)	688.6	Wet Soil & Pan (g)	942.8
Dry Soil & Pan (g)	620.1	Dry Soil & Pan (g)	836.0
Dry Soil (g)	456.8	Dry Soil (g)	673.7
Water (g)	68.5	Water (g)	106.8
Moisture (%)	15.0	Moisture (%)	15.9

Figure 13

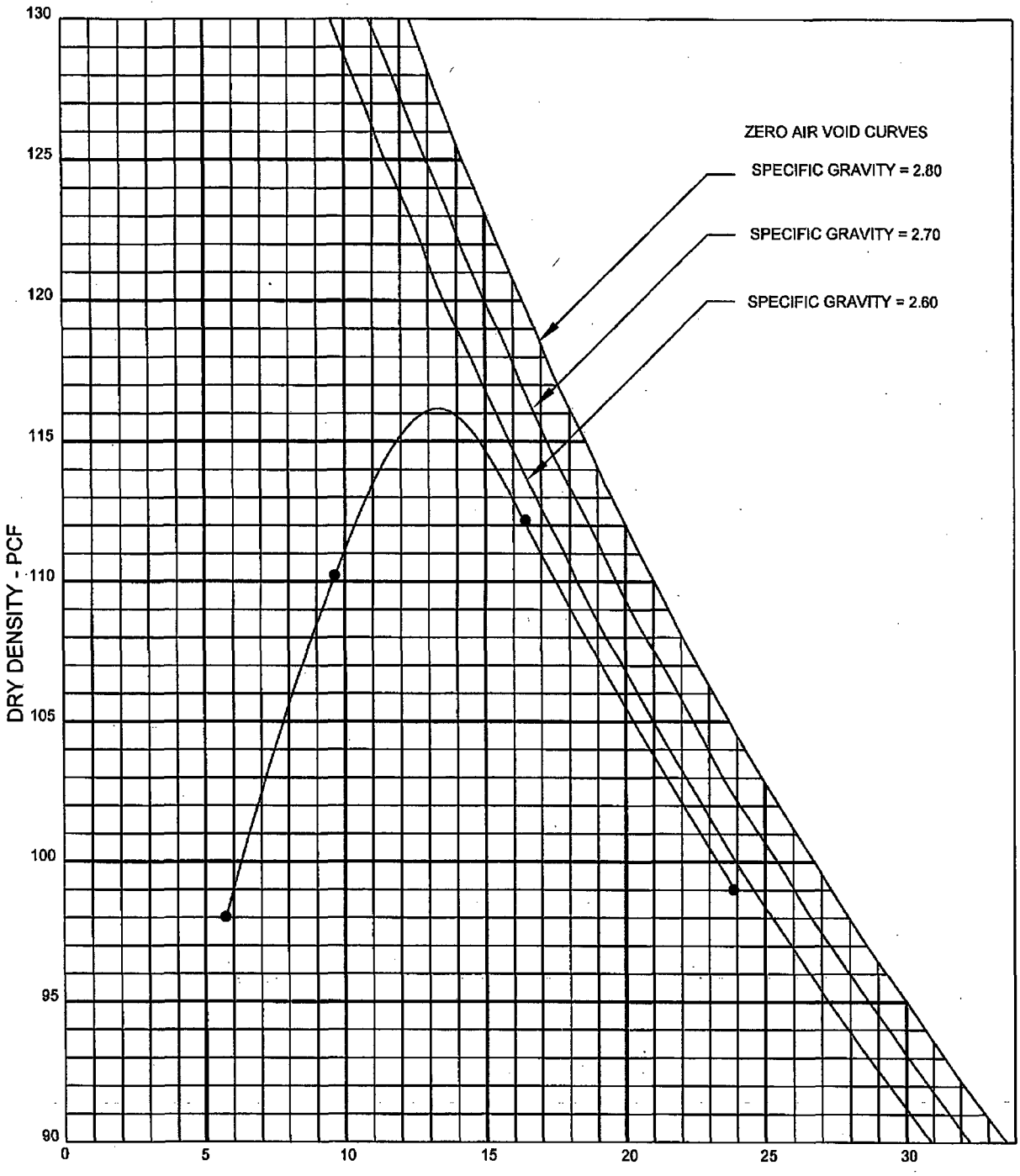


LOCATION : California Gulch Borrow Area; Sample I.D. ACC CL-7	MOISTURE-DENSITY RELATIONSHIPS
SOIL DESCRIPTION : Very Clayey SAND (SC)	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.
MAX. DRY DENSITY : 109.6 PCF OPT. MOIST. CONTENT : 15.4 %	PROCEDURE : ASTM D 698 METHOD A
LIQUID LIMIT : 31 PLASTICITY INDEX : 13	JOB NO. : 412147A
GRAVEL : 3 % SAND : 49 % SILT AND CLAY (−200) : 48 %	DATE : 10/3/2012, Lab No. 185 | Fig. 16

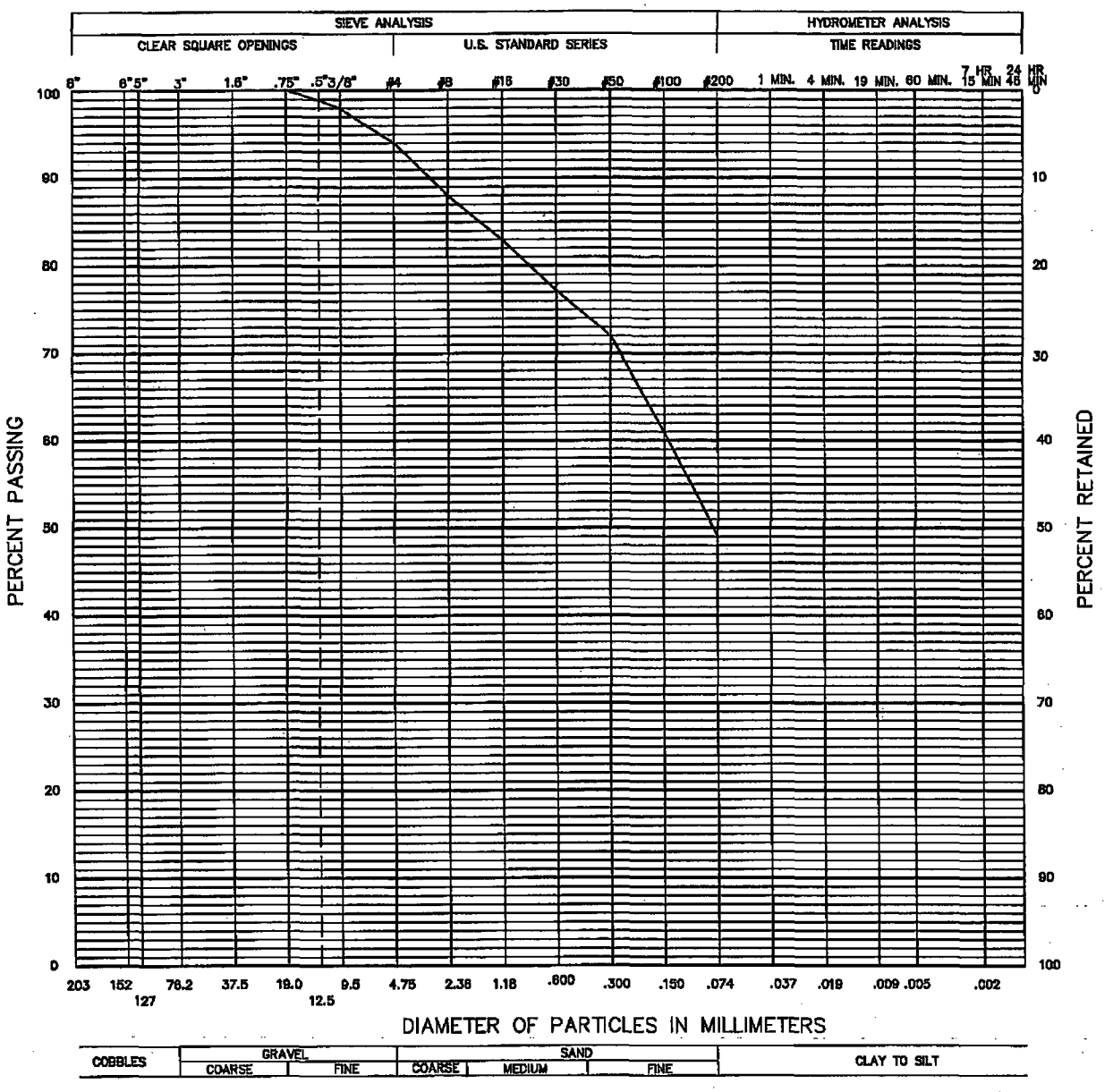


GRAVEL	3 %	SAND	49 %	SILT AND CLAY	48 %
LIQUID LIMIT	31 %			PLASTICITY INDEX	13 %
SAMPLE OF: Very Clayey Sand (SC)				FROM: Borrow Area	
SAMPLE I.D.: ACC CL – 7				LAB NO.: 185	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 17



LOCATION : California Gulch Borrow Area; Sample I.D. ACC CL-8	MOISTURE-DENSITY RELATIONSHIPS
SOIL DESCRIPTION : Very sandy CLAY (CL)	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.
MAX. DRY DENSITY : 116.1 PCF OPT. MOIST. CONTENT : 13.2 %	PROCEDURE : ASTM D 698 METHOD A
LIQUID LIMIT : 29 PLASTICITY INDEX : 10	JOB NO. : 412147A
GRAVEL : 6 % SAND : 45 % SILT AND CLAY (−200) : 49 %	DATE : 10/3/2012, Lab No. 186 | Fig. 18



GRAVEL	6 %	SAND	45 %	SILT AND CLAY	49 %
LIQUID LIMIT	29 %			PLASTICITY INDEX	10 %
SAMPLE OF:	Very Sandy Clay (CL)			FROM:	Borrow Area
SAMPLE I.D.:	ACC CL – 8			LAB NO.:	186

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 19

HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

Project Name: California Gulch, Leadville, Colorado.

Project Number: 412 147A **Date: 10/03/2012** **Figure: 14**

Moisture Content	
Location	Northwest Corner of the Lower Pond Basin
Date	10/03/2012
Depth	@ +6 Inches
Pan #	S
Pan Wt. (g)	107.96
Wet Soil & Pan (g)	1384.17
Dry Soil & Pan (g)	1215.20
Dry Soil (g)	1107.24
Water (g)	168.97
Moisture (%)	15.3
Notes:	Sampled From Lower Basin During Placement

Moisture Content	
Location	Center of the Lower Pond Basin
Date	10/03/2012
Depth	@ +12 Inches
Pan #	V
Pan Wt. (g)	508.46
Wet Soil & Pan (g)	1453.50
Dry Soil & Pan (g)	1328.74
Dry Soil (g)	820.28
Water (g)	124.76
Moisture (%)	15.2
Notes:	Sampled From Stockpile Prior to Placement

Figure 14

HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

Project Name: California Gulch, Leadville, Colorado.

Project Number: 412 147A **Date: 10/04/2012 & 10/05/2012** **Figure: 15**

Moisture Content		Moisture Content	
Location	East Portion of the Upper Main Basin	Location	East Portion of the Upper Main Basin
Date	10/04/2012	Date	10/05/2012
Depth	@ +6 Inches	Depth	@ +12 Inches
Pan #	5	Pan #	Y
Pan Wt. (g)	506.27	Pan Wt. (g)	467.63
Wet Soil & Pan (g)	1339.17	Wet Soil & Pan (g)	1440.01
Dry Soil & Pan (g)	1232.16	Dry Soil & Pan (g)	1289.11
Dry Soil (g)	725.89	Dry Soil (g)	821.48
Water (g)	107.01	Water (g)	150.90
Moisture (%)	14.7	Moisture (%)	18.4
Notes:	Sampled From Stockpile Prior to Placement; Additional Moisture Conditioning Observed During Placement	Notes:	Sampled From the East Portion of the Main Basin During Placement

Figure 15

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

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Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/03/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Haul Truck

Type & # of Compaction Units: Smooth Drum Roller

Method of Moisture Conditioning: Water Truck at Borrow Site

Compaction Standard: ASTM D-698 (Standard)

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	80 Feet East, 16 Feet South	+6"	114.7	14.9	111.3	16.4	97	95	A
2	122 Feet East, 16 Feet South	+6"	114.7	14.9	117.2	13.8	100	95	A
2A	Retest of Test #2	+6"	114.7	14.9	116.0	15.7	100	95	A
3	80 Feet East, 65 Feet South	+6"	114.7	14.9	116.8	16.1	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to where the drainage channel meets wood line at the northwest corner of the site. Temperatures of soils across the basin ranged from 55° to 60° F. Depth of lift across the lower pond basin ranged between 5.5 and 7 inches. Contractor plans to complete the 2nd lift in the lower northwest pond basin tonight and tomorrow morning and move to the eastern portion of the main basin (area 2) for the first lift, Thursday afternoon and Friday morning. Two samples of clay material were obtained from the borrow area for laboratory analysis and 2 samples from the lower basin for moisture content. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner
Field Observer

Jared Cohen
Reviewed By

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

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Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/04/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Loader, Track-hoe, Haul Truck

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck at Borrow Site

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	88 Feet East, 31 Feet South	+12"	114.7	14.9	120.1	14.4	100	95	A
2	85 Feet East, 60 Feet South	+12"	114.7	14.9	125.5	13.1	100	95	A
3	60 Feet East, 45 Feet South	+12"	114.7	14.9	121.1	14.7	100	95	A
4	90 Feet East, 70 Feet South	+6"	114.7	14.9	114.3	14.9	99	95	A
5	115 Feet East, 115 Feet South	+6"	114.7	14.9	119.2	14.9	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-2017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to where the drainage channel meets wood line at the northwest corner of basin. Below optimum moisture % in the lower pond basin (Tests 1, 2 & 3) attributed to 12+ hour delay between time of placement and time of testing. Moisture sample from 10/03/2012 representative of moisture % at time of placement. Lower basin (+12") temps. 38° to 42° F at 9:45 am. Central portion, upper part of basin (+6"), tests 4 to 7, temps. 42° to 44° F at 9:55 am. Depths in lower basin were estimated between 12 to 14 inches total. Central portion, upper basin, 6 to 8 inches for the 1st lift. Second lift to be completed in upper basin today. Tests 8 to 14 were taken at 4:45 pm with temps. at 42° to 44° F and moderate 10 to 15 mph winds; includes upper lift in central portion of upper basin and first lift in the eastern portion of upper basin. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner
Field Observer

Jared Cohen
Reviewed By

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

Hepworth-Pawlak Geotechnical, Inc.
P.O. Drawer 1887
240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989
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Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/04/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
6	105 Feet East, 175 Feet South	+6"	114.7	14.9	119.8	15.0	100	95	A
7	85 Feet East, 240 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A
8	110 Feet East, 80 Feet South	+12"	114.7	14.9	117.3	15.8	100	95	A
9	90 Feet East, 130 Feet South	+12"	114.7	14.9	118.2	15.3	100	95	A
10	120 Feet East, 15 Feet South	+12"	114.7	14.9	110.1	16.9	96	95	A
11	100 Feet East, 230 Feet South	+12"	114.7	14.9	133.7	15.7	100	95	A
12	125 Feet East, 195 Feet South	+6"	114.7	14.9	115.4	15.3	100	95	A
13	150 Feet East, 162 Feet South	+6"	114.7	14.9	111.3	15.2	97	95	A
14	170 Feet East, 215 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A

Tom Brunner
Field Observer

Jared Cohen
Reviewed By

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Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/05/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Loader, Track-hoe

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: ASTM D-698 (Standard)

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	130 Feet East, 150 Feet South	+6"	114.7	14.9	117.3	16.3	100	95	A
2	145 Feet East, 220 Feet South	+12"	114.7	14.9	114.3	15.9	99	95	A
3	125 Feet East, 190 Feet South	+12"	114.7	14.9	113.7	17.1	99	95	A
4	170 Feet East, 185 Feet South	+12"	114.7	14.9	111.3	16.1	97	95	A
5	190 Feet East, 120 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to drainage channel at northwest corner of basin at wood line. Contractor currently placing material on eastern wall of main basin. Temperatures taken at 2:45 pm of the material ranged between 41° and 44°F. Depths of Lift 1 ranged from 6 to 8 inches and for Lift 2, 12 to 12+ inches. Water truck brought over from borrow area to water banks and floor of basin to ensure proper moisture content with drying from moderate 10 to 15 mph winds throughout the day. Samples obtained by H-P Geotech for lab moisture content analysis. Sample taken by Tony Gregorich (ACC) for hydraulic conductivity analysis. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner
Field Observer

Jared Cohen
Reviewed By

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Report of Construction Activities

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/08/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

Weather Conditions and Temperature: Mostly Sunny, 35° to 40° F

Major Equipment on Site: Dozer, Mini-hoe

Contractor's Construction Activities:
Placing fabric over top of the Area #2 clay fill placement.

H-P Geotech's Site Activities:

Performed temperature testing on the surface of the Area #2 clay fill placement (10:30 to 10:45 am):

1. 45 Feet West, 45 Feet South of the Approximate Northeast Corner = 44° F
2. 15 Feet West, 45 Feet South of the Approximate Northeast Corner = 42° F
3. 45 Feet West, 150 Feet South of the Approximate Northeast Corner = 33° F
4. 15 Feet West, 150 Feet South of the Approximate Northeast Corner = 31° F
5. Slope, Approximate Southeast Corner = 28° F
6. Approximate Center of the South Slope, Area #2 = 31° F
7. Approximate Center of the Lower Pond Basin = 32° F

Verbal Communication With: Tony Gregorich with ACC

Jared Cohen
Field Observer / Reviewed By

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/08/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: Mini-hoe, Dozer

Type & # of Compaction Units: None at the time of our site visit.

Method of Moisture Conditioning: None at the time of our site visit.

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	45 Feet West, 45 Feet South of the Approximate Northeast Corner	+12"	114.7	14.9	110.5	16.2	96	95	A
2	15 Feet West, 45 Feet West of the Approximate Northeast Corner	+12"	114.7	14.9	109.1	15.9	95	95	A
3	Halfway up Slope, 30 Feet South of the Approximate Northeast Corner	+12"	114.7	14.9	108.8	14.5	95	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations tested, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
We were informed that the areas tested were placed, moisture conditioned and compacted on Friday and Saturday.

Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration.

Copies:

Jared Cohen
Field Observer / Reviewed By

HP Geotech
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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/09/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, Loader, Track-hoe, Mini-hoe

Type & # of Compaction Units: Smooth Drum Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	135 Feet East, 115 Feet South	+12"	114.7	14.9	122.3	15.2	100	95	A
2	130 Feet East, 70 Feet South	+12"	114.7	14.9	114.5	15.9	100	95	A
3	105 Feet East, 45 Feet South	+12"	114.7	14.9	115.5	15.5	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
At 11:45 am, material temperatures ranged from 48° to 50° F across floor of basin. Depth tests within upper (main) basin and lower pond all showed minimum 12+ inch thickness up to approximately 14 to 15 inches. Tony Gregorich (ACC) took several additional hand drive samples for hydraulic conductivity testing. All test locations relative to drainage channel at northwest corner of site where it meets wood line. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner — **Field Observer**
Jared Cohen — **Reviewed By**

HP Geotech
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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/10/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, (2) Loader, Track-hoe, Mini-hoe

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	East Berm, 45 Feet South, 20 Feet Above Toe of Slope	-0-	114.7	14.9	109.8	15.9	96	95	A
2	East Berm, 0 Feet South, 10 Feet Above Toe of Slope	-0-	114.7	14.9	115.1	13.7	100	95	A
3	East Berm, 115 Feet South, 30 Feet Above Toe of Slope	-0-	114.7	14.9	113.6	13.4	99	95	A
4	Southeast Corner of South Berm, 25 Feet Above Toe of Slope	-0-	114.7	14.9	111.5	15.9	97	95	A
5	South Berm, 30 Feet West, 15 Feet Above Toe of Slope	-0-	114.7	14.9	110.9	12.5	97	95	A
6	South Berm, 90 Feet West, 30 Feet Above Toe of Slope	-0-	114.7	14.9	111.7	13.0	97	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Berm covered in geotextile at time of arrival. Placement of rock and gravel across basin floor. East berm was worked yesterday, 10/09/2012, by tracking with dozer and watering from above with hose. Smooth drum roller then used to approximately 30 feet up from toe of slope per CDM instructions on site visit 10/04/2012 to not roll above where smooth drum could not reach without assistance. South berm placed last week, 10/01 to 10/05/2012. Time lapse between time of placement and time of testing resulted in moisture percentages less than actual percentages at time of placement. Western berm not accessible for testing.

Copies:

Tom Brunner — **Field Observer**
Jared Cohen — **Reviewed By**

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Thickness Test #79

Thickness Test #80

Thickness Test #81

Thickness Test #82

Thickness Test #83

PERMEABILITY TRIAXIAL
Flow Pump
ASTM 5084

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC Composite	SAMPLED	
DEPTH		TEST STARTED	09/13/12 CAL
SAMPLE NO.	CL-3 & CL-4	TEST FINISHED	09/19/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	9P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	449.4	455.4
Wt. Wet Soil & Pan (g)	455.9	462.0
Wt. Dry Soil & Pan (g)	378.0	378.0
Wt. Lost Moisture (g)	77.9	84.0
Wt. of Pan Only (g)	6.6	6.6
Wt. of Dry Soil (g)	371.4	371.4
Moisture Content %	21.0	22.6
Wet Density PCF	125.0	130.6
Dry Density PCF	103.3	106.5

Init. Diameter (in)	2.410	(cm)	6.121
Init. Area (sq in)	4.562	(sq cm)	29.432
Init. Height (in)	3.003	(cm)	7.628
Vol. Bef. Consol. (cu ft)	0.00793		
Vol. After Consol. (cu ft)	0.00769		
Porosity %	38.56		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.966
Diameter	2.388
Pressure (psi)	1.053
Area after consol. (cm*cm)	28.900
Gradient	9.827
Permeability k (cm/s)	8.1E-08
Permeability k (m/s)	**8.1E-10**
Back Pressure (psi)	88.0
Cell Pressure (psi)	90.0
Ave. Effective Stress (psi)	1.474

Average temperature degree C: 23.1
NOTE: Remolded moisture content appears to be greater than optimum.

Data entry by: DAW Date: 09/20/2012
Checked by: CM Date: 9/20/12
FileName: HEP0CL34

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT HP Geotechnical JOB NO. 2158-88

BORING NO.	ACC Composite	SAMPLED	
DEPTH		TEST STARTED	09/13/12 CAL
SAMPLE NO.	CL-3 & CL-4	TEST FINISHED	09/19/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	9P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.9	17.7				
50.0	48.0	18.7	19.9	38.9	48.2	9.3	0.93
60.0	58.0	20.2	21.3	49.0	58.0	9.0	0.90
70.0	68.0	21.3	22.2	58.9	68.2	9.3	0.93
80.0	78.0	23.1	24.1	68.9	78.2	9.3	0.93
90.0	88.0	24.3	25.1	78.8	88.2	9.4	0.94
100.0		25.1	25.2	88.9	98.4	9.5	0.95

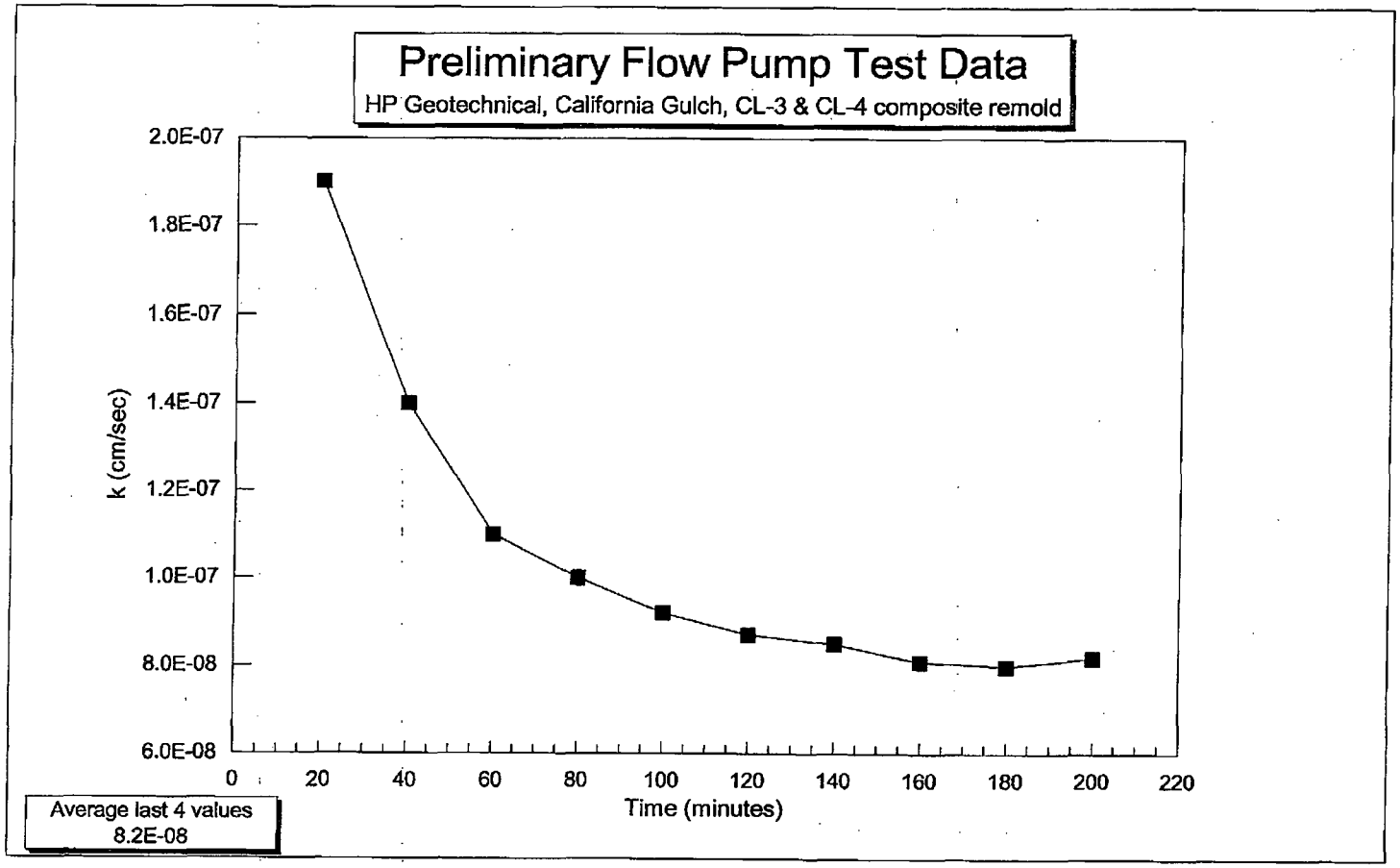
CONSOLIDATION DATA

NOTE: No consolidation data to report.

Initial Height (in)	3.003	Init. Vol. (CC)	224.52
Height Change (in)	0.037	Vol. Change (CC)	21.25
Ht. After Cons. (in)	2.966	Cell Exp. (CC)	14.49
Initial Area (sq in)	4.562	Net Change (CC)	6.76
Area After Cons. (sq in)	4.479	Cons. Vol. (CC)	217.76

Data entry by: DAW Date: 09/20/2012
Checked by: CAL Date: 9/20/12
FileName: HEP0CL34

ADVANCED TERRA TESTING, INC. ATT



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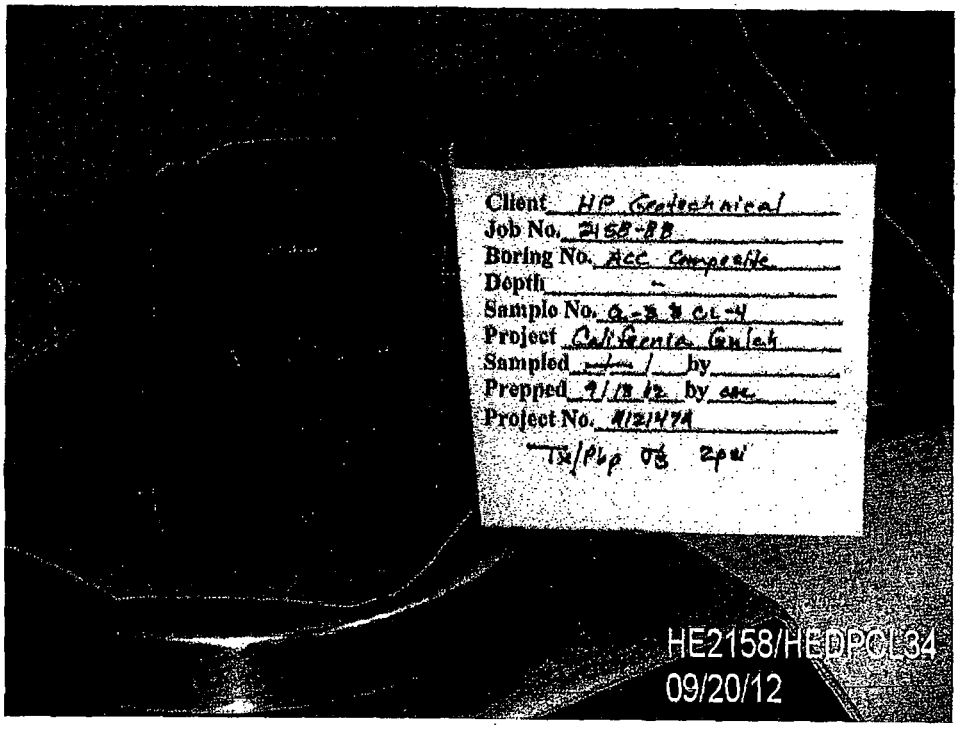
Date: 9/19/2012
Date Checked: 9/20/12


Client HP Geotechnical
Job No. 2158-88
Boring No. Acc. Composite
Depth
Sample No. A-3 & A-4
Project Calif. Gulch
Sampled / by
Prepped 9/18/12 by acc.
Project No. 12/1471
TX/PLP 03 2pcf
HE2158/HEDPCL34
09/20/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical Inc	JOB NO.	2158-88
BORING NO.	ACC CL-5	SAMPLED	
DEPTH		TEST STARTED	9/14/12 CAL
SAMPLE NO.	133	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	449.0	468.5
Wt. Wet Soil & Pan (g)	457.2	476.7
Wt. Dry Soil & Pan (g)	397.9	397.9
Wt. Lost Moisture (g)	59.2	78.8
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	389.8	389.8
Moisture Content %	15.2	20.2
Wet Density PCF	125.7	131.0
Dry Density PCF	109.1	109.0

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	2.990	(cm)	7.595
Vol. Bef. Consol. (cu ft)	0.00787		
Vol. After Consol. (cu ft)	0.00789		
Porosity %	35.26		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.973
Diameter	2.416
Pressure (psi)	0.326
Area after consol. (cm*cm)	29.571
Gradient	3.035
Permeability k (cm/s)	6.4E-06
Permeability k (m/s)	**6.4E-08**
Back Pressure (psi)	68.0
Cell Pressure (psi)	70.0
Ave. Effective Stress (psi)	1.837
Average temperature degree C:	23.1

Notes: Remolded Sample.

Data entry by: MLM Date: 09/19/2012
Checked by: CAL Date: 9/19/12
FileName: HEP05133

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical Inc	JOB NO.	2158-88
BORING NO.	ACC CL-5	SAMPLED	
DEPTH		TEST STARTED	9/14/12 CAL
SAMPLE NO.	133	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

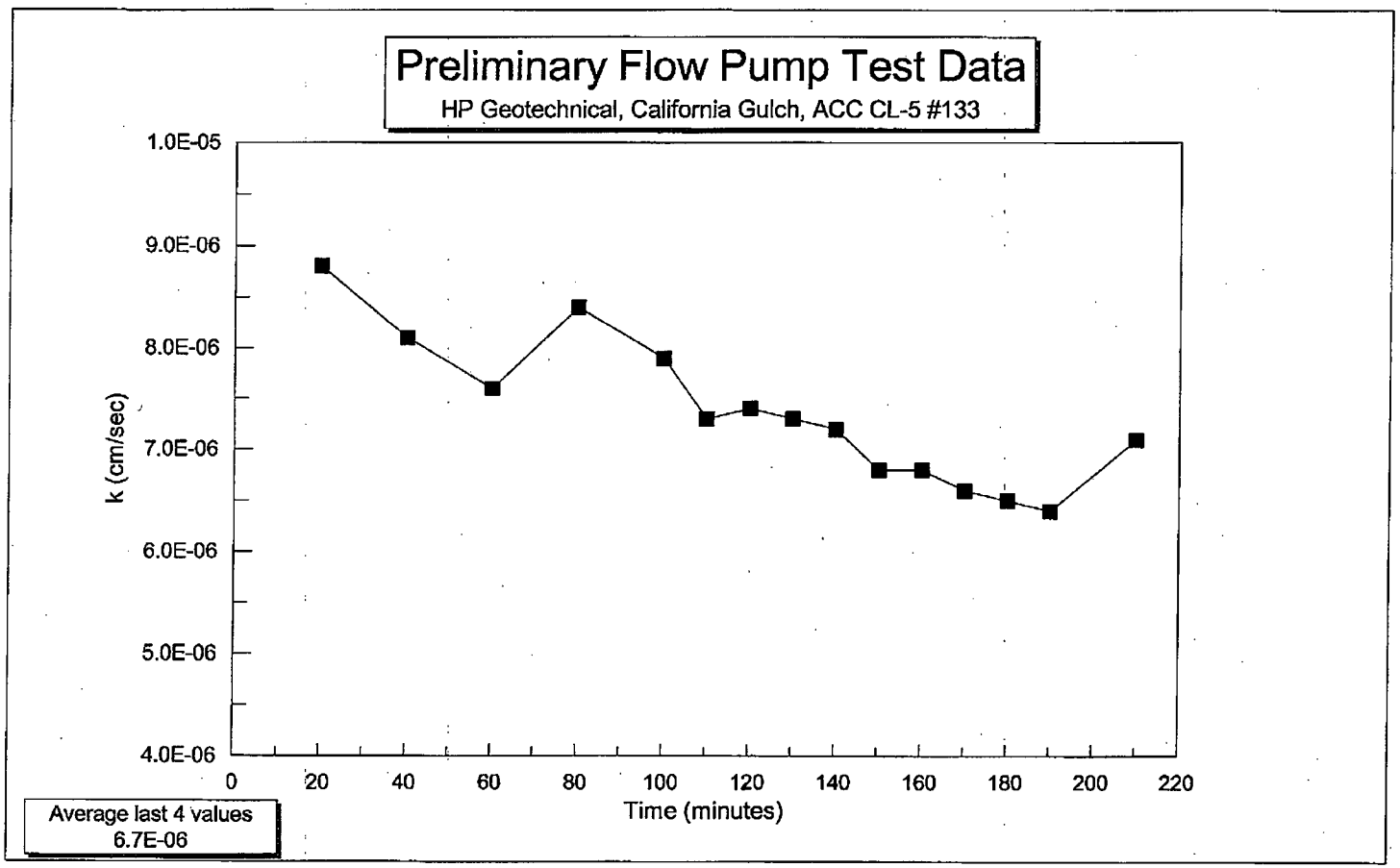
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.2	15.0				
50.0	48.0	16.0	17.8	39.3	47.9	8.6	0.86
60.0	58.0	18.1	19.2	49.1	58.3	9.2	0.92
70.0	68.0	19.5	20.3	58.9	68.3	9.4	0.94
80.0		20.6	20.8	69.1	78.8	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	2.990	Init. Vol. (CC)	222.99
Height Change (in)	0.017	Vol. Change (CC)	17.40
Ht. After Cons. (in)	2.973	Cell Exp. (CC)	17.75
Initial Area (sq in)	4.550	Net Change (CC)	-0.35
Area After Cons. (sq in)	4.583	Cons. Vol. (CC)	223.34

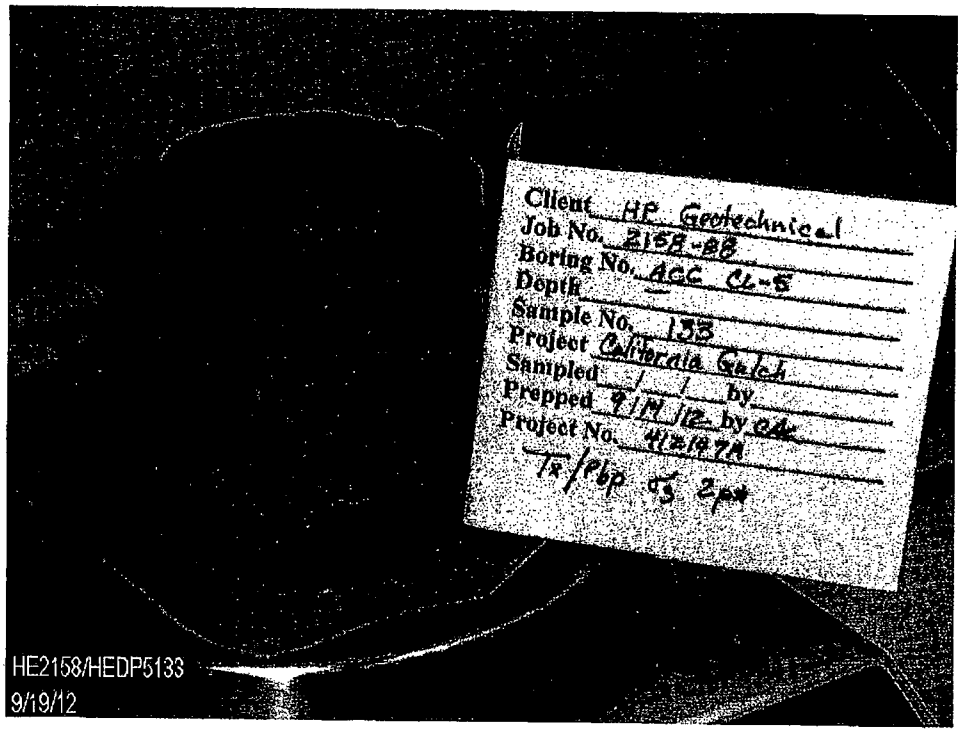
Data entry by: MLM Date: 09/19/2012
Checked by: ACC Date: 9/19/12
FileName: HEP05133

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: cdk
File Name: HEFP5133

Date: 9/18/2012
Date Checked: 9/19/2012


Client HP Geotechnical
Job No. 2158-88
Boring No. ACC CL-5
Depth
Sample No. 133
Project Colorado Gulch
Sampled / / by
Prepped 9/14/12 by ak
Project No. 41218 7A
Tx/Pbp of 2pk
HE2158/HEDP5133
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC CL-6	SAMPLED	--
DEPTH	--	TEST STARTED	9/14/12 CAL
SAMPLE NO.	134	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	10P
LOCATION	CALIFORNIA GULCH	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	450.5	468.0
Wt. Wet Soil & Pan (g)	457.2	474.7
Wt. Dry Soil & Pan (g)	398.2	398.2
Wt. Lost Moisture (g)	59.0	76.5
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	391.5	391.5
Moisture Content %	15.1	19.5
Wet Density PCF	125.9	136.1
Dry Density PCF	109.4	113.9

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	2.995	(cm)	7.607
Vol. Bef. Consol. (cu ft)	0.00789		
Vol. After Consol. (cu ft)	0.00758		
Porosity %	35.61		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	5
Percentage of Pump setting	100
Q (cc/s)	5.81E-03
Height	2.975
Diameter	2.368
Pressure (psi)	0.218
Area after consol. (cm*cm)	28.408
Gradient	2.028
Permeability k (cm/s)	1.0E-04
Permeability k (m/s)	**1.0E-06**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.891
Average temperature degree C:	22.7

Notes: Remolded Sample.

Data entry by: MLM Date: 09/19/2012
Checked by: CAK Date: 9/19/12
FileName: HEP06134

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC CL-6	SAMPLED	--
DEPTH	--	TEST STARTED	9/14/12 CAL
SAMPLE NO.	134	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147A	SETUP NO.	10P
LOCATION	CALIFORNIA GULCH	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

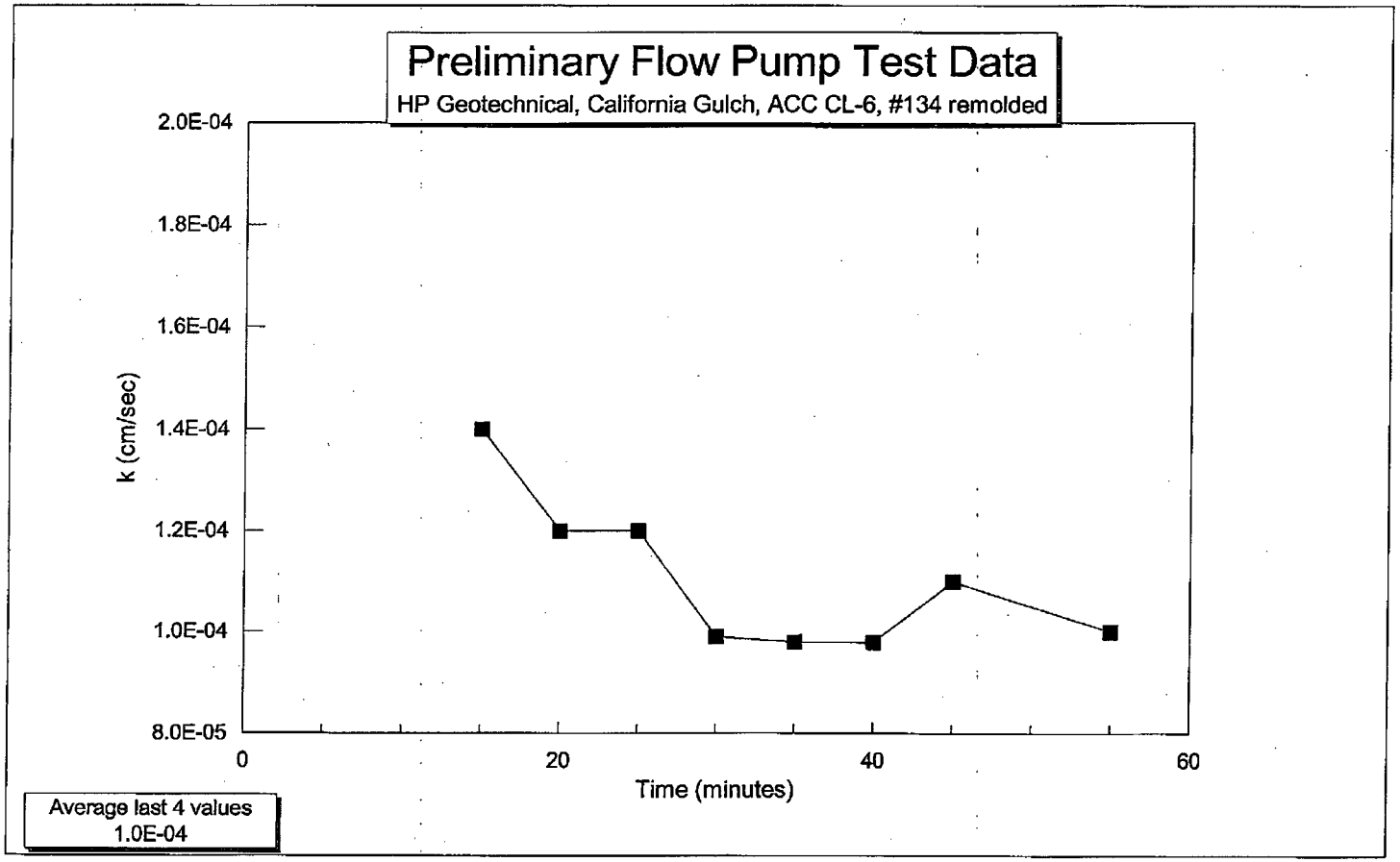
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.1	14.7				
50.0	48.0	15.1	16.6	39.0	47.6	8.6	0.86
60.0	58.0	17.3	18.4	48.9	58.0	9.1	0.91
70.0		19.0	19.2	58.8	68.3	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	2.995	Init. Vol. (CC)	223.37
Height Change (in)	0.020	Vol. Change (CC)	16.40
Ht. After Cons. (in)	2.975	Cell Exp. (CC)	7.74
Initial Area (sq in)	4.550	Net Change (CC)	8.66
Area After Cons. (sq in)	4.403	Cons. Vol. (CC)	214.71

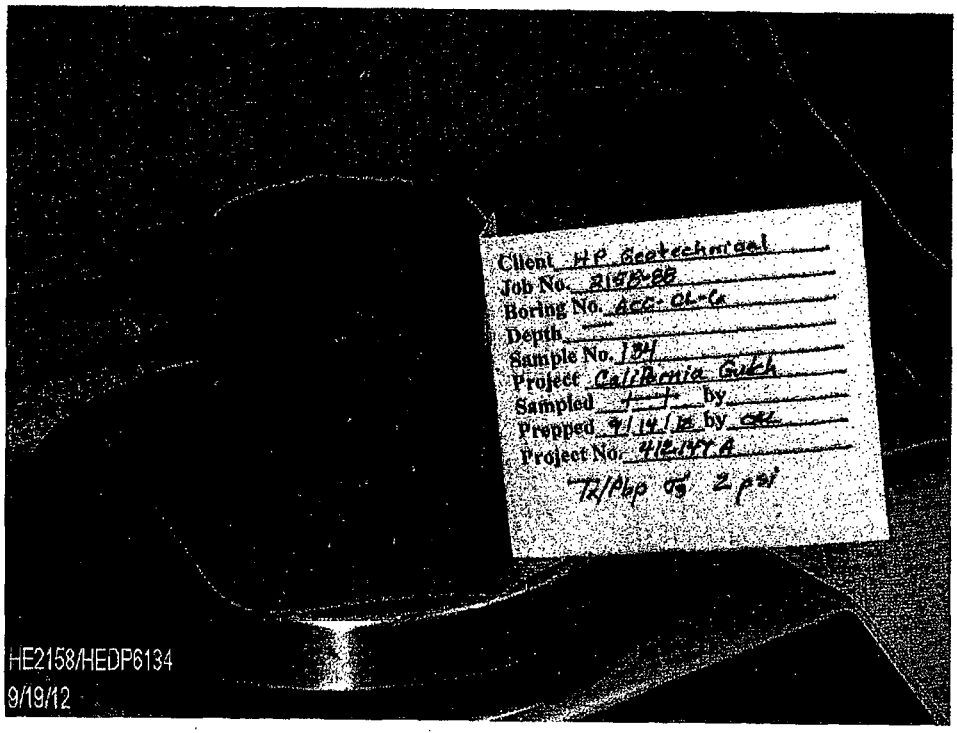
Data entry by: MLM Date: 09/19/2012
Checked by: CR Date: 9/19/12
FileName: HEP06134

ADVANCED TERRA TESTING, Inc. ATT



Data Entered By: CAL
Data Checked By: JM
File Name: HEFP6134

Date: 9/18/2012
Date Checked: 9/19/12


Client HP Geotechnical
Job No. 2158-08
Boring No. ACG-CL-6
Depth
Sample No. 134
Project California Gulch
Sampled by
Prepped 9/14/12 by CRL
Project No. 418-177.A
TX/Pkp 05 2 psi
HE2158/HEDP6134
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-88
BORING NO.	NW 71 ft LSG Repository	SAMPLED	
DEPTH		TEST STARTED	9/13/12 CAL
SAMPLE NO.	12 In Place #1	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147 A	CELL NUMBER	7S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	308.8	315.8
Wt. Wet Soil & Pan (g)	317.2	324.2
Wt. Dry Soil & Pan (g)	276.9	276.9
Wt. Lost Moisture (g)	40.2	47.3
Wt. of Pan Only (g)	8.4	8.4
Wt. of Dry Soil (g)	268.6	268.6
Moisture Content %	15.0	17.6
Wet Density PCF	133.0	141.6
Dry Density PCF	115.7	120.4

Init. Diameter (in)	1.936	(cm)	4.917
Init. Area (sq in)	2.944	(sq cm)	18.993
Init. Height (in)	3.005	(cm)	7.633
Vol. Bef. Consol. (cu ft)	0.00512		
Vol. After Consol. (cu ft)	0.00492		
Porosity %	33.93		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.998
Diameter	1.900
Pressure (psi)	0.308
Area after consol. (cm*cm)	18.286
Gradient	2.844
Permeability k (cm/s)	4.4E-07
Permeability k (m/s)	**4.4E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.846
Average temperature degree C:	22.7

Data entry by: MLM Date: 09/19/2012
Checked by: CAL Date: 9/29/12
FileName: HEP07112

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-88
BORING NO.	NW 71 ft LSG Repository	SAMPLED	
DEPTH		TEST STARTED	9/13/12 CAL
SAMPLE NO.	12 In Place #1	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147 A	SETUP NO.	7S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

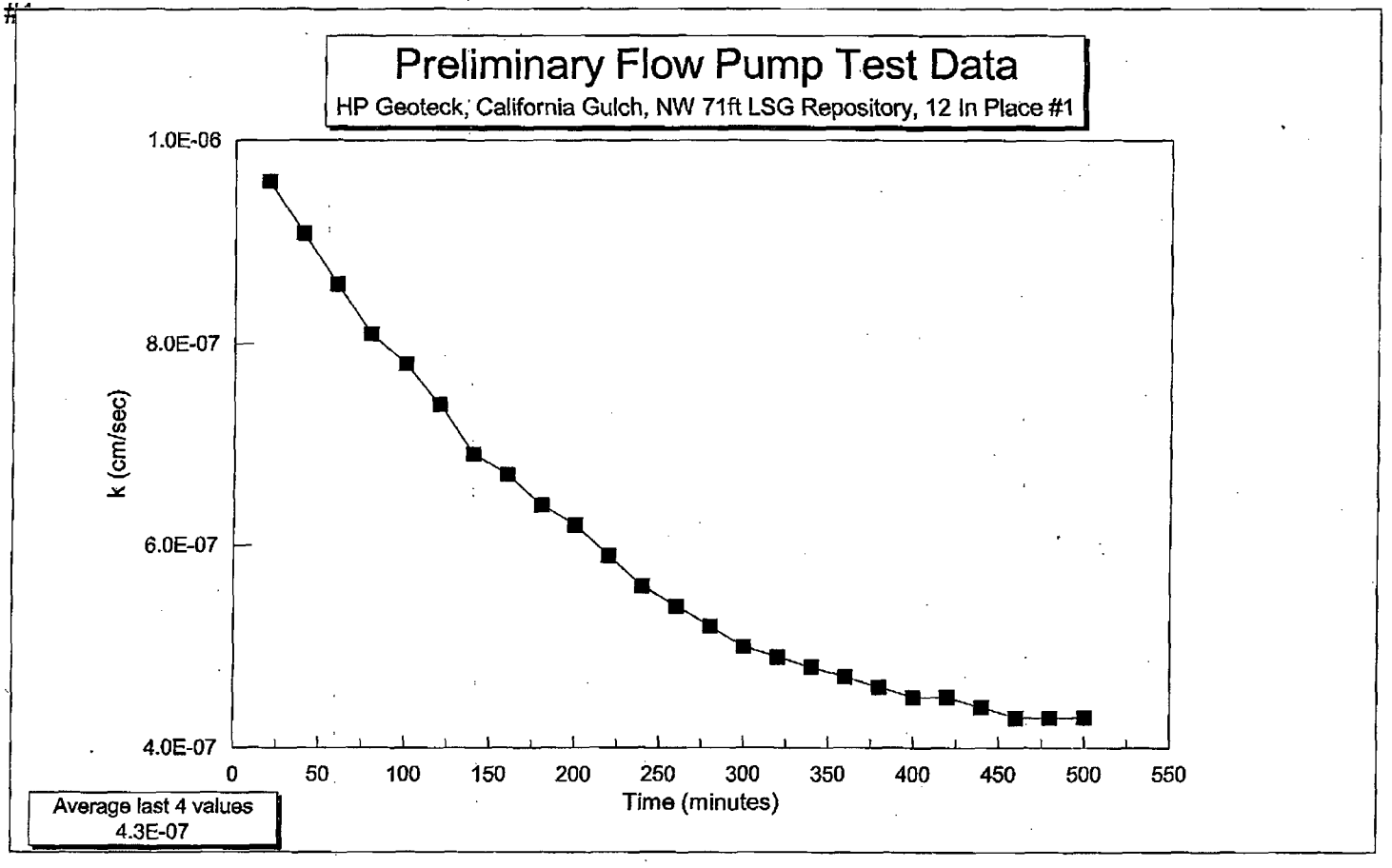
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.3	10.6				
50.0	48.0	15.2	16.3	38.7	48.0	9.3	0.93
60.0	58.0	16.8	17.8	48.9	58.3	9.4	0.94
70.0		18.5	18.7	58.9	68.6	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	3.005	Init. Vol. (CC)	144.99
Height Change (in)	0.007	Vol. Change (CC)	16.70
Ht. After Cons. (in)	2.998	Cell Exp. (CC)	10.99
Initial Area (sq in)	2.944	Net Change (CC)	5.71
Area After Cons. (sq in)	2.834	Cons. Vol. (CC)	139.27

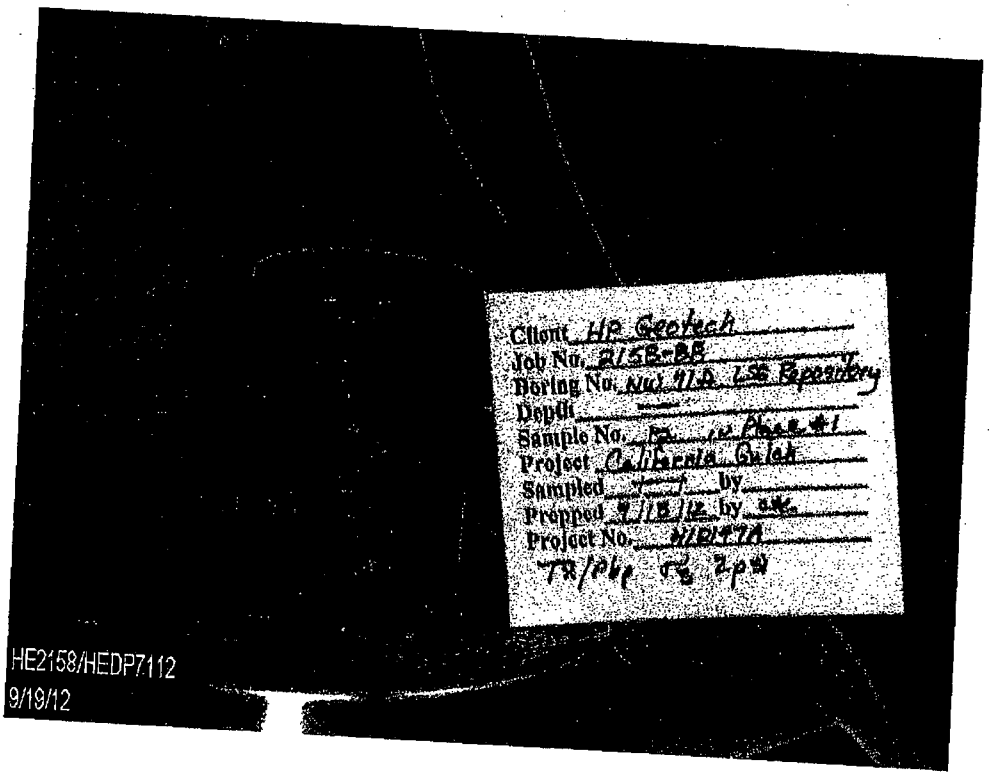
Data entry by: MLM Date: 09/19/2012
Checked by: CAL Date: 9/19/12
FileName: HEP07112

ADVANCED TERRA TESTING, Inc. ATT



Data Entered By: DPM
Data Checked By: JM
File Name: HEFP7112

Date: 09/17/2012
Date Checked: 9/19/12


Client HP Geotech
Job No. 2158-BB
Boring No. NW1 NW Lee Repository
Depth
Sample No. Fm. in Phase #1
Project California Gulch
Sampled 7-7 by
Prepped 9/18/12 by SK
Project No. HEDP7112
7A/Pb1 @ 2pm
HE2158/HEDP7112
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#29 In Place	TEST FINISHED	10/06/12 CAL
SOIL DESCR.	#2012-1	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	300.4	315.6
Wt. Wet Soil & Pan (g)	307.1	322.2
Wt. Dry Soil & Pan (g)	274.8	274.8
Wt. Lost Moisture (g)	32.3	47.4
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	268.1	268.1
Moisture Content %	12.0	17.7
Wet Density PCF	128.6	134.4
Dry Density PCF	114.8	114.2

Init. Diameter (in)	1.936	(cm)	4.917
Init. Area (sq in)	2.944	(sq cm)	18.993
Init. Height (in)	3.023	(cm)	7.678
Vol. Bef. Consol. (cu ft)	0.00515		
Vol. After Consol. (cu ft)	0.00518		
Porosity %	32.35		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.022
Diameter	1.941
Pressure (psi)	1.307
Area after consol. (cm*cm)	19.094
Gradient	11.972
Permeability k (cm/s)	5.0E-07
Permeability k (m/s)	**5.0E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.347

Average temperature degree C: 21.9

Notes: Filling required due to gravel. Sample diameter is less than specification for nominal particle size in sample.

Data entry by: MLM Date: 10/09/2012

Checked by: ok Date: 10/09/2012

FileName: HEP0CG29

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#29 In Place	TEST FINISHED	10/06/12 CAL
SOIL DESCR.	#2012-1	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

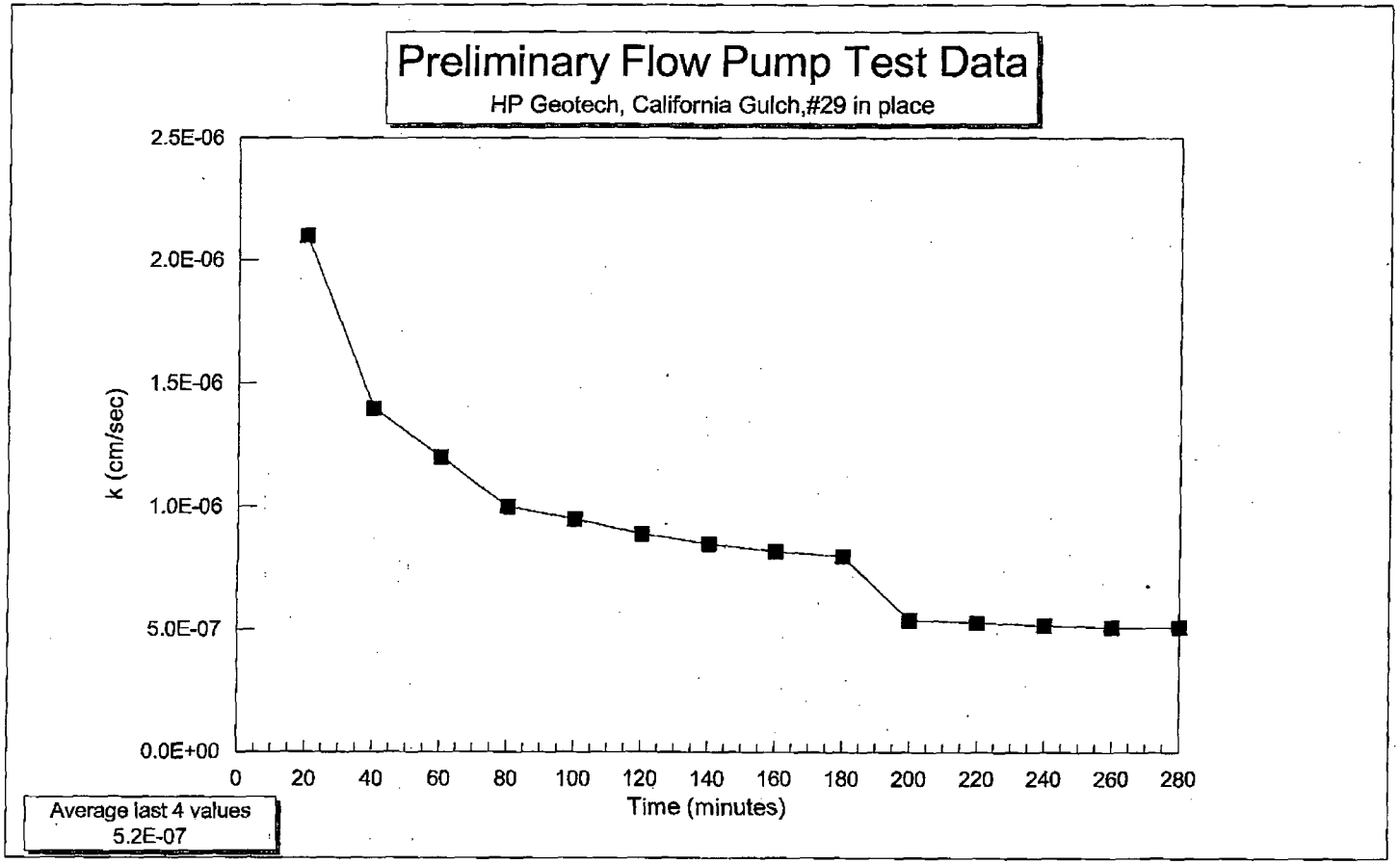
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.2	10.1				
50.0	48.0	8.1	9.2	38.9	48.0	9.1	0.91
60.0	58.0	9.6	10.6	48.7	58.0	9.3	0.93
70.0		10.8	11.0	58.8	68.5	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	3.023	Init. Vol. (CC)	145.85
Height Change (in)	0.001	Vol. Change (CC)	8.60
Ht. After Cons. (in)	3.022	Cell Exp. (CC)	9.34
Initial Area (sq in)	2.944	Net Change (CC)	-0.74
Area After Cons. (sq in)	2.960	Cons. Vol. (CC)	146.59

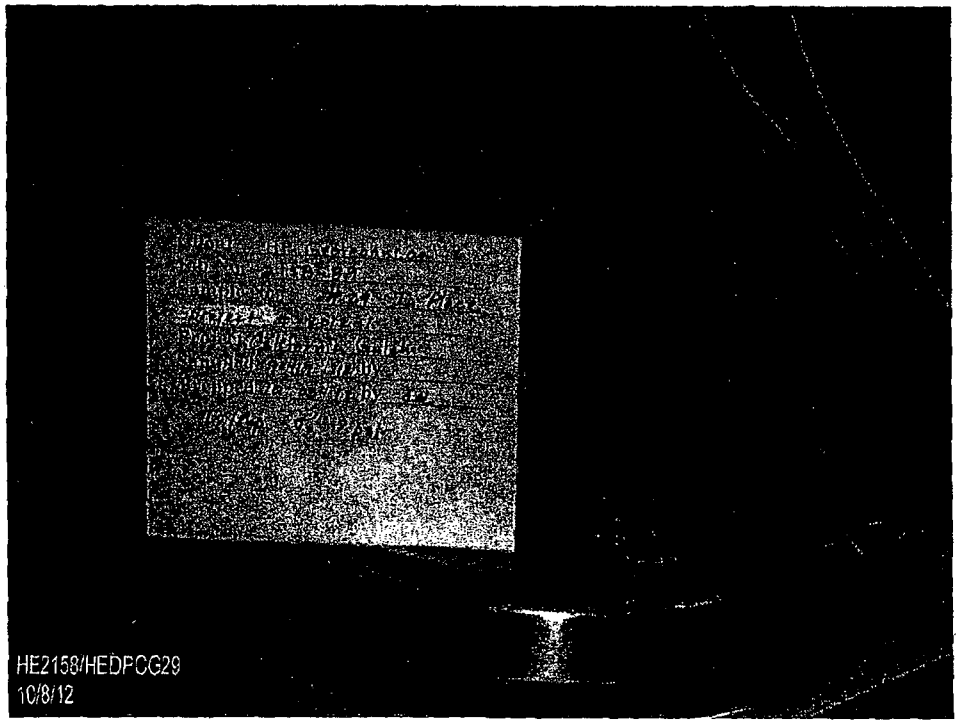
Data entry by: MLM Date: 10/08/2012
Checked by: Date: 10/9/12
FileName: HEP0CG29

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: _____
File Name: HEFPCG29

Date: 10/06/2012
Date Checked: 10/08/2012


HE2158/HEDPCG29
10/8/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#28 In Place	TEST FINISHED	10/05/12 CAL
SOIL DESCR.	#2012-1	CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	247.3	254.3
Wt. Wet Soil & Pan (g)	254.0	261.0
Wt. Dry Soil & Pan (g)	222.7	222.7
Wt. Lost Moisture (g)	31.3	38.3
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	216.0	216.0
Moisture Content %	14.5	17.8
Wet Density PCF	130.8	130.7
Dry Density PCF	114.2	111.0

Init. Diameter (in)	1.920	(cm)	4.877
Init. Area (sq in)	2.895	(sq cm)	18.680
Init. Height (in)	2.488	(cm)	6.320
Vol. Bef. Consol. (cu ft)	0.00417		
Vol. After Consol. (cu ft)	0.00429		
Porosity %	31.55		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	9
Percentage of Pump setting	100
Q (cc/s)	2.28E-04
Height	2.479
Diameter	1.951
Pressure (psi)	0.314
Area after consol. (cm*cm)	19.294
Gradient	3.506
Permeability k (cm/s)	3.4E-06
Permeability k (m/s)	**3.4E-08**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.843

Average temperature degree C: 22.0

Notes: Filling required due to disturbances caused by sampling gravel. Sample diameter is smaller than specification for nominal particle size in sample.

Data entry by: MLM Date: 10/09/2012

Checked by: CAL Date: 10/09/2012

FileName: HEP0CG28

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#28 In Place	TEST FINISHED	10/05/12 CAL
SOIL DESCR.	#2012-1	SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

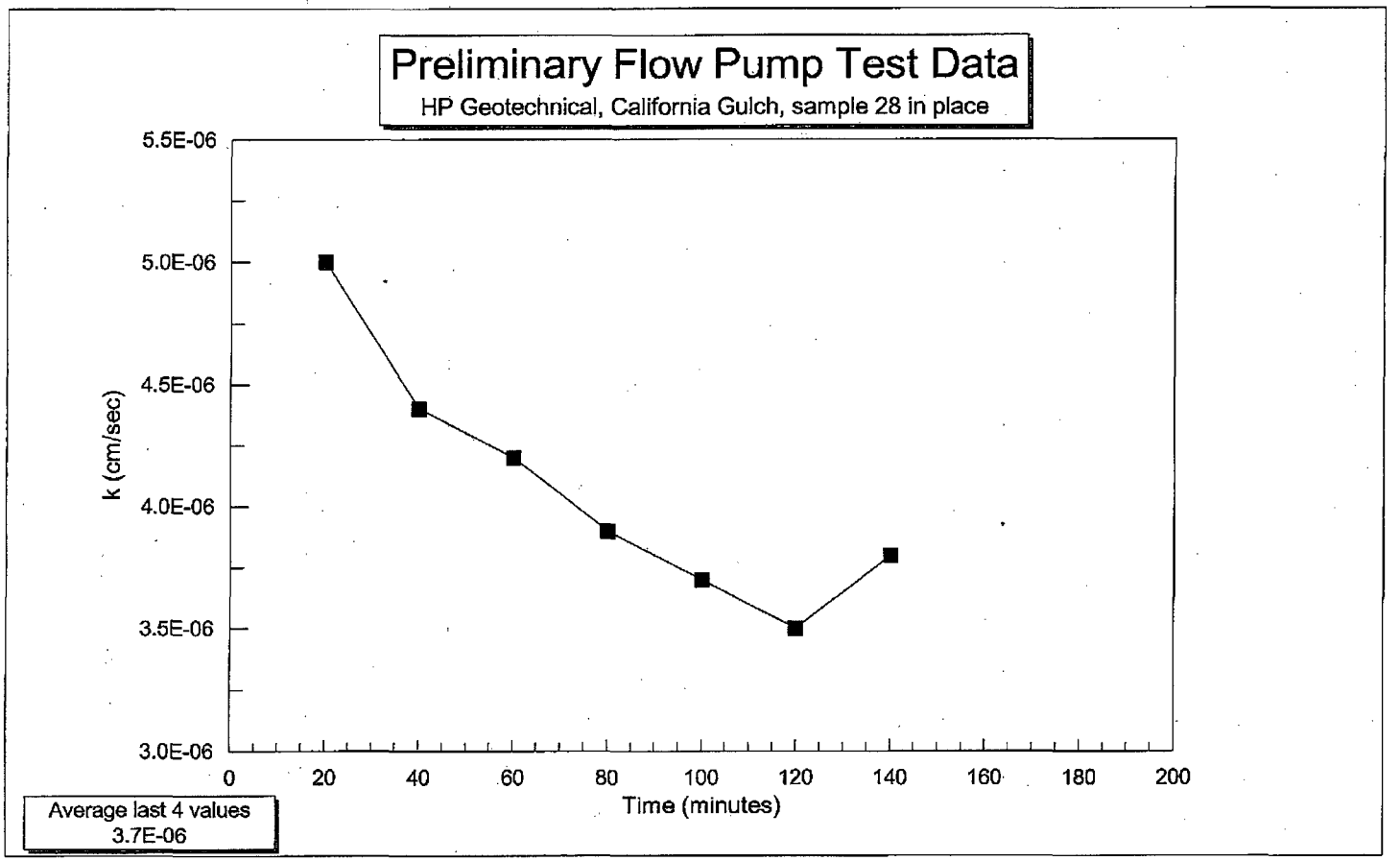
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.6	9.9				
50.0	48.0	9.2	10.3	38.9	47.9	9.0	0.90
60.0		10.8	11.0	48.7	58.2	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	2.488	Init. Vol. (CC)	118.07
Height Change (in)	0.009	Vol. Change (CC)	9.40
Ht. After Cons. (in)	2.479	Cell Exp. (CC)	12.85
Initial Area (sq in)	2.895	Net Change (CC)	-3.45
Area After Cons. (sq in)	2.991	Cons. Vol. (CC)	121.51

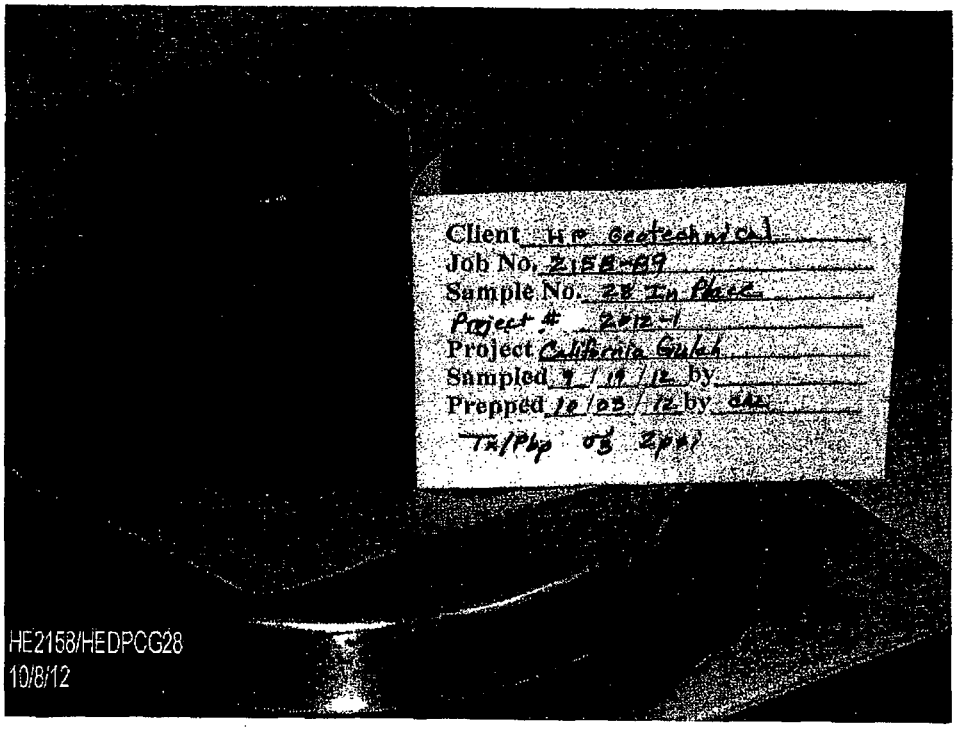
Data entry by: MLM Date: 10/08/2012
Checked by: Oh Date: 10/09/12
FileName: HEP0CG28

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: mm
File Name: HEFPCG28

Date: 10/05/2012
Date Checked: 10/08/2012


Client H.P. Geotechnical
Job No. 2158-G9
Sample No. 2B In Place
Project # 2012-1
Project California Gulch
Sampled 9 / 19 / 12 by
Prepped 10 / 02 / 12 by CAS
Tx/Plp of 2B#1
HE2158/HEDPCG28
10/8/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#34 In Place	TEST FINISHED	10/11/12 CAL
SOIL DESCR.		CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	257.2	264.3
Wt. Wet Soil & Pan (g)	265.4	272.5
Wt. Dry Soil & Pan (g)	233.2	233.2
Wt. Lost Moisture (g)	32.1	39.2
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	225.0	225.0
Moisture Content %	14.3	17.4
Wet Density PCF	131.0	130.4
Dry Density PCF	114.6	111.0

Init. Diameter (in)	1.925	(cm)	4.890
Init. Area (sq in)	2.910	(sq cm)	18.778
Init. Height (in)	2.570	(cm)	6.528
Vol. Bef. Consol. (cu ft)	0.00433		
Vol. After Consol. (cu ft)	0.00447		
Porosity %	31.00		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	2.547
Diameter	1.965
Pressure (psi)	0.649
Area after consol. (cm*cm)	19.556
Gradient	7.053
Permeability k (cm/s)	4.1E-07
Permeability k (m/s)	**4.1E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.676
Average temperature degree C:	22.5

Data entry by: DAW Date: 10/12/2012
Checked by: CMC Date: 10-12-12
FileName: HEP0341P

ADVANCED TERRA TESTING, Inc.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#34 In Place	TEST FINISHED	10/11/12 CAL
SOIL DESCR.		SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

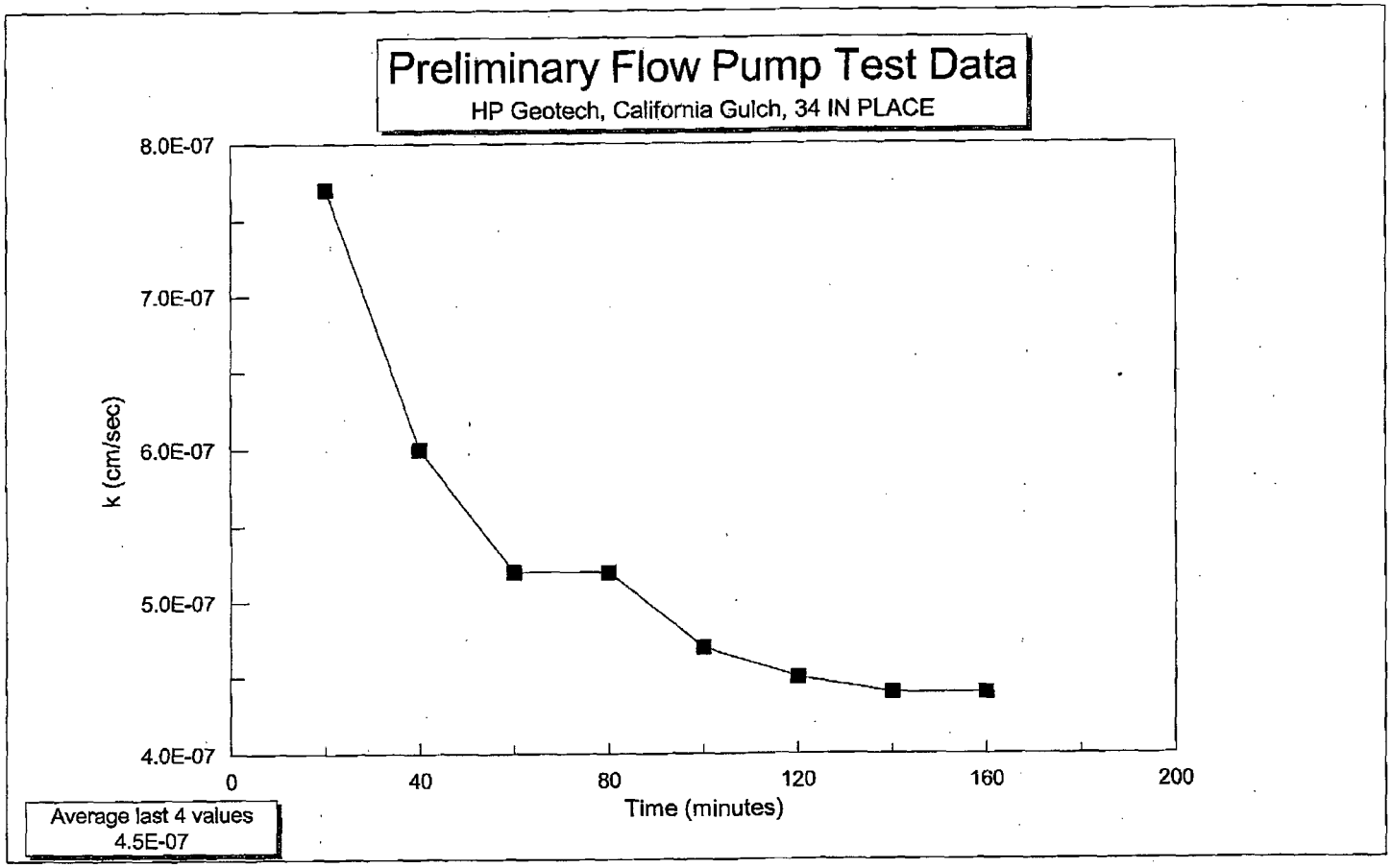
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.7	10.3				
50.0	48.0	9.4	10.4	38.6	47.6	9.0	0.90
60.0		10.3	10.5	48.5	58.2	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	2.570	Init. Vol. (CC)	122.59
Height Change (in)	0.023	Vol. Change (CC)	8.90
Ht. After Cons. (in)	2.547	Cell Exp. (CC)	12.85
Initial Area (sq in)	2.910	Net Change (CC)	-3.95
Area After Cons. (sq in)	3.031	Cons. Vol. (CC)	126.54

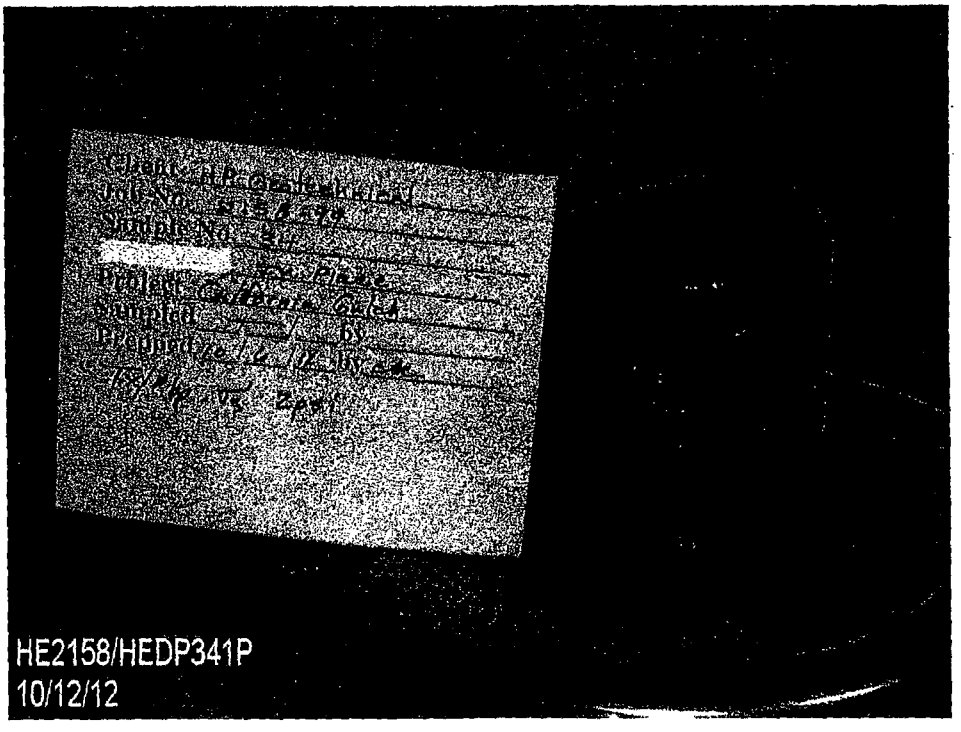
Data entry by: DAW Date: 10/12/2012
Checked by: CH Date: 10-12-12
FileName: HEP0341P

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By:
File Name: HEFP34IP

Date: 10/11/2012
Date Checked: 10/13/12


HE2158/HEDP341P
10/12/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/24/12 CAL
SAMPLE NO.	ACC CL-8	TEST FINISHED	11/02/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	1440	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	440.4	467.5
Wt. Wet Soil & Pan (g)	446.9	474.1
Wt. Dry Soil & Pan (g)	390.1	390.1
Wt. Lost Moisture (g)	56.8	84.0
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	383.5	383.5
Moisture Content %	14.8	21.9
Wet Density PCF	122.7	128.8
Dry Density PCF	106.9	105.6

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	3.007	(cm)	7.638
Vol. Bef. Consol. (cu ft)	0.00791		
Vol. After Consol. (cu ft)	0.00801		
Porosity %	37.05		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	5
Percentage of Pump setting	100
Q (cc/s)	5.81E-03
Height	3.005
Diameter	2.421
Pressure (psi)	0.081
Area after consol. (cm*cm)	29.699
Gradient	0.746
Permeability k (cm/s)	2.6E-04
Permeability k (m/s)	**2.6E-06**
Back Pressure (psi)	68.0
Cell Pressure (psi)	70.0
Ave. Effective Stress (psi)	1.960
Average temperature degree C:	23.3

Notes: Remolded Sample.

Data entry by: MLM Date: 11/05/2012
Checked by: ctt Date: 11/06/12
FileName: HEP0CL8R

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/24/12 CAL
SAMPLE NO.	ACC CL-8	TEST FINISHED	11/02/12 CAL
SOIL DESCR.	412147A	SETUP NO.	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	1440	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

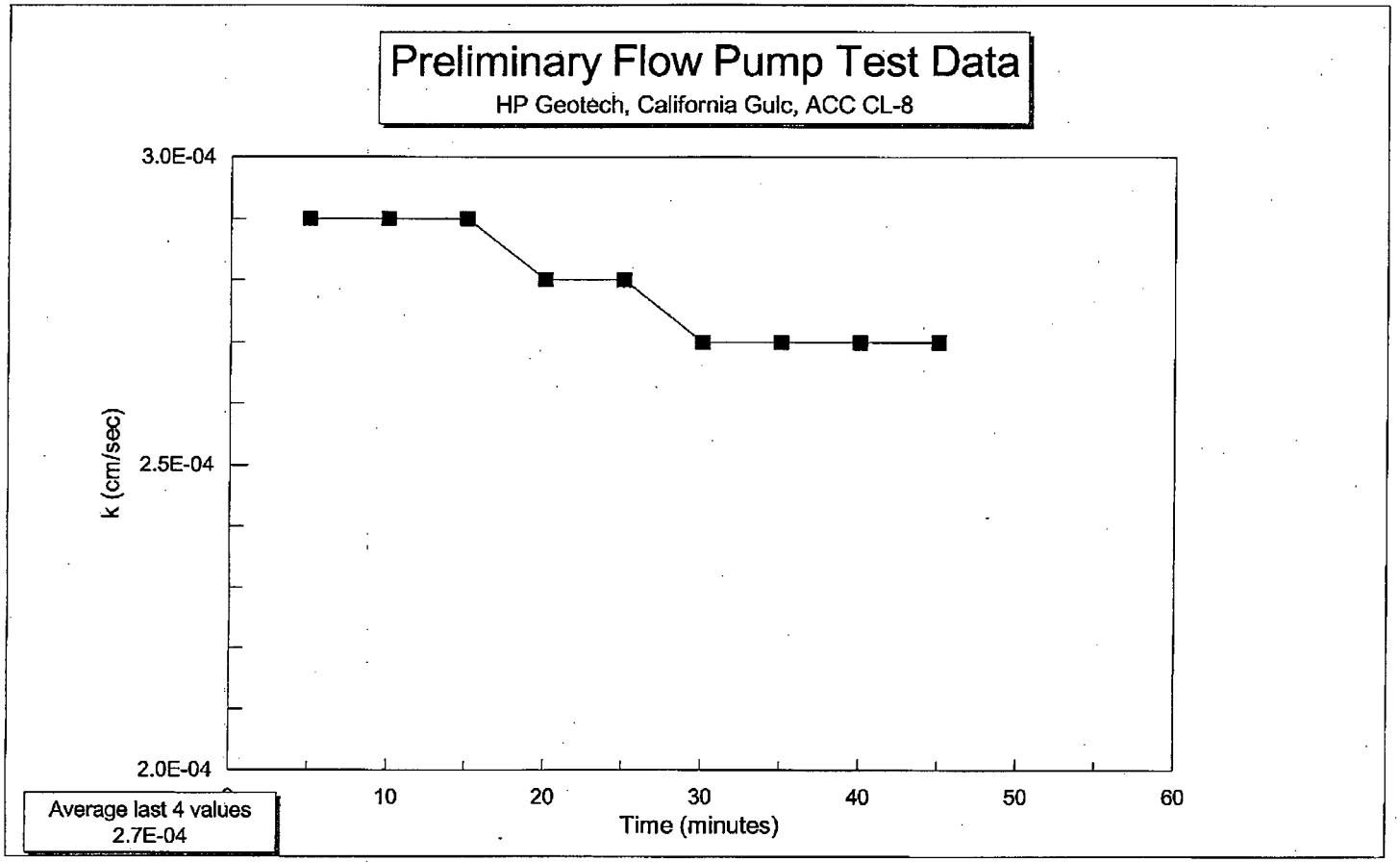
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.1	13.5				
50.0	48.0	13.2	14.4	38.9	46.6	7.7	0.77
60.0	58.0	14.5	15.4	48.9	57.1	8.2	0.82
70.0	68.0	15.6	16.5	58.9	67.6	8.7	0.87
80.0		17.0	17.1	68.1	77.7	9.6	0.96

NO CONSOLIDATION DATA

Initial Height (in)	3.007	Init. Vol. (CC)	224.08
Height Change (in)	0.002	Vol. Change (CC)	15.10
Ht. After Cons. (in)	3.005	Cell Exp. (CC)	17.75
Initial Area (sq in)	4.547	Net Change (CC)	-2.65
Area After Cons. (sq in)	4.603	Cons. Vol. (CC)	226.72

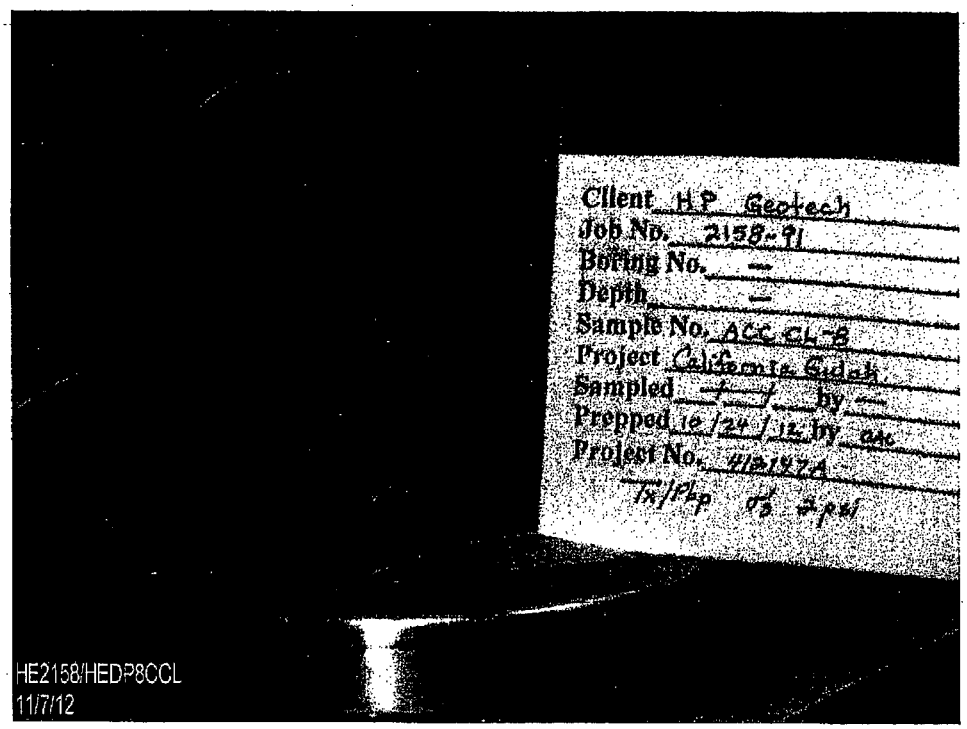
Data entry by: MLM Date: 11/05/2012
Checked by: Date: 11/6/12
FileName: HEP0CL8R

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: YM
File Name: HEFPCL8R

Date: 11/02/2012
Date Checked: 11/05/2012


Client H P Geotech
Job No. 2158-91
Boring No. —
Depth —
Sample No. ACC CL-B
Project California Gulch
Sampled —/—/— by —
Prepped 10/24/12 by atc
Project No. #2158A
Tx/Perm UU 4 psi
HE2158/HEDP8CCL
11/7/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#33 Retest	TEST FINISHED	10/10/12 CAL
SOIL DESCR.		CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	296.2	302.0
Wt. Wet Soil & Pan (g)	304.6	310.3
Wt. Dry Soil & Pan (g)	267.4	267.4
Wt. Lost Moisture (g)	37.1	42.9
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	259.1	259.1
Moisture Content %	14.3	16.6
Wet Density PCF	132.0	135.2
Dry Density PCF	115.4	116.0

Init. Diameter (in)	1.915	(cm)	4.864
Init. Area (sq in)	2.880	(sq cm)	18.583
Init. Height (in)	2.969	(cm)	7.541
Vol. Bef. Consol. (cu ft)	0.00495		
Vol. After Consol. (cu ft)	0.00493		
Porosity %	30.76		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	2.954
Diameter	1.915
Pressure (psi)	0.874
Area after consol. (cm*cm)	18.588
Gradient	8.190
Permeability k (cm/s)	3.8E-07
Permeability k (m/s)	**3.8E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.563
Average temperature degree C:	22.3

Data entry by: DAW Date: 10/11/2012
Checked by: CAL Date: 10-12-12
FileName: HEP033RT

ADVANCED TERRA TESTING, Inc.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#33 Retest	TEST FINISHED	10/10/12 CAL
SOIL DESCR.		SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

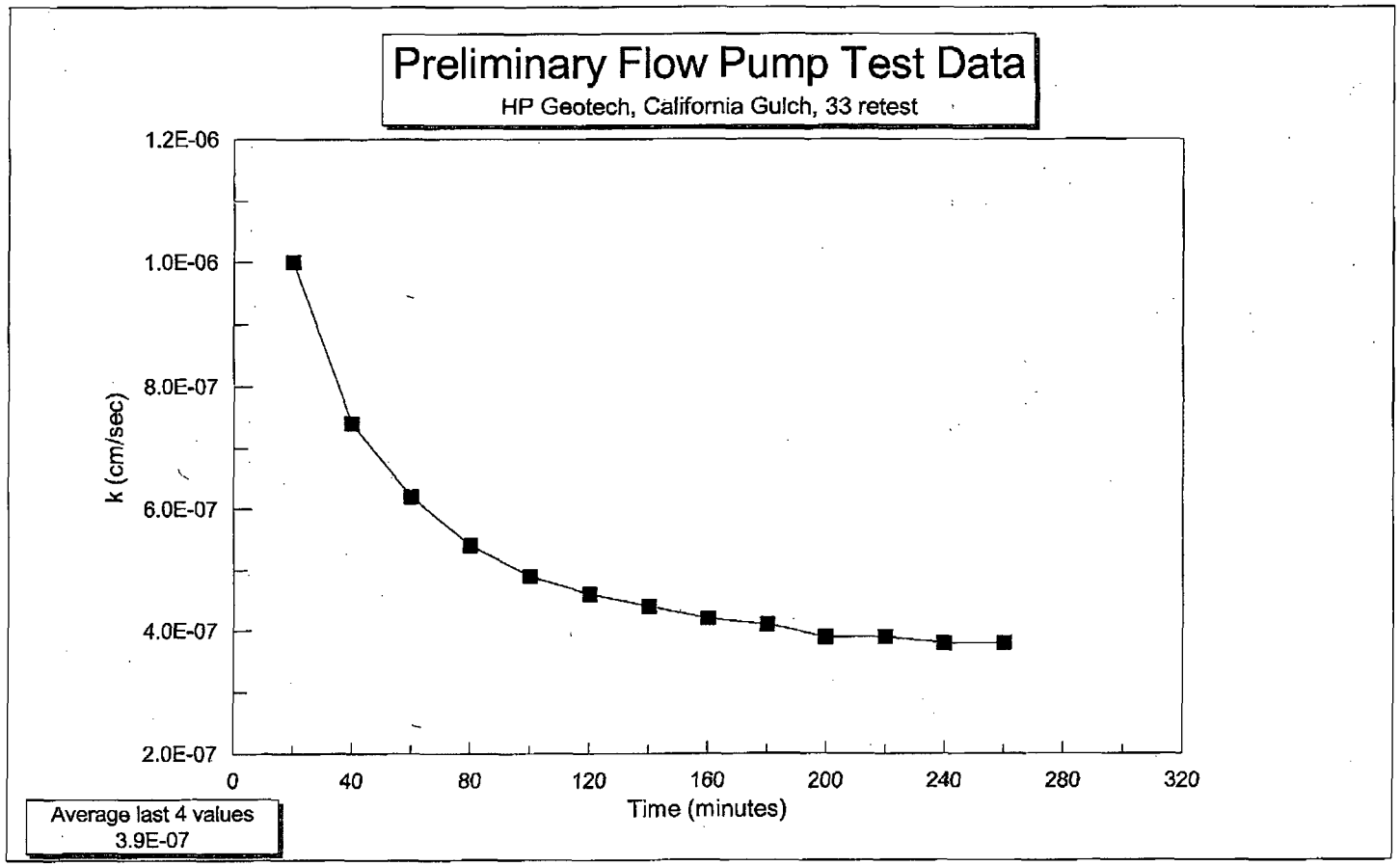
SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.2	9.8				
50.0	48.0	9.6	10.5	38.7	47.3	8.6	0.86
60.0		10.2	10.4	48.5	58.1	9.6	0.96

NO CONSOLIDATION DATA

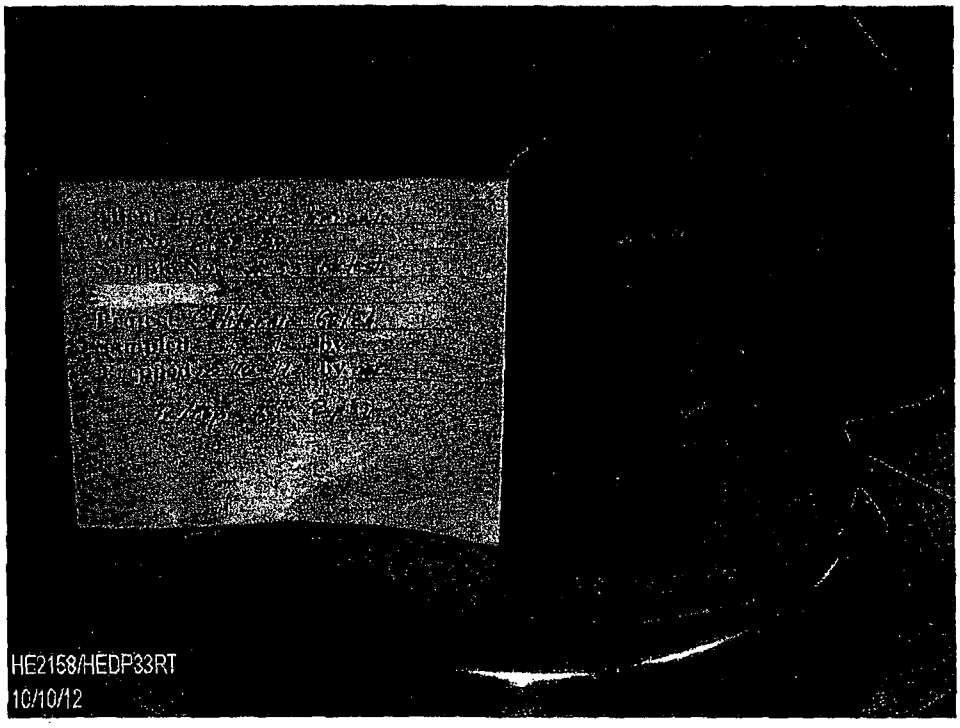
Initial Height (in)	2.969	Init. Vol. (CC)	140.16
Height Change (in)	0.015	Vol. Change (CC)	9.10
Ht. After Cons. (in)	2.954	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.880	Net Change (CC)	0.67
Area After Cons. (sq in)	2.881	Cons. Vol. (CC)	139.49

Data entry by: DAW Date: 10/11/2012
Checked by: CAL Date: 10-12-12
FileName: HEP033RT



Data Entered By: CAL
Data Checked By: CAL
File Name: HEFP33RT

Date: 10/10/2012
Date Checked: 10/12/12


HE2158/HEDP33RT
10/10/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	S 185 ft E 170 ft	SAMPLED	
DEPTH		TEST STARTED	10/12/12 CAL
SAMPLE NO.	35 In-Place	TEST FINISHED	10/16/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	304.6	309.6
Wt. Wet Soil & Pan (g)	311.2	316.3
Wt. Dry Soil & Pan (g)	269.0	269.0
Wt. Lost Moisture (g)	42.3	47.3
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	262.3	262.3
Moisture Content %	16.1	18.0
Wet Density PCF	130.0	134.0
Dry Density PCF	111.9	113.5

Init. Diameter (in)	1.926	(cm)	4.892
Init. Area (sq in)	2.913	(sq cm)	18.797
Init. Height (in)	3.064	(cm)	7.783
Vol. Bef. Consol. (cu ft)	0.00517		
Vol. After Consol. (cu ft)	0.00509		
Porosity %	32.82		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.038
Diameter	1.921
Pressure (psi)	1.123
Area after consol. (cm*cm)	18.689
Gradient	10.232
Permeability k (cm/s)	6.0E-07
Permeability k (m/s)	**6.0E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.439
Average temperature degree C:	23.5

Notes: Filling required due to gravel.

Data entry by: MLM Date: 10/17/2012
Checked by: [illegible] Date: 10/17/12
FileName: HEP0CG35

ADVANCED TERRA TESTING, INC.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	S 185 ft E 170 ft	SAMPLED	
DEPTH		TEST STARTED	10/12/12 CAL
SAMPLE NO.	35 In-Place	TEST FINISHED	10/16/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

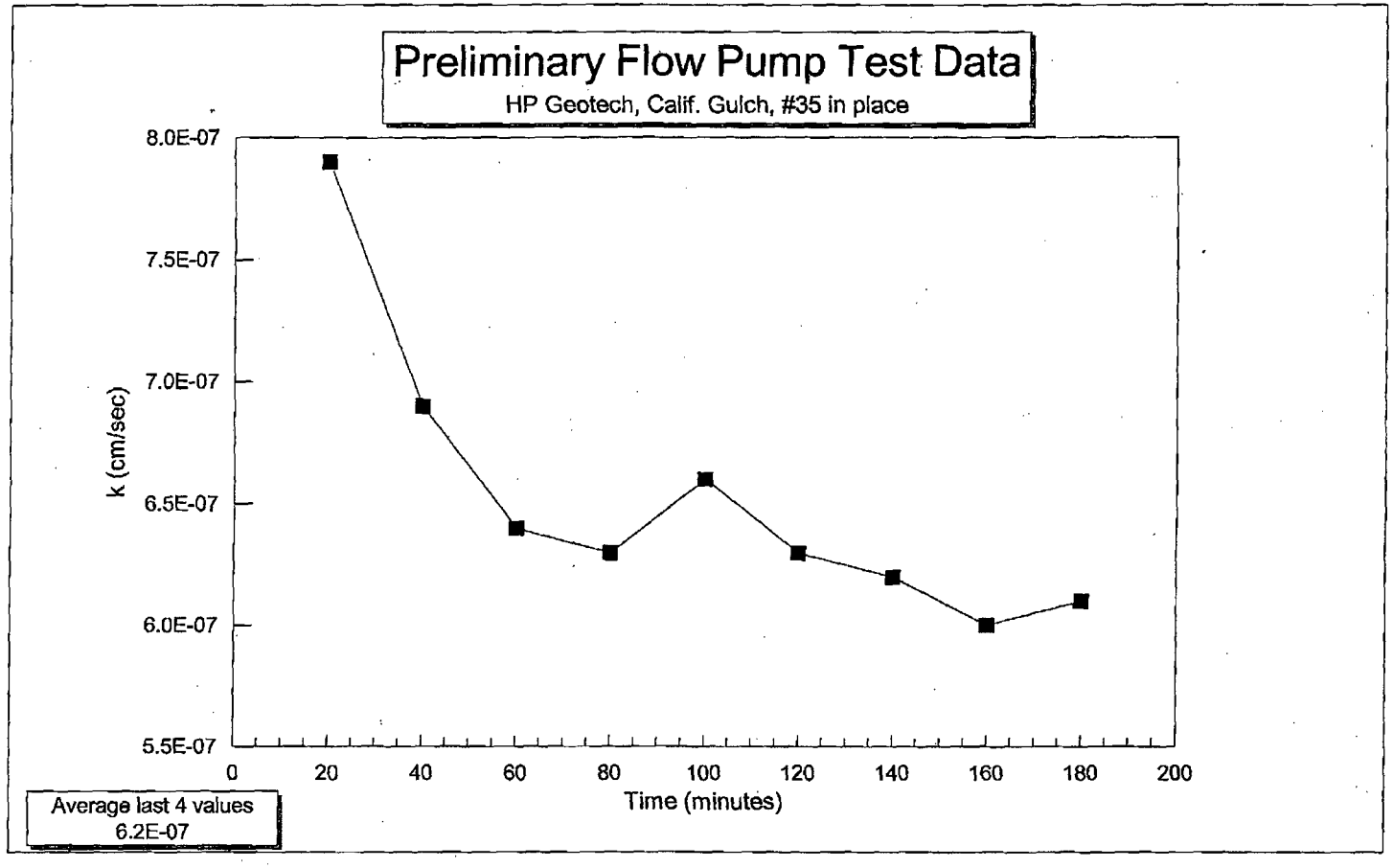
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.8	11.1				
50.0	48.0	10.6	11.8	38.6	48.0	9.4	0.94
60.0		12.3	12.6	48.7	58.2	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	3.064	Init. Vol. (CC)	146.31
Height Change (in)	0.026	Vol. Change (CC)	10.50
Ht. After Cons. (In)	3.038	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.913	Net Change (CC)	2.07
Area After Cons. (sq in)	2.897	Cons. Vol. (CC)	144.24

Data entry by: MLM Date: 10/17/2012
Checked by: Date: 10/17/12
FileName: HEP0CG35

ADVANCED TERRA TESTING, INC. ATT



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File Name: HEPCG35

Date: 10/16/2012
Date Checked: 10/17/12

Client
Job No.
Sample No.
Project
Sampled by
Prepped by
HE2158/HEDPCG37
10/18/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT HP Geotechnical JOB NO. 2158-90

BORING NO.	E 190' N 120'	SAMPLED	
DEPTH	2nd lift	TEST STARTED	10/12/12 CAL
SAMPLE NO.	37 In Place	TEST FINISHED	10/17/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	313.6	318.7
Wt. Wet Soil & Pan (g)	320.3	325.4
Wt. Dry Soil & Pan (g)	279.8	279.8
Wt. Lost Moisture (g)	40.5	45.6
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	273.1	273.1
Moisture Content %	14.8	16.7
Wet Density PCF	132.8	130.7
Dry Density PCF	115.6	112.0

Init. Diameter (in)	1.929	(cm)	4.900
Init. Area (sq in)	2.922	(sq cm)	18.856
Init. Height (in)	3.079	(cm)	7.821
Vol. Bef. Consol. (cu ft)	0.00521		
Vol. After Consol. (cu ft)	0.00538		
Porosity %	29.97		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.062
Diameter	1.965
Pressure (psi)	1.458
Area after consol. (cm*cm)	19.575
Gradient	13.180
Permeability k (cm/s)	4.5E-07
Permeability k (m/s)	**4.5E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.271

Average temperature degree C: 22.5
NOTE: Filing required due to gravel.

Data entry by: DAW · Date: 10/18/2012
Checked by: CR Date: 10/19/12
FileName: HEP0CG37

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	E 190' N 120'	SAMPLED	
DEPTH	2nd lift	TEST STARTED	10/12/12 CAL
SAMPLE NO.	37 In Place	TEST FINISHED	10/17/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.7	9.9				
50.0	48.0	9.1	10.0	38.4	47.7	9.3	0.93
60.0	58.0	10.0	10.8	48.6	58.0	9.4	0.94
70.0		10.8	10.9	58.5	68.2	9.7	0.97

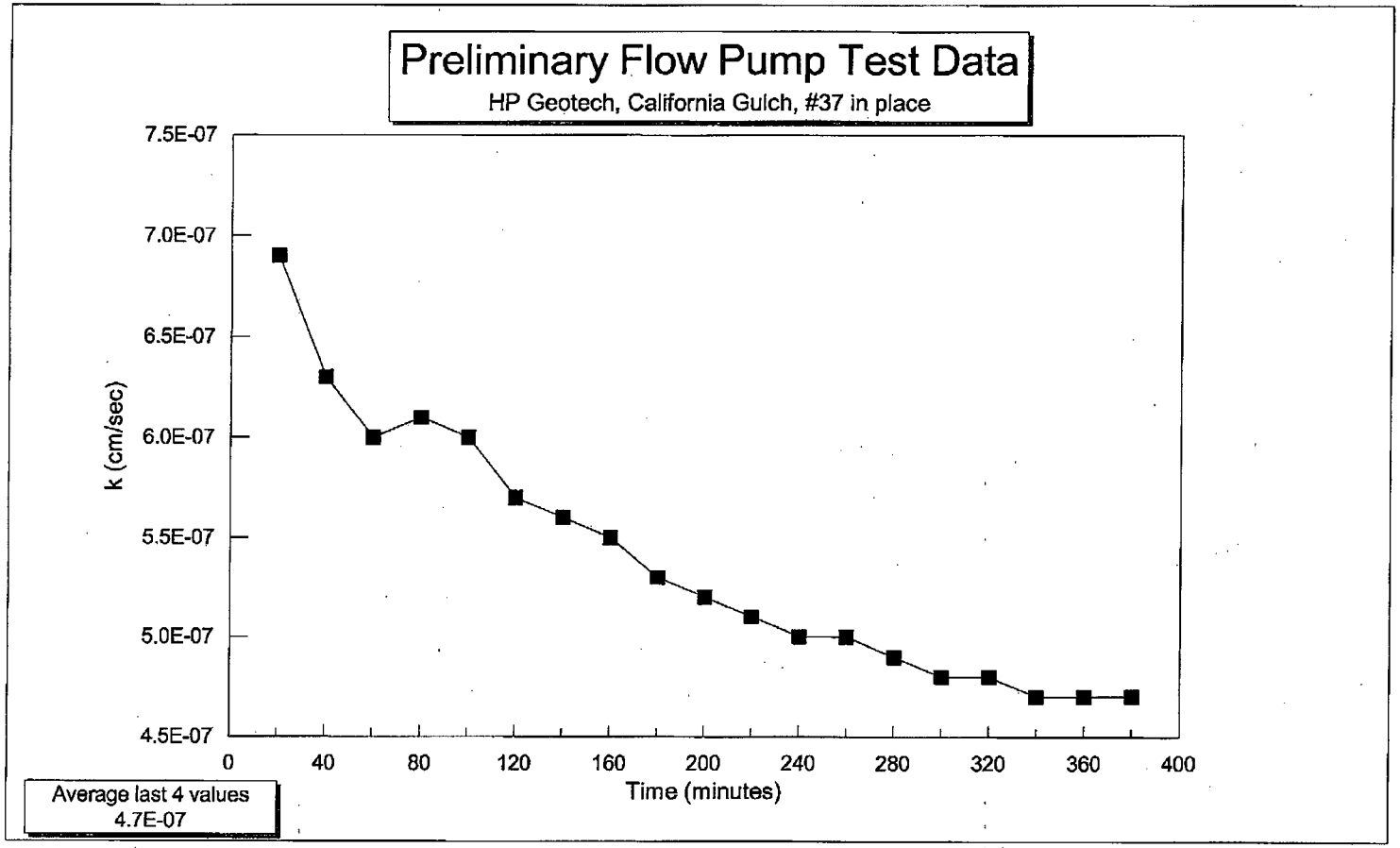
NO CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)

Initial Height (in)	3.079	Init. Vol. (CC)	147.48
Height Change (in)	0.017	Vol. Change (CC)	8.90
Ht. After Cons. (in)	3.062	Cell Exp. (CC)	13.69
Initial Area (sq in)	2.922	Net Change (CC)	-4.79
Area After Cons. (sq in)	3.034	Cons. Vol. (CC)	152.27

Data entry by: DAW Date: 10/18/2012
Checked by: GH Date: 10/19/12
FileName: HEP0CG37

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: [signature]
File Name: HEFPCG37

Date: 10/17/2012
Date Checked: 10/18/12

HE2158/HEDPCG35
10/17/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/19/12 CAL
SAMPLE NO.	#43 between 2 clays	TEST FINISHED	10/25/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	300.3	308.5
Wt. Wet Soil & Pan (g)	307.0	315.2
Wt. Dry Soil & Pan (g)	270.4	270.4
Wt. Lost Moisture (g)	36.6	44.8
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	263.7	263.7
Moisture Content %	13.9	17.0
Wet Density PCF	131.8	136.5
Dry Density PCF	115.8	116.7

Init. Diameter (in)	1.928	(cm)	4.897
Init. Area (sq in)	2.919	(sq cm)	18.836
Init. Height (in)	2.972	(cm)	7.549
Vol. Bef. Consol. (cu ft)	0.00502		
Vol. After Consol. (cu ft)	0.00498		
Porosity %	31.75		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	9
Percentage of Pump setting	100
Q (cc/s)	2.28E-04
Height	2.964
Diameter	1.923
Pressure (psi)	0.695
Area after consol. (cm*cm)	18.744
Gradient	6.490
Permeability k (cm/s)	1.9E-06
Permeability k (m/s)	**1.9E-08**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.653
Average temperature degree C:	22.3

Data entry by: DAW Date: 10/26/2012
Checked by: ext Date: 10/26/12
FileName: HEP0CG43

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/19/12 CAL
SAMPLE NO.	#43 between 2 clays	TEST FINISHED	10/25/12 CAL
SOIL DESCR.	412147A	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

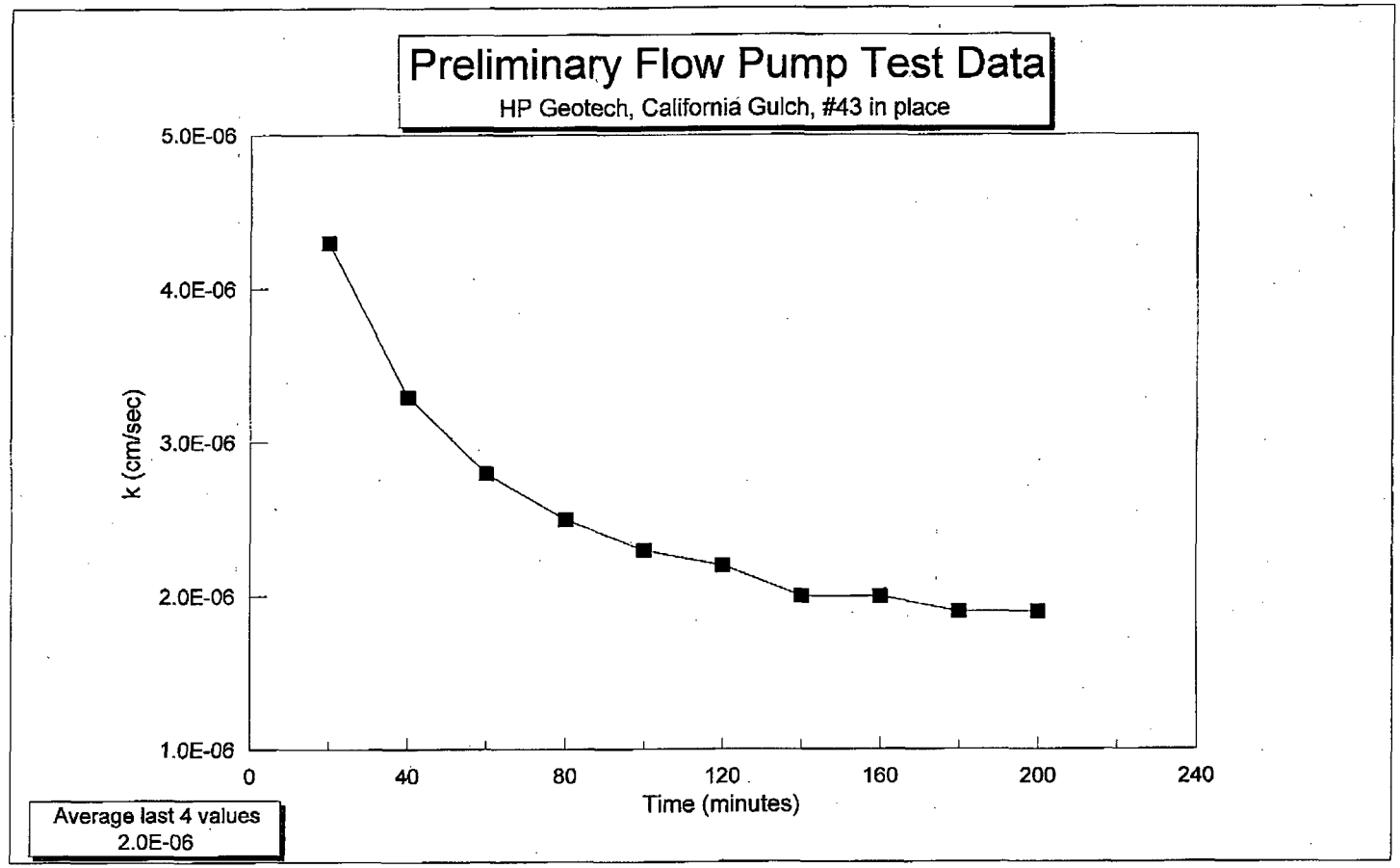
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.9	9.5				
50.0	48.0	9.6	10.5	39.0	48.4	9.4	0.94
60.0		11.0	11.2	48.7	58.3	9.6	0.96

NO CONSOLIDATION DATA

Initial Height (in)	2.972	Init. Vol. (CC)	142.21
Height Change (in)	0.008	Vol. Change (CC)	9.50
Ht. After Cons. (in)	2.964	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.919	Net Change (CC)	1.07
Area After Cons. (sq in)	2.905	Cons. Vol. (CC)	141.14

Data entry by: DAW Date: 10/26/2012
Checked by: CMC Date: 10/26/12
FileName: HEP0CG43

ADVANCED TERRA TESTING, INC. ATT



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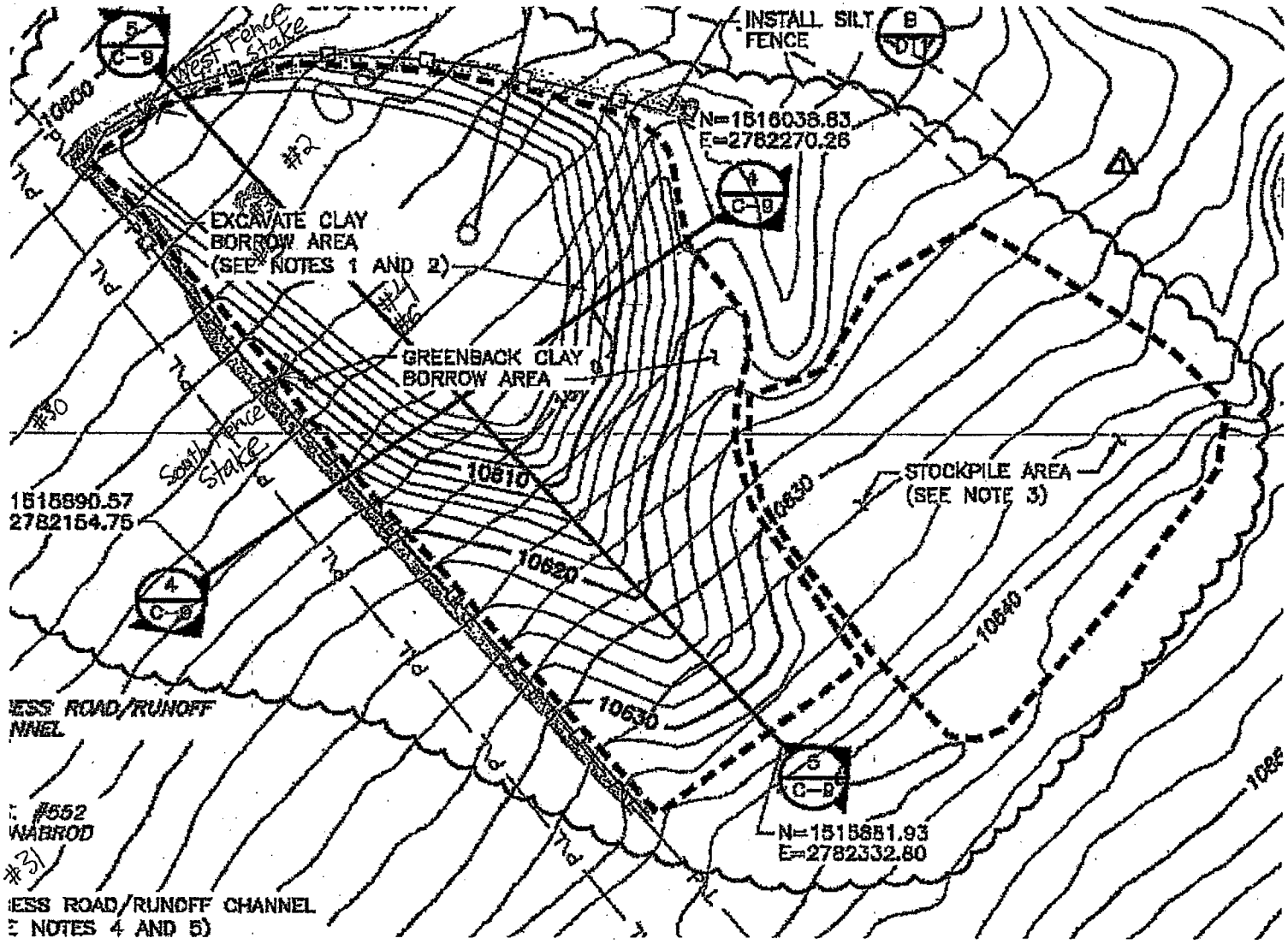
Data Checked By: DM
File Name: HEFPCG43

Date: 10/25/12
Date Checked: 10/26/12

Client: H.E. Project
Job No. 21-6-3
Sample No. 2-3 'A' piece
Aggregate
Project: Hillsdale Gate Turnpike
Sampled by
Prepped 10/18/12 by
Fr/Pb Pg. 2 Part
HE2158/HEDPCG43
10/26/12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GREENBACK CLAY BORROW AREA
STOCKPILE AREA (SEE NOTE 3)
West Fence Stake
South Fence Stake
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10620
10630
10640
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NNEL
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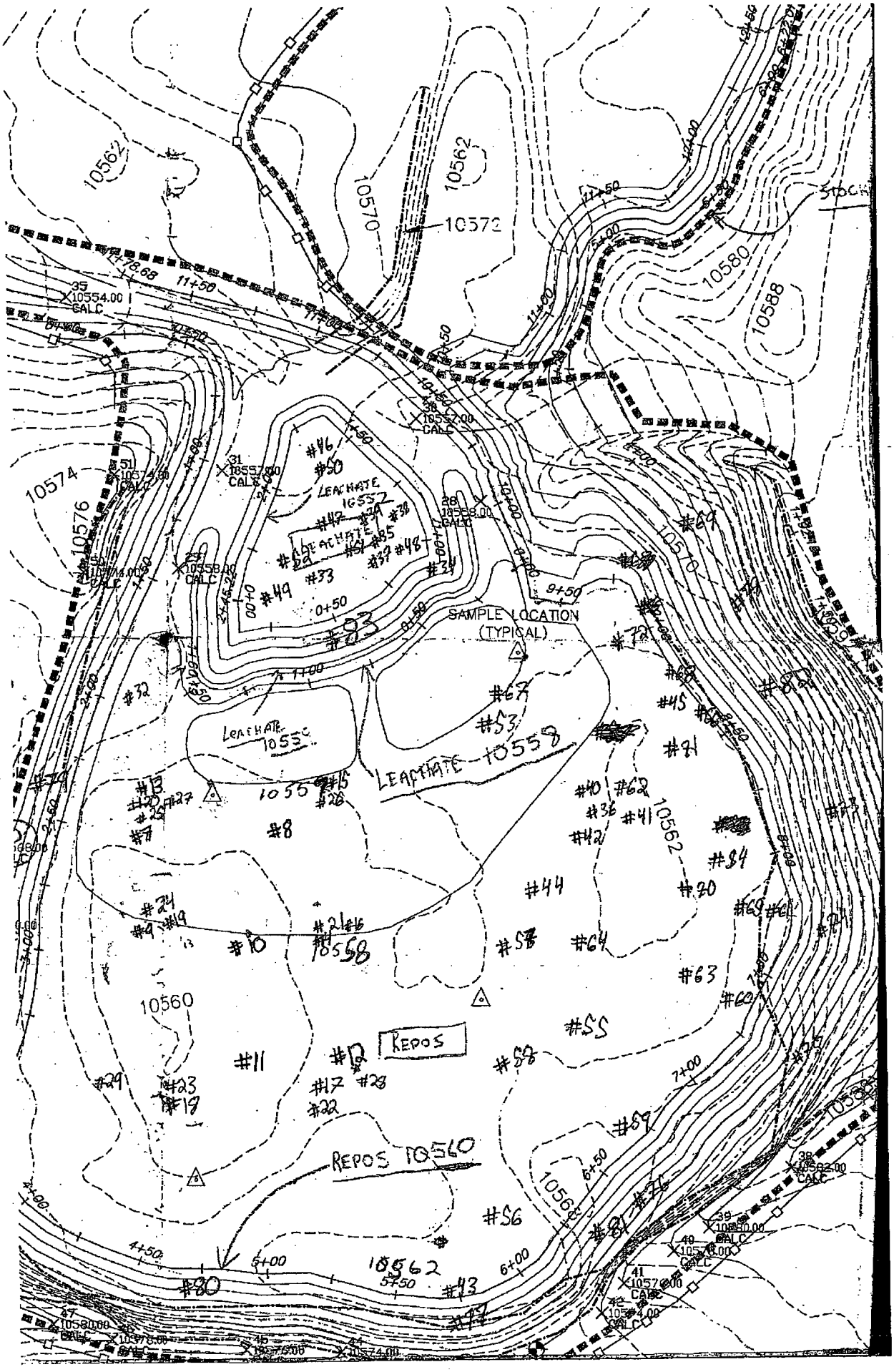
WABROD
#31
ESS ROAD/RUNOFF CHANNEL
E NOTES 4 AND 5)
9/14/2012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(TYPICAL)
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LEACHATE 10558
REPOS
REPOS 10560
10562
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#2
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37 10558.00 CALC
38 10574.00 CALC
39 10580.00 CALC
40 10578.00 CALC
41 10576.00 CALC
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19+50

Section 4

Stormwater Field Inspection

COLORADO DEPARTMENT OF TRANSPORTATION

STORMWATER FIELD INSPECTION REPORT – ACTIVE CONSTRUCTION

(1) Project Name:California Gulch	(2) Project Contractor:American Civil Const.	(3) Erosion Control Supervisor/SWMP Administrator:Tony Gregorich	
(4) Project Engineer/Representative:	(5) Inspector(s) (Name and Title):	(6) CDOT Project Number:	
(7) Project Code (Sub Account #):	(8) CDPS-SCP Certification#:	(9) CDOT Region:	(10) Date of Project Inspection:9/12/2012
(11) Weather at Time of Inspection:Overcast			

(12) REASON FOR INSPECTION / EXCLUSION

- ☐ Routine Inspection: (minimum every 14 Calendar Days)
- ☒ Runoff Event: (Post-storm event inspections must be conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The occurrence of any such delayed inspection must be documented in the inspection record.) Routine inspections still must be conducted every 14 calendar days.
  Storm Start Date: 9/11/2012 7:00 pm Approximate End Time of Storm (hrs): 9/12/2012 6:00 am
- ☐ Third Party Request:
- ☐ Winter Conditions Inspections Exclusion: Inspections are not required at sites where construction activities are temporarily halted, snow cover exists over the **entire site** for an extended period, and **melting conditions posing a risk of surface erosion do not exist**. This exception is applicable only during the period where **melting conditions do not exist**, and applies to the routine 14-day inspections, as well as the post-storm-event inspections. If **visual inspection** of the site verifies that all of these conditions are satisfied, document the conditions in section 18 (General Notes) and proceed to section 19 (Inspection Certification). Documentation must include: dates when snow cover occurred, date when construction activities ceased, and date when melting conditions began.
- ☐ Other:

(13) SWMP MANAGEMENT

	Yes	No	NA
(a) Is the SWMP notebook located on site?	☒	☐	
(b) Are changes to the SWMP documents noted and approved?	☐	☐	☒
(c) Are the inspection reports retained in the SWMP notebook?	☒	☐	
(d) Are corrective actions from the last inspection completed?	☒	☐	☒
(e) Is a Spill Prevention Control and Countermeasure Plan retained at the project site?	☒	☐	
(f) Is a list of potential pollutants retained at the site?	☒	☐	

(14) CURRENT CONSTRUCTION ACTIVITIES:

Hauling clay from the Greenback clay borrow area to the LSG Repository Area

Estimate of disturbed area at the time of the inspection: 3.5Acres

(15) BMPs ON SITE AT TIME OF INSPECTION *See Inspection Report Instructions for more detail.

	In SWMP	Used	Not Needed at this time
(a) EROSION CONTROL BMPs ON SITE			
Seeding	☐	☐	☒
Mulching/Mulch Tackifier	☐	☐	☒
Soil Binder	☐	☐	☒
Soil Retention Blankets	☐	☐	☒
Embankment Protector*	☐	☐	☒
Grading Techniques*	☐	☐	☒
Berm/Diversion	☐	☐	☒
Check Dams*	☐	☐	☒
Outlet Protection*	☐	☐	☒
Other:	☐	☐	☒
(c) BMPs FOR SPECIAL CONDITIONS			
Dewatering Structure	☐	☐	☒
Temp. Stream Crossing	☐	☐	☒
Clear Water Diversion	☐	☐	☒
Sensitive Area Fencing	☐	☐	☒

	In SWMP	Used	Not Needed at this time
(b) SEDIMENT CONTROL BMPs ON SITE			
Stabilized Const. Entrance	☐	☐	☒
Sediment Trap	☐	☐	☒
Inlet Protection*	☐	☐	☒
Sediment Basin	☐	☐	☒
Perimeter Control*	☐	☒	☐
Other:	☐	☐	☒
(d) MATERIALS HANDLING, SPILL PREVENTION, WASTE MANAGEMENT AND GENERAL POLLUTION PREVENTION			
Stockpile Management*	☐	☐	☒
Materials Management*	☐	☐	☒
Concrete Waste Management*	☐	☐	☒
Saw Water Management*	☐	☐	☒
Solid Waste/Trash Management	☐	☐	☒
Street Sweeping	☐	☐	☒
Sanitary Facility*	☐	☒	☐
Vehicle and Equip. Management	☐	☐	☒

Other:	☐	☐	☒	Other:	☐	☐	☒

(16) CONSTRUCTION SITE ASSESSMENT & CORRECTIVE ACTIONS **Off site Pollutant Discharges are a Violation of the Permit and Reason for Immediate Project Suspension**

The construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site shall be inspected for evidence of, or the **potential** for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters. If there is evidence of sediment or other pollutants discharging from the site, see section 17 (Construction Site Assessment).

All erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are maintained and operating correctly. Identify the condition of the BMP, using more than one letter if necessary: (I) Incorrect Installation; (M) Maintenance is needed; (F) BMP failed to operate; (A) Additional BMP is needed; (R) Remove BMP. Keep copies of this blank page for additional room if needed.

Continuous maintenance is required on all BMPs. **BMPs that are not operating effectively, have proven to be inadequate, or have failed must be addressed as soon as possible, immediately in most cases.**

Location	BMP	Condition	Comments: Description of Corrective Action and Preventative Measure Taken	Date Completed & Initials
On the silt fence by the 2 inch minus stockpile needed repair	Silt Fence	M	Tony Gregorich installed an additional silt fence behind the fallen down silt fence to prevent any sediment from escaping the job site	9/13/2012 CD
In the Greenback borrow Area on the South Side	Silt Fence	M	Tony Gregorich replaced the fallen down T-Post and correctly re-installed the silt fence	9/13/2012 CD

(17) CONSTRUCTION SITE ASSESSMENT:**OFF SITE POLLUTANT DISCHARGES ARE A VIOLATION OF THE PERMIT AND REASON FOR IMMEDIATE PROJECT SUSPENSION**

(a) Is there evidence of discharge of sediment or other pollutants from the site? ☐ Yes ☒ No
*If yes, explain the discharge and the corrective actions in section 16 (Construction Site Assessment & Corrective Actions) or section 18 (General Notes).
(b) Has sediment or other pollutants discharging from the site reached state waters? ☐ Yes ☒ No
*If yes, see subsection 208.03(c) and Part II A.2 and 3 of the permit for reporting requirements.

(18) GENERAL NOTES

(19) INSPECTION CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date: 9/13/2012
CDOT Project Engineer/CDOT Designee (Signature Required)	Date:

(20) COMPLIANCE CERTIFICATION

Corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the permit to the best of the signer's knowledge and belief.

Contractor's Erosion Control Supervisor/SWMP Administrator (Signature Required)	Date: 9/13/2012
CDOT Project Engineer/CDOT Designee (Signature Required)	Date:

Stormwater Management Field Inspection Report Instructions

State waters are defined to be any and all surface and subsurface waters which are contained in or flow through the state, including, streams, rivers, lakes, drainage ditches, storm drains, ground water, and wetlands, but not including waters in sewage systems, waters in treatment works or disposal systems, waters in potable water distribution systems, and all water withdrawn for ; until use and treatment have been completed. (Per subsection 107.25 and 25-8-103 (19) CRS)

(3) Erosion Control Supervisor/SWMP Administrator: Indicate the name of the individual responsible for implementing, maintaining and revising the SWMP.

(4) CDOT Project Engineer/Representative: Indicate the name of the CDOT representative performing the inspection with the ECS/SWMP Administrator. This person should be the Project Engineer or an authorized representative.

(9) CDPS-SCP Certification #: Indicate the Colorado Discharge Permit System (CDPS) Stormwater Construction Permit (SCP) (for Stormwater Discharges Associated with Construction Activities) certification number, issued by CDPHE, for the project which the report is being completed. Certification number can be found on the first page of the SCP.

(12) Reason(s) for Inspection / Exclusion: Indicate the purpose for the inspection or exclusion. These inspections are required to comply with the CDOT Specifications and the CDPS-SCP.

❑ Routine Inspections. These inspections are required at least every 14 calendar days during active construction. Suspended projects require the 14 calendar day inspection unless snow cover exists over the entire site for an extended period of time, and melting conditions do not exist (see, Winter Conditions Inspections Exclusions).
☑ Runoff Event Inspection for Active Sites: See page 1 for definition.
❑ Third Party Request. Indicate the name of the third party requesting the inspection and, if known, the reason the request was made.
❑ Winter Conditions Inspections Exclusions. See page 1 for definition. An inspection does not need to be completed, but use this form to document the conditions that meet the Exclusion.
❑ Other. Specify any other reason(s) that resulted in the inspection.

(13) SWMP Management: Review the SWMP records and documents and use a ✓ to answer the question. To comply with CDOT Standard Specifications and the CDPS-SCP, all of the items identified must be adhered to. If No is checked, document the reason ; indicate the necessary corrective action in section 16 (Construction Site Assessment & Corrective Actions). If NA is checked, ; late why in the space provided or indicate in section 18 (General Notes).

(a) Is the SWMP notebook located on site? A copy of the SWMP notebook must be retained on site, unless another location, specified by the permit, is approved by the Division.
(b) Are changes to the SWMP documents noted and approved? Indicate all changes that have been made to any portion of the SWMP notebook documents during construction. Changes shall be dated and signed at the time of occurrence. Amendments may include items listed in subsection 208.03(c).
(c) Are the inspection reports retained in the SWMP notebook? The ECS/Engineer shall keep a record of inspections. Inspection reports must identify any incidents of non-compliance with the terms and conditions of the CDOT specifications or the CDPS-SCP. Inspection records must be retained for three years from expiration or inactivation of permit coverage.
(d) Are corrective actions from the last inspection completed? Have corrective actions from the last inspection been addressed? Is a description of the corrective action(s), the date(s) of the corrective action(s), and the measure(s) taken to prevent future violations (including changes to the SWMP, as necessary) documented?
~~**(e) Is a Spill Prevention Control and Countermeasure (SPCC) Plan retained in the SWMP notebook? Subsection 208.051(c)**~~ requires that a SPCC plan be developed and implemented to establish operating procedures and that the necessary employee training be provided to minimize accidental releases of pollutants that can contaminate stormwater runoff. Records of spills, leaks or overflows that result in the discharge of pollutants must be documented and maintained. Information that should be recorded for all occurrences include the time and date, weather conditions, reasons for spill, etc. Some spills may need to be reported to the Water Quality Control Division immediately.
(f) Is a list of potential pollutants retained at the site? Subsection 107.25(b)5 requires the Erosion Control Supervisor to identify and describe all potential pollutant sources, including materials and activities, and evaluate them for the potential to contribute pollutants to stormwater discharge.

(14) Current Construction Activities: Provide a short description of the current construction activities/phase at the project site; include summary of grading activities, installation of utilities, paving, excavation, landscaping, etc.
- Estimate the acres of disturbed area at the time of the inspection. Include clearing, grading, excavation activities, areas receiving overburden (e.g. stockpiles), demolition areas and areas with heavy equipment/vehicle traffic, installation of new or improved haul roads and access roads, staging areas, borrow areas and storage that will disturb existing vegetative cover.

(15) BMPs On Site at Time of Inspection: Indicate the BMPs that are installed on-site at the time of inspection. All BMP details (e.g., Standard Plan M-208-1) shall be included with the SWMP documents.

Stormwater Management Field Inspection Report Instructions (continued)

BMPs In SWMP/Used/Not Needed at this Time. This section can be used as follows:

- ☐ If the BMP is required by the SWMP and implemented, indicate by placing a ✓ in both the "In SWMP" and "Used" columns.
- ☐ If the BMP is required by the SWMP, but not implemented, indicate by placing a ✓ in the "In SWMP" and "Not Needed at this [illegible]e" columns.

Erosion Control BMPs On Site

- Embankment Protector (e.g., temporary slope drains, open-chute drains, etc.)
- Grading Techniques (e.g., vertical tracking, scarifying, or disking the surface on the contour, etc.)
- Check Dams (e.g., rock check, erosion logs, erosion bales, silt berms, etc.)
- Outlet Protection (e.g., riprap, erosion log around top of headwall, etc.)

(b) Sediment Control BMPs On Site

- Inlet Protection (e.g., erosion logs, erosion bales, sand bags, gravel bags, etc.)
- Perimeter Control (e.g., silt fence, erosion logs, berms, etc.)

(d) Materials Handling, Spill Prevention, Waste Management and General Pollution Prevention

- Stockpile Management. Stockpiles shall be located away from sensitive areas. All erodible stockpiles (including topsoil) shall be contained by silt fence, berms or other sediment control devices throughout construction (also see subsection 208.052).
- Materials Management. Material that could contribute pollutants to stormwater shall have secondary containment or other equivalent protection (also see subsection 208.051).
- Concrete Waste Management. All concrete residue shall be contained in a signed structure as designed per subsection 208.02(k) and subsection 208.05(n). It shall be located a minimum of 50 feet from state waters.
- Saw Water Containment (e.g., pick-up broom or vacuum). Street washing is *not* allowed.
- Sanitary Facility. Temporary sanitary facilities shall be located 50 feet away from drainage ways, inlets, receiving waters, and located away from areas of high traffic, and areas susceptible to flooding or damage by construction equipment.

(16) Construction Site Assessment & Corrective Actions: Inspect the construction site and indicate where BMP feature(s) identified in section 15 (BMPs On Site at Time of Inspection), require corrective action. Erosion and sediment control practices identified in the SWMP shall be evaluated to ensure that they are operating correctly.

- Location. Site location (e.g., project station number, mile marker, intersection quadrant, etc.).
- BMP. Indicate the type of BMP at this location that requires corrective action (e.g., silt fence, erosion logs, soil retention blankets, etc.).
- Condition. Identify the condition of the BMP, using more than one letter (identified in section 16) if necessary.
- Description of Corrective Action and Preventative Measure Taken. Provide the proposed corrective action needed to bring the [illegible] or BMP into compliance. Once corrective actions are completed, state the measures taken to prevent future violations and ensure that the BMPs are operating correctly, including the required changes made to the SWMP.
- Date Completed & Initials. Date and initial when the corrective action was completed and the preventative measure statement finished.

(17) Construction Site Assessment: Was there any off site discharge of sediment at this site since the last inspection?

(a) Is there evidence of discharge of sediment or other pollutants from the site? **Off site pollutant discharges are a violation of the permit.** The construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, discharge locations, and locations where vehicles access the site shall be inspected for evidence of, or the **potential** for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state water.

(b) Has sediment or other pollutants discharging from the site reached state waters? **Off site pollutant discharges are a violation of the permit.** If off site discharge has occurred, explain the discharge and the corrective actions in section 16 (Construction Site Assessment & Corrective Actions) or section 18 (General Notes).

(18) General Notes: Indicate any additional notes that add detail to the inspection; this may include positive practices noted on the project.

(19) Inspection Certification: In accordance with Part I, F.1.c of the CDPS-SCP, all reports for submittal shall be signed and certified for accuracy.

(20) Compliance Certification: In accordance with Part I, D.6.b.2.viii of the CDPS-SCP, compliance shall be certified through signature.

Section 5

Daily Construction Reports and all site work

American Civil Constructors

Daily Operations Report

Start Time: 5:30 AM
Stop Time: 3:00 PM
Job Conditions: (Good) Fair Poor
Weather: (Sunny) Overcast Rain/Snow
Temperature: Low ____ High 63
Precipitation: Inches 5/10

Job # 203 2707
Project: California Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W (T) F S
Date: 8-24-17

Work Performed

Work on subgrade on West Side of plant
Ash material to screen
Screen material

Problems/Delays: water at 2 Feet

Engineer/Architect/Owner Instructions or Extra Work:	Authorized By:

Meetings:

Site Visits:

Discussed:	Directions/Concerns:

Safety Meeting? Yes

Signed: ~~Kirk Haptonstall~~ Robert Davis

American Civil Constructors

Daily Operations Report

Start Time: 7:00 AM
Stop Time: 7:30 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Cloudy / Rain/Snow
Temperature: Low ___ High 68
Precipitation: Inches 0

Job # 703 2777
Project: California Gold
Location: Point Molate
Supervisor: Roberto Acosta
Day: S M T W T (R) S
Date: 8-25-12

Work Performed

work on pick truck into high pile to produce ground
work on pick material to screen
Screen and move material

Problems/Delays: loose pin on d-8

Engineer/Architect/Owner Instructions or Extra Work:

Authorized By:

Meetings:

Site Visits:

Discussed:

Directions/Concerns:

Safety Meeting? Yes

Signed: ~~Kirk Haptonstall~~ Roberto Acosta

American Civil Constructors

Daily Operations Report

Start Time: 7:00 AM
Stop Time: 3:30 PM
Job Conditions: ~~Good~~ Fair Poor
Weather: ~~Sunny~~ Overcast Rain/Snow
Temperature: Low High 69
Precipitation: Inches 0

Job # 283 7777
Project: Culvert Catch
Location: Loud Ville
Supervisor: Robert Hooter
Day: S M T W T F (S)
Date: 5-26-12

Work Performed

I am spending work on Green mutual
work on pink mutual to Green
work on cut to Subgrade

Problems/Delays:

Engineer/Architect/Owner Instructions or Extra Work:

Authorized By:

Meetings:

Site Visits:

Discussed:

Directions/Concerns:

Safety Meeting? Yes

Signed: ~~Kirk Haptonstall~~ Robert Hooter

Daily Operations Report

American Civil Constructors

Start Time: 7:00
Stop Time: 4:00
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low — High 72
Precipitation: Inches 0

Job # 203.2077
Project: California Gulch
Location: Lead Valley
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 6/17/20

Daily Report

Work on stream material
work on layered material into piles
Push material
Went other area moved chips and stumps
work on Stream top soil

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto G Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6a
Stop Time: 3:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job # 203.2777
Project: California Golden
Location: Westville
Supervisor: Roberto Arista
Day: S M T W T F S
Date: 5 / 18 / 12

Daily Report

Work on pole material to screen
Screen material
want to open area on trench top soil
start to remove top of burrow to get to clay
County Guy show up today to get dirt and boulders

Problems/Delays: County was to sent truck to get boulders on monday

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Arista

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 8
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 42 High 72
Precipitation: Inches 0

Job # 205 2727
Project: Colorado Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 5 / 28 / 12

Daily Report

Work on pile unstacked to screen
Work pile material screened
Work on Bottom area on Ramp over berm material

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed:

Daily Operations Report

American Civil Constructors

Start Time: 7 00
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 68
Precipitation: Inches 0

Job # 203 2777
Project: California Golden
Location: Longwood
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 8 / 31 / 12

Daily Report:

Work on Grade and compact slopes and install SWPPP
Work on Grade Floor pits for boxes and SWPPP
Work on push material for Green

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

American Civil Constructors

Daily Operations Report

Start Time: 7 AM
Stop Time: 5:30 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: 2080 2777 Gilroy
Project: California Gilroy
Location: Leaf Mile
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9-05-12

Work Performed

work on [redacted]

work on push material to screen to screenout

work on complete slopes and floor

work move screen to start dig point

Problems/Delays:

Engineer/Architect/Owner	Instructions or Extra Work:	Authorized By:

Meetings:

Site Visits:

Discussed:	Directions/Concerns:

Safety Meeting? Yes

Signed: Roberto Acosta
Kirk Raptonstall

American Civil Constructors

Daily Operations Report

Start Time: 6 AM
Stop Time: 5:30 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job # 203 2777
Project: Calaveras Gulch
Location: Levi Valley
Supervisor: Roberto Acosta
Day: S M T W R F S
Date: 9-24-12

Work Performed

work on pick material for screen
work on pick material to get to clay
work on Grade Subgrade on Slopes and out floor

Problems/Delays:

Engineer/Architect/Owner	Instructions or Extra Work:	Authorized By:

Meetings:

Site Visits:

Discussed:	Directions/Concerns:

Safety Meeting? Yes

Signed: Kirk Haptonstall

American Civil Constructors

Daily Operations Report

Start Time: 6 AM
Stop Time: 6:30 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: 285 7777
Project: California Gulch
Location: Leadville
Supervisor: Roberto Nosta
Day: S M T W T F S
Date: 9-08-11

Work Performed

Work on dry out portion to center of work area to dry out clay and pushed to stock pile
Dry out pump mixture fill with fresh
Rip for proper clay Remove 6" of top soil

Problems/Delays:

Engineer/Architect/Owner Instructions or Extra Work:	Authorized By:

Meetings:

Site Visits:

Discussed:	Directions/Concerns:

Safety Meeting? Yes

Signed: Roberto Nosta
Kirk Haptonstall

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 5:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low ___ High 76
Precipitation: ___ Inches

Job # 23 7777
Project: California Gulch
Location: Leadville
Supervisor: Roberto Arostegui
Day: S M T W T F S
Date: 4 10 11 12

Daily Report

work on push material and Rip to Screen
work on push piles
work on push over burn material to stock area to get to clay if not Loot removed
work on Rip ton process clay
3 Haul truck from 10 to 6

Problems/Delays: Clay problem sand and rocks on clay

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Roberto Arostegui

American Civil Constructors

Daily Operations Report

Start Time: 6 AM
Stop Time: 4:30 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: 203 2772
Project: California Gulch
Location: Teton Village
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9-08 17

Work Performed

Work on Cloud Slope dig out wet material out
Work on sub grade on floor of work area
Work on top soil process Clay
3 truck Loads 7-430

Problems/Delays:

Engineer/Architect/Owner Instructions or Extra Work:	Authorized By:

Meetings:

Site Visits:

Discussed:	Directions/Concerns:

Safety Meeting? Yes

Signed: Kirk Huntonstall

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 6:30
Job Conditions: ~~Good~~ Fair Poor
Weather: ~~Sunny~~ Overcast Rain/Snow
Temperature: Low High 66
Precipitation: Inches 0

Job # 203 2777
Project: California Gulch
Location: Eagle Valley
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9 / 1 / 12

Daily Report

Work on spread clay on slopes and on liner
Work on screen material
Work on mix clay
Excel mix clay
grizzly screen
Jig Screening

Problems/Delays: test from clay

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 8:31
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 70
Precipitation: Inches 0

Job # 203 2722
Project: Caltrans Gridley
Location: Ley Gurley
Supervisor: Roberto Isaak
Day: S M (T) W T F S
Date: 9/1/22

Daily Report

truck Clay from Sierra 50 Hill
4 trucks 8 of 5:30 31 loads each
mix Clay
screen material
spoil load Clay
~~Jaw~~ screen
Culvert mix clay

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? yes

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 8
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job # 283 2777
Project: California, Colfax
Location: Legislative Route
Supervisor: Robert Stock
Day: S M T W T F S
Date: 9 / 23 / 12

Daily Report

Rain

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Yes

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 6 am
Stop Time: 5:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low ____ High 65
Precipitation: ____ Inches

Job # 23 2727
Project: California Gilroy
Location: Santa Nella
Supervisor: Roberto Rojas
Day: S M T W T F S
Date: 9 / 19 / 12

Daily Report

Push Run to screen material / under size
work on mix clay
work on dig pond
Screen after get material dry
Sat bag on clay
Fix screen
Spare mix clay

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 5:30
Job Conditions: (Good) Fair Poor
Weather: (Sunny) Overcast Rain/Snow
Temperature: Low ____ High (85)
Precipitation: ____ Inches (0)

Job # 203 2727
Project: California Golf Club
Location: Laguna Niguel
Supervisor: Roberto Acosta
Day: S M T W T (F) S
Date: 9/14/12

Daily Report

moved clay to lower creek
3 truck 6:30 - 5:30
spread last truck
dry screen
spread truck and compact and check for grade

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low ____ High 68
Precipitation: 0 Inches

Job #: 202 2727
Project: Cattaraugus Gulch
Location: Leon Valley
Supervisor: Roberto Rosa
Day: S M T W T F S
Date: 9 / 15 / 22

Daily Report

dig pond with 8
Screen material under rear pile
dig Screen
sprinkle screen material
Crest got here at 2:00 pm

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Robert Rosa

American Civil Constructors

Daily Operations Report

Start Time: 7 AM
Stop Time: 4 PM
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 38 High 63
Precipitation: Inches

Job # 203.2277
Project: California Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date:

Work Performed

work on pugh material for screen
work on pugh Rock and screen material
work on moved screen top Shelf cut pond
work on Roll slope with Roller
work on Rip out Roll clay and water

weather brought compactor 1pm

Tony and owner Rep discuss clay material Take 2 more spots

Problems/Delays: not have all test for clay / Can't place on slope
Clay Rock on basis of sand
source for Rock and screen material Been out

Engineer/Architect/Owner Instructions or Extra Work:

Authorized By:

Meetings:

Site Visits:

Discussed:

Directions/Concerns:

Safety Meeting? Yes

Signed: Kirk Haptonstall

Daily Operations Report WR 9/22

American Civil Constructors

Start Time: 7
Stop Time: 8
Job Conditions: Good (Fair) Poor
Weather: Sunny Overcast (Rain/Snow)
Temperature: Low 28 High 62
Precipitation: Inches 1.0

Job # 803 2722
Project: California Gold
Location: Leggett, CA
Supervisor: Roberto Acosta
Day: S (M) T W T F S
Date: 9/17/12

Daily Report

work on screen Mafenbil
Jay Run screen
Carol work on 6 inch rocks down and material to screen
Steve work on Run Rock tire Grede and moved to stope
work on by Fabric on slope and spread Rocks
work on compact clay
work on cut sweet

Problems/Delays: tony call to stop Rocks on slope

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: 6 am
Stop Time: 8 pm
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 65
Precipitation: Inches 0

Job # 283 2772
Project: California Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9 / 18 / 12

Daily Report

Start working on push rock on slope
Spare work on rocks on crest and moved to slope
Cat work on slope and push rock to easy
Jay work on screen
work on spread rock mat fabric on slope
work on dig swell and work on pond

Problems/Delays: Take Step Rock on Slope

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6a
Stop Time: 7:30
Job Conditions: good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 62
Precipitation: Inches 28

Job # 253 2777
Project: California Gold
Location: Feather River
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 4 / 19 / 12

Daily Report

work on spread rock on slope
work on continue screening (Tan)
work on separate rock on Gravley (sparkle
work on seem fabric and lay (soft
Civil work on clay berm
work on spread rock and push rock to get screen
work push material out to screen
Mechanic work on loader

Problems/Delays: Mechanic work on 644 loader
730 truck yard Broke

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 8:36
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 67
Precipitation: Inches 18

Job # 203.2722
Project: Cutthroat Gulch
Location: Loyd WMA
Supervisor: Roberto Maeda
Day: S M T W T F S
Date: 9/20/12

Daily Report

Jay work on screening loader down Ky team
Sparky work on Rock on Cell 2 on Slope mechanic work Pit Track
Cat work on clay
Jeff work on seam Fabrics
work on push Rock back spread Rock on Slope
push Rock to screen on Grade
Ivy trucks and trucks

Problems/Delays: Loader track Ky

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Yes

Signed: Roberto Maeda

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 10:00
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 65
Precipitation: Inches 25

Job # 703 2777
Project: Cataract Gulch
Location: Leadville
Supervisor: Roberto Mora
Day: S M T W T F S
Date: 9 / 21 / 12

Daily Report

work on more Rock to Cell Spade
work on Screening Jay
work on Fuel on Truck Jeff
Cont work on Clay Barrow
work on Level Rock and Push Rock to Screen
work on Sand Rock to Crush Out

no more Clay on Clay Barrow

Problems/Delays: Dirt on Rock Pile
Loader Leak Hy add

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High 65
Precipitation: Inches 0

Job # 203 9222
Project: Cafe Loma Estates
Location: Louisville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9 / 22 / 12

Daily Report

Sporty work on Phase Two on Cell
Jay work on scree dirt
Jeff work on Gravel on Roads
Carl work on rock Run on Slope
work on rock Run to Screen
work on slopes
rock dirt and Roads

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 7 am
Stop Time: 4 pm
Job Conditions: Good — Fair — Poor
Weather: Sunny — Overcast — Rain/Snow
Temperature: Low — High 55
Precipitation: Inches .01

Job # 2032772
Project: California Gulch
Location: Leadville
Supervisor: Roberto Rosales
Day: S M T W T F S
Date: 9 / 24 / 12

Daily Report

Cont work on roof Mech on Cell
Jeff work on screen and moved ROCKS to stpe
Steve work on trans and into loader moved Rock
Jeff work on trans and clean trash on Rock
work on push to screen
work on excavator to feed screen

Problems/Delays: loader down mechanic Steve off sick

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Robert Smith

Daily Operations Report

American Civil Constructors

Start Time:	6 AM			Job #	203 777
Stop Time:	530			Project:	Cuttermans Gulch
Job Conditions	Good	(Fair)	Poor	Location:	Paradise
Weather	Sunny	Overcast	Rain/Snow	Supervisor:	Robert Estrada
Temperature	Low	High	56	Day:	S M (T) W T F S
Precipitation		Inches	0	Date:	9 / 25 / 12

Daily Report

Spoke superintendent and staff meeting about tonights pour

Set up work on existing slope and moved Cummins

Set up work on top and set forms

Use excavator to load straw

Cont work on push material to screed and place to slope

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Robert Estrada

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low ____ High 58
Precipitation: ____ Inches 0

Job # 203 2773
Project: Calhoun Catch
Location: Louisville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9 / 26 / 12

Daily Report

Spoke work on moved material screened
by Loot screen and moved material
Curb work on pick material to screen and work on clean stone
Left Rail Subgrade
Work on Cut east side of road put stuff and
Remove 2 feet of Flow compact dry material

Problems/Delays: Roller blew motor

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 8:00
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 26 High 52
Precipitation: Inches 0

Job # 203 2777
Project: Cal Poly Graton Addn
Location: Kentfield
Supervisor: Roberto Mata
Day: S M T W T F S
Date: 9 / 27 / 12

Daily Report

Work on Clean Slope with Excavator
Spotty work on cut with tractor bench
Jay work on Clean Screen and fly Debris
Left work on Pan Roller and Clean screen and fly Debris
Ran work on Cut fill Boot on I call to Change the Spring work on Screen to Hunter Inspired to other Job

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Mata

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 8
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 20 High 55
Precipitation: Inches 0

Job # 203 2727
Project: California Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 9 / 28 / 12

Daily Report

Kept work on subgrade cell no: 1
Sprayed water on Jay + Reform dry slope and work on dry gutter from top
and move dry track for silt fence
Jay and Jeff work on Jay Culvert and Roll subgrade
work on packed material away from cell
work on Silt fence crooked moved
about push clay 2 men to slope

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low ____ High 56
Precipitation: ____ Inches 0

Job # 703 2777
Project: California Gulch
Location: Leadville
Supervisor: Robert Arata Jr.
Day: S M T W T F S
Date: 9/29/12

Daily Report

Rail work on Clear Berrow Clay
Sprite work on cleaning new Berrow Clay
Jay Jeff work on inlet silt fence work to 2 pm
work on push back and CBS 2 men - on slope
Clay Fabric
compact and Grade cell no 1

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Robert Arata

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 5:30
Job Conditions: Good-- Fair Poor
Weather: Sunny Overcast Rain/Snow
Temperature: Low 37 High 62
Precipitation: Inches 0

Job # 203 2777
Project: Californian Gulch
Location: Leadville
Supervisor: Roberto Arroyo
Day: S M T W T F S
Date: 10/12/12

Daily Report

work on 6" dia Tony on cell one
work on Belt Rock on swell

Kurt work work on shut mtr, clay and finish Manuel overtime
spoils work with Kurt on Clay groove

Jay work on skid screen material on cell 2

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Arroyo

Daily Operations Report

American Civil Constructors

Start Time: 6:00
Stop Time: 9:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 36 High 56
Precipitation: Inches 0

Job # 203 2222
Project: California Gold
Location: ~~Contractor Yard~~
Supervisor: Roberto Hoshi
Day: S M T W T F S
Date: 10 / 3 / 12

Daily Report

work on pipe, clay on bench and compact 6" lifts
work on start of clay on cell
work on solid base with excavator
Kent work on mix clay
Steele work on water truck
Jay work on load truck
2 hours

Problems/Delays: lack on 750 old engine

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Lucas

Daily Operations Report

American Civil Constructors

Start Time: 6 am
Stop Time: 6 pm
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 32 High 54
Precipitation: Inches

Job # 203 7777
Project: California Gulch
Location: Leadville
Supervisor: Roberto Urrutia
Day: S M T W T F S
Date: 10 / 4 / 12

Daily Report

Kait work on rock clay
Sparks work on water truck
Jay work on haul trucks
Mark on push clay on slope and floor
compact clay
lay Fabric on pond and cell one
4 trucks

Problems/Delays: 750 South old Leach

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Roberto Urrutia

Daily Operations Report

American Civil Constructors

Start Time: 7a
Stop Time: 4:30
Job Conditions: (Good) Fair Poor
Weather: Sunny Overcast Rain/Snow
Temperature: Low 99 High 119
Precipitation: Inches 0

Job # 203 2977
Project: California Gulch
Location: Ladville
Supervisor: Roberto Acosta
Day: S (M) T W T F (S)
Date: 10/25/12

Daily Report

Work on lay Fabrick on slopes and finish cut ourkey trench Remove dirt on top slope work on completing slopes and track slopes

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 6
Stop Time: 3:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 22 High 52
Precipitation: Inches

Job #: 283, 2727
Project: California Bolt
Location: Leuterville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 10 / 15 / 12

Daily Report:

Rent work work on mix clay on barrow area
Jay load trucks with clay
Spevie work on water truck
work on push clay on slope
work on compact clay
4 trucks

Problems/Delays: 750 dozer old tear down

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 2:30
Job Conditions: (Good) Fair Poor
Weather: (Sunny) Overcast Rain/Snow
Temperature: (Low) High
Precipitation: Inches

Job #
Project: California Gulch
Location:
Supervisor:
Day: S (M) T W T F S
Date: 10/7/12

Daily Report

work on finish Fabric, on top of clay on East side of slope
and correct all as found

work on dig out Rocks to rebid out cells

Problems/Delays: on clay we spend all water and Roller
wind blow fabric

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Robert Brown

American Civil Constructors

Daily Operations Report

Start Time: 7 am
Stop Time: 2 pm
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10/8/12

Daily Report

Work on Rock material on Pond
work on Belt Boom on mud
work on rock Rocks on cell
Brad work on screen ROCKS
Jay and Jeff work on Eskow
Steele work on moved Rocks

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 7:00
Stop Time: 3:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low 52 High 80
Precipitation: Inches 0

Job # 203 2757
Project: California Gulch
Location: Leadville
Supervisor: Roberto Montoya
Day: S M T W T F S
Date: 10 / 9 / 12

Daily Report

Work on mount Road to Slopes
Work on Gulch Center to Curb
Rest work on Dig out Ram for Slopes
Sparse work on mixed Run
Left work on Jug Fabrics

Problems/Delays: Lift on Rear mud stop Slopes

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Montoya

Daily Operations Report

American Civil Constructors

Start Time: 7:00
Stop Time: 7:30
Job Conditions: (Good) Fair Poor
Weather: (Sunny) Overcast Rain/Snow
Temperature: Low 28 High 56
Precipitation: Inches 0

Job # 203 2777
Project: Calaveras Culch
Location: Los Vilos
Supervisor: Roberto Rosales
Day: S M T W (T) F S
Date: 10 / 11 / 12

Daily Report

Work on Push Back on Slopes
Rent work on screen Back Ar. Slope
Sparte work on mover Back on Slope
Left work on Dean screen unit Log Extension

Problems/Delays: Left on Racks

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Rosales

Daily Operations Report

American Civil Constructors

Start Time:	7:00	**Job #**	205 2777
Stop Time:	2:30	**Project:**	California 60/24
Job Conditions	Good (Fair) Poor	**Location:**	Perryville
Weather	Sunny Overcast Rain/Snow	**Supervisor:**	Roberto Montes
Temperature	Low 72 High 98	**Day:**	S M T W T F S
Precipitation	Inches 1/8"	**Date:**	10 11 12

Daily Report

work on get track on slope Rock loader on slopes
Kurt work on screen track
Sperlin work on mwet track on slopes
Jeff work on mwet dirt on top of retain

Problems/Delays: Rock track on slopes
dirt on trans have to screen again

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Roberto Montes

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 4:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain / Snow
Temperature: Low 26 High 46
Precipitation: Inches 1

Job # 203.2777
Project: Castle Valley Gulch
Location: Castle Valle
Supervisor: Robert Hoste
Day: S M T W T F S
Date: 10/13/12

Daily Report

work on push material on clay barrow water and compacted
Steele on water truck
Jeff work on Roller
Kurt work on get Rock on slopes

Problems/Delays: Jay is off snow slow Jay Fabrick

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Robert Hoste

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 2:30
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project: California Gulch
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 15 / 12

Daily Report

worky on push over down for Green area
water and compact material
Next and- Day work on finish inlet liner on slope

Problems/Delays: water Broke

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: 7
Stop Time: 7
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain
Temperature: Low / High 28
Precipitation: Inches 0

Job # 263 2772
Project: California Gulch
Location: Leadville
Supervisor: Roberto Braglia
Day: S M T W T F S
Date: 10 / 16 / 12

Daily Report

work on push material on slope on top of jaws
Jeff and Joe work on mtl Lubring
spare work on moved material

Problems/Delays: Ice and snow on Ground

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: Roberto Braglia

Daily Operations Report

American Civil Constructors

Start Time: 7:00
Stop Time: 2:30
Job Conditions: Good (Fair) Poor
Weather: Sunny Overcast Rain/Snow
Temperature: Low High 42
Precipitation: Inches 2

Job # 203 2727
Project: Cottonwood Gulch
Location: Leadville
Supervisor: Roberto Acosta
Day: S M T W T F S
Date: 10/17/12

Daily Report

work on finish grading material off slope
work on gravel liner on road
work on grading gully
work on sand bags channel

Jay out daily work on culvert failure

Kent work on excavator
Spoon work on moving material

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Start Time: 7 a
Stop Time: 12 noon
Job Conditions: ~~Good~~ Fair Poor
Weather: ~~Sunny~~ Overcast Rain/Snow
Temperature: Low High 48
Precipitation: Inches 0

Job # 203 2727
Project: Calaveras Gulch
Location: Leggville
Supervisor: Roberto Acosta
Day: S M T W ~~T~~ F S
Date: 10 11/8/12

Daily Report

work on Replys shovel
work on Get fabric on center trench ready to burned
Close area on fabric
Back fill center trench
work on dirt pile to get spread
Kurt work on compact trenches / and grove on Rock pile
spade work on mixed material and ~~Close~~ Close fabric
Jenes and Jeff work on fabric

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Roberto Acosta

Daily Operations Report

American Civil Constructors

Anthony Gregorich

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S (M) T W T F S
Date: 7 / 16 / 2012

Daily Report

Ordered signs from NAPA for construction equipment crossing the bike path and the county road. Wrote up the method for handling traffic control plan on the California Gulch project and found housing as well. Went in the yard to see if we had some stands and signs for the MHT plan and got the dimensions of the signs.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M (T) W T F S
Date: 7 / 17 / 2012

Daily Report

Drove to Walden in the morning for sagebrush inspection and met up with Debbie from CDOT to pick-up some forms for Chris to sign. Ordered a porta-potty for California Gulch and submitted some product data submittals as well.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 7 / 18 / 2012

Daily Report

Drove up to Leadville to help install silt fencing at the California Gulch job.
Picked up waddles from Hanes to install instead of silt fence because too much.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W (T) F S
Date: 7 / 19 / 2012

Daily Report

Continued reinstalling silt fence and wrote-up more submittals for the California Gulch job. Met with Dan Hinds from Frontier Environmental to talk about moving back the silt fence because too rocky. Dan approved and kept a pallet of wattles and stakes; sent the other pallet back to the yard.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 7 / 20 2012

Daily Report

Worked on silt fence installation at California Gulch job, then drove to Walden for sparrow inspection.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Anthony Gregorich

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S (M) T W T F S
Date: 7/30/2012

Daily Report

Did time for CR 31H and California Gulch projects and did equipment time for California Gulch. Made a MSDS binder for the California Gulch job and took us additional housing to get after the 2 week bike race is over. Called Johnson Septic to get the porta-potty moved to the LSG area.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 7 / 31 / 2012

Daily Report

Drove to Leadville, CO to place signs for the traffic control plan on county road 1. Installed safety fencing throughout the project for California Gulch job.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T (W) T F S
Date: 8 / 1 / 2012

Daily Report

Drove to Walden in the morning to cut down willows for Michigan River Bridge project.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W (T) F S
Date: 8 / 2 / 2012

Daily Report

Continued to cut down willows and finished around 4:30, then drove to Leadville

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T (F) S
Date: 8 / 3 / 2012

Daily Report

Drove back to Littleton to work on submittals for California Gulch.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Tony Gregorich

Daily Operations Report

American Civil Constructors

Start Time:		**Job #**	
Stop Time:		**Project:**	
Job Conditions	Good / Fair / Poor	**Location:**	
Weather	Sunny / Overcast / Rain/Snow	**Supervisor:**	
Temperature	Low / High	**Day:**	S (M) T W T F S
Precipitation	Inches	**Date:**	8 / 6 / 2012

Daily Report

Entered timecards for EL314, Michigan River Bridge, and California Gulch Jobs. Continued to submit submittals for the California Gulch job as well and entered in equipment time. Drove over to CTL Thompson to drop off a soil sample to get tested. Finished the HAZWOPER test for California Gulch project. Updated the project schedule for California Gulch.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Tony Gregorich

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M (T) W T F S
Date: 8 / 7 / 2012

Daily Report

Finished up the tax exempt form for the California Gulch job in Leadville, CO Worked on finishing up the last of the pre-construction submittals for California Gulch and found a subcontractor for the chain link fencing.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T (W) T F S
Date: 8 / 8/22/12

Daily Report

Drove up to Idaho Springs, CO to drop off orange marking paint, 2 bundles of survey lathe, 6 sticks of #4 12' long rebar, 2 bags of Floor-dry, swivel hook, 4" core drill & bit & grease for hammer. Then drove to Leadville, CO to meet with the geoteh guy from H2P Geotech and view the site. Drove back the grapple bucket and dropped it off at the Bobcat office in Denver.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W (T) F S
Date: 8 / 9 / 2012

Daily Report:

Inputted values for the Keller Golf Course job in St. Paul, Minnesota and worked on take-offs for the irrigation system as well.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 8 / 10 / 2012

Daily Report

Attended the weekly meeting in the morning and discussed trying to get a front-end loader up to Leadville to speed up the process for screening. ~~Prepared~~ Mailed out the pre-construction submittals to CDM Smith then drove to Idaho Springs to pick-up Lucas paper work for dailys. Had the pay application signed and sent off to CDM Smith to be signed (ACC + Lake County already signed). Worked on writing up submittals for products on the California Gulch project so can get it approved and ordered next week.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Anthony Gregorich

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S (M) T W T F S
Date: 8 / 13 / 2012

Daily Report

Out of office, on vacation

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 8 / 14 / 2012

Daily Report

- Sent pre-Construction Submittals to Eleonora for Cali. Gulch project
- Did crew time for Cali. Gulch & CR 3/4 and did equipment time for Cali. Gulch
- Called around to get bunker liners, bunker sand, asphalt paving, concrete paths, grass seeding and fertilizer quotes for the Keller Golf course in Madewood, MN
- Worked the night shift for County Road 3/4 in Idaho Springs from 6:30 pm to 4:00 am.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Troy Engle

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 9 / 15 / 2012

Daily Report

- Attended weekly conference call for Calle Gulch project
- Drove to Leadville, CO to meet with the chain link fencing subcontractor company, Metro Fencing for installing the chain link fence on the Calle Gulch project
- Once got back to office wrote up the subcontract for Metro Fencing

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T F S
Date: 8 / 16 / 2012

Daily Report

- Received manufacturer certificates for piping & erosion control for the Coll. Gulch job
- submitted piping & erosion control submittal certificates to COM Smith via email to get approved
- Got new housing for Coll. Gulch in Leadville, CO because other housing was taken up
- Worked the night shift for CR 314 in Idaho Springs from 6 pm to 1 am.

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T (F) S
Date: 9 / 17 / 2012

Daily Report

- Worked from home because worked the night shift before previous night
- Called Libby from Hanes to get the erosion control items squared away because purchase order exceeded our credit limit

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Tony Gregorich

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S (M) T W T F S
Date: 8 / 20 / 2012

Daily Report

- Did time for CR 3M and California Gulch. Also did equipment time for California Gulch
- Called ACA for pricing on 9" rip rap
- Called Dave from interwest safety signs for ordering the project sign.
- Went to Home Depot to pick up 4 five gallon buckets for soil sampling
- Drove to Leadville

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Tony Gregorich

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 8 / 21 / 2012

Daily Report

- Drove to Fort Collins to drop off soil samples at the CSU Soil Testing Lab
- Calculated stockpiles for 2 inch minus, 2-12 inch rock and topsoil stockpile in the LS6 Repository
- Wrote up the 2 week look ahead schedule for Calf. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 9 / 22 / 2012

Daily Report

- Attended weekly conference call for Colt Ranch project
- Staked where I took the soil samples in each topsoil stockpiles
- Installed the caution signs on the bike path
- Called Duke Power in Inter-Mountain to schedule surveying for the stockpiles in the LSG stockpile area

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 8/23/2012

Daily Report

- Helped Earl survey the CSR floor and wrote how much cut and fill is needed on a 50 foot grid
- Inter-Mountain Engineering came to survey the stockpiles of 2 inch minus, 2-12 inch rocks, topsoil and wood chips

Problems/Delays: Dug too much, had to fill 2 feet of CSR floor

Subcontractor Work Performed: Survey

Company:	Work Performed:	Sub-Equipment:
Inter-Mountain Engineering	Survey stockpiles	

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 8 / 24 / 2012

Daily Report

- Called Amanda at Hanes to reschedule the delivery for the erosion control blanket and geotextile for Catch basin
- Drove back to the office to mail out copies of subcontracts
- Called N-Pa Geotech to see where we stand on clay samples

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Tony Gregorich

American Civil Constructors

Daily Operations Report

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S (M) T W T F S
Date: 8 12/7/2012

Daily Report

- Did time for CR 314 and Calf. Gulch. Also did equipment time for Calf. Gulch
- Wrote up daily's for last week
- Got 33 gallon garbage bags from NAPA
- Mailed out the Health & Safety Plan & Environmental Control Plan for Calf Gulch to COM Sun
- Erosion Control Blanket & Geotextile got delivered & helped unload the material

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: Tony Gregorich

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 8 / 28 / 2012

Daily Report

- Wrote up a 205 form for Michigan River Bridge project in Walden CO
- Met with Inter-Mountain Engineering to survey the ESG Repository Area #1, central berm, runoff rip rap channel and quantity the Greenhook Topsoil
- Prepared for the conference call on Wednesday and wrote out the meeting topics
- Met with Brad from Lake County Public Works and discussed about the boulders

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T (W) T F S
Date: 8 / 29 / 2012

Daily Report

- Met with Lake County Public Works to remove boulders in LSG Repository Area
- Had weekly conference call for Cali Gulch Project
- Wrote up a Material Handling Plan & finished pre QC Plan

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T F S
Date: 8/30/2012

Daily Report

- Helped find grade in the CSR Floor of the LSG Repository Area
- Helped upload piping for the Calf. Gulch Job
- Did time for ICA 314 & Calf. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rainy/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T (F) S
Date: 8/31/2012

Daily Report

- Met with CDM Smith and Frontier Environmental to get specific locations of where to take soil samples from in the Greenbank clay borrow area
- Took clay samples to M-P Geotech in Silverthorne, CO for testing
- Approved some invoices for Coli Gulch
- Sent over hard copies of the Piping submittals to CDM Smith for final approval

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Anthony Gregorich

American Civil Constructors

Daily Operations Report

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 9 / 4 / 2012

Daily Report

- Did time for CR 314 and Coll. Gulch
- Did equipment time for Coll. Gulch
- Drove to Leadville and helped unload piping materials
- Resubmitted the revised QC Plan on Docs

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 9 / 13 / 2012

Daily Report

- Inter-Mountain Engineering came to survey greenback TS & OB, central berm, verify Area #1 and shape up rap channel
- Lake County here today as well take out ~~the~~ most the boulders
- Attended weekly meeting
- Looked at extension of work because behind schedule
- Figured out what exactly to amend

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W (T) F S
Date: 9 / 6 / 2012

Daily Report

- Called ACA to order 1½" rock and calculated number of loads
- Figured out when each feed was required during the excavation of clay
- Stockpile problem because 2 of 12 inch rock is on top of Area #2
- Need to see if we can get more workers up here because behind schedule

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T F S
Date: 9 / 7 / 2012

Daily Report

- Wrote up a 205 for Peak Concrete Pumping on the Walden job
- Discussed we are going to process clay in the Greenback before we haul to the LSC area
- Updated and reviewed all invoices
- Went back to office and finished the payment application for Calf. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S (M) T W T F S
Date: 9 / 24 / 2012

Daily Report

- Did timecards for CR 314 and Calif. Gulch
- did equipment time for Calif. Gulch
- Updated 2 week look ahead schedule for Calif Gulch
- Sent out samples of geotextile and thread seams
- Wrote up change order to extend Greenback area south to get more clay
- Drove up to Leadville and met with Don Finds & discussed piping ± 2-12" rock
  - Don't need survey and can use stakes, just turn upside down
- Sent quantity surveys to COM Smith Submittals
  - 2 inch minus & 2-12 inch piles volumes
  - Clay
  - Greenback TS & OB
- Sent Class B Filter Rock Submittals to COM Smith
- Sent Stakes/Staples Submittal to COM Smith

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 9 / 25 / 2012

Daily Report

- No visitors to site
- Finished 2-12 inch rock and piping / strip drain
  - Started laying geotextile over 2-12 inch rock & started placing 2 inch minus near central berm
- Helped Jeff lay out geotextile
- Sent over Surveyor's quote to COM Smith for change order
- Called Colorado Material to order Compost + Fertilizer
- Met with Mike from Johnson Septic to get Porta-Potty emptied
- Sent the following submittals over to COM Smith for approval
  - Class 6 Gravel Gradation
  - Class 4 Gravel Gradation
  - 2-12 inch rock grade west side of LS 6

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T (W) T F S
Date: 9 / 26 / 2012

Daily Report

- Relived get Area #2 to subgrade and pond
- Attended weekly conference call, discussed extending geotextile and change order
- Sent the following submittals over to EOM Smith
  - Strip Drawings for Piping & Fittings
  - Organic Matter
  - Application Rate for Organic Matter
  - Soil Tests of Topsoil Results
  - Off-site Rip Rap Gradation
- Emailed over a revised survey quote for the new Greenback area

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 9 / 27 / 2013

Daily Report

- Helped dig anchor trench & helped gary level 2-12" rock on slopes
- Emailed out RFI 007 about extension of grade stake
- Theodora Borisova was at the site
- Sent CDM Smith the ground temperature readings via email
- Sent CDM Smith RFI 007 for extending short grade stake
- Wrote up a revised schedule for Ed. Catch with the new change order

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 9 / 28 / 2012

Daily Report

- Helped install geotextile over the 2-12" rock
- Survey was up at site getting the Area #2 for subgrade verification & - / - Also staking out the silt fence for the new Greenbelt area
- Dan was up at the site to observe the under trench and subgrade testing
- Sent over the shop drawings for all of piping and fittings to CDM Smith via Email
- Sent over hard copies of the following submittals to CDM Smith
  - Moisture & Density tests for Area #1
  - Chain Link Fence
  - Seed
  - Class B Gravel

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job # 2032777
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 1 / 2012

Daily Report

- bid time for CR 3 14 and Calf Gulch
- bid equipment time for Calf Gulch
- Called A1 agg. for order Fertilizer and Compost
- Updated drawings for testing in Leadville, CO
- Brought up Roberto's new track to the site

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job # 2032799
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 10 12 12012

Daily Report

- Order hydraulic Mulch & seeding
- Dan Winds! was on site and discussed perimeter berm & extending the fabric
- Write up RFI 007 for extending fabric with pins
- Talked to Tove about what to do with extending fabric on berm

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 10 / 13 / 2012

Daily Report

- Wrote up shop drawing for the first section of strip drain
- Hauled clay from 16B to LSG
- Helped roll and place clay
- Dan was on site observing

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 4 / 2012

Daily Report

- Neil Smith was on site to observe clay processing
- Helped roller and compact the clay
- Ordered prevention sites from Inter-West Safety
- Order more geotextile fabric

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 5 / 2012

Daily Report

- Steve was at site to observe clay placement
- Ron talked to Steve and stated that a little freezing was not going to hurt the clay and Steve agreed
- wrote up RFI to use adhesive instead of sewing
- Rolled the slopes and had welder where roller turned
- Steve stated we don't need to roll slopes anymore
- Laid Geotextile over exposed clay

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Ant Hauling 6-

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 1 / 2012

Daily Report

- Did Time for CR 314 & Cali. Gulch
- Did equipment time for Cali. Gulch
- Submitted the official change order to COM Smith & Lake County
- Recieved the test #27 of the in-place Hydraulic conductivity and emailed out the results
- Wrote up the Weekly Schedule for Cali. Gulch
- Received a response from COM Smith for RFI 007 & the piping shop drawings
- Got a quote from Gary Allen for the Fencing

#8

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T F S
Date: 10 / 2 / 2012

Daily Report

- Ordered the excavator replacement mirror from NAPA
- Approved invoices from ACA products & Parkville Water D/Stuff
- Mike Fleming Dan Hinds was onsite for proof-rolling in Cell #1
- Submitted the following submittals:
  - East Repository Subgrade
  - Pipe Shop Drawing
  - Updated Clay Testing Tracking Table
  - RFI 008 for additional hydraulic conductivity testing

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10/3/2012

Daily Report

- Received pond verification guides from Inter-Mountain
- Contacted Kate from Mares Geo Components about switching the sewing method with using adhesive instead
- Got the recommended fertilizer application rate from Agfinity
- Submitted the following submittals:
  - Fertilizer Certificate
  - Fertilizer Application Rate
  - ~~Hydro Mulch~~
- Requested a quote from Mares Geo Comp. for Hydro Mulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
H-P Geotech	Moisture Content on Pond 1st lift	
	Thickness tests for Pond 1st Lift	
	Moisture & Density on Pond 1st lift	

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W (T) F S
Date: 10 / 4 / 2012

Daily Report

- Helped run the vibratory & sheeps foot to compact clay
- Ordered Fertilizer for Cell 6 Wash

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
M-P Geotech	Thickness on LSG #2 1st & 3rd lifts Moisture & Density on LSG #2 1st & 2nd lifts Thickness on Pond 2nd lift Moisture & Density on Pond 2nd lift 2 samples from Greenback Borrow Area	

Safety Meeting?

Signed: _____

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 5 / 2012

Daily Report:

- Ordered Tackifier + hydro mulch from Hares Bed.
- Submitted the 3M Adhesive to COM Smith for approval
- Drove back to office to drop off hydraulic conductivity samples

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
Inter-Mountain	-Surveyed the new Greenback Area	

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S (M) T W T F S
Date: 10 / 8 / 2012

Daily Report

- Did Time for CR 3 M & Calli. Gulch
- Did equipment time for Calli. Gulch
- Picked up seed from Arkansas Valley 2 bags
- Picked up geotextile from Mares Geo 5 rolls
- Submitted RFI 009 about 3M Adhesive for fabric
- Sent CDM Smith Survey quantities for clear & Grub & LSG topsoil area
- Sent CDM Smith an updated table for temperature readings

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
H-P Geotech	Location & photo of clay surface	
	Location & Temp. of clay surface	
	Location & Temp & shade of clay	

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 10 / 9 / 2012

Daily Report

- Reworked exposed clay
- Gave H-P Geotech 2 more hydraulic conductivity
- Ordered more geotextile
- Ordered Fertilizer & Compost
- ~~Graded~~
- Received permeability tests from ATT #28&29
- Got the contractor exempt certificate for Coll. Gulch
- Received RFI 010 to rework the exposed clay
  - Brought up the clay that was affected by the freezing temperatures
  - Watered the clay
  - Compacted the clay back into place and covered with fabric

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
H-P Geotech	Rapid Density + Moisture LSG 2nd lift area #2 Thickness Tests LSG Area #2 2nd lift Hydraulic Conductivity from Pond C3 2nd lift LSG Area #2 2nd lift (4)	

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 10 / 2012

Daily Report

- Attended weekly conference call
- Sketched the piping shop drawing for the East LSG Repository
- Sent out the 2 weeks look ahead schedule
- Sent the following submittals:
  - East Repository TOP of Clay
  - East Repository shop drawing piping
  - Pond TOP of clay
  - Updated Clay Testing Tracking Table
- ~~Sent [illegible]~~
- Sent CDM smith RFI 011 for Fertilizer change
- Sent CDM smith Clay Layer Table + Test Locations
- Sent CDM Smith the rough drafts Field repots from H-P Geotech

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:
H-P Geotech	Rapid Density + Moisture for LSG Area #2 Lift Hydraulic Conductivity test near central berm	

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W (T) F S
Date: 10 / 11 / 2012

Daily Report

- Had a meeting with Todd about all of the field testing
- Work with Dennis to get new schedule to get hydro mulch ready
- Sent over rough copies of field reports from H-P Geotech
- Reviewed all responses for the submittals

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T F S
Date: 10 / 12 / 2012

Daily Report

- Sent purchase order to Arkansas Valley for seeding
- Sent purchase order to Colorado Materials for Compost
- Helped Larry post for September billings

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 15 / 2012

Daily Report

- Did time for CR 314 & California Gulch
- Drove to Leadville to fix thickness of clay problem
- Dug 2 holes to subgrade in Cell #2 to get to subgrade & top of clay elevations
- Dan Hinds verified that we hit subgrade & top of clay
- Took pictures of measurements to bottom of clay to top

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M (T) W T F S
Date: 10 / 16 / 2012

Daily Report

Resubmitted the hydraulic mulch submittal with the fertilizer included
- ~~Still~~ Dug another hole in the pond on the slopes 10 measure from top of slope to subgrade
- Re-submitted the Fertilizer Application Rate submitted

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 10 / 17 / 2012

Daily Report

- Received on 2 more hydraulic conductivity test results & sent CDM Smith
- Also got additional field information & sent it to CDM Smith
- Attended last weekly conference call for Colo Gulch
- Sent over information about the adhesive glue in cold weather to CDM Smith
- Sent over revised payment application 003 to CDM Smith with survey quantities

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W (T) F S
Date: 10 / 18 / 2012

Daily Report

- Sent purchase order over to Inter-Mesa Safety for (4) prevention signs
- Sent purchase order for 3M adhesive glue
- Sent over conference meeting minutes to Todd at CDM Smith
- Called Todd to talk about remaining submittals
- Sent the following submittals to CDM Smith
  - Subgrade Survey Cell 1
  - Subgrade Survey Pond
  - Top of Clay Cell #1
  - Top of Clay Pond
  - Hydraulic Conductivity In-Place Clay
  - Clay Material During Excavation
  - Clay Temp Readings
  - Piping Shop Drawing Cell #2
  - Submittal Schedule
- Sent Marvie equipment time Call. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 19 / 2006

Daily Report

- Attended weekly ACC meeting
  - Monitored tieing up 3 people next week
  - All equipment can be picked up next week
- Resubmitted pay app. 003 to CDM
- Wrote out the substantial completion for Calif. Gulch
- Hydro Mulch was installed on 2 inch minus pile, perimeter berm & Greenback area

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S (M) T W T F S
Date: 10 / 22 / 2012

Daily Report

- Did time for Colt. Gulch & CR 314
- Did equipment time for Colt. Gulch
- Sent over final as-built drawings for Colt. Gulch
- Recieved RFI 012 about CMP installed at Access Road
- Finished installing Erosion control Blanket
  - Inspected all installed blanket and correctly installed except for 2 places on 2 inch mines pile where had to pull up and re-staple
- Inspected the installed hydraulic mulch installed
  - All areas were covered and correct method was used

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 23 / 2012

Daily Report

- Sent Steve a response to RFI 012 saying that we have fixed the problem in the field
- Attended final inspection meeting of Cali. Gulch
  - Everything was good except some minor changes
- Attended first weekly carpool meeting

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 10 / 29 / 2012

Daily Report

- Caught-up on all invoices for Calf Gulch
- Wrote-up & sub contracts for subcontractors on the Rocky Mountain Metro Airport job
- did final pay app. for Calf Gulch
  - Mable going all calculations & did some calcs for some items
- sent pay app. to Lake County + CDM Smith

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting? Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #
Project:
Location:
Supervisor:
Day: S M T W (T) F S
Date: 10 / 23 / 2012

Daily Report

- Sent out POs for piping on SH 128 job
- Got lab accreditations, resumes from testing company
- Laid the pump-outs off for the Calf. Gulch
- Wrote-up the closure report for Calf. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T (F) S
Date: 10 / 26 / 2012

Daily Report

- Attended the ~~weekly~~ meeting
- Sent in the weekly company warranty Submittal
- Sent over the as-built drawings to COM Smith

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 29 / 2012

Daily Report

- Did time for CR 319 & Calf Gulch
- Did Argo equipment time for Calf Gulch
- Ran up to Idaho Springs to get all paper work from Lupe
- Sent over the revised subcontract to Rocky Mountain Signing

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time:
Stop Time:
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #:
Project:
Location:
Supervisor:
Day: S M T W T F S
Date: 10 / 30 / 2012

Daily Report

- Attended the weekly meeting for the Rocky Mountain Airport job
- Sent Con Smith the water log submittal
- Sent Cindy the form to get the tax exempt certificate

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed:

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T (W) T F S
Date: 10/31/2012

Daily Report

- Recieved the other as-built drawings from Inter-Mountain Engineering then sent them to CDG Smith
- Verified all quantities on the final payment application for Calf. Gulch

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low _____ High _____
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W (T) F S
Date: 11 / 1 / 2012

Daily Report

- Filled out a rejection invoice for fertilizer on Calf. Gulch
- Received the following quantities from JME:
  - Volume of placed 12" minus
  - Area of ~~rock~~ entire ESG
  - Area of rip rap channels
- Sent Cindy the final copy for the tax exempt certificate
- Sent the job information to Ferguson piping

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Daily Operations Report

American Civil Constructors

Start Time: _____
Stop Time: _____
Job Conditions: Good / Fair / Poor
Weather: Sunny / Overcast / Rain/Snow
Temperature: Low / High
Precipitation: _____ Inches

Job #: _____
Project: _____
Location: _____
Supervisor: _____
Day: S M T W T (F) S
Date: 11 / 2 / 2012

Daily Report

- Requested invoices for all of the Subs on CNI. Gulch
- Attended the company weekly meeting
- Sent Pat Tyron the adjusted subcontract for the corrected pricing
- Called in locates for rocky mountain airport

Problems/Delays:

Subcontractor Work Performed:

Company:	Work Performed:	Sub-Equipment:

Safety Meeting?

Signed: [signature]

Section 6

SPCC Plan and Safety Reports

Spill Prevention Control and Countermeasure Plan

California Gulch Superfund Site
Contaminated Soil Repository Lake County, CO Project No. 2012-1

July 2011

AMERICAN CIVIL CONSTRUCTORS
4901 South Windermere St
Littleton, Colorado 80120
(303) 795-2582
www.accbuilt.com

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Regulatory Cross-Reference

Regulatory Citation	Description of Regulatory Requirement	Section Number
§112.3 (d)	Professional Engineer Certification	1.5
§112.3 (e)	Location of SPCC Plan Copies	1.1
§112.3	Applicable Industry Standards	1.6
§112.4	Plan Amendments	1.7
§112.4(a), (c)	Written Notifications [112.4(a), 112.4(c)]	2.4.1
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1.0 INTRODUCTION AND FACILITY INFORMATION

1.1 INTRODUCTION

This document is the Spill Prevention Control and Countermeasure Plan (SPCC) Plan for the American Civil Constructors, Inc. (ACC) California Gulch Superfund (the Project) located approximately 1 miles east of Leadville, CO. The staging area has aboveground oil storage capacity greater than 1,320 gallons which triggers the requirement for the Plan. The Plan describes measures ACC takes to prevent oil and chemical discharges. The Plan focuses on prevention and control measures, but also includes response procedures to be followed to minimize potential impacts in the event a spill occurs, and to assure appropriate internal and external reporting. The Plan is prepared according to requirements that are contained in Volume 40 Part 112 of the Code of Federal Regulations (40 CFR 112). Copies of this Plan are kept on file at the ACC Littleton, Colorado office as well as the field office that is responsible for this staging area.

A Site Specific Quick Reference Guide, including summary information regarding the oil contained at the facility as well as spill notification procedures, is included as Appendix A.

1.2 GENERAL INFORMATION

1. Name of Facility: **California Gulch Superfund Site Project No. 2012-1 (the Project)**
2. Type of Facility: **Construction Site**
3. Facility Location: **Near County Road 1D, Lake County, Colorado (See Figure 1)**
4. Facility Phone Number: **303-944-2777**
5. Facility SIC Code: **1611 (Highway and Street Construction, Except Elevated Highways)**
6. Name and Address of Owner or Operator:
   Name: **American Civil Constructors, Inc. (ACC)**
   Address: **4901 S. Windermere Street**
   Littleton, CO 80120

1.3 *DESIGNATED PERSON ACCOUNTABLE FOR OIL SPILL PREVENTION (40 CFR 112.7(f)(2))*

The following person reports to management and is accountable for discharge prevention at the subject facilities.

Name: **Karl Frakes**
Title: **Superintendent**
Office: **(303) 795-2582**
Cell: **(303) 944-2777**

1.4 *MANAGEMENT COMMITMENT (40 CFR 112.7(d)(2))*

ACC is committed to the prevention of discharges of oil to navigable waters and the environment from the California Gulch Superfund Site Contaminated Soil Repository Project No. 119200-88151 (the Project) located in Lake County, Colorado. As a part of this commitment, ACC will provide the necessary resources to fully implement this Spill Prevention, Control, and Countermeasure Plan. ACC will maintain the highest standards for discharge prevention, control, and countermeasures through regular review, updating, and implementation of this Plan.

Signature: _____ Date: _____
Name: Karl Frakes
Title: Project Superintendent

1.5 *REQUIREMENT TO PREPARE AND IMPLEMENT (40 CFR 112.3)*

The design, construction, operation and maintenance of the subject facilities are conducted in conformance with the applicable industrial standards and good engineering practices. This Plan has been determined adequate for this facility by a Professional Engineer.

1.6 *PLAN REVIEW AND AMENDMENTS (40 CFR 112.4 and 112.5)*

Amendments to this plan are required whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil into or upon navigable waters of the United States. Such amendments must be implemented as soon as possible, but no later than six months after such changes occur

In addition, in accordance with 40 CFR 112.5(b), a review and evaluation of this SPCC plan is conducted at least once every five years. As a result of this review and evaluation, ACC will amend the plan to include more effective spill prevention and control technology if:

1. Such technology will significantly reduce the likelihood of a spill event from the facilities; and

2. If such technology has been field-proven at the time of the review.

Technical amendments to this SPCC plan will be certified by a Registered Professional Engineer within six months if modifications to the facility materially affect the potential for discharges of oil into or upon navigable waters. Modifications which may require plan amendments and certification include:

1. Commissioning or decommissioning of containers;

2. Replacement, reconstruction, or movement of containers;

3. Reconstruction, replacement or installation of piping systems;

4. Construction or demolition actions that may alter secondary containment structures;

5. Changes in products or type of equipment service; or

6. Changes in operating and maintenance procedures.

Administrative or non-technical amendments do not require the certification of a Registered Professional Engineer. Examples of administrative changes include, but are not limited to, phone number changes, name changes, or any non-technical text revisions.

Amendments and/or reviews of this Plan are documented in Appendix B..

1.7 FUTURE IMPLEMENTATION (40 CFR 112.7)

If an SPCC Plan calls for procedures, methods, or equipment not yet fully operational or for additional facilities, these items will be discussed separately, and the discussion must explain the details of installation and operational startup.

Currently, the Project does not intend to change facility operations related to this Plan, nor does the Project plan on adding any equipment or amending any procedures related to this Plan.

2.1 FACILITY CONFORMANCE (40 CFR 112.7(a)(1) AND (2))

The subject facilities are in conformance with 40 CFR 112 as amended on July 17, 2002, December 26, 2006, and February 3, 2009 with the following exceptions noted below. The reason for any nonconformance and the provided equivalent environmental protection measures are also noted.

Conformance Deviation	Reason for Nonconformance	Equivalent Environmental Protection Measures
(1) Per 40 CFR 112.8(c)(6), aboveground storage tanks must have a secondary method of integrity testing in additional to regular visual inspections for spill prevention purposes.	According to Federal Register /Vol 67, No. 137/Wednesday, July 17, 2002/Rules and Regulations page 47120 states, "Certain smaller shop-built containers in which internal corrosion poses a minimal risk of failure a secondary method.	These smaller shop-built containers are inspected at least monthly; and, for which all sides are visible (i.e., the container has no contact with the ground), visual inspection alone might suffice, subject to good engineering practice. "
High level alarm or direct vision gauge are not provided on the bulk storage containers per 40 CFR 112.8(c)(8).	Such a device is not provided for drums that contain oil or used oil.	However, the level in the used oil drums is visible through the bung opening in the top of the drum, allowing personnel to determine when the drum is full.

2.2 FACILITY PHYSICAL LAYOUT (40 CFR 112.7(a)(3))

The location of the Facility is shown on the Google Earth Topographic Site Location Map presented as Figure 1. Figure 2, the Site Map, provides a more detailed view of the facilities, including locations of oil storage equipment and storm water drainage pathways.

Appendix A lists the oil storage containers located at the facility and their respective volumes, contents, and locations. The locations of these containers are also shown on Figure 2.

For mobile or portable containers, it is difficult to predict the quantity of containers that will be on-site at any one time. As such, the quantities have been estimated and will vary depending upon current usage rates. However, mobile or portable containers of oil will be stored in covered, locked storage units.

2.3 *DRAINAGE PATHWAYS AND DISTANCES TO NAVIGABLE WATERS*

Drainage pathways and surface waters proximate to the subject facility are shown on Figures 1 (Site Location Map) and 2 (Site Map).

2.4 CONTACT LIST AND PHONE NUMBERS (40 CFR 112.7(a)(3-5))

Lists of contact names and phone numbers for responsible ACC personnel, company-approved cleanup contractors, and federal and state agencies are shown in Appendix A. Appendix A also includes the forms to be used for organizing release notification information and the submission of required information to the EPA Regional VIII Administrator for **qualified discharges**.

A **qualified discharge** is: any oil spill that contacts surface water (whether flowing or not), or an intermittent drainage and results in a "visible sheen" on the water.

Any release that has or will impact waters of the state (which include surface water, ground water and dry gullies or storm sewers leading to surface water), no matter how small, will be reported immediately to Department of Public Health and Environment. The contact information for reporting is in Appendix B. An immediate notification must be made to the National Response Center (NRC), Colorado Department of Public Health and Environment, 9-1-1 Local Emergency Response Agency, and the Local Emergency Planning Committee if this is not covered by the 9-1-1 call. If notification to the NRC is not possible, the spill must be reported verbally to U.S. EPA Region 8.

Discharges that do not involve spills to navigable water, but which involve **releases of greater than 25 gallons** or pose an immediate threat to human health or the environment, must be immediately reported to the Colorado Department of Public Health and Environment, 9-1-1 Local Emergency Response Agency, and the Local Emergency Planning Committee, if this is not covered by the 9-1-1 call.

Discharges from aboveground storage tanks and fueling systems regulated by the Colorado Division of Oil and Public Safety which impact navigable water or are greater than 25 gallons, must be reported to the Colorado Division of Oil and Public Safety, in addition to the Colorado Department of Public Health and Environment, 9-1-1 Local Emergency Response Agency, and the Local Emergency Planning Committee, if this is not covered by the 9-1-1 call.

2.4.1 *Written Notifications [112.4(a), 112.4(c)]*

The U.S. EPA requires that a written report be submitted within 60 days to the appropriate Regional Administrator and State agency, whenever there is a single discharge of oil exceeding 1,000 gallons or two discharges of oil exceeding 42 gallons, each within any 12-month period. Send the reports to the following addresses:

United States Environmental Protection Agency, Region 8
999 18th Street, Suite 200
Denver, CO 80202

A copy of this written report will be sent to the following State and Local agencies:

Colorado Department of Public Health and Environment
4300 S. Cherry Creek Drive South
Denver, CO 80246

and

Local Emergency Planning Committee
Lake County
P.O. BOX 850
Leadville, CO 81631
Attn: Barry Smith

2.5 *SPILL PREDICTION AND CONTROL (40 CFR 112.7(a), (b) and (h))*

The U.S. EPA, in defining "oil" under SPCC regulations, has determined that "any kind of oil in any form, including solid form, is subject to SPCC requirements. This includes petroleum oil and oil products, such as gasoline, fuel oil, motor oil, and asphalt; fats, oils and greases of animal or fish origin; vegetable oils; mineral oils and synthetic oils. All oils at any stage in their life from crude oils, newly processed oils, refined products, and used and waste oils are also included."

Oils most likely to be present at ACC facilities include purchased oils such as engine and lubricating oils as well as fuels (diesel and gasoline).

Equipment and containers located at the subject facilities with the potential to accidentally release oil are specifically addressed by location in Appendix A.

The reasonably expected modes of major failure or accident for which oil could be released from the facilities are as follows:

A. Bulk Storage Tank Leak or Failure

1. Failure Modes: Corrosion, vandalism, lightening strikes, valve or piping failure, or overfilling.

2. Rate of Flow: Variable, depending upon the type, size and location of the tank failure. The ambient temperature at the time of the release may affect the viscosity of the oil and thereby impact the rate of flow. Flow rates for corrosion failure are typically low, ranging from less than a gallon per day to a gallon per hour. Flows resulting from valve and piping failures or vandalism typically range from a gallon per hour to a few hundred gallons per minute. Lightning strikes may result in a release that is essentially instantaneous.

3. Discharge Quantity: Variable depending upon the type and location of the failure. The total quantity discharged would not exceed the working capacity of the largest tank.

4. Preventative Measures: Personnel routinely perform visual inspections of storage tanks. Storage tanks are constructed in accordance with API industry standards. Materials used in constructing the tanks are compatible with the substances stored. Where practicable, earthen berms or other diversionary structures are utilized to control any released fluids. Tanks are appropriately sized to minimize the risk of overfilling.

B. Tanker Truck Loading and Unloading Operations

1. Failure Modes: Piping or valve failure, tank failure, flexible hose failure, connection failure, overflow, and human error.

2. Rate of Flow: Variable depending upon the type, size and exact location of the failure, and the amount of oil in the tanker truck and storage tank. The ambient temperature at the time of the release may affect the viscosity of the oil and thereby impact the rate of flow. Flow rates resulting from piping and valve failures can range from 1 gallon per hour up to a few hundred gallons per minute. Tank failures may result in releases that are essentially instantaneous.

3. Discharge Quantity: Variable depending upon the type and location of the failure. The total quantity discharged would not exceed the working capacity of the largest tank.

4. Preventative Measures: Tanker truck loading and unloading operations are conducted in accordance with United States Department of Transportation regulations (49 CFR 177). All loading operations are attended by the truck driver. No smoking or open flames are allowed in the vicinity of the storage tanks and loading area. Wheel chocks (40 CFR 112.7(h)(2)) are placed at the wheel nearest the truck loading connection to reduce the risk of the truck movement during loading operations. Before and after the completion of loading operations, the transfer line, all valves and outlets on the tanker truck and the storage tank are visually inspected (40 CFR 112.7(h)(3)) for leaks and are assured to be tightened, adjusted, or replaced to prevent liquid discharge prior to vehicle departure.

C. Piping Failure

1. Failure Modes: Flexible fueling pipelines may become brittle, crack and leak. Associated flanges, screwed connections, valves and gauges are also subject to corrosion and may fail or leak.

2. Rate of Flow: Variable, depending on the size and location of the piping related failure. The maximum potential rate of flow is not expected to exceed the oil process rates as listed in Appendix A.

3. Discharge Quantity: Variable depending upon the type and extent of the failure and the length of time that the failure went undetected.

4. Preventative Measures: Personnel routinely perform visual inspections of aboveground piping to detect failures.

D. Mobile Refueling

1. Failure Modes: Piping or valve failure, tank failure, flexible hose failure, connection failure, overflow, and human error.

2. Rate of Flow: Variable depending upon the type, size and exact location of the failure, and the amount of oil in the tanker truck and storage tank. The ambient temperature at the time of the release may affect the viscosity of the oil and thereby impact the

rate of flow. Flow rates resulting from piping and valve failures can range from 1 gallon per hour up to a few hundred gallons per minute. Tank failures may result in releases that are essentially instantaneous.

3. Discharge Quantity: Variable depending upon the type and extent of the failure and the length of time that the failure went undetected.

4. Preventative Measures: Refueling operations are always attended by the driver. Mobile refuelers are equipped with automatic shutoff valves. Drip pans or other temporary containment is put in place prior to and throughout the transfer. A spill response kit is kept on the fueling truck and any leaks drips or spills are cleaned up immediately by the driver.

2.6 FACILITY DISCHARGE COUNTERMEASURES (40 CFR 112.7(a)(3)(iv))

ACC has provided adequate means for the discovery, response, and cleanup of discharges of oil through the implementation of this Plan. Where possible, secondary containment is provided. Through routine inspections, potential discharges will be discovered. If such a discharge is found, appropriate response and cleanup measures are in place. In the event facility personnel are not able to handle the response and cleanup work for a spill, contractors are available to assist. The contacts and phone numbers for the contractors are shown in Appendix A.

2.7 METHODS OF DISPOSAL (40 CFR 112.7(a)(3)(v))

Spills onto Soil

Flowing oil spills will be contained as soon as possible by the construction of earthen dams or by the placement of mechanical barriers. Free oil may be removed from the ground by the use of a vacuum truck. Sumps or trenches may be dug to intercept or drain free oil. Remaining free oil may be removed from the ground by the use of oil-absorbent materials.

When all free oil has been removed, impacted soil will be secured and managed according to appropriate cleanup requirements.

To prevent stormwater contamination, all impacted soils will be placed in an approved disposal site or in a secure interim storage location for future management. Temporarily placing impacted soil on a sheet of visqueen

and providing appropriate cover, diking, or stormwater diversions, is acceptable.

Spills onto Water

Oil spills onto surface waters must be cleaned up to the satisfaction of the landowners and regulatory agencies. The spill will be contained as soon as possible by the use of floating booms or other mechanical barriers. Free oil may be removed from the water by the use of a vacuum truck or by oil-skimming equipment. Remaining free oil may be removed from the water by the use of oil-absorbent materials such as spray-sorb. Oil-absorbent materials may also be used to remove oil that has accumulated on shoreline soils, rocks, and vegetation. Oil contaminated soil, sediment, or water may require removal from the spill site to a suitable treatment or disposal facility.

2.8 *GENERAL CONTAINMENT/DIVERSION CONTROLS (40 CFR 112.7(c))*

The facility employs at least one of the containment/diversion options listed in 40 CFR 112.7(c) for each oil container 55 gallons and larger. Options include dikes, berms, curbing, retention basins, and buildings. All bulk storage containers have dedicated secondary containment systems as required by 40 CFR 112.8(c). For oil filled equipment that is not regulated as "bulk storage containers" (such as motors/engines) the facility will use either drip pans or sorbent materials to contain discharges or containment is designed into the equipment skid that houses the equipment. Secondary containment volumes and calculations can be found in Appendices A and C.

To prevent discharges of oil to navigable waterways, ACC has provided appropriate secondary containment for bulk storage containers and discharge prevention equipment capable of containing oil prior to cleanup. ACC maintains an oil-only spill kit and a supply of granular absorbent at the facility. The oil-only spill equipment is composed of the following equipment:

- Over-pack spill drum with lid and ring;
- Shovels;
- Granular absorbent;
- Adsorbent pads and/or rolls;
- Disposable bags and ties; and

- Gloves.

2.9 IMPRACTICABLE CONTAINMENT OR DIVERSION MEASURES (40 CFR 112.7(d))

As described in Section 2.8 and Appendices A and C, adequate secondary containment is provided for bulk storage containers. Therefore, this section is not applicable.

2.10 CONTINGENCY PLANNING (40 CFR 112.7(d)(1) and (2))

As previously mentioned in Section 1.4 in the unlikely event of a spill, ACC will commit the manpower, equipment and materials necessary to ensure that the clean up occurs in the shortest practical time while minimizing environmental damage and maximizing product recovery.

ACC is committed to an anti-pollution and spill prevention program. ACC is also committed to designing and operating the facilities in a manner that will minimize the size and occurrence of spills and to a pro-active training and inspection program that will insure that the facilities are operated and maintained in a manner that will prevent or minimize the occurrence of spills.

2.11 INSPECTIONS AND TESTING (40 CFR 112.7(e))

Written procedures are outlined in Section 2.11.1 and utilized when performing prescribed inspection and testing of equipment. Monthly site inspections will be conducted which include all bulk storage containers. These records will be kept for 3 years.

The field operations personnel, in the course of their normal daily duties, are responsible for inspecting the facilities. Daily inspection is performed to ensure that the facilities are operating properly and that no problems exist; however, these inspections are not typically documented. In addition to observations made by personnel in their daily routine activities, formal documented inspections of each facility are conducted on a monthly basis to insure that the facility is in compliance with the SPCC Plan.

The following items are inspected and documented weekly. If problems are identified, prompt action is taken for repairs and documented either on the inspection form or through completed work orders. A copy of the inspection form is included in Appendix D.

THE FOLLOWING ITEMS (if present) MUST BE INSPECTED:

Ditches and Waterways

Drainage ditches in and around the facility, nearby roadside ditches, water courses, ponds, etc. will be inspected for oil accumulations.

Tanks

All bulk storage tanks and associated piping and hoses will be visually inspected for leaks, overflows, and signs of potential problems. Special emphasis will be placed on the inspection of foundations, bottom seams, patches, flanges, piping connections, sight-glasses, and other openings. Drain valves are always closed.

Berms

Earthen berms will be constructed of sufficiently impervious materials, not gravel, and will be inspected for adequate capacity, erosion and leaks. Accumulations of liquid will be removed from the containment area. If the liquid is from one of the tanks, the source will be found and repaired. Rainwater will be removed promptly by a vacuum truck to retain sufficient secondary containment.

Generators

Generators will be visually inspected for leaks, especially around valves, fittings/seals, and motor.

Nozzles and Hoses

Nozzles will be inspected for any leaks.

Pressure Relief Valves

Pressure relief valves will be checked for leaks, evidence of leaks and signs of failure.

Rainwater Removed from Berms

Rainwater will be retained within containment or berms and a vacuum truck will be used to transport the rainwater off-site to an appropriate treatment or disposal facility.

2.12 *PERSONNEL TRAINING AND DISCHARGE PREVENTION PROCEDURES (40 CFR 112.7(f))*

1) All ACC personnel that handle oil and that are involved with oil transfer operations will be instructed on discharge prevention procedures, the actions to take in the event of a discharge, the use of discharge response equipment, applicable regulations pertaining to oil discharges, general facility operations, and the contents of this Plan. The training will include a "dry-run" drill for an on-site vehicular spill incident.

   This instruction will be conducted for employees according to the following schedule:

   - Employees who currently have oil-handling responsibilities will be instructed will be instructed prior to implementation of this plan;
   - Employees who are newly assigned oil-handling responsibilities will be instructed prior to assuming such responsibilities; and
   - New employees who do not have oil-handling responsibilities will be instructed in the spill notification procedures per Section 2.4 and Appendix A of this Plan at the time of Orientation Training.

Records of employee training will be maintained in Appendix E for at least three (3) years.

Additional short briefing sessions are held as needed before and during certain jobs to review spill potential, necessary precautions and appropriate responses. Also included in the briefing is a review of known spill events or failures, malfunctioning components and recently developed precautionary measures.

In addition, spill related topics are discussed at safety meetings. Safety meeting topics include: spill control equipment; equipment operation and maintenance; inspection of containment structures, vessels, tanks and piping; spill response, containment and clean up; company policies on reporting and responding to spills; and specific SPCC Plans.

2) For the Project, the designated person accountable for oil discharge prevention is:

Name: **Karl Frakes**
Title: **Project Superintendent**
Office: **(303) 795-2582**
Cell: **(303) 210-2777**

3) Contractors working at the facilities are instructed as follows:

a. Pollution control will be maintained at all times in connection with all operations by the contractor. ACC personnel will be notified immediately of any emitting, spilling, venting, discharging, disposal or loss of any hazardous or harmful substances, air contaminants and/or pollutants of any nature (referred to as discharges).

b. If any discharges occur as a result of the performance of work by the contractor, its agents, employees and subcontractors, or other persons for whom the contractor is responsible, the contractor will immediately proceed to stop or abate such discharges.

c. The contractor will comply with any and all local, state and federal laws, regulations, standards and orders applicable to the controlling and prevention of discharges.

d. Contractors will install and maintain adequate discharge control equipment on or about their vehicle or other equipment to prevent discharges, in violation of any local, state and federal laws, regulations, standards and orders.

2.13 FACILITY SECURITY (40 CFR 112.7(g)(1-5))

ACC is committed to the prevention of oil releases by acts of vandalism. The following security measures are utilized at the project site.

1) Access to the oil storage containers at the project staging area is controlled by storage in lockable storage units or by locking the containers themselves. Storage unit doors are locked when the site is unattended.

2) Valves associated with oil storage containers at the facility are kept locked when not in use.

3) Pumps associated with oil storage containers at the facility are kept locked when not in use.

4) There is no piping present at the facility associated with oil storage containers at the facility.

5) Exterior and interior lighting at the Facility includes lighting at bulk storage container locations, and is sufficient for the discovery of discharges from the oil storage and dispensing systems.

2.14 FACILITY TANK CAR AND TANK TRUCK LOADING/UNLOADING RACKS (40 CFR 112.7(h))

There are no loading or unloading "racks" at the ACC facility; therefore, this section is not applicable. However, there are unloading "areas" where bulk storage containers are loaded and unloaded or where fuels are transferred from mobile refuelers to vehicles. ACC's preventive measures for these activities are included in Section 2.5.

2.15 BRITTLE FRACTURE EVALUATION (40 CFR 112.7(i))

This facility does not have any field constructed tanks or equipment; all equipment is factory constructed. Therefore, it is not necessary to evaluate any containers for risk of discharge or failure due to brittle fracture or other catastrophic failure. This section is not applicable.

2.16 REGULATORY CONFORMANCE (40 CFR 112.7(j))

Colorado has State regulations dealing with above ground and underground storage tanks. These are defined in the Code of Colorado Regulations, 1101-14, Section 3-6.

This above ground storage capacity applies to the Project because as defined in Section 3-6-1(a), the facility has an aggregate above ground oil storage capacity greater than 1,320 gallons. Section 2.4.1 of this Plan describes the specific written notification requirements for discharges and incidents for the State of Colorado.

Implementation of this plan will ensure ACC conforms to all applicable State and Federal oil pollution prevention regulatory requirements.

2.17 REGULATORY EXCLUSIONS

The subject properties are classified as onshore production facilities which store only petroleum-based oils. Furthermore, the properties are not expected to cause substantial harm to the environment as demonstrated by the completed Certification of Substantial Harm Determination form contained in Appendix F. As such, the Project is excluded from the following regulations:

Subpart B - Requirements for Petroleum Oils and Non-Petroleum Oils except Animal Fats

40 CFR 112.9	SPCC Plan requirements for onshore oil production facilities
40 CFR 112.10	SPCC plan requirements for onshore oil drilling & workover facilities
40 CFR 112.11	SPCC plan requirements for offshore oil facilities

Subpart C - Requirements for Animal Fats and Oils, Greases, Fish and Marine Oils

40 CFR 112.12	SPCC plan requirements for onshore facilities (excluding production)
40 CFR 112.13	Removed from regulation December 26, 2006
40 CFR 112.14	Removed from regulation December 26, 2006
40 CFR 112.15	Removed from regulation December 26, 2006

3.0 SPCC PLAN REQUIREMENTS FOR ONSHORE FACILITIES (EXCLUDING PRODUCTION FACILITIES)

This facility is not considered to be a "production facility" for the purposes of SPCC regulation, therefore the provisions of 40 CFR 112.8 apply, rather than those of 40 CFR 112.9.

3.1 FACILITY DRAINAGE (40 CFR 112.8(b))

3.1.1 Means of Restraining Drainage from Diked Storage Areas [112.8(b)(1)]

The area considered to be diked includes berms provided for the Facility's oil storage containers. Drainage from these areas is removed promptly via vacuum truck (if transported offsite) or via portable pump (if water is discharged on site. In the case of onsite discharge, release is only conducted after a properly trained ACC employee has determined that the drainage is not contaminated.

3.1.2 Valves for the Drainage of Diked Areas [112.8(b)(2)]

Drainage from diked areas does not occur by valves used to restrain any drainage. Therefore, this section is not applicable.

3.1.3 Drainage Systems from Undiked Areas [112.8(b)(3)]

Drainage from areas of the site that are outside of secondary containment (i.e., undiked areas) with a potential for a discharge of oil due to operations at the site, include the areas where tank trucks transfer to on site storage containers in the staging area and areas where fuel is transferred to construction vehicles from mobile refueling units along the project footprint. If not properly managed, oil spilled in these undiked areas could reach surface waters. Therefore the potential for a discharge in these areas will be managed by adhering to the prevention measures described in section 2.5.

3.1.4 Diversion System for Final Discharge [112.8(b)(4)]

Through the means discussed in Section 3.1.3, the undiked areas at the Facility will be managed with the described prevention measures. Therefore, this section is not applicable.

3.1.5 *Facility Drainage Systems and Equipment [112.8(b)(5)]*

ACC has no treatment system for its drainage waters. Therefore, this section is not applicable.

3.2 *BULK STORAGE CONTAINERS (40 CFR 112.8(c))*

Pursuant to 40 CFR 112.2, the containers at the site that meet the definition of "bulk storage containers" include those noted in Appendix A.

3.2.1 *Container Compatibility with Contents and Storage Conditions (40 CFR 112.8(c)(1))*

The material and construction of bulk storage containers are compatible with the materials stored and the conditions of storage such as pressure and temperature.

3.2.2 *Secondary Containment (40 CFR 112.8(c)(2))*

Secondary containment is provided for all bulk storage containers, and is designed for the entire volume of the largest single container plus precipitation of a 25-year, 24-hour storm event if the containment is not protected from precipitation.

Calculations demonstrating the adequacy of on-site secondary containment are included in Appendix C.

3.2.3 *Drainage of Uncontaminated Rainwater from Diked Areas (40 CFR 112.8(c)(3))*

Drainage from these areas is removed promptly via vacuum truck (if transported offsite) or via portable pump (if water is discharged on site. In the case of onsite discharge, release is only conducted after a properly trained ACC employee has determined that the drainage is not contaminated (no visible oil sheen).

3.2.4 *Corrosion Protection of Completely Buried Metallic Storage Tanks (40 CFR 112.8(c)(4))*

There are no completely buried metallic storage tanks at this facility. Therefore, this section is not applicable.

3.2.5 *Corrosion Protection of Partially Buried or Bunkered Metallic Storage Tanks (40 CFR 112.8(c)(5))*

There are no partially buried or bunkered metallic storage tanks at this facility. Therefore, this section is not applicable.

3.2.6 *Integrity Testing and Visual Inspection (40 CFR 112.8(c)(6))*

Integrity testing of any bulk storage container will not be required for the following reasons:

All oil storage containers at the facility are either single-use containers, e.g., 55-gallon drums and totes of various size, which are frequently visually inspected for signs of deterioration and leaks, or

The containers are shop-built, of less than 30,000 gallons in capacity, and all sides of each container are visible (i.e., the container, or the secondary containment, has no contact with the ground).

Comprehensive inspections of al bulk storage containers are conducted on a monthly basis. Records of the inspections will be kept in Appendix D for at least three years.

3.2.7 *Leakage Through Defective Internal Heating Coils (40 CFR 112.8(c)(7))*

This facility does not utilize any heating coil systems within the bulk storage containers on site. Therefore, this section is not applicable.

3.2.8 *Good Engineering Practice of Containers (40 CFR 112.8(c)(8))*

During loading or unloading of all bulk oil storage containers, the operation is manned at all times and spill absorbents are present. In addition, containers that are **not one-time use**, will be equipped with visual gauges.

3.2.9 *Operation of Effluent Treatment Facilities (40 CFR 112.8(c)(9))*

There is no equipment at this facility associated with the treatment of petroleum-contaminated water generated as a result of oil storage or use at this facility. Therefore, this section is not applicable.

3.2.10 *Correction of Visible Discharge (40 CFR 112.9(c)(10))*

The bulk oil storage appurtenances at this facility will be visually inspected on a monthly basis (see Section 2.11). If any discharges are

noted during the inspection, they will be cleaned up promptly, and the cause of the release corrected to prevent future discharges.

3.2.11 *Position of Mobile or Portable Oil Storage Containers (40 CFR 112.8(c)(11))*

The drums and totes of oil are considered to be mobile or portable oil storage containers. These containers are all positioned within secondary containment or on secondary containment pallets.

3.3 *TRANSFER, PUMPING AND PROCESS OPERATIONS (40 CFR 112.8(d))*

Oil transfer operations, such as fueling vehicles or filling/emptying bulk storage containers, are conducted at the facility.

3.3.1 *Protection of Buried Piping [112.8(d)(1)]*

There is no buried piping at the facility. Therefore, this section is not applicable.

3.3.2 *Terminal Connections [112.8(d)(2)]*

There are no terminal piping connections at the facility. Therefore, this section is not applicable.

3.3.3 *Design of Pipe Supports [112.8(d)(3)]*

There are no supported liquid piping systems associated with the oil storage containers. Therefore, this section is not applicable.

3.3.4 *Inspection of Aboveground Valves, Piping, and Appurtenances [112.8(d)(4)]*

No valves, piping or above ground appurtenances associated with oil storage are present at this facility; therefore, this section is not applicable.

3.3.5 *Protection of Aboveground Piping and Other Transfer Operations from Vehicular Traffic [112.8(d)(5)]*

No above ground piping is present at the facility; therefore, this section is not applicable.

4.0 FACILITY RESPONSE PLANS (40 CFR 112.20)

Facilities with the potential to cause substantial harm to the environment as a result of an oil spill are required to develop and submit to the EPA a Facility Response Plan (FRP). Appendix F shows the Certification of Substantial Harm Determination. As shown by the responses in the certification, the facility is not required to develop an FRP.

Figure 1
Site Location Map

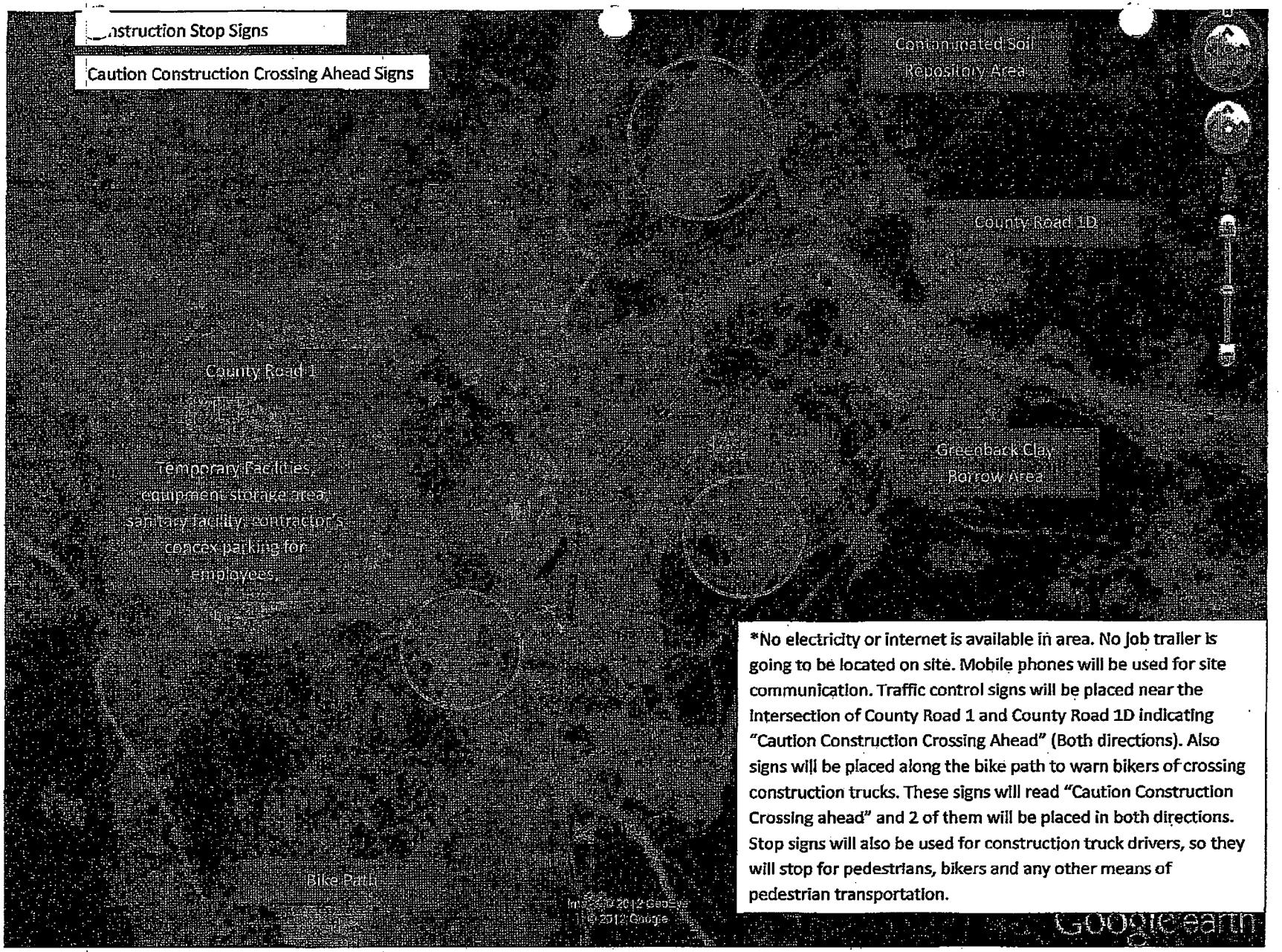
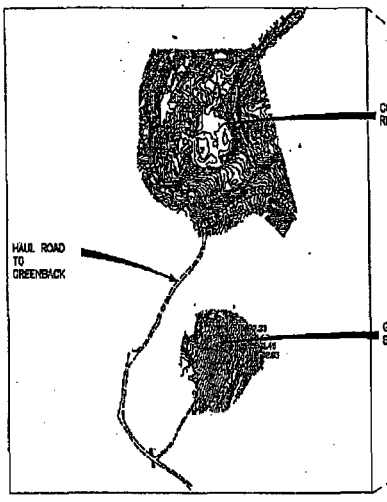

nstruction Stop Signs
Caution Construction Crossing Ahead Signs
Contaminated Soil
Repository Area
County Road 1D
County Road 1
Temporary Facilities
equipment storage area,
sanitary facility, contractor's
coacex parking for
employees,
Greenback Clay
Borrow Area
Bike Path
*No electricity or internet is available in area. No job trailer is going to be located on site. Mobile phones will be used for site communication. Traffic control signs will be placed near the intersection of County Road 1 and County Road 1D indicating "Caution Construction Crossing Ahead" (Both directions). Also signs will be placed along the bike path to warn bikers of crossing construction trucks. These signs will read "Caution Construction Crossing ahead" and 2 of them will be placed in both directions. Stop signs will also be used for construction truck drivers, so they will stop for pedestrians, bikers and any other means of pedestrian transportation.
Google earth

Figure 2
Site Map

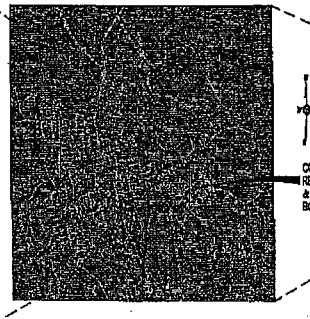
LAKE COUNTY, COLORADO

CALIFORNIA GULCH SUPERFUND SITE CONTAMINATED SOIL REPOSITORY CONSTRUCTION

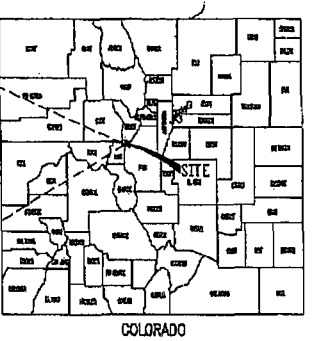
MAY 2012



SITE MAP
NTS



VICINITY MAP
NTS



LOCATION MAP
NTS

SHEET INDEX TITLE

	PLATE NO.
COVER SHEET AND AREA MAPS	G-1
NOTES AND LEGEND	G-2
CONTAMINATED SOIL REPOSITORY AREA EXISTING CONDITIONS	C-1
GREENBACK CLAY BORROW AREA EXISTING CONDITIONS	C-2
LSG SOIL BORROW AREA EXCAVATION PLAN	C-3
GREENBACK CLAY BORROW AREA EXCAVATION PLAN	C-4
CONTAMINATED SOIL REPOSITORY CLAY LINER PLAN	C-5
CONTAMINATED SOIL REPOSITORY LEACHATE COLLECTION SYSTEM PLAN	C-6
CONTAMINATED SOIL REPOSITORY ACCESS AND STORMWATER CONTROLS PLAN	C-7
GREEN BACK CLAY BORROW AREA RESTORATION PLAN	C-8
CROSS SECTIONS	C-9
SITE DETAILS 1	DT-1
SITE DETAILS 2	DT-2
SITE DETAILS 3	DT-3

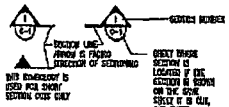
CDM SMITH, INC
DENVER, COLORADO

WATER+ENVIRONMENT+TRANSPORTATION+ENERGY+FACILITIES CDM Smith

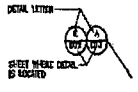
GENERAL AND TOPOGRAPHIC LEGEND

- SPOT ELEVATION
- SURVEY CONTROL POINT
- BUILDING/FEATURE
- SITE WORK AREA
- CULVERT
- NEW RIPRAP
- EXISTING RIPRAP
- DIRT ROAD OR GRAVELED ROADWAY
- PL — PL — EXISTING PROPERTY LINE
- EXISTING 2' CONTOURS
- 10000 — EXISTING 10' CONTOURS
- FINAL 2' CONTOURS
- 10000 — FINAL 10' CONTOURS
- SILT FENCE
- SAFETY FENCE
- CHAIN LINK FENCE
- DEPRESSION CONCAVE
- GRAVEL BAGS EDGE
- RIPRAP CHANNEL
- HYDROSEED
- GRAVEL
- FILL
- CLAY
- STRAW BALE
- TEST PIT LOCATION
- CONCRETE

SECTION CUT SYMBOLS



DETAIL CALL OUT SYMBOLS



GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF CURRENT CONDITIONS AND LOCATIONS OF ALL THE EXISTING ITEMS PRIOR OF CHANGES TO THE WORK, OR THAT MAY BE DISTURBED BY THE WORK.
2. LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES, FORMER MINE STRUCTURES, PROPERTY LINES, SURFACE SOIL, OR ROCK CONDITIONS ARE BASED ON THE BEST AVAILABLE SURVEY INFORMATION. IN ADDITION, ALL EXISTING UTILITIES MAY NOT BE SHOWN, IN PARTICULAR, ALL UNDERGROUND UTILITY LINES; UNDERGROUND AND/OR OVERHEAD ELECTRICAL, TELEPHONE CABLES AND POLES ARE NOT GUARANTEED TO BE SHOWN.
3. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND OTHER EXISTING ITEMS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL EXISTING UTILITIES AND OTHER ITEMS, WHETHER SHOWN ON THESE DRAWINGS OR NOT, CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING STRUCTURES, MONUMENTS, AND OTHER ITEMS.
4. THE CONTRACTOR IS RESPONSIBLE FOR OVERALL SITE SAFETY, HOUSEKEEPING, AND KEEPING THE SITE FREE OF DEBRIS, DEBRIS, AND REFUSE.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING LOOSE SOIL AND OTHER CONTAINER MATERIALS SUCH AS SPOIL PILES FROM WIND AND WATER EROSION UNTIL THESE MATERIALS HAVE BEEN USED FOR ON-SITE FILL OR TRANSPORTED TO OFF-SITE REPOSITORIES. THE CONTRACTOR IS RESPONSIBLE FOR ALL DUST CONTROL MEASURES FOR ACCESS ROADS, CONSTRUCTION SITE, AND MATERIAL BORROW AREAS.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL ARRANGEMENTS NECESSARY FOR WATER AND TEMPORARY UTILITIES TO THE SITE.
7. THE CONTRACTOR SHALL PREPARE AN EROSION CONTROL PLAN FOR APPROVAL BY THE ENGINEER PRIOR TO SITE MOBILIZATION. THE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES CONTAINED HEREIN ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR WILL UPGRADE AND/OR SUPPLEMENT ADDITIONAL BEST MANAGEMENT PRACTICES AS REQUIRED FOR UNEXPECTED STORM EVENTS, CHANGED SITE CONDITIONS AND/OR AS ORDERED BY THE PROJECT REPRESENTATIVE. THE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES SHOWN HEREON MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH CLEARING AND GRADING ACTIVITIES.
8. STORM EVENTS MAY PRECIPITATION MAY OCCUR DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL HAVE ADEQUATE PROVISIONS TO PROTECT CONSTRUCTION AREAS FROM RUNOFF AND RUNOFF. THE EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE INSPECTED AND MAINTAINED AT LEAST WEEKLY AND AFTER STORM EVENTS TO ENSURE CONTINUED PROPER FUNCTION THROUGHOUT THE LIFE OF THE PROJECT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE RELATED TO THIS CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS OF EQUIPMENT USED DURING THE PROJECT FOR DAMAGE EXPERIENCED ON EXISTING BRIDGES AND ROADS. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE COUNTY, STATE, AND FEDERAL AGENCIES FOR USE OF PUBLIC ROADS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPROVEMENTS AND/OR EXPANSION OF HAUL ROADS AS REQUIRED TO COMPLETE THE SCOPE OF WORK. HAUL ROAD WIDTH SHALL BE NARROWED FOR HAULING, REGULATION OF SWITCHES AND SIDINGS WHERE MAY BE NECESSARY. ALL COUNTY ROADS THAT ARE USED SHALL BE LEFT IN A CONDITION AT LEAST EQUAL TO THOSE EXISTING CONDITIONS, AS ACCEPTABLE TO THE ENGINEER.
12. LINES OF CONSTRUCTION AND LINES OF EXCAVATION COMPONENTS ARE SHOWN HEREWITH TO SCALE ON THESE DRAWINGS. THE CONTRACTOR SHALL LOCATE TO THE GRADES AND CONTOURS SHOWN HEREIN, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
13. CONTRACTOR SHALL PROTECT THE EDGES OF NEW EXCAVATION TO GUARD AND EXISTING SURFACES THAT ARE TO BE REMAIN UNDER THE CONTRACT – AS ACCEPTABLE TO THE ENGINEER.

SURVEY CONTROL POINTS:

Point Table

Point #	Elevation	Northing	Easting	Description
1	10388.88	1547332.43	2782438.49	CP TOP
2	10280.09	1547264.98	2782438.84	CP 10
3	10312.35	1547697.82	2782242.84	CP PIT SOUTH
4	10548.27	1547885.27	2782310.84	CP PIT WEST
5	10298.06	1547118.81	2781821.47	CP MILL
6	10232.07	1547257.59	2781947.26	CP MIDDLE
7	10218.14	1547027.79	2782105.94	CP RED
8	10434.92	1546241.35	2782343.38	CP TOP HILL
9	10262.89	1546803.77	2781918.53	CP WEST SIDE

(COORDINATES CONTROL BASED ON NAD83 (1992) (2002, US FOOT))

RECOMMENDED SEQUENCING OF MAJOR WORK ELEMENTS:

1. INSTALL TEMPORARY ACCESS ROADS, HAUL ROAD IMPROVEMENTS, SITE WORK BOUNDARIES, EROSION CONTROL FEATURES, PROTECTIVE MEASURES FOR CULTURAL RESOURCES, AND OTHER FACILITIES AND CONTROLS TO COMPLETE THIS PROJECT SCOPE OF WORK.
2. CLEAR AND GRUB THE LSG STOCKPILE AREA AND THE GREENHORN CLAY BORROW AREA, PROCESS ROCKY MATERIALS AND STOCKPILE AT THE AREAS INDICATED (SHEETS C-3 AND C-4). EXCAVATE EXISTING TOPSOIL AT THE LSG STOCKPILE AREA AND THE GREENHORN CLAY BORROW AREA AND STOCKPILE AT THE AREAS INDICATED (SHEETS C-3 AND C-4).
3. EXCAVATE AND REMOVE OVERBURDEN FROM THE LSG SOIL BORROW AREA AND STOCKPILE AREA (SHEET C-3). SCREEN REMAINING EXCAVATED OVERBURDEN AND STOCKPILE AT THE AREA INDICATED (SHEET C-3).
4. EXCAVATE OVERBURDEN FROM THE GREENHORN CLAY BORROW AREA AND STOCKPILE IN THE AREA INDICATED (SHEET C-4). EXCAVATE CLAY FROM THE CLAY BORROW AREA AND HAUL TO REPOSITORY AREA (SHEET C-4).
5. INSTALL CLAY LINER AND PROTECTIVE LAYERS AT THE REPOSITORY AREA AND LEACHATE COLLECTION POND AREA (SHEET C-5).
6. INSTALL CENTRAL RUN-ON CONTROL BERM IN THE REPOSITORY AREA, FOLLOWED BY LEACHATE COLLECTION SYSTEM (SHEET C-6).
7. INSTALL PERIMETER CHANNELS AND SPILLWAY AT LEACHATE COLLECTION POND (SHEET C-7).
8. INSTALL PERIMETER RUN-ON CONTROL BERM, AMEND SOIL, AND PLACE SEED, (SHEET C-7).
9. AMEND SOIL STOCKPILES AT LSG STOCKPILE AREA AND PLACE SEED, (SHEET C-7).
10. INSTALL ACCESS PROTECTION SIGNS, FENCE, AND GATE (SHEET C-7).
11. PLACE AND COMPACT OVERBURDEN AT GREENHORN CLAY BORROW AREA, PLACE TOPSOIL, AMEND, AND SEED AREA (SHEET C-8), REMOVE ROAD/RUNOFF BERMS AT GREENHORN (SHEET C-8).
12. REMOVE TEMPORARY SITE FACILITIES.

ESTIMATED EXCAVATION VOLUMES

SOIL AREA	ACTION ON SITE CONTRACT	APPROXIMATE VOLUME (BCY)	MATERIAL TYPE
LSG STOCKPILE AREA	EXCAVATE AND STOCKPILE	1,800 CY	TOPSOIL
LSG SOIL BORROW AREA	EXCAVATE AND REMOVE	500	OVERBURDEN
LSG SOIL BORROW AREA	EXCAVATE, SCREEN, AND STOCKPILE	10,700	OVERBURDEN
GREENHORN CLAY BORROW AREA	EXCAVATE AND STOCKPILE	700	TOPSOIL
GREENHORN CLAY BORROW AREA	EXCAVATE AND STOCKPILE	810	OVERBURDEN
GREENHORN CLAY BORROW AREA	EXCAVATE, HAUL, AND PROCESS	8,800	CLAY

ESTIMATED MINIMUM LSG SOIL SCREENING VOLUME REQUIREMENTS

LSG SOIL BORROW AREA	PROTECTIVE SOIL, BERMS, AND USE BY OTHERS	7,300	6" MINUS SOIL
LSG SOIL BORROW AREA	USE BY OTHERS	2,700	6" MINUS SOIL
LSG SOIL BORROW AREA	LEACHATE COLLECTION SYSTEM DRAINAGE LAYER	1,200	1" – 1½" ROCK
LSG SOIL BORROW AREA	CRUSHER RUNOFF	300	½" PLUS ROCK

REV.	DATE	DESIGN	CHKD	REMARKS
1	8/3/12	KS	MA	REMOVE STOCK PILE AREA

DESIGNED BY: K. ANDES
DRAWN BY: K. BARKER
QUALITY CHKD BY: K. ANDES
CLIENT CHKD BY: K. ANDES
APPROVED BY: T. BENSON
DATE: JULY 2012

CDM Smith

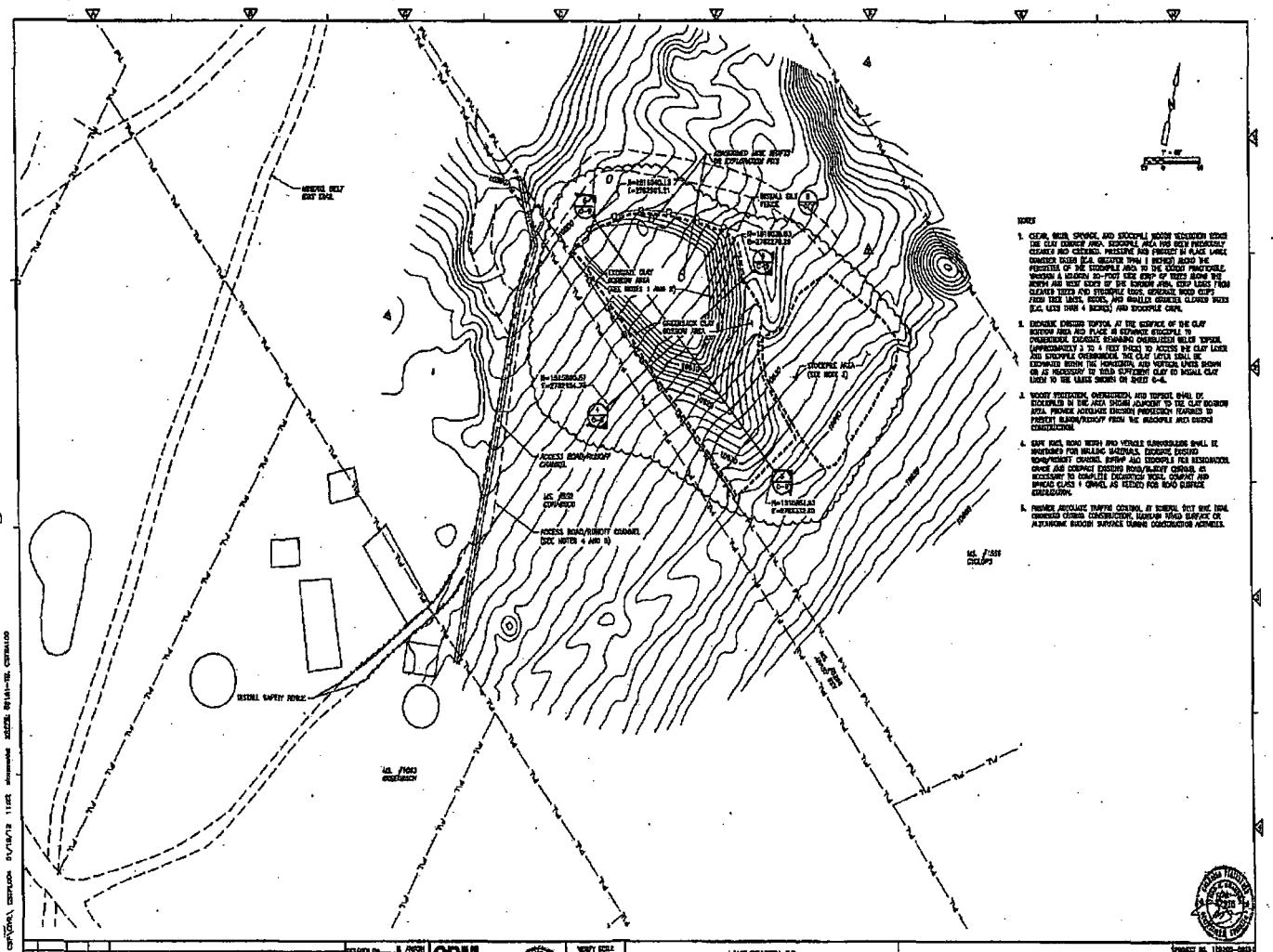
VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
IF NOT, ADJUST SCALES ACCORDINGLY

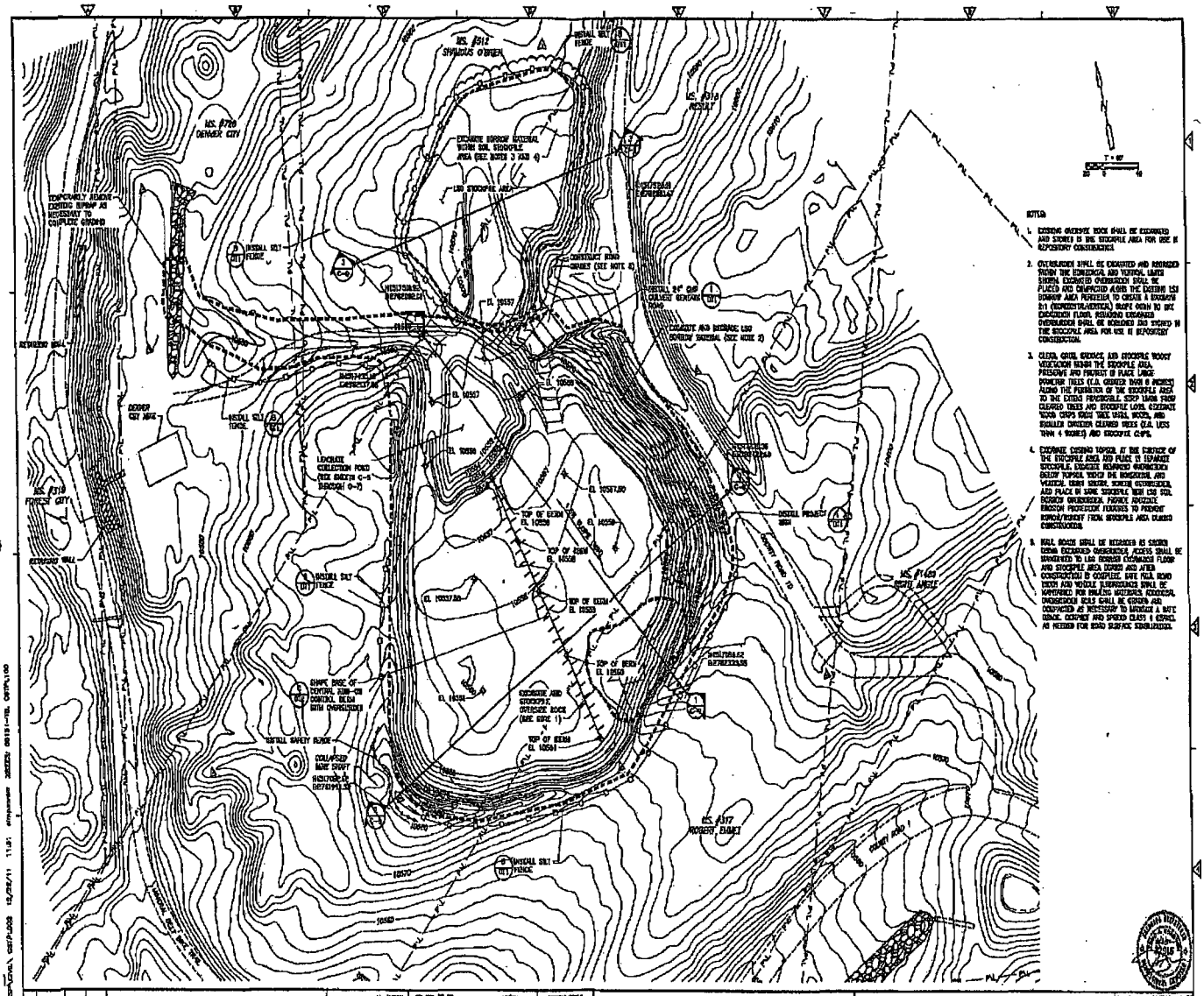
LAKE COUNTY, CO
CALIFORNIA GULCH SUPERFUND SITE
CONTAMINATED SOIL REPOSITORY CONSTRUCTION

NOTES AND LEGEND

PROJECT NO. 518200-8818
FILE NAME: GEN_NOTES
SHEET NO. G-2

2012 Lake County Superfund Soil Repository 05/08/12 10:07 mmoore J:\ENG\518200-8818\GEN_NOTES.DWG


NOTES
1. CLEAR, GRUB, SPONGE, AND STOCKPILE WOODY VEGETATION WITHIN THE CLAY BORROW AREA. STOCKPILE AREA HAS BEEN PREVIOUSLY CLEARED AND GRUBBED. PRESERVE AND PROTECT IN PLACE LARGE DIAMETER TREES (E.G. GREATER THAN 1 INCHES) ALONG THE PERIMETER OF THE STOCKPILE AREA TO THE EXTENT PRACTICABLE. WHERE A MINIMUM 20-FOOT WIDE STRIP OF TREES ALONG THE NORTH AND WEST EDGE OF THE BORROW AREA. KEEP LIMBS TRIM CLEARED TREES AND STOCKPILE WOOD. REMOVE WOOD CHIPS FROM TREE LIMBS, BRUSH, AND SMALLER DIAMETER CLEARED TREES (E.G. LESS THAN 4 INCHES) AND STOCKPILE CHIPS.
2. EXCAVATE EXCESS TOPSOIL AT THE SURFACE OF THE CLAY BORROW AREA AND PLACE AS SEPARATE STOCKPILE TO OVEREXCAVATE EXCESSIVE REMAINING OVERBURDEN BELOW TOPSOIL (APPROXIMATELY 1 TO 4 FEET THICK) TO ACCESS THE CLAY LAYER AND STOCKPILE OVERBURDEN. THE CLAY LAYER SHALL BE EXCAVATED WITHIN THE HORIZONTAL AND VERTICAL LIMITS SHOWN ON AS PRACTICABLY TO YIELD SUFFICIENT CLAY TO INSTALL CLAY LINER TO THE LINES SHOWN ON SHEET C-42.
3. WOODY VEGETATION, OVERBURDEN, AND TOPSOIL SHALL BE STOCKPILED IN THE AREA ADJACENT TO THE CLAY BORROW AREA. PROVIDE ADEQUATE EROSION PROTECTION FEATURES TO PREVENT RUNOFF FROM THE STOCKPILE AREA DURING CONSTRUCTION.
4. HAUL ROAD, ROAD WIDTH AND VEHICLE CLEARANCES SHALL BE MAINTAINED FOR HAULING MATERIALS. EXCAVATE EXISTING EMBANKMENT CHANNEL, SWALE AND STOCKPILE FOR REGRADING. GRADE AND COMPACT EXISTING ROAD/RUNOFF CHANNEL AS NECESSARY TO COMPLETE EXCAVATION WORK. COMPACT AND SPREAD CLASS 1 GRAVEL AS NEEDED FOR ROAD SURFACE STABILIZATION.
5. PROVIDE ADEQUATE TRAFFIC CONTROL AT SCHEDULE, TEST HAUL ROAD, INSPECT CULVERT CONSTRUCTION, MAINTAIN HAUL ROAD SURFACE ON ALTERNATE SHOULDER SURFACE DURING CONSTRUCTION ACTIVITIES.
EXISTING CLAY BORROW AREA
(SEE NOTES 1 AND 2)
EXCAVATION CLAY BORROW AREA
STOCKPILE AREA
(SEE NOTE 3)
ACCESS ROAD/RUNOFF CHANNEL
(SEE NOTES 4 AND 5)
INSTALL SAFETY FENCE
EXISTING LAKE BOTTOM
NO EXCAVATION AREA
INSTALL SILT FENCE
EXISTING SILT FENCE
EXISTING CULVERT
EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING ROAD
EXISTING FENCE
EXISTING POWER POLE
EXISTING TREE
EXISTING BUILDING
EXISTING GRAVEL ROAD
EXISTING GRAVEL ROAD
EXISTING GRAVEL ROAD


MS. #312
SHILOH O'BRIEN
MS. #729
DENVER CITY
MS. #319
FOREST CITY
MS. #316
NEDALT
MS. #429
SOUTH ARGLE
MS. #317
MOSSBY, EMMET
EXCAVATE BORROW MATERIAL WITHIN SOIL STOCKPILE AREA (SEE NOTES 3 AND 4)
LSG STOCKPILE AREA
CONSTRUCT ROAD GRADES (SEE NOTE 6)
EXCAVATE AND STOCKPILE LSG OVERBURDEN MATERIAL (SEE NOTE 2)
EXCAVATE AND STOCKPILE LSG BORROW MATERIAL (SEE NOTE 1)
EXCAVATE AND STOCKPILE OVERBURDEN MATERIAL (SEE NOTE 2)
LOCATE COLLECTION POND (SEE SHEETS C-5 THROUGH C-7)
SHAPE SIDE OF CENTRAL RUN-ON CONTROL BERM WITH OVERBURDEN
SCALLOPED BASE GRADE
INSTALL SILT FENCE
INSTALL SAFETY FENCE
TEMPORARILY REMOVE EXISTING BERM AS NECESSARY TO COMPLETE GRADING
RETAINING WALL
TOP OF BERM EL. 10558
TOP OF BERM EL. 10556
TOP OF BERM EL. 10554
TOP OF BERM EL. 10550
TOP OF BERM EL. 10554
EL. 10557.00
EL. 10557.50
EL. 10559
EL. 10556
EL. 10554
EL. 10550
EL. 10570
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EL. 10770
EL.

Appendix A
Site Specific Quick Reference Guide

Emergency Contact Information

Facility: Project No. 119200-88151	
Site Location : California Gulch Superfund Site Contaminated Soil Repository Leadville, CO	
American Civil Constructors, Inc. – Emergency Coordinator and Alternate	
Karl Frakes – Superintendant	Tony Gregorich –Field Engineer
Office: (303)795-2582	Office: (303)795-2582
Cell: (303) 944-2777	Cell: (303) 944-6576
Emergency Contacts	
Emergency Central Dispatch (Local calls Only)	911
Poison Control	(800) 222-1222
State Patrol	(303) 239-4501
Lake County Fire Station	(719) 486-2990
Agency Contacts	
National Response Center	(800)-424-8802
EPA Region VIII Spill Line (24-hours)	(303)-293-1788
EPA Region VIII (Working hours)	(303)-312-6312
EPA Region VIII ER Spill Hotline (24-hours)	(800)-227-8914
Colorado Department of Public Health and Environment's Emergency Spill Reporting Line (24-hour)	(877)-518-5608
Division of Oil and Public Safety (Colorado Dept. of Labor and Employment)	(303)-318-8547

Release Notification Form

Federal or state agency concerning an accidental release will be informed and provided with the following information.

Reporter's Full Name:_____ Title:_____

Primary Phone Number:_____ Secondary Phone Number:_____

Company: American Civil Constructors, Inc. Office Address:4901 S. Windermere St._____

Litteton, CO. 80120

Spill Location:_____

Nearest City: Leadville County: Lake County State: CO

Directions From Nearest City to Spill Location:_____

_____

Date and Time of Release:_____ Type of Material Released:_____

Source of the Material Release:_____

Total Quantity Released:_____ Quantity Released Into Water:_____

Container Type:_____ Container Material:_____

Container Storage Capacity:_____ Facility Storage Capacity:_____

Actions Undertaken to Correct, Control and Mitigate the Incident:_____

_____

Description of Damages:_____

_____

Number of Injuries:_____ Number of Deaths:_____

Evacuation(s) Conducted:_____ Number Evacuated:_____

Notification Log

Agency Contacted	Contact Person	Date and Time of Contact
National Response Center (NRC) (800)-424-8802		
EPA Regional VIII Office (303)-293-1788 / 1-800-227-8914		
Colorado Department of Public Health and Environment's Emergency Spill Reporting Line (877)-518-5608		
CO Division of Oil & Public Safety (303)-318-8547		
Oil and Gas Conservation Commission (888)-235-1101		
Local Emergency Contact Lake County Fire Station (719) 486-2990		
Other:_____		

Information Submittal to EPA Regional VIII Administrator for Qualified Discharge(s)

In the event of a qualified discharge or discharges, this form can be utilized to provide official notification to the EPA Regional VIII Administrator. If a facility has experienced a discharge or discharges that meet one of the following two criteria, then this report must be submitted to the Regional VIII Administrator within 60 days.

(Check as appropriate)

☐ This Facility has experienced a reportable spill as referenced in 40 CFR Part 112.1(b) of 1,000 gallons or more.

☐ This Facility has experienced two (2) reportable spills (as referenced in 40 CFR Part 112.1(b) of greater than 42 gallons each within a 12-month period.

Facility Name and Location: American Civil Constructors, Inc. Leadville, CO

Facility Contact Person (Name, address/phone number):_____

Facility Maximum Storage or Handling Capacity:_____

Facility Normal Daily Throughput:_____

Describe the Corrective Actions and Countermeasures Taken (include description of equipment repairs and replacements):_____

Describe the Facility (Attach maps, flow diagrams and topographical maps as necessary):_____

Describe the Cause of the Discharge (as referenced in 40 CFR Part 112.1(b)) Including Failure Analysis of the System:_____

Describe the Preventative Measures Taken or Contemplated to Minimize the Possibility of Recurrence:_____

Other pertinent information:_____

NOTE: A copy of this report must also be sent to the Colorado Division of Oil and Public Safety and the Colorado Department of Public Health and Environment.

American Civil Constructors, Inc. - Spill Log

Date of Spill	Location on site	Cause of Spill	Cleanup Method	Description of future spill prevention

Summary of Facility Bulk Storage and Use (40 CFR 112.7(a)(3)(i))

Operator: **American Civil Constructors, Inc. (ACC)**
Name of Facility: **California Gulch Superfund Site Project No. 2012-1**
Location of Facility: **39°14'48.85" North , 106°16'19.10" West**
(Location of contractor staging area, see attached Map)

Surface Water	Distance and Direction from Facility

Potential Source	Type Of Material	Storage Quantity (gallons)	Location	Rate of Flow (gal/hr)	Predicted Direction of Flow	Failure Mode	Secondary Containment Volume	Type of Secondary Containment
Fuel Tank #1	Red Diesel	2,000	Off of access road	220		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Double-Walled Tank
Drum	multipurpose grease	55		55		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums are stored on secondary containment pallets within fully-enclosed storage unit.
Drum	Hydraulic Oil/Fluid	55		55		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture,		Drums are stored on

Potential Source	Type Of Material	Storage Quantity (gallons)	Location	Rate of Flow (gal/hr)	Predicted Direction of Flow	Failure Mode	Secondary Containment Volume	Type of Secondary Containment
						or leakage		secondary containment pallets within fully-enclosed storage unit.
Drum	Gear Oil	55		55		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums are stored on secondary containment pallets within fully-enclosed storage unit.
Drum	Transmission Fluid	55		55		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums are stored on secondary containment pallets within fully-enclosed storage unit.
Drum/tote	Concrete curing compound	55 to 250		55 to 250		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums or totes are stored on secondary containment pallets within fully-enclosed storage unit.
Drum/tote	Wax Emulsion	55 to 250		55 to 250		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums or totes are stored on secondary containment pallets within

Potential Source	Type Of Material	Storage Quantity (gallons)	Location	Rate of Flow (gal/hr)	Predicted Direction of Flow	Failure Mode	Secondary Containment Volume	Type of Secondary Containment
								fully-enclosed storage unit.
Drum/tote	Antifreeze (mixture)	55-250		55 to 250		Corrode, vandalism, lightening strikes, valve/pipe failure, rupture, or leakage		Drums or totes are stored on secondary containment pallets within fully-enclosed storage unit

The type of failure for any of these containers or equipment can be from a gradual leak to instantaneous depending on type, size and exact location of the failure.

Bulk storage containers installations are constructed so that a means of secondary containment is provided for the entire capacity of the largest single container plus sufficient freeboard to contain precipitation. Twenty-five year 24-hour storm event data indicate a worst-case precipitation rate of 2.4 inches per day for this region. Storage containers for which secondary containment is not practicable are discussed in Section 2.9. Diked areas are sufficiently impervious to contain discharged oil. This means the oil "will not escape containment before cleanup occurs including no subsurface conduit to navigable waters allowing the oil to reach navigable waters before it is cleaned up" (SPCC Guidance for Regional Inspectors, 2005). When present, mobile or portable oil storage containers, including drums, are stored within diked areas.

Visible discharges which result in a loss of product from containers will be promptly corrected and any accumulations of oil in the diked areas will be promptly removed.

Appendix B
Log of Amendments

SPCC Plan
July 2012

Log of Amendments and Reviews

Description of Revision/Review	Sections/Pages Affected	Date of Revision

Appendix C
Secondary Containment Volume Calculations

5-29-09

AMERICAN CIVIL ⇒ SPCC PLAN

- BLACK RHINO: STANDARD 2,000 GAL BLACK RHINO
  LOCATED:

STORAGE TANK VOLUME = 2000 GAL = 267.5 ft^3

VOLUME OF CONTAINMENT BASIN
L = 188" W = 79" D = 39"
188" × 79" × 39" = 863,823.0 in^3 = 326.3 ft^3

RAIN FALL EVENT = 2.8" FOR 25YR / 24HR STORM.

183" = 15.3' 79" = 6.6' 39" = 3.3'
(15.3' × 6.6') D = 267.5 ft^3
∴ D = 2.65 ft

DEPTH OF CONTAINMENT REQUIRED FOR TANK STORAGE
= 2.65 ft

DEPTH OF CONTAINMENT REQUIRED FOR STORM EVENT
= 2.8"
∴ REQUIRED CONTAINMENT VOLUME
= (15.3 ft)(6.6 ft)[2.65 ft + (2.8")] =
= (15.3 ft)(6.6 ft)(2.88 ft) = 291.0 ft^3

ACTUAL CONTAINMENT = 326.3 ft^3
∴ 291.0 ft^3 < 326.3 ft^3
CONTAINMENT VOLUME IS ADEQUATE.

TS

Appendix D
Inspection Form

MONTHLY VISUAL ASSESSMENTS STORM WATER CONVEYANCE SYSTEMS/OUTDOOR GROUNDS	Project Name: Completed by: Title: Date:

Area/Item		Checklist			Tracking Information
Storm Water Conveyance System: (culverts, ditches, retention basins, etc.)	All Catch Basins, Dikes, & Ditches Inspected	Indication of Contamination	Indication of Obstructions	Indication of Erosion	Date of Inspection:_____ Name of Inspector:_____ Action Items Noted: ☐ Yes ☐ No
	☐ Yes	☐ No	☐ No	☐ No	
Outdoor Grounds: General outdoor conditions	Overgrowth of plants	Indication of Spill/Leak	Indication of Potential for Spill/Leak	General Cleanliness of Areas	
	☐ No	☐ No	☐ No	☐ Good	

*** If you are unable to mark the box in the checklist for any item, immediately report the item to your manager.**

Action to Be Taken	Responsible Person	Date Notified (MM/DD/YY)	Date Resolved (MM/DD/YY)	Description of Action Taken

MONTHLY VISUAL ASSESSMENTS

STORAGE TANKS/CONTAINERS

Project Name:

Completed by:

Title:

Date:

Area/Item	Checklist				Tracking Information
Storage Tanks: Items to be inspected include tank integrity, secondary containment, loading/unloading area, piping components, and potential physical hazards to tank integrity.	Tank ID	Indication of Spill/Leak	Indication of Potential Spill/Leak	General Cleanliness of Area	Date of Inspection:_____ Name of Inspector:_____ Action Items Noted: ☐ Yes ☐ No
		☐ No ☐ No ☐ No ☐ No	☐ No ☐ No ☐ No ☐ No	☐ Good ☐ Good ☐ Good ☐ Good	
Containers: Items to be inspected include container integrity, secondary containment, and potential physical hazards to container integrity (i.e., drums, totes, etc.).	Open Containers	Indication of Spill/Leak	Indication of Potential for Spill/Leak	General Cleanliness of Areas	
	☐ No	☐ No	☐ No	☐ Good	

*** If you are unable to mark the box in the checklist for any item, immediately report the item to your manager.**

Action to be Taken	Responsible Person	Date Notified (MM/DD/YY)	Date Resolved (MM/DD/YY)	Description of Action Taken

MONTHLY VISUAL ASSESSMENTS TRANSFER AREAS/FACILITY EQUIPMENT	Project Name: Completed by: Title: Date:

Area/Item	Checklist				Tracking Information
Transfer Areas: Loading or unloading areas	All Areas Assessed	Indication of Residue in Area	General Cleanliness of Area		Date of Inspection:_____ Name of Inspector:_____ Action Items Noted: ☐ Yes ☐ No
	☐ Yes	☐ No	☐ Good		
Facility Equipment: Items to be inspected include vehicles, heavy equipment, and other site equipment, that use oils or fuels (i.e., forklifts, compressors, cutting / shearing equipment, etc.).	All Equipment Assessed	Maintenance Records Current	Indication of Any Leaks	General Cleanliness of Equipment	
	☐ Yes	☐ Yes	☐ No	☐ Good	

*** If you are unable to mark the box in the checklist for any item, immediately report the item to your manager.**

Action to Be Taken	Responsible Person	Date Notified (MM/DD/YY)	Date Resolved (MM/DD/YY)	Description of Action Taken

Appendix E
Training Record Form

TRAINING RECORD FORM

DATE: _____ TRAINER: _____

SUBJECT: _____

_____

_____

ATTACH COPIES OF ALL HANDOUTS ETC.

NAME	SIGNATURE	COMPANY	JOB TITLE

Appendix F
Certification of Substantial Harm Determination

CERTIFICATION OF SUBSTANTIAL HARM DETERMINATION

Operator Name: **American Civil Constructors, Inc.**
Facility Name: ~~CR 314 CDOT Project Number C 0703-378~~ California Gulch Superfund Site

1. Does any single facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

YES ☐ NO ☒

2. Does any single facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation with the storage area?

YES ☐ NO ☒

3. Does any single facility have the maximum storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriate formula in attachment C-III to Appendix C of Part 112 or a comparable formula) such that a discharge from the facility could cause injury to fish, wildlife or sensitive environments?

YES ☐ NO ☒

4. Does any single facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriate formula in attachment C-III to Appendix C of Part 112 or a comparable formula*) such that a discharge from the facility would shut down a public drinking water intake?

YES ☐ NO ☒

5. Does any single facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons and has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons within the past 5 years?

YES ☐ NO ☒

* If an alternative formula is used, documentation of the reliability and analytical soundness of the alternative formula must be attached to this form.

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

_____ _____

Signature Date

Name: Tony Gregorich
Title: Field Engineer

Section 7

Health and Safety Plan

HEALTH AND SAFETY PLAN

CALIFORNIA GULCH SOIL REPOSITORY
LAKE COUNTY, COLORADO

July 23, 2012
Project #2032777

Prepared for:

Lake County, CO

Prepared by:
American Civil Constructors
4901 S. Windermere Street
Littleton, CO 80120

HEALTH AND SAFETY PLAN

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HEALTH AND SAFETY PLAN

California Gulch Soil Repository

1.0 INTRODUCTION

Lake County Government, The United States Environmental Protection Agency, and the Colorado Department of Public Health and Environment are working together to establish a contaminated soil repository (land fill) for the disposal of collected lead contaminated soils from the California Gulch Superfund Site.

Both the engineering firm (CDM SMITH) and the construction contractor (American Civil Constructors) were selected through a competitive bid process for the design and construction of the project.

Construction of the Repository Site will commence in mid-July and continue through October of 2012 when substantial completion should occur.

This *Health and Safety Plan* (HSP) provides specifics regarding how American Civil Constructors [ACC] (hereinafter referred to as the Contractor) will satisfy applicable health and safety regulations and ensure the safety of the Contractor's personnel. The HSP should be considered a supplement to and used in conjunction with the Contractor's *Safety & Health Manual* and the project *Materials Management Plan*.

In the event that any subcontractors perform activities at the site in support of the described activities, the Contractor shall provide them with information related to identify hazards at the site and with information on hazards which are reasonably believed to be present. Subcontractors and their employees that are on site shall acknowledge receipt of hazard information by signing a form provided by the Contractor before commencing work at the site.

2.0 HEALTH AND SAFETY HAZARD ASSESSMENT

This section of the HSP provide an overview of the known and suspected hazards at the site and outlines various procedures and work practices which may be used to minimize the risks of illness and/or injury associated with these hazards.

Overview of Site Hazards

Historical Information

The project area is located just to the East of Leadville, CO in the Rocky Mountains. The project is the California Gulch Superfund Site, Stray Horse Gulch Operable Unit 6 Contaminated Soil Repository located in Lake County, Colorado. The site has two limits of disturbance areas. The first one is to the Northeast of Leadville and is the contaminated soil repository area. The second area is located just South of the repository area and is where the greenback clay borrow area will be. These areas cover roughly 89,000 square yards of disturbance area and are located close to Denver City Mine, which has been impacted by historical mining operations, resulting in the presence of mine adits and tunnels and the disposal of distinct volumes of mine waste rock, dredge tailings, and mill tailings.

In addition to the chemicals listed, other chemicals may be encountered at the project site during construction activities including gasoline, diesel fuel, petroleum oils, and other petroleum hydrocarbons.

Contaminants

It is possible that additional suspect contaminated materials may be encountered during the construction of this project. If suspect contaminated materials are encountered or otherwise brought to the surface (as evidenced by soil staining, odors, field monitoring, or other means), the following procedures shall be followed by the Contractor:

- Work in the immediate area of the contamination shall cease and the project Health & Safety Officer (HSO) or his designated representative shall be notified immediately. Karl Frakes will be the Health & Safety Officer on site for the duration of the project.
- The HSO (or his designated representative) shall evaluate the suspect material for potentially hazardous substances or other contamination. This evaluation may include field monitoring using appropriate instrumentation (i.e. photoionization detector, explosimeter, etc.) or sampling with subsequent off-site analysis.
- Work in the immediate vicinity of the suspect material shall be suspended until such time as the HSO determines that on-site conditions do not pose a threat to on-site personnel or the general public.

- If field personnel encounter any mine shafts, tailing piles, buried drums or containers, or other anomalies during construction, the Site Superintendent (or his designated representative) and the HSO will be notified immediately and all work activities in the immediate vicinity will cease and access shall be restricted until such time as the HSO determines that such access is safe.

2.1.1 Physical Hazards

Roadway construction and earth moving activities at the site typically involve a significant number of physical hazards. Heavy equipment operation, trenching and excavation operations, buried and overhead utilities, and material and waste handling are all examples of physical hazards which may expose on-site workers to risk of burns, cuts, abrasions, falling objects, heat/cold stress, and noise. Additional information on these hazards, along with others specifically related to certain job tasks, is provided throughout this HSP.

Engineering and administrative controls will be given first priority for minimizing employee exposure to physical hazards. When engineering and administrative controls are not feasible, personal protective equipment (PPE) will be used to reduce employee exposure. A detailed discussion of PPE is provided in Section 5.0.

2.1.2 Fire and Explosion Hazards

Fire and explosion hazards on the site are generally associated with the presence of natural gas utility lines, propane tanks, acetylene tanks, vehicle and equipment fuel tanks, and/or other flammable vapors which may accumulate or otherwise be present.

Personnel will use equipment and procedures that do not create a source of ignition in areas where there may be a possibility of flammable vapors or gases, flammable liquids, or other flammable or combustible materials. Vehicles will not be parked or left idling in areas where a possibility of fire or explosion can occur. Smoking will only be permitted in designated areas as directed by the HSO.

Emergency Response procedures to be implemented during a fire or explosion are outlined in Section 11.2.2 and specific requirements for "hot work" (i.e. torch cutting and/or welding) are provided in Section 12.0.

2.1.3 Biological Hazards

Various insects, such as mosquitoes, wasps, hornets, ants, spiders and bees may be present at the site. Care should be taken not to locate equipment and clothing in areas prone to support these hazards such as ant hills and bushes. Personnel may utilize insect repellent before donning personal protective equipment and while working in areas prone to insects. Care should also be taken when lifting possible habitats of snakes and spiders such as debris and

cover. Field treatment of snake bites should be limited to submerging or covering the bite area with wet ice and/or a cold compress.

Task Description and Hazard Evaluation

Various tasks to be performed in conjunction with the project have specific hazards associated with them. These tasks include the following:

- Mobilization of equipment and support facilities
- Soil excavation, rock removal

Known hazards associated with each of these tasks are identified in the following Sections. In addition, strategies for minimizing workers' risks to the identified hazards are addressed.

2.1.4 Site Mobilization

Project personnel may conduct field activities related to the installation of site support facilities including: minor grading to prepare the site for trailers, utility connections, and construction of designated work zones. The following hazards have been identified:

- general construction hazards associated with work around heavy equipment
- electrocution from contact with high voltage electrical distribution lines
- exposure to hazardous concentrations of chemicals or other contaminants of concern

General construction site safety practices will be utilized during mobilization activities. Hazards from vehicular traffic will be controlled by providing regular briefings to all personnel involved in these activities including equipment operators and contract drivers. If appropriate, traffic flow patterns on the site will be marked using cones, barricades, or other effective means. Excavation equipment will be equipped with standard back-up alarms. Personnel working on the ground near construction equipment will be instructed to maintain visual contact with the equipment operator. Ground personnel will not approach the working radius of heavy equipment without communicating first with the equipment operator. The equipment operator will acknowledge using standard hand signals. Buckets or blades will be grounded prior to approaching heavy equipment on foot, and engines will be put in idle. All trailers will be stabilized by chocking the wheels and then securing the trailer using appropriate tie straps.

Only suitably trained and experienced personnel will be utilized for performing electrical work involved in connecting electrical utilities to the site trailers, perimeter air monitoring system, or other locations requiring electrical power. All outdoor electrical circuits will be equipped with ground fault interruption (GFI) devices. Installation of electric power to the site from existing power points at the site will be performed by others and will not involve operations in potentially affected areas. Consequently, this activity will not be subject to this HSP.

An air monitoring program for the presence of hazardous materials may be implemented in those areas where contaminated soils or groundwater are likely to be encountered. The content of this monitoring program is discussed in Section 8.0.

2.1.5 Soil excavation, rock removal

All of the hazards identified in Section 2.2.1 will apply to this task. In addition, excavation and/or subsurface exploration activities may result in the exposure of site personnel to a variety of underground hazards which are not readily apparent from the surface. Such hazards may include:

- electrocution resulting from boring into or digging up underground power lines or by direct contact with overhead power lines from masts, booms, or other extensions
- hazardous conditions resulting from rock blasting or removal
- explosions resulting from boring into or digging up underground gas lines
- flooding resulting from boring into or digging up water or sewer lines
- exposure to hazardous chemicals resulting from boring or digging into or disturbing underground tanks, vaults, mine adits, tunnels or contaminated soils and/or groundwater
- Suffocation resulting from cave-ins associated with open excavations and/or trenches

To minimize the risk of electrocution from contact with overhead power lines, Contractor shall ensure that either all electrical distribution and transmission lines are de-energized and visibly grounded. If these options are not possible, Contractor shall maintain the minimum OSHA clearances referenced below. In addition, a "spotter" shall be present to assist the operator with raising, lowering, or final placement of the mast or boom. Under no circumstances shall equipment be moved with the mast or boom in an upright position.

Voltage	Minimum Clearance
≤ 50 kV	10 feet
> 50 kV	10 feet + 0.4 inch for each 1 kV over 50 kV *or* twice the length of the line insulator but never less than 10 feet

To minimize the hazards associated with drilling into or digging up underground hazards during drilling and/or caisson placement, the following procedures shall be implemented:

- Areas where utility lines are known to exist will be avoided, if possible. If this is not possible, hand digging will be performed in the area of the utility line to uncover it before heavy equipment is used.

- Operations must be suspended and corrective actions taken if the airborne concentration of flammable vapors exceed the action levels specified in Table 1. A combustible gas meter will be used to make this determination in areas where there is the potential to encounter flammable or volatile organic substances.
- Operations must be suspended and corrective action taken if the ambient airborne concentration of volatile organic vapors exceed the action levels specified in Table 1. A PID or other comparable instrument shall be used to make this determination.
- Entry into mine tunnels or other subsurface structures is prohibited.

To minimize the dangers associated with cave-ins, workers shall avoid entering any open excavations (including trenches) if possible. If entry is required, the Contractor shall comply with OSHA's amended standards for excavations as described in 29 CFR 1926. These standards require, at a minimum, that:

- surface encumbrances be removed or supported, as necessary
- person as defined by OSHA (i.e. "*one who is capable of identifying existing and predictable hazards in the surroundings, working conditions which are unsanitary, hazardous or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them*")
- excavations greater than four feet deep shall be tested as often as necessary for oxygen deficiency (i.e. below 19.5%) and/or hazardous atmospheres
- adequate precautions shall be taken to protect workers from hazards associated with water accumulation
- support systems shall be provided to insure the stability of adjacent structures loose rock, soil, or other material shall be kept at least 2 feet from any excavation
- daily inspections of excavations, protective systems, and adjacent areas shall be made by a competent person
- adequate physical barriers may be installed as directed by the HSO to protect workers from falling or tripping into the excavation
- the integrity and stability of the excavation must be protected against cave-in by either providing adequate sloping, benching, shoring, or shielding. In all cases, the selection must be based upon tables contained in the OSHA standard, other approved data, or else designed by a registered professional engineer.

3.0 SITE ORGANIZATION & RESPONSIBILITIES

The Contractor has designated specific individuals to assume responsibility for the various operational and/or administrative health and safety functions associated with the project. These individuals have the authority to stop work in the event that an unsafe condition develops or is otherwise encountered on the project.

- *Project Manager* (PM). The PM will have responsibility for the conduct of project field and administrative activities.
- *Corporate Safety Director* (CSD). The CSD will have responsibility for ensuring compliance with OSHA regulatory requirements and the requirements of the Contractor's health and safety policies.
- *Health and Safety Officer* (HSO). The HSO shall perform environmental monitoring performed in accordance with the project. In addition, the HSO will have responsibility for preparing specific methodologies for characterizing, removing, containing, and subsequently disposing of waste materials.
- *Site Superintendent* (SS). The SS will have operational responsibility for ensuring the field implementation of this HSP through the Safety Director and/or HSO.

The names and telephone numbers of the specific individuals designated by the Contractor to serve in these various capacities is provided in Table 2.

For purposes of this project, the HSO or his designee will have field responsibility for the implementation and day-to-day documentation of project activities in accordance with the requirements of this HSP. At least one of these persons will be available at the site or on call at all times that project activities are taking place. Telephone numbers where these persons may be reached will be posted on the bulletin board in the Contractor's trailer.

4.0 TRAINING

The CSD or the HSO will present the contents of this *Health & Safety Plan* to all on-site workers prior to the commencement of field activities. Workers will be required to acknowledge by their signature that they have read the *Health & Safety Plan*, that they understood the plan, and that they will comply with its' requirements.

All site personnel who will be working with hazardous materials, mine waste or suspect hazardous materials will have received the safety training required by OSHA under 29 CFR 1910.120 (e). Contractor personnel who are in direct contact with mine waste will have 40-hour OSHA training as required by CERCLA or the HSO (Not to be anticipated for this project). Additional training will be provided as required by CERCLA, CDPHE or the HSO. Supervisory personnel will have received additional training as required by these regulations. Suitable training will be provided to Contractor personnel for any task that they are to perform when there is a specific OSHA training requirement. Contractor's CSD will determine the adequacy of training of contractor and subcontractor personnel. Contractor and subcontractor personnel must provide suitable documentation of training to the HSO who will maintain copies of all training certificates at the site.

The HSO will prepare and present periodic site-specific or task-specific health and safety briefings or training sessions for Contractor and site personnel. A record will be made of all such training sessions including the names of the personnel present at the session, the subject(s) covered, the name of the presenter, and the date that the training was provided. In addition, daily tailgate safety meeting topics will be conducted by the HSO or the SS. All site personnel will be present for meetings and will sign the attendance form provided. Topics may include, but are not limited to, the following:

- PPE
- Site contaminants
- Historical mine hazards
- Thermal stress
- Decontamination procedures
- Environmental monitoring results
- Exclusion zones
- Fall protection guidelines
- Cutting and hot work
- Emergency procedures
- New health and safety concerns
- Material Safety Data Sheets (MSDS)

Designated persons will be trained for implementation of the emergency response plan. Personnel will be trained in the specific tasks and skills described in Section 11.0.

All ACC employees that are on site will go through the 40 hour HAZWOPER certification course and for the employees that are going to be on site for longer than 30 days will also take a blood test before construction and after completion of the project. The HAZWOPER certification process will be a take home test and the employees will return the next day with their tests to be turned in for grading. ACC's safety officer will than grade the tests and make sure that each employee passed the test, to then proceed with giving them the certification.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Introduction

Personal Protective Equipment (PPE), helps prevent hazardous contaminants and hazardous conditions from entering or affecting a worker's body. There are four ways that toxic substances can enter the body:

- inhalation
- ingestion
- dermal (skin) absorption
- injection

A substance can enter the body by more than one route. Site personnel will conduct work tasks in a manner that minimizes the potential for the entry of any toxic substance into the body. There are three types of protection that are available: body defenses, personal hygiene, and PPE. Whenever feasible and practicable, administrative and engineering controls will be used to minimize potential worker exposure to hazards during construction activities. When engineering and administrative controls cannot be used to reduce site hazards, PPE will be used to minimize employee exposure to hazards. Site personnel must wear PPE when activities involve known or suspected atmospheric contamination, when hazardous vapor, gases, or particulates may be generated by site activities, when direct skin contact with hazardous substances may occur, or when work activities may result in excessive noise levels (i.e. noise in excess of 85 dB(A)).

Workers should be reminded that PPE does not remove the hazard(s). Rather, the purpose of PPE is to shield or isolate individuals from the chemical, physical, or radiological hazards that exist on the site. Note that wearing PPE can, at times, increase worker susceptibility to hazard exposure.

Minimum Standards for PPE

Careful selection and use of adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. PPE to be used during site operations will meet the following minimum standards:

- Provide adequate protection against the hazard to which the worker will be exposed.
- Maximum comfort coupled with minimum interference and weight.
- Minimum restrictions of essential body movement and vision.
- Durability and ease of on-site maintenance.
- Construction in accordance with accepted standards; i.e., American National Standards Institute (ANSI), National Institute for Occupational Safety and Health (NIOSH).

Selection of Personal Protective Equipment

All on-site personnel will be required to comply with the personal protective levels designated by the CSD or the HSO. The level of PPE will be selected based on the best available information pertaining to the distribution of contaminants and atmospheric conditions at the site. This information includes:

- the type and concentration of the chemical constituent
- potential for contact with mine wastes or contaminated water
- the potential for exposure to substances in air, liquid splashes, or other direct contact with the chemical constituent

Certain unanticipated operations or hazards not previously identified may require changes in PPE requirements. Under these circumstances, additional protective measures may be implemented by the CSD or the HSO that includes PPE other than that described in this section.

Face and Eye Protection

The face and eyes of on-site personnel will be protected against flying objects as well as against splash, spray, and potentially harmful vapors. All on-site personnel will wear approved safety glasses with side shields in accordance with the specific policy outlined in the Contractor's *Safety & Health Manual.* Any worker who performs burning or cutting operations will have a face shield with appropriate light filtering eye protection.

Head Protection

Head protection required by OSHA will be utilized by all on-site personnel as well as visitors to minimize the risk of head injury from falling objects, projectiles, or bump hazards. All hard hats will comply with ANSI Standard Z89.1-1969.

Hand Protection

Hand protection is a concern for on-site workers with regard to the potentially hazardous materials operations, where the risk of injury is compounded by chemical hazards. The major sources of danger to hands that are addressed by protective equipment are abrasion, burns, cuts, thermal extremes, and chemicals.

Protection from abrasion and cuts will be provided by mechanically resistant materials. General-purpose leather gloves may be used by workers for day-to-day construction tasks. Gloves with insulating and reflective materials may be used to add protection against extremes of temperature. Insulating gloves will be utilized by personnel performing burning or cutting operations. For protection against chemicals, chemical-resistant gloves will be used which are

suitable for the chemicals most likely to be encountered based on historical laboratory test results.

Foot Protection

It is recommended that all site personnel wear work boots designed for mechanical protection against potential hazards to feet or toes. If chemical protection is required, chemical-resistant boots will be utilized by affected personnel. The HSO will select the appropriate foot protection for operations involving chemicals.

Hearing Protection

Hearing protection should be worn by all employees working in noise levels of 85 dB(A) or greater. Prior to employees engaging in work activities at the site, they will be trained by their employer in the proper use, selection, limitations, and permissible exposure limits related to hearing protection. The employer will ensure that the training includes all elements of 29 CFR 1910.95.

Respiratory Protection

If contaminated soils are encountered during excavation and/or subsurface exploration activities, the work will be suspended and the HSO will contact the engineer immediately. Respiratory protection will only be used on this project if the environment becomes dangerously hazardous and someone needs to get back on the site for an emergency reason. Other than any emergency situation respiratory protection will not be used on this project.

Documentation of PPE

The use of PPE by site personnel will be documented by the HSO using a suitable form. This form will be completed before personnel enter the work areas requiring such PPE. All completed forms will be incorporated into the project's permanent health and safety records.

6.0 THERMAL STRESS

Heat Stress

Project personnel wearing PPE are subject to risk of developing heat stress. Individuals vary in their susceptibility to heat stress. Factors that may predispose on-site workers to heat stress include the following:

- Lack of physical fitness
- Lack of acclimatization
- Age
- Dehydration
- Obesity
- Alcohol and drug use
- Infection
- Sunburn

Project personnel at risk of heat stress will be monitored under the direction of the HSO. Because the incidence of heat stress depends on a variety of factors, all workers (even those not wearing PPE) will be monitored. For workers wearing permeable clothing, Contractor will follow the recommendations for monitoring requirements and suggested work/rest schedules in the current American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for Heat Stress. For workers wearing semipermeable or impermeable PPE, the ACGIH standard cannot be used. For these situations, workers will be monitored when the temperature in the work area is above 80°F. Monitoring may include:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in a rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle will be shortened by one third.
- Symptoms of heat stress. Heat rash; heat cramps; muscle spasms; pain in hands, feet, and abdomen; pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting; and/or confusion. If any symptoms are evident, the worker may be removed from the work area and monitored closely by the SS and/or the HSO.

Project personnel will be trained in the detection of signs and symptoms and preventive measures to help avert heat stress-related illnesses. Preventive measures include:

- Adjustment of work/rest schedules
- Maintenance of workers' body fluids
- Optimal physical fitness regimen
- Shelter for rest periods

Cold Temperatures

Cold temperatures and attendant hypothermia and frostbite hazards may be present during site activities. The HSO will observe employees during periods of cold weather to ensure that adequate clothing is being worn.

Employees will be alerted to the signs and symptoms of frostbite and hypothermia. Specifically, these include the following:

- gray appearance of exposed flesh
- absence of feeling, particularly in extremities or exposed portions of the body
- uncontrollable persistent shivering
- absence of shivering although the subject feels severely chilled
- lethargy and disorientation

Work activities will be inspected by the HSO and/or SS to ensure that early signs of frostbite or hypothermia are noted and promptly responded to. Hypothermia will be most likely to develop in personnel performing dust control and decontamination activities. Break periods may be extended or be taken more frequently during periods of extreme cold.

7.0 ENVIRONMENTAL MONITORING

- Work in the immediate area of the contamination shall cease and the project Health & Safety Officer (HSO) or his designated representative shall be notified immediately. Karl Frakes will be the Health & Safety Officer on site for the duration of the project.
- The HSO (or his designated representative) shall evaluate the suspect material for potentially hazardous substances or other contamination. This evaluation may include field monitoring using appropriate instrumentation (i.e. photoionization detector, explosimeter, etc.) or sampling with subsequent off-site analysis.
- Work in the immediate vicinity of the suspect material shall be suspended until such time as the HSO determines that on-site conditions do not pose a threat to on-site personnel or the general public.
- If field personnel encounter any mine shafts, tailing piles, buried drums or containers, or other anomalies during construction, the Site Superintendent (or his designated representative) and the HSO will be notified immediately and all work activities in the immediate vicinity will cease and access shall be restricted until such time as the HSO determines that such access is safe.

8.0 SITE CONTROL

An exclusion zone will be established by the HSO prior to the commencement of work activities which may impact or otherwise disturb contaminated soils or groundwater. Access to the exclusion zone will be controlled by a perimeter fence, barrier tape, or other means which adequately restricts access to hazardous areas by unauthorized personnel and the general public. The extent of site controls required will be in accordance with the hazards present at the site.

The HSO and/or the SS will evaluate individual work areas for potential hazards. These hazards may include physical hazards, high traffic density, and/or potential chemical exposures. No person may enter the designated exclusion zone without the complement of PPE designated by the HSO and/or SS based on the work to be performed. No eating, drinking, smoking or use of other tobacco products is allowed within an EZ.

The decision to modify the boundary of the exclusion zone or to modify required PPE, environmental monitoring, or other operational requirements can only be made by the HSO and/or the SS after consideration as to the appropriate type of hazard.

If on-site work activities, ingress, or egress will significantly impact local traffic patterns, the Contractor shall utilize flagmen and/or signage, as necessary, to minimize the potential for accidents.

9.0 EMERGENCY RESPONSE PROCEDURES

These emergency response procedures describe actions to be taken by the Contractor's personnel and other persons operating under their direction and control in the event of an emergency situation arising at the site. This ERP is limited to emergencies arising as a result of work activities conducted at the site, including emergencies that result from adverse weather, storms, rock falls, avalanche, or other natural events that may affect the health and safety of workers at the site. Off-site emergencies including transportation emergencies involving materials originating at the site are not addressed in this Plan.

Throughout this section, reference will be made to the HSO and/or the SS. These terms are explicitly inclusive in that they also refer to anyone acting by designation on behalf of the HSO or SS or acting in their stead in the event of their absence during an emergency.

Pre-Emergency Planning

Pre-emergency planning consists of addressing several different concerns. These include the following:

- Identification of reasonably anticipated emergency conditions that may arise at the site
- Provision of adequate emergency response equipment and supplies
- Identification of off-site personnel, companies, and agencies that can assist in the event of an emergency or which must be otherwise notified
- Estimation of the potential for off-site effects of site emergencies

These items are addressed in the following sections.

Anticipated Emergency Conditions

Emergency conditions may include chemical releases of various sorts, fires, explosions, accidents, injuries, illnesses, and adverse weather conditions. Any of these events may trigger implementation of the ERP.

9.1.1 Intrusion Into Unknown Materials

This release scenario involves the intrusion into materials not previously known to be present at the site. This situation would result in the creation of a condition in which unknown hazards to personnel, the facility, and the environment would be present.

In the event of the discovery of unanticipated materials (mine wastes, tunnels, falling rock, buried materials, or other mining related hazards), the HSO or his designated representative will attempt to sample the material and estimate its quantity, determine the potential to cause harm,

the likelihood that it may be released into the environment, and its hazardous properties to the extent they can be determined with instruments available at the site.

Further work will not be conducted in an area affected by unknown material or condition until the hazard has been evaluated and appropriate measures for personal protection have been implemented. These will be determined by the HSO. After the physical condition, mining related hazard, or hazardous material has been evaluated and attempts made to determine its chemical identity or origin, a plan will be developed and implemented to mitigate the hazard. The Contractor will consult with the CDPHE to obtain additional input and hazard mitigation planning.

9.1.2 Fires and Explosions

Fires may arise from natural causes as a result of work activities or from events off site not associated with work activities. Fires may or may not involve chemical substances stored or used on the site.

In the event of any fire whatever the size, the HSO and the PM must be notified immediately. They will determine immediately whether the fire can be controlled with personnel and fire-fighting equipment immediately available or whether off-site assistance is required. Based on their decision, the fire department will be notified or appropriately trained personnel will be directed to extinguish the blaze. The PM will ensure that suitable types of fire extinguishers are utilized based on the characteristics of the fire.

All personnel on site who are not involved in fire-fighting activities will be evacuated to a safe location away from the fire. The PM will ascertain that all personnel are accounted for. Immediate steps will be taken to locate any missing personnel and effect their rescue.

Any fire that may reasonably be expected to involve or intrude upon cylinders of compressed gas will result in immediate evacuation of the site and notification of the fire department. The fire department must be informed of the nature of the fire and conditions at the site relevant to fire fighting and the health and safety of the responders.

Any unplanned explosion at the site (not related to rock removal blasting) will result in evacuation of the site and notification of the fire department. Measures to locate and rescue any missing persons will only be undertaken upon the approval of the PM. Work may not recommence until the cause of the explosion has been determined and conditions that could lead to a recurrence have been eliminated.

9.1.3 Accidents, Illnesses, and Injuries

Accidents, illnesses, and injuries can arise in any work situation. These events may or may not be associated with exposure to hazardous chemicals. In the event of an accident, the PM and SS will be notified immediately.

The SS or other trained site personnel will render appropriate first aid in the event of an accident involving injury and take such steps as may be necessary to stabilize the injured person pending the arrival of medical assistance should that be needed. The PM and the SS will concur on the necessity of providing professional medical care in the event of an accident that results in injury. If medical care is indicated, it will be summoned by the HSO, PM or SS.

During the time that the injured person or persons are being cared for, site control procedures will be modified as needed to expedite care of the victim(s). Appropriate measures will be taken to ensure that injured persons are removed from dangerous circumstances if they can be safely moved. Routine requirements regarding use of protective equipment, decontamination, etc., may be modified as required to attend to the conditions arising from the accident.

If the accident or injury is a result of or involves exposure to hazardous materials on site, the PM or the HSO will evaluate the need for emergency decontamination and take such actions as may be warranted by the circumstances. Responding medical personnel will be informed of any chemical or radioactive contamination that may be involved in a medical emergency. *Material Safety Data Sheets* (MSDS) will be provided to medical personnel if available. Medical personnel, equipment, and emergency vehicles will be decontaminated before leaving the site if necessary.

In the event of acute illness, the affected person will be instructed to immediately cease work activities. Appropriate measures to secure prompt medical attention will be implemented by the PM. This may mean the summoning of off-site medical response personnel or transportation of the ill employee to medical attention.

9.1.4 Extreme Weather

Work activities will cease during extreme weather. The PM or SS will make such a determination if appropriate and notify all personnel to cease work and take appropriate shelter during episodes of extreme weather. Required measures to secure site activities and equipment from weather damage will be implemented as conditions allow. The PM or SS will determine when work activities can safely be resumed.

Emergency Equipment

An appropriate selection of emergency equipment will be maintained at the site at all times. This equipment may consist of medical and first-aid materials, rescue equipment, communications devices, and fire-fighting equipment.

9.1.5 Medical and First Aid Equipment

The minimum medical and first-aid equipment at the site will consist of industrial first-aid kits of appropriate size for the on-site work crew. A first aid kit will be available in each of the

Contractor's vehicles, the Contractor's construction trailer, or the "gang box" located at the work site. Each first-aid kit will be stocked and maintained in a state of readiness for use. The PM or SS will be familiar with the contents of the first-aid kit and will determine its adequacy from time to time based on use of the materials, the number of workers on site, and the types of injuries likely to require use of the first-aid equipment on the site.

Additional first-aid equipment and supplies will be obtained based on the work being performed and the hazards encountered. Such equipment and supplies may include, but is not limited to, the following:

- Additional first-aid kit supplies
- Emergency eye wash

All first-aid and medical supplies will be stored in a convenient location where they will be protected from adverse weather or other environmental conditions. All site personnel will be trained in the use of basic first-aid equipment and supplies. Additionally, there will be at least one person on the site trained in the provision of rescue breathing and cardiopulmonary resuscitation (CPR).

Site management, consisting of the SS and HSO, will periodically review the adequacy of first-aid equipment and supplies and personnel training in their use. A written record of this review will be prepared together with any recommendations for alterations in the stock of equipment, supplies, or training. Periodic personnel retraining or training reinforcement will be conducted as deemed desirable by site management personnel.

9.1.6 Rescue Equipment

Emergency equipment, as required by on site activities, will be provided by the local fire department or other emergency responders which are designated in Table 2 of this Plan.

If confined space entry is necessary, a suitable number of site personnel will be trained in the use of this equipment. Training will be periodically reviewed and updated, and refresher or training reinforcement will be provided as required based on the judgment of the HSO and/or the SS.

9.1.7 Fire-Fighting Equipment

Fire-fighting equipment will consist of portable fire extinguishers of appropriate type. The SS and HSO will be responsible for ensuring the presence of a suitable number and type of fire extinguishers. Fire extinguishers will be available in each of the Contractor's vehicles located at the work site. In addition, a fire extinguisher will be available at each site where a cutting torch is being used. Contractor's personnel are routinely trained in the use of fire-extinguishers.

Off-Site Personnel

A telephone list of off-site emergency services and contacts is provided in Table 2 and will be maintained and posted conspicuously at all times on-site. This list includes the following:

- Ambulance service
- Local fire department
- Police department
- Nearest hospital facilities
- Local CDPHE office
- Contractor's Office

This list will be posted by all site telephones. Additionally, a copy of this list will be placed in a location convenient to the main exit for use off site in the event that site telephones are unavailable. Directions to the nearest designated emergency medical facility (St. Vincent Hospital 822 West 4th Street Leadville, CO 80461) are provided in *Figure 2.*

Potential Off-Site Effects

Based on the current state of knowledge of the site, off-site effects are not anticipated for any reasonably anticipated on-site emergency. It is reasonable to anticipate that the effects of any reasonably foreseeable emergency would be confined to the site premises. In the event that off-site effects are anticipated, the Local Emergency Response Committee, Emergency Management Agency, or other groups will be notified, as required by law.

Emergency Recognition and Prevention

Emergency recognition will be the responsibility of all personnel on the site. Any condition that may constitute an emergency or which may result in the development of an emergency will be reported promptly to the HSO or SS. Prompt response or corrective measures will then be implemented.

The principal types of potential site emergencies, i.e., chemical releases, fires, and explosions, are generally apparent to casual observation. Site work areas and chemical and material storage areas are inspected on a regular basis for evidence of leaks, spills, or other releases. During work activities that can produce sparks, flames, or otherwise provide sources of ignition, a spotter is assigned for fire watch responsibilities.

Accident and injury prevention is accomplished by a program of regular safety training and reinforcement. Protective equipment is utilized as specified by the HSO. Employees working on elevated platforms, on roofs, or in otherwise hazardous locations are protected from falls by the use of lifelines, safety harnesses or other approved fall protection device.

Employees performing work with a potential for falls greater than 6 feet, or working in areas where others may be performing leading edge tasks which could result in injury will be kept under observation by a spotter. This spotter will be responsible for issuing warnings or halting work activities if a hazardous condition develops which poses an immediate danger of an accident or injury to workers on the site. Work practices are monitored on a regular basis by the HSO and SS to ensure that work is performed in a safe and conscientious manner.

Designated On-Site Assembly Point

In the event of an emergency condition that requires that workers abandon active work areas but which does not require that the site be evacuated, people on site will report to the designated assembly point. The designated assembly point will be established in the daily safety meeting. Personnel will be accounted for at the assembly point and additional instructions provided.

Site Security and Control

Emergency response will not result in any change in site security procedures. Access to the site will be controlled at all times by the Contractor. Traffic control during an emergency will be provided by the SS. They will be responsible for directing incoming and outgoing site traffic to ensure that vehicles and personnel do not unknowingly intrude into hazardous areas on the site.

Evacuation Routes and Procedures

If site evacuation is required, the HSO or SS will signal the work force to leave the site. This signal will be given orally as well as through the use of a suitable noisemaker or signaling device. Site workers will gather at the designated assembly point described in Section 9.7. The HSO and/or the SS will account for all site workers and other persons on site as they gather at the designated assembly point. Appropriate measures will be initiated to locate and recover any missing persons.

Emergency Decontamination

Emergency decontamination may be necessary in the event that personnel become contaminated by toxic, corrosive, radioactive, or flammable materials in a work area. Removal to a designated decontamination area may not be practical or effective under these circumstances. Emergency decontamination will be provided by containers of water which will be staged in or adjacent to work areas where personal contamination is possible.

Water used for emergency decontamination will be recovered if possible and combined with decontamination water in the designated decontamination facility. However, the absence of containment for emergency decontamination water or other emergency decontamination products will not delay implementation of emergency decontamination.

Emergency Medical Treatment and First Aid

Provision of on-site emergency treatment and first aid will be implemented as required. Site personnel will be trained in or be familiar with the use of basic first-aid procedures.

10.0 HOT WORK - BURNING OR CUTTING

Project personnel who perform burning or cutting operations shall comply with applicable hot work requirements in accordance with 29 CFR 1910.252.

Fire Protection

A fire watcher will be present in the work area when hot work is being performed. Fire watchers will be equipped with fire extinguishing equipment (20-pound multipurpose or equivalent) readily available and will be trained in its use. Fire watchers will be provided with facilities for sounding an alarm in the event of a fire. Fire watchers will look for fires in all exposed areas and try to extinguish them only when obviously within the capability of the equipment available. Otherwise, an alarm should be sounded and the SS immediately notified. A fire watch will be maintained for at least a half hour after completion of cutting operations to detect and extinguish possible smoldering fires.

Hot work will not be permitted in (1) the presence of explosive atmospheres, (2) explosive atmospheres that may develop inside uncleaned tanks, or (3) equipment which has previously contained such materials or that may develop in areas with an accumulation of combustible dusts. Air monitoring will be performed in the work areas prior to the onset of hot work. Where practical, all combustibles will be relocated a minimum of 35 feet from the work site. Where relocation is impractical, combustibles will be protected with flameproof covers or guards.

Personnel Protection

Site personnel will utilize appropriate respiratory protective equipment in work areas for removal of respirable dusts in the event that potential hazardous concentrations exist. The HSO will determine the appropriate respiratory protection before work in the area commences. Site personnel will be equipped with suitable eye protection during all hot work operations. Protective eye and face equipment will be required in accordance with 29 CFR 1910.133.

Authorization

Before cutting or hot work is permitted, the work area will be inspected by the SS.

11.0 FALL PROTECTION

Project personnel who perform activities adjacent to vertical walls or on a scissor lift shall be trained and comply with applicable fall protection requirements in accordance with 29 CFR 1926.501-503.

Employees on a working surface with an unprotected side or edge that is 6 feet or more above a lower level must be protected from falling by the use of guardrail system or personal fall arrest systems.

When working from an elevated scissor lift, a worker must be protected from falling by a properly designed and maintained guardrail system. If the guardrail system is less than adequate or the worker leaves the safety of the work platform, an additional fall protection device (such as a personal fall arrest system) must be utilized.

Guardrail Requirements:

- The top edge height of top rails must be 42 inches above the working/walking level and support a 200 lb force (at least 2"x4" lumber).
- Mid rails, screens, mesh, intermediate vertical members, or equivalent members ashall be installed mid-way between the top rail and the working/walking level and support a 150 lb force (at least 1"x6" lumber).
- Toe boards shall be 3.5 inches high and support a 50 lb force.
- Posts shall be no more than 8 feet apart (2"x4" lumber).

Personal Fall Arrest System (Harness, Lanyard, Connectors & Anchors Requirements:

- Shall be inspected prior to each use.
- Attachment point to body shall be in the center of the wearer's back.
- Limit fall to 6 feet and prevent contact with lower levels.
- Limit maximum deceleration distance to 3.5 feet.
- D-rings and snaphooks must have minimum tensile strength of 5000 lbs.
- Lanyards and lifelines must have minimum breaking strength of 5000 lbs.
- Self-retracting lifelines and lanyards that limit fall distance to 2 feet or less must have minimum tensile strength of 3000 lbs applied to the device with lifeline fully extended. Greater than 2 feet the minimum tensile strength must be 5000 lbs.
- Anchorages must be capable of supporting at least 5000 lbs.
- Body belts and other positioning device systems are not a part of the personal fall arrest system.

12.0 CONFINED SPACE ENTRY PROCEDURE

No one on the job site will be allowed down into any mine shaft during construction. All shafts that are located near the constructions sites will be fenced off with orange safety fence. If for any reason someone needs to get access into a confined space procedures will be followed according to the OSHA standards 1910.146. There will be testing required before the entry to make sure no dangerous air contamination is present. No permit will be required if the need to enter a confined space, but a spotter will be required during the operation/time being in the area. The person entering the area will be securely strapped off and attached to a Davit, Tripod or another safety device. The area around the Tripod will be fenced off by orange fence and the spotter will be monitoring from above.

13.0 HAZARD COMMUNICATION

There will be daily safety meetings discussed before the start of construction in the morning and also in the afternoon. The discussions will change from day to day and include hazardous materials around the construction site. These discussions will also consist of equipment safety ranging from heavy equipment (dozers and loaders) to light equipment (chainsaws and handheld tools). If any hazardous detection is notice by the workers, work will be stopped and the project engineer will be notified, then the project engineer will notify the environmentalist about the situation and resolve a solution from there.

14.0 SANITATION

If any worker on the jobsite lifts a rock with their bare hands they will immediately go wash their hands. Good daily personal hygiene will be required from each worker.

Table 1

Off-Site Emergency Contact Information

Name and Address of Agency or Organization	Telephone Number
Fire, Ambulance, Police	911
St. Vincent Hospital 822 West 4th Street Leadville, CO	(719) 486-0230 *or* 911
American Civil Constructors (*Project Office*) 4901 S. Windermere Street, Littleton, CO	(303) 795-2582

Table 2

Contractor's Designated Project Safety Team

Project Role	Name of Responsible Individual & Affiliation	Contact Location	Telephone Number
Project Manager	Grant Johns (*American Civil Constructors*)	office	(303) 795-2582
		mobile	(303) 918-0884
Site Superintendent	Karl Frakes (*American Civil Constructors*)	office	(303) 795-2582
		mobile	(303) 944-2777
Corporate Safety Director	John Rovedo (*American Civil Constructors*)	office	(303) 795-2582
		mobile	(303) 419-2434
Field Engineer	Tony Gregorich (*American Civil Constructors*)	Office	(303) 738-5126
		mobile	(303) 944-6576
Operations Manager	Ricky Maher (*American Civil Constructors*)	Office	(303) 795-2582
		mobile	(303) 730-4524

ACKNOWLEDGEMENT OF HEALTH & SAFETY PLAN

CALIFORNIA GULCH SUPERFUND SITE

All persons, entering the work area (including American Civil Constructors employees, subcontractors, visitors, clients, and regulatory agency personnel, etc.) must read the *Health & Safety Plan* and acknowledge by their signature that they have understood the plan and will comply with its' requirements.

"I hereby acknowledge that I have read and understood the attached *Health & Safety Plan* and will comply with the requirements specified in the Plan."

NAME	SIGNATURE	COMPANY	DATE/TIME

American Civil Constructors	**Site Health and Safety Plan** **Safety Plan Implementation Checklist**	
Project Name	Project Location (city and state)	Date
Name of Site Safety Coordinator	Weather Conditions	Project Number

Staff Present	Name	Office

Indicate the status of each of the following:

1.	Is a copy of the Site Safety and Health Plan (SSHP) on site?	☐ YES	☐ NO ☐ N/A
2.	Is the personal protective equipment required by the SSHP available and being used correctly?	☐ YES	☐ NO ☐ N/A
3.	Have the work zones been delineated?	☐ YES	☐ NO ☐ N/A
4.	Has a decontamination station been set up as required by the SSHP?	☐ YES	☐ NO ☐ N/A
5.	Are the decontamination procedures being followed?	☐ YES	☐ NO ☐ N/A
6.	Is access to the exclusion zone being controlled?	☐ YES	☐ NO ☐ N/A
7.	Has the site activities briefing and tailgate safety meeting been provided?	☐ YES	☐ NO ☐ N/A
8.	Is the list of emergency telephone numbers posted at the support zone?	☐ YES	☐ NO ☐ N/A
9.	Are directions to nearest emergency medical assistance posted at support zone?	☐ YES	☐ NO ☐ N/A
10.	Is emergency equipment available and functional, as required by the SSHP?	☐ YES	☐ NO ☐ N/A
11.	Has the nearest toilet facility been identified or a portable facility been set up?	☐ YES	☐ NO ☐ N/A
12.	Has an adequate supply of drinking water been provided?	☐ YES	☐ NO ☐ N/A
13.	Has water for decontamination been provided?	☐ YES	☐ NO ☐ N/A
14.	Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the SSHP?	☐ YES	☐ NO ☐ N/A
15.	Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO ☐ N/A
16.	Have the trenches and excavations been clearly marked?	☐ YES	☐ NO ☐ N/A
17.	Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO ☐ N/A
18.	Are dust suppression measures being used?	☐ YES	☐ NO ☐ N/A
19.	Is food and tobacco consumption being restricted to the support zone?	☐ YES	☐ NO ☐ N/A
20.	Has a confined space been identified as part of this project?	☐ YES	☐ NO ☐ N/A
21.	Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO ☐ N/A
22.	Has the work/rest cycle for the shift been established?	☐ YES	☐ NO ☐ N/A
	TIME ON (minutes): _____ TIME OFF (minutes): _____		
23.	Has a shaded rest area been set up in the support zone?	☐ YES	☐ NO ☐ N/A

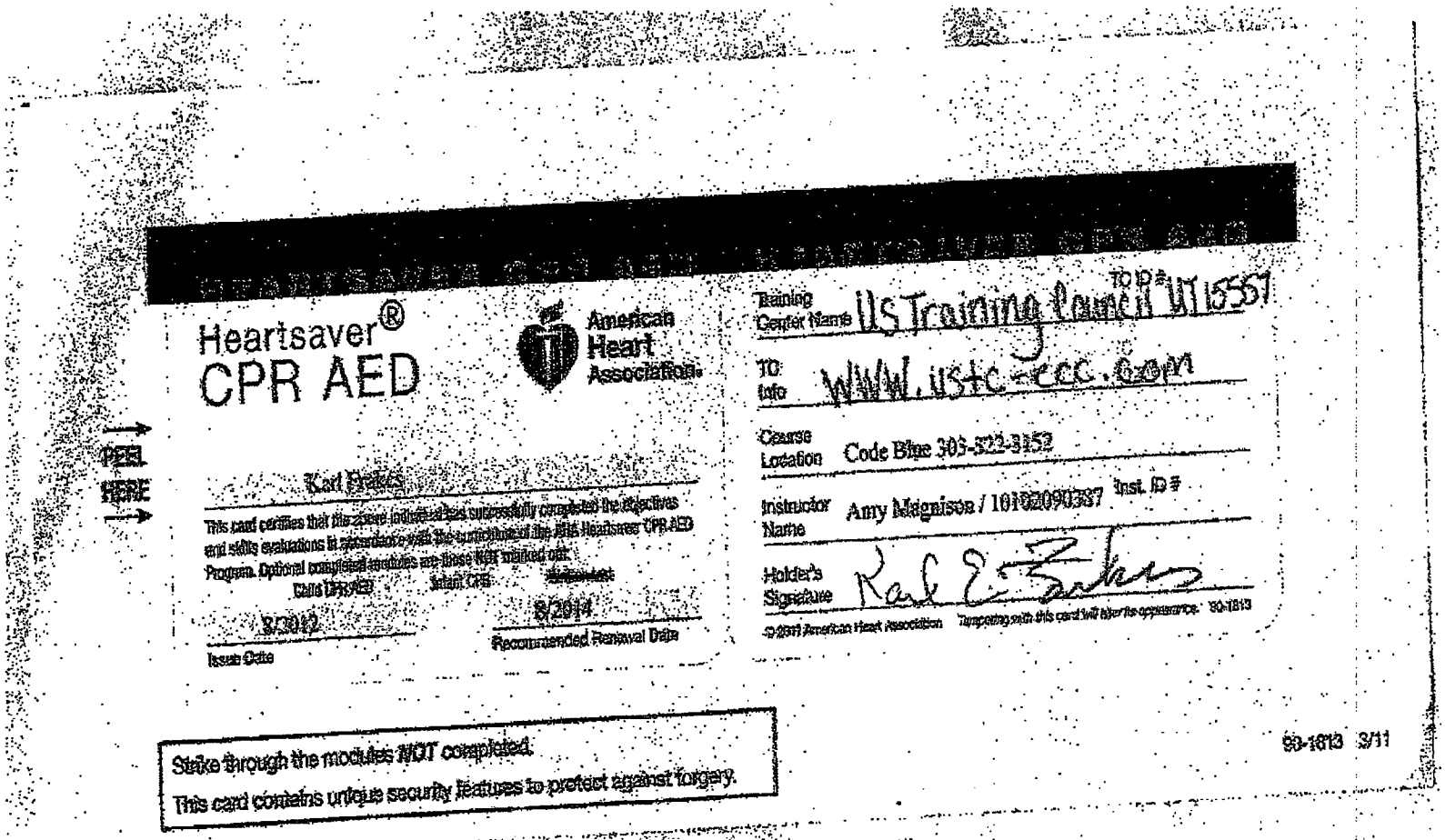
We hereby confirm that the above Safety and Health Plan will be followed by whoever is present on the jobsite during construction.

Safety and Health Manager Date:

John Rovedo

Site Safety and Health Officer/Site Superintendent Date:

Karl Frakes



Heartsaver®
CPR AED

American Heart Association.

PEEL HERE

Karl Fraker

This card certifies that the above individual has successfully completed the objectives and skills evaluations in accordance with the curriculum of the AHA Heartsaver CPR AED Program. Optional completed modules are those NOT marked out.

Basic Rescuer | Infant CPR | Automated External Defibrillation

8/2012
Issue Date

8/2014
Recommended Renewal Date

Training Center Name: US Training Council TCP# UT15557

TC Info: www.ustc-ccc.com

Course Location: Code Blue 303-322-3152

Instructor Name: Amy Magnison / 101920903837 Inst. ID #

Holder's Signature: Karl E. Fraker

©2011 American Heart Association Tampering with this card will alter its appearance. 90-1813

Strike through the modules NOT completed.

This card contains unique security features to protect against forgery.

90-1813 3/11

Section 8

Environmental Protection Plan

Person Responsible for Ensuring Adherence to the EPP and Training the Contractor's Environmental Protection Personnel

Karl Frakes will be responsible for all safety measures on the job site and Tony Gregorich will be responsible for all erosion control inspections.

See attachment for ACC's Environmental Protection Personnel Training Program equivalent to the Stormwater Management during Construction CDOT Erosion Control Supervisor Certification Class "B".

Federal, State and Local Laws, Regulations

Federal Laws and Regulations

- Chemical Safety Information, Site Security and Fuels Regulatory Relief Act
- Clean Air Act (CAA)
- Clean Water Act (CWA) (original title: Federal Water Pollution Control Amendments of 1972)
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund)
- Federal Water Pollution Control Amendments - See Clean Water Act
- National Environmental Policy Act (NEPA)
- Occupational Safety and Health (OSHA)
- Oil Pollution Act (OPA)
- Pollution Prevention Act (PPA)
- Safe Drinking Water Act (SDWA)
- Superfund - See Comprehensive Environmental Response, Compensation, and Liability Act
- Superfund Amendments and Reauthorization Act (SARA) - See Comprehensive Environmental Response, Compensation, and Liability Act
- Toxic Substances Control Act (TSCA)

Laws and Regulations by the State of Colorado

- Hazardous waste control laws: CRS 25-15-101 to 25-15-515
- Colorado Air Pollution Prevention and Control Act, CRS 25-7-101 to 25-7-139
- Lead-based paint abatement laws: CRS 25-7-1101 to 25-7-1107
- Colorado Water Quality Control Act, CRS 25-8-101 to 25-8-703
- Hazardous waste cleanup laws: CRS 25-16-101 to 25-16-104.7
- Voluntary Cleanup and Redevelopment Act, 25-16-301 to 25-16-310
- Pollution Prevention Act of 1992, CRS 25-16.5-101 to 25-16.5-109

- Petroleum storage tank laws: CRS 8-20.5-101 to 8-20.5-304
- Air quality control regulations: 5 Code of Colorado Regulations (CCR) 1001
- Water quality regulations: 5 CCR 1002 and 1003
- Hazardous materials and waste management regulations: 6 CCR 1007

Regulatory Agencies

- Colorado Department of Public Health and Environment (CDPHE)
- Department of Labor and Employment Division of Oil and Public Safety (OPS)
- Colorado Department of Natural Resources (DNR)
- U.S. Environmental Protection Agency (EPA) Region 8

Erosion Control Plan

The locations of all the erosion control items are mentioned below and are also found in the Spill Prevention Control and Countermeasure Plan under figure 2 (Site Plan). The temporary erosion control items that will be placed on the LSG site will be as follows: silt fence will be installed around areas that will receive sediment runoff in case of a storm. These areas are on the Southern and Eastern sides of the LSG borrow site; also around the North and West side of the LSG stockpile area. On the Greenback site there will be silt fence placed around the Northern, Western and Southern parts of the site to contain sediment runoff.

There will be a Central Run-On Control Berm placed in the middle of the LSG borrow area once the site has been excavated. Piping inverts will be placed on both sides of the Central Berm on the LSG site to be feed into a Leachate Collection Pond located at the North end of the LSG site. Riprap channel will be installed around the Leachate Collection Pond where it will run down to the existing riprap channel. The LSG area will get Erosion Control Blankets installed on the perimeter slopes of the LSG borrow area and the perimeter berms. Erosion Blankets will be installed at the Greenback borrow area to restore it back to original form. All silt fences will be removed after the completion of the project and the road/runoff channel will be restored to working conditions.

All erosion control items will be inspected weekly to make sure that they are working correctly and to see if maintenance will be needed. The sediment control items will comply with all Federal, State and Local laws and regulations. The Spill Prevention Control and Countermeasure Plan will include most of the erosion control items that were listed above.

Best Management Practices will be used during all construction phases to maintain the integrity of the surrounding environments. See the Spill Prevention Control Plan for further erosion control methods on how to deal with spills and the procedures you must follow.

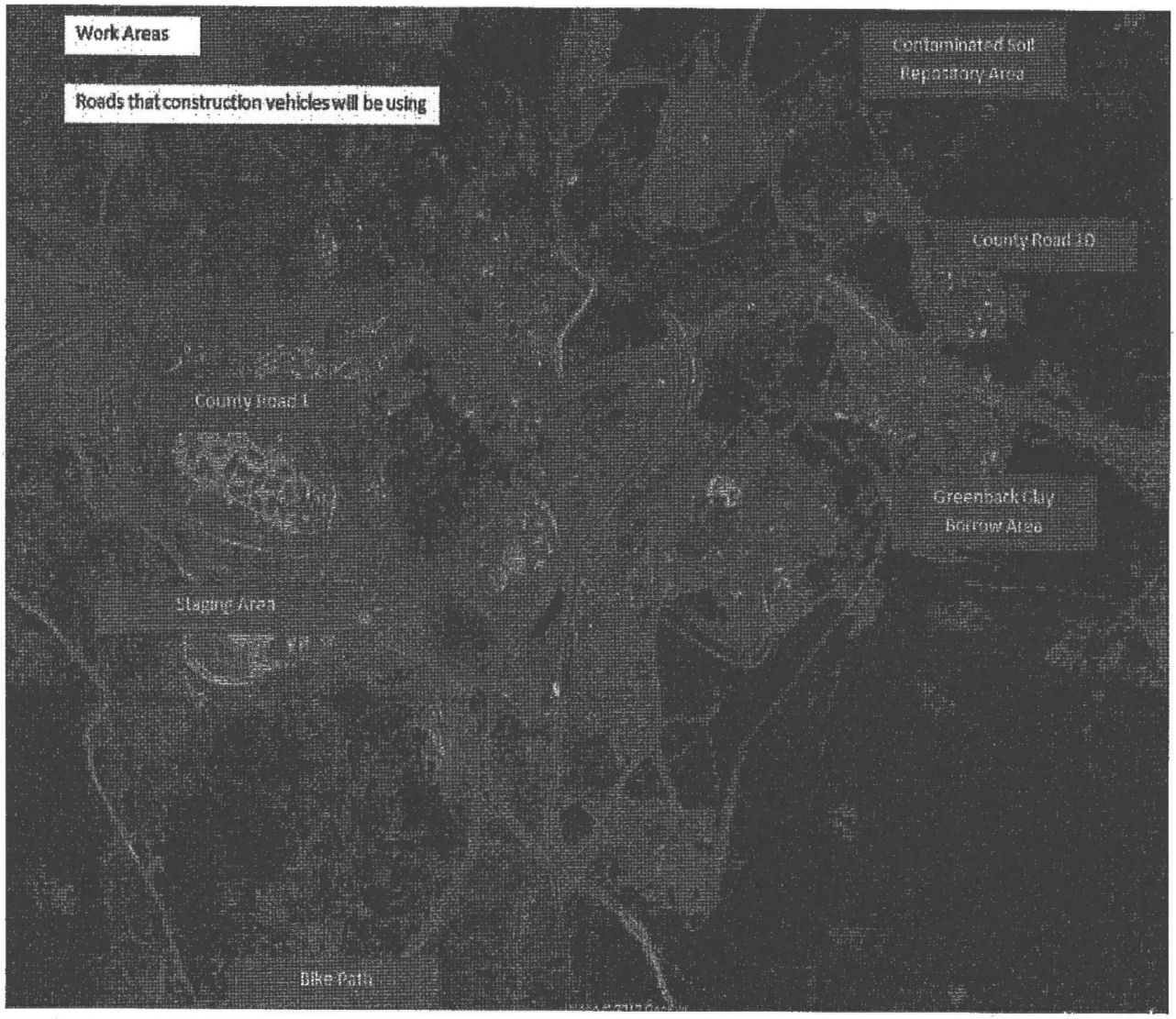
Tony Gregorich the Project Engineer on the project will be responsible for inspecting all erosion control items after severe rain storms to ensure that the silt fencing and other erosion control items are still working in accordance as there were designed to. Reports will be taken weekly on the jobsite for the erosion control items and a report will be written up after any severe storms.

Traffic Control Plan

See attachment "A" for the site plan and temporary signage. Materials will only be covered if the material is being hauled from the two sites or being hauled onto paved roads. The hauling will be from the Greenback site to the LSG site, when ready to install the clay linear. Roads that will be used during this time will be County Road 1 and 1D, the dirt road South of the bike path bridge off of County Road 1,the dirt road crossing over the bike path, and the existing riprap channel next to the Greenback site. All damage done by the haul trucks will be pactched up and repaired to its original form. Pieces of plywood will be laid down when haul trucks are crossing the asphalt bike path to prevent any road damage. Once the haul truck has crossed over the bike path the plywood will be removed.

All damage caused by construction vehicles and equipment will be repaired accordingly from its original form prior to construction. Equipment that will be using the dirt roads will be as follows: company pick-up trucks, haul trucks, D6 dozer, and 724K loader. Other various construction equipment may be used during the construction process.

Work Area Plan



All of the areas circled in blue outlining are the areas that will be affected by construction. All of the red lines are dirt roads that construction vehicles will be using during construction. All areas that are not highlighted in red or blue will not be affected by construction work. The following areas identified are limited use or nonuse areas: County Road 1, 5th Street in the Leadville town, staging area, and areas north of the Greenback clay borrow area and any areas within 10 feet of installed silt fence.

All of the areas will be restored by seeding and restored to their previous conditions or better. The silt fence around the blue outlined areas will protect from any sediment that may be runoff from any storm that comes through.

Any spills in the work area will be reported immediately to the Superintendent on site and work will be stopped to clean up the spilled area. A report will be filled out in accordance with the Spill Prevention Control Plan and the Project Engineer will be notified of the spill. After the contaminated area is cleaned and the Engineer approves that it is clear then work can be resumed.

Air Pollution Control Plan

All excess construction materials will be contained and covered on trailers to be brought back to American Civil Constructors yard in Littleton, CO to be disposed of. Dust will be kept to a minimum by using water to contain the dust to within the limits of disturbance. Other debris and trash will be maintained in the company's trucks in trash bags provided and will be disposed of at the end of each day.

Dust control will be contained in the construction limits to eliminate dust particles and other debris from leaving the job site. Air monitoring will be performed weekly to ensure that ACC is keeping the dust contained in the construction limits. During clearing and grubbing of each site, the trees will be cut down to where no trees are falling outside of the construction area. All of the limbs and other small branches will be cut off and stockpiled near the perimeter, which will later be run through a wood chipper. The remaining logs will be hauled to a stockpile area and be piled.

During the excavation part of the project daily air monitoring will be perform to ensure that the air quality is remaining at a low level. All of the excavation equipment operators will be required to keep the dust to a minimum, but without delaying the project. When hauling clay and dirt from site to site the trucks will not be filled all the way to the top, making sure that no debris will escape during the trips.

The overall project area will be kept neat and clean after every day of work.

Contaminant Prevention Plan

See the Site Health, Safety and Materials Plan for all hazardous materials and how to handle all of these items. The actions that are going to be taken to prevent any hazardous materials from escaping the construction limits are: no heavy equipment will be allowed to leave the construction area to enter the town of Leadville, unless on a trailer and inspected then washed off of any potential hazardous material. A Material Safety Data Sheet binder will be updated accordingly. If a hazardous spill is to occur the Spill Prevention Control Plan will be followed accordingly to protect the surrounding environments and to keep the spill from spreading.

Wastewater Management Plan

All equipment will be monitored continuously throughout the day to make sure that no hazardous fluids are leaking from any equipment and entering the soil. If any equipment needs decontamination water, it will be collected into some contained container to where it can be shipped off to a waste management facility to be correctly disposed of. See the section number 2.7 in the Spill Prevention Control Plan for methods of disposal.

All Environmental Permit Equivalencies, Notifications, Certifications, etc.

See attachment "B" for certification, otherwise not applicable.

Earthwork Plan

During the construction excavation of the LSG and Greenback areas two main pieces of machinery will be used: D6 dozer, D8 dozer and 724K loader. These pieces of equipment will be responsible for removing topsoil, clearing and grubbing, removal of overburden and excavating clay. Haul trucks will be used to transport clay from the Greenback site to the LSG site. All of the heavy equipment will be inspected throughout the day to make sure of no leaks or the possibility of becoming a problem for leakage. The power screener will be used during the screening process of the LSG area and will be inspected before the start of screening and after each day the screening is going on. Best Management Practices will be used to ensure that all of the construction related items stay within the construction boundaries. The heavy equipment will refrain from using the County Roads and will be stationed on the excavation sites. If for some reason the heavy equipment needs to relocate to another part of the site, someone will follow to make sure nothing leaks and to help direct the operator through the dirt roads. For any spills regarding oil leaks, hydraulic fluid leaks, etc. see the Spill Prevention Control Plan for further instructions and ways to clean the area.

Preventive Measures

Preventive measures will be in accordance with the Spill Prevention Control Plan. Every worker on site will be responsible for using general knowledge to make sure that preventive measures are taken into effect each work day. Karl Frakes will be the person responsible for all of the activities and Best Management Practices during construction. Karl will keep daily logs of the activities going on throughout the day.

Certificates

See attachment "C" for all HAZWOPER certifications.

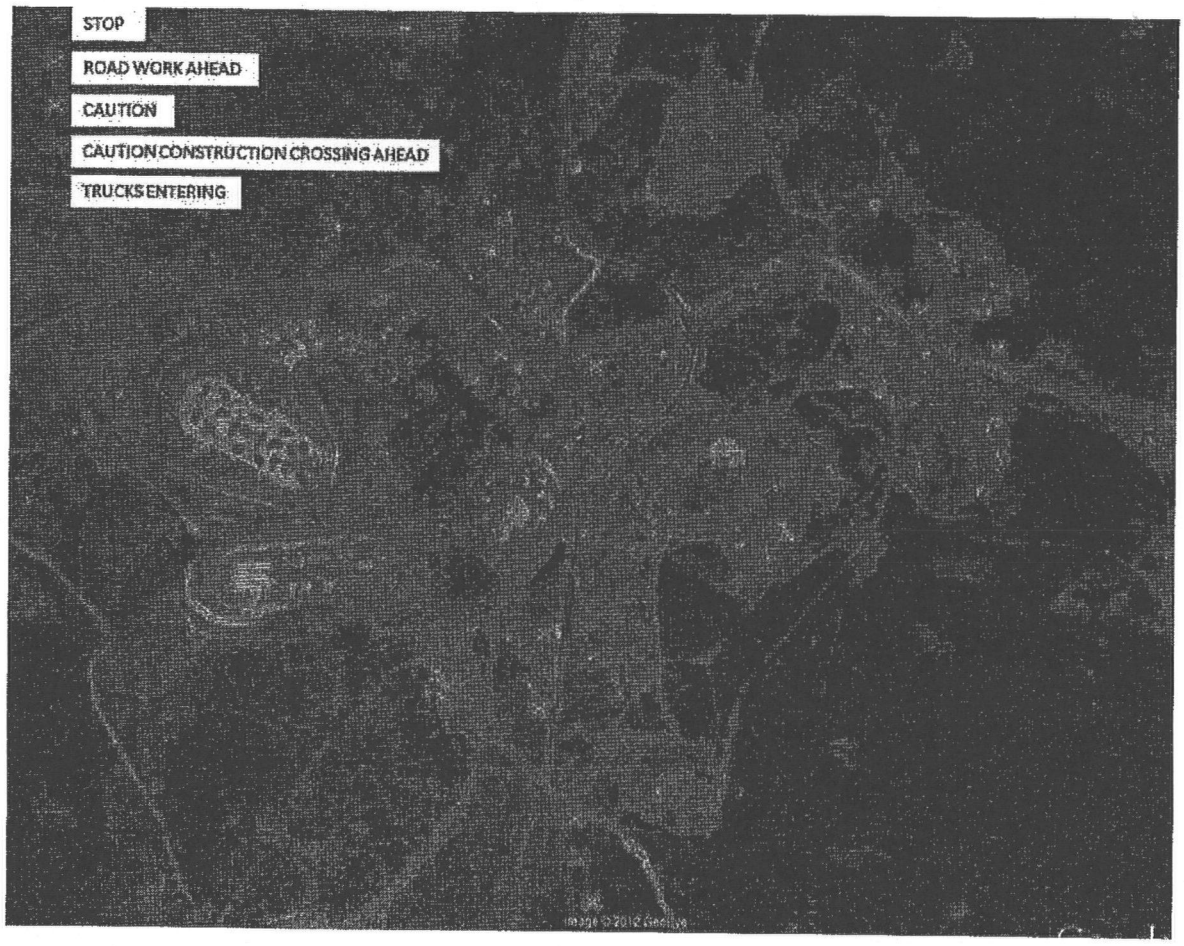
Protection Features Report

Any trees, shrubs or grass areas outside of the silt fence will be maintained as their present appearance. The areas affected by construction will be installed according to the plans and specifications. The trees that will be removed from the construction site will either be stockpiled (4 inches or greater in diameter) or chipped up and then stockpiled (trees less than 4 inches in diameter). All of the dirt and asphalt roads will be repaired to their original form. All historical features discussed in the pre-construction site walk will be preserved and no surrounding environments will be harmed during the construction process. Trees that are in the construction limits, but are not be in the way of the construction process will be preserved. The construction affected areas will be removed of all construction related items and equipment once substantial completion is achieved.

Signatures for Verification Date:

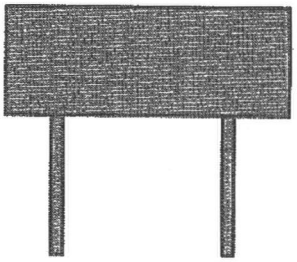
Date:

Attachment "A"



From top of stop sign to base of stop sign is 2.5 feet. The base of the stand to the top of the stop sign is 4 feet. These stop signs will be placed on each side of the bike path, one entering County Route 1 (turning right) and one for exiting from the LSG site.

The sign is 4 feet on each side and is 5 feet tall from the base of the legs to the top of the sign.



The TRUCKS ENTERING, CAUTION and CAUTION CONSTRUCTION CROSSING AHEAD signs are all going to be 36 inches long by 18 inches high. The height from the top of the sign to the base of the green post is 4.5 feet.

Attachment "B"

ALTITUDE TRAINING ASSOCIATES

Awards this Certificate of Completion to

Anthony Gregorich

Who on June 16th, 2012 Successfully Completed
the Following Training Class:

Stormwater Management During Construction
CDOT Erosion Control Supervisor

Tom Lee
Instructor
Altitude Training Associates

ALTITUDE TRAINING ATA ASSOCIATES

Completion of This Course Has also Earned the Recipient .8 CEU's

DOT COLORADO DEPARTMENT OF TRANSPORTATION

EROSION CONTROL SUPERVISOR TRAINING

Issued to: Anthony Gregorich

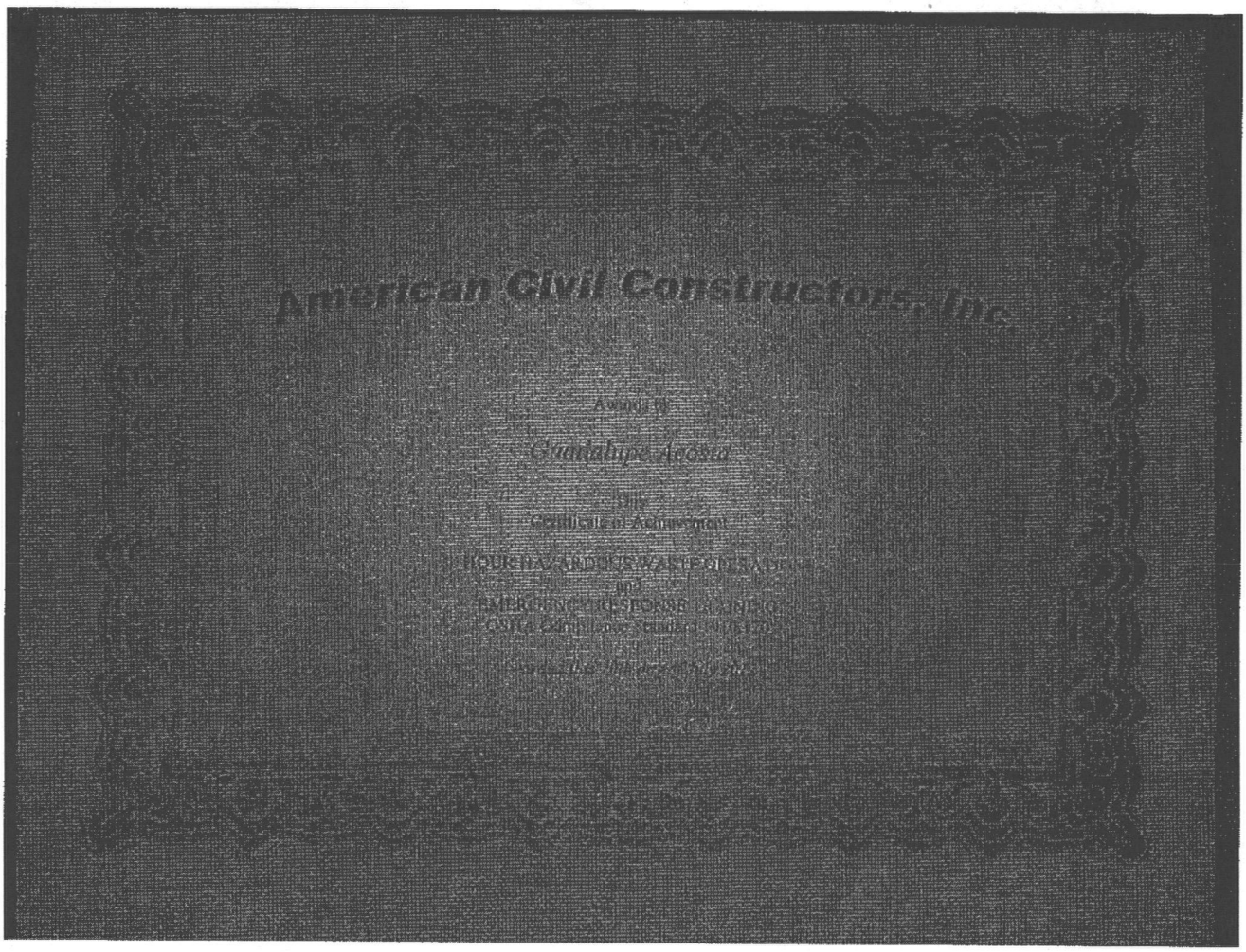
Date: 6-16-2012

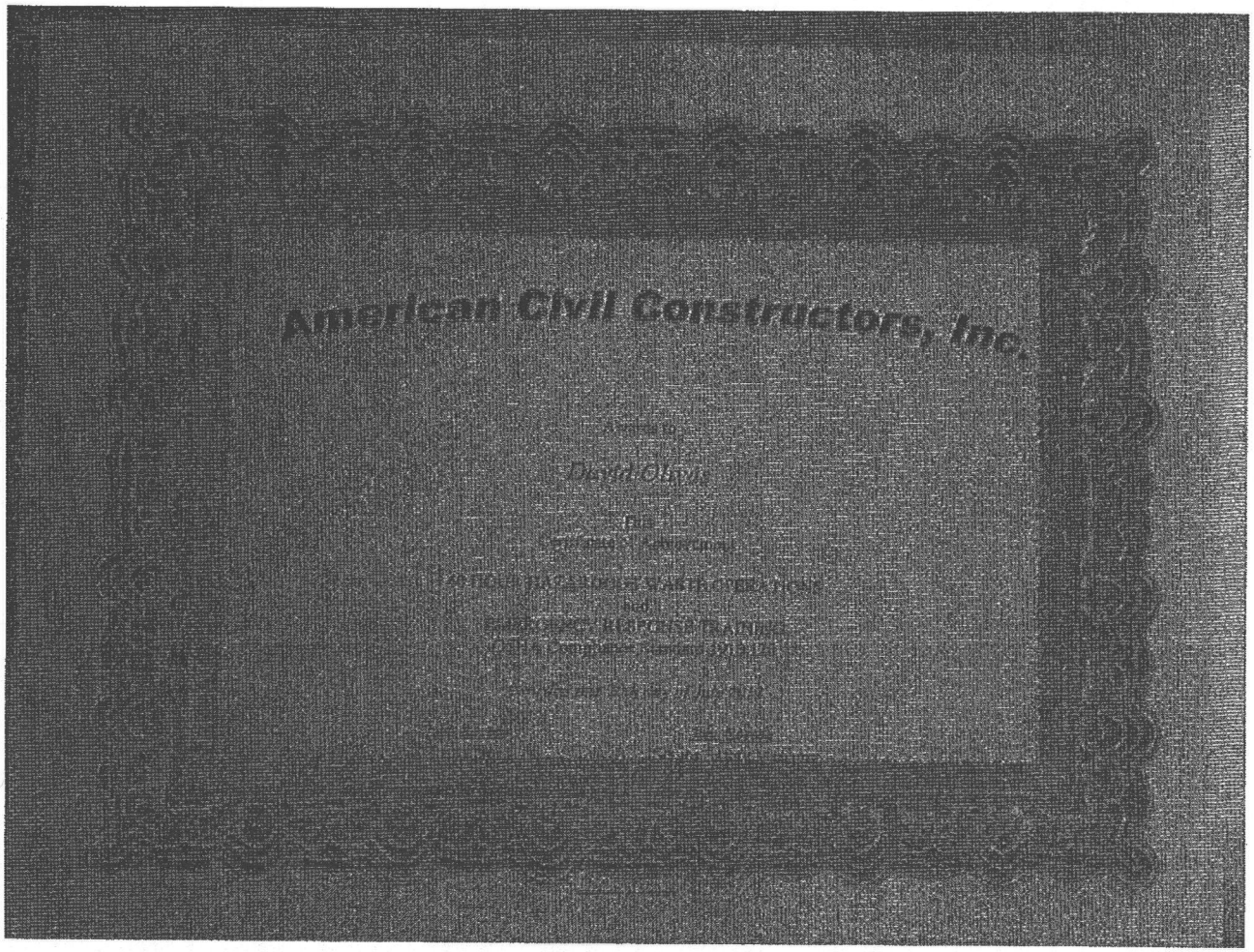
The person identified above has successfully completed an Erosion Control Supervisor Training Program approved by the Colorado Department of Transportation.

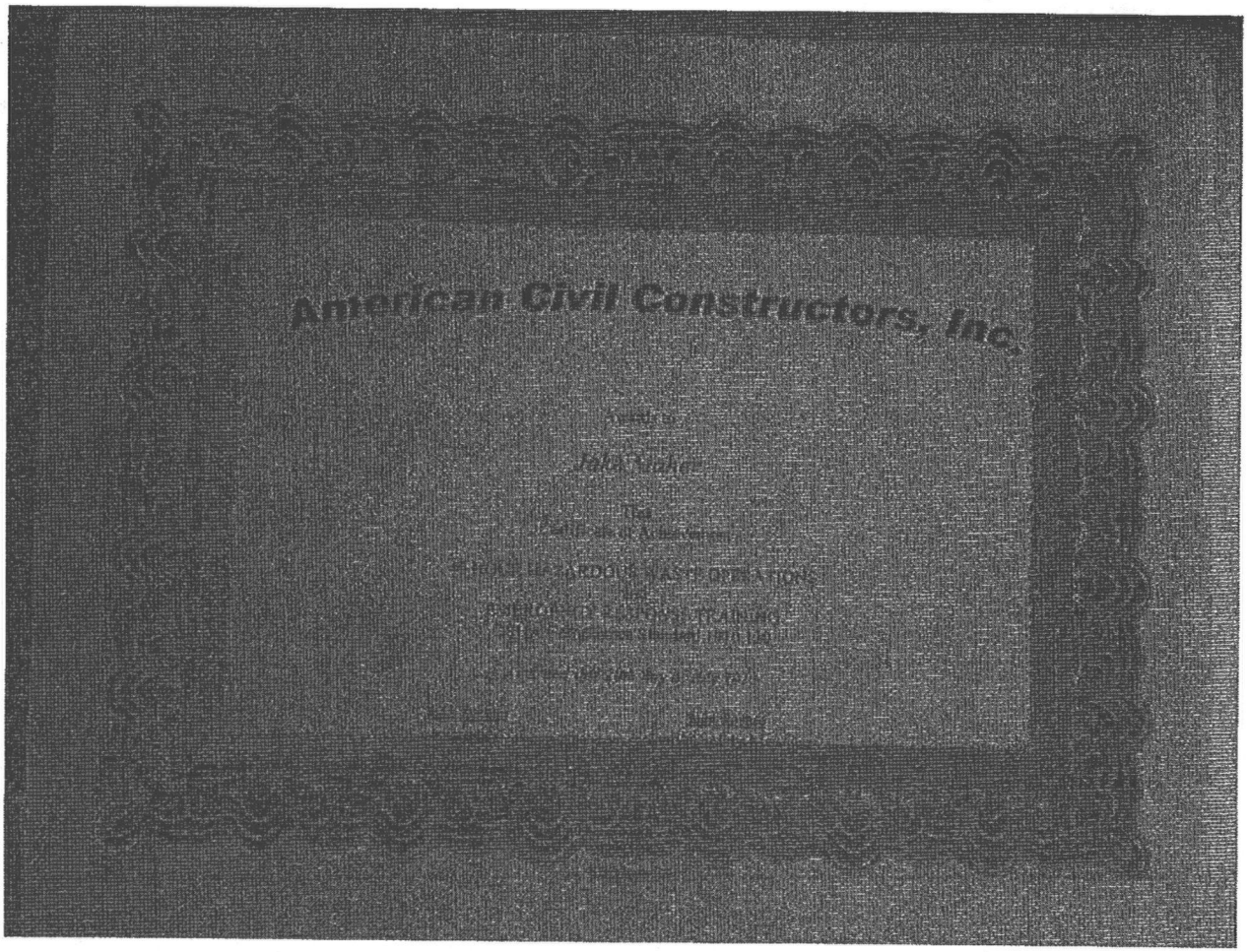
Chief Engineer
Colorado Department of Transportation

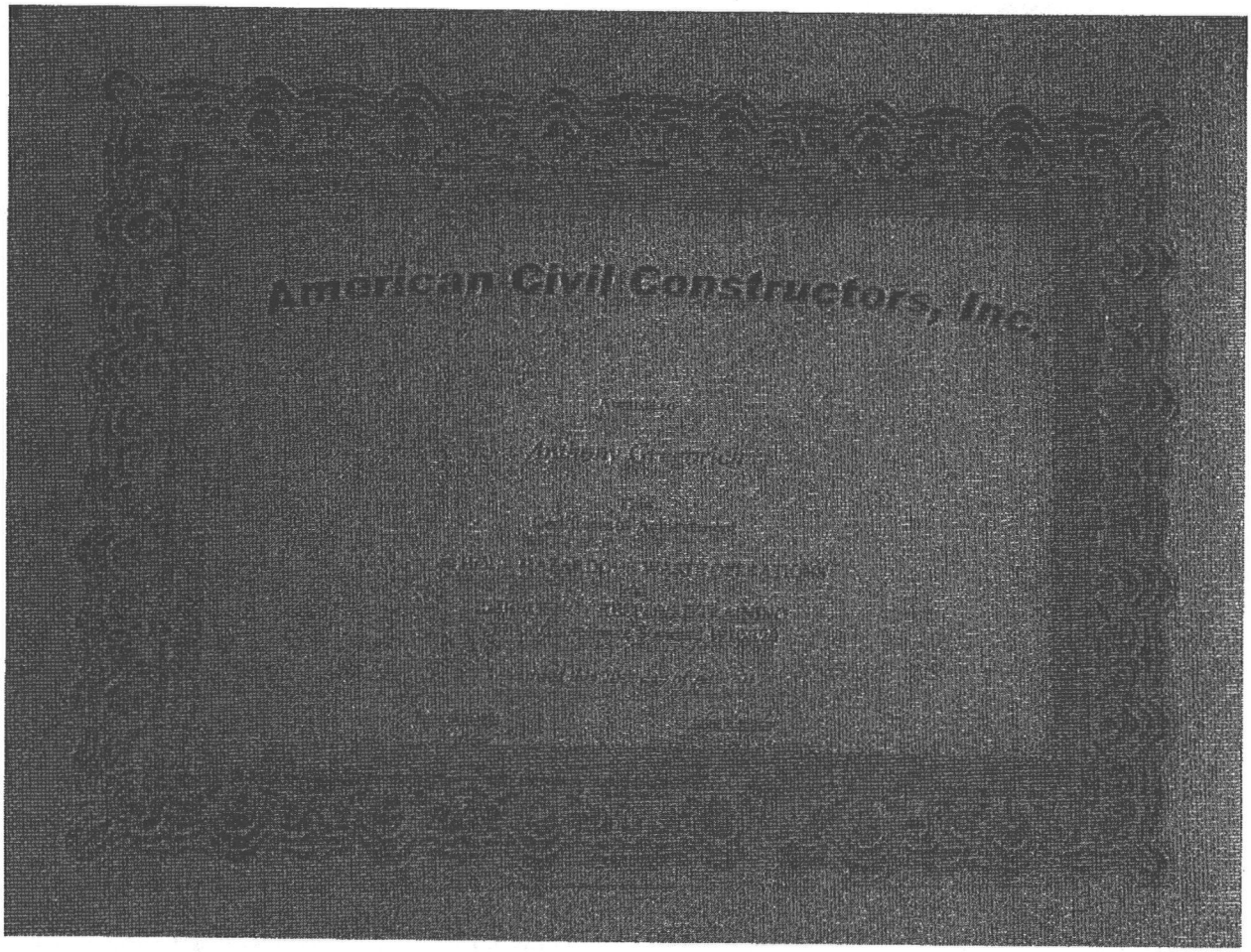
Tom Lee
Instructor

Attachment "C"




American Civil Constructors, Inc.


American Civil Constructors, Inc.


American Civil Constructors, Inc.

American Civil Constructors, Inc.

Section 9

Quality Control Plan

American Civil Constructors

4901 South Windermere Street
Littleton, Colorado 80120

Quality Control Plan

Lake County Project No. 2012-1
California Gulch Superfund Site

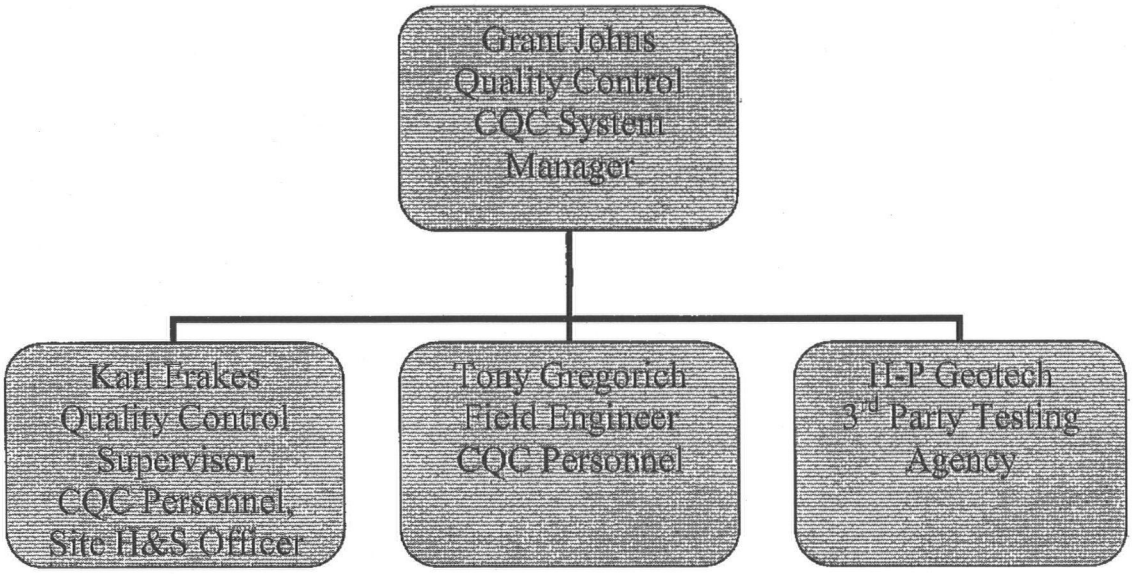
Prepared For:
Lake County, Colorado

a) Plan Development

It is American Civil Constructors, Inc. intent to provide our customers (Lake County) with the highest quality product in accordance with the Standard Specifications for Contaminated Soil Repository Construction.

- American Civil Constructors, Inc. would like to submit for approval the following organizational structure and methods as to execute and implement our Quality Control Plan.

Organizational Chart



- ACC will supply a Project Manager, Grant Johns, to oversee and direct quality control personnel. Karl Frakes will be ACC's on site Superintendent. ACC will also supply Quality Control Representatives under the direction of Karl Frakes (on-site Superintendent and Lead Quality Control Representative). It will be Karl Frakes's responsibility to report directly to Grant Johns on a daily basis. Karl Frakes's reports shall contain a summarization of daily construction activities, potential problems and any other relevant information. The Field Engineer, Tony Gregorich, will be responsible for the collection of all information during the 3 phases of each item. Although Grant Johns will not be on-site one hundred percent of the time, he will, on a daily basis, be in contact with Karl Frakes, whom will be held responsible for quality control practices and act as quality control representative. H-P Geotech will perform the on-site testing, as required by relevant construction activities. American Civil Constructors, Inc.'s on-site personnel and H-P Geotech's (3rd party testing agency) tester will be held accountable for any quality control measures necessary for construction. ACC reports shall contain daily test results, future tests deemed necessary for construction in accordance with the construction schedule and any other relevant information that pertains to testing and quality control. H-P Geotech will be responsible for all laboratory testing requirements.

- Grant Johns will be responsible for reviewing the plans and specifications with the construction crew(s) prior to beginning work on each contract pay item via Karl Frakes. In this capacity Grant Johns will be able to illustrate, dictate and interpret the plans and specifications for this particular project. He will also be responsible for obtaining proper certifications, submittals, required tests and sampling.

  The overall goal of ACC's Quality Control Plan is to conduct consistent and effective processes and procedures such that work performed naturally conforms to the contract requirements. Testing and inspection will be performed and documented for the purpose of evaluating the effectiveness of our work processes, identifying and correcting non-conforming work and ensuring that the quality of the work is not compromised.

  Please advise me if there are any additions or supplements you would like us to make to this Quality Control Plan. If there are changes to any items (personnel, suppliers, etc...) we will attempt to provide the Lake County notice in advance of their impact on the work.

b) Personnel Qualifications

1. Document the name, authority, relevant experience, and qualifications of person with overall responsibility for the inspection system: Karl Frakes and Tony Gregorich

   Please refer to the attached documents.

2. Document the names, authority and relevant experience of all personnel directly responsible for inspection and testing: Grant Johns, Karl Frakes, Tony Gregorich and Jared Cohen from H-P Geotech for Testing.

   Please refer to the resumes below.

3. Document of pre-qualifications of ACC, their crews, construction methods, sequence of installation, tolerances, workmanship, standards and the approach to providing quality work can be seen at the bottom of this document:

   Please refer to Attachment "A" (at the end of the QC Plan) for ACC's Statement of Qualifications.

Resumes

GRANT JOHNS
Project Manager

American Civil Constructors

Qualifications
With over fourteen years in the heavy construction industry, Mr. Johns' experience ranges from $70,000 to $22,000,000 projects (including high altitude). His wide variety of experience includes acting as project engineer and project superintendent, handling contract negotiations, scheduling, and subcontract administration. He is a skilled estimator, surveyor, and quality control inspector.

Education
B.S. - Range and Forest Management, Colorado State University, Fort Collins, CO. 1997.

Experience

2004-Present American Civil Constructors. *Project Manager/Pre-Construction Services*

- **Minute Man Missile MATOC project:** ACC is one of three contractors invited to bid on the Minute Man Missile projects let by the FHWA. Work entails the re-graveling of service roads and while the work is not technical the aggregate specifications are stringent.
- **Beartooth Highway: This project for FHWA involves construction of roadway and replacement of a bridge.**
- **Edwards, Interchange:** Construction of 4 roundabouts within the existing interchange off of interstate I-70.
- **Orvis-Shorefox Golf Course/Site Development:** Mass excavation of over 2.5 million yards of dirt, construction of roads and bridgework. The owner continually added to ACC's scope of work developing the contract over 140%
- **Vail Front Door Project:** for Hyder Construction. This was a structural excavation project at the base of Vail Mountain.
- **Guanella Pass, FHWA:** Construction of a high mountain pass including 8.5 miles of road, MSE retaining walls, soil nail walls dry stacked with Boulders and reclamation/landscape. This project spanned four construction seasons.

1999-2004 American Civil Constructors. *Project Superintendent/Engineer/Estimator*

- **Crown Mountain Park**
- **Bryce Canyon National Park, FHWA:** 11 miles of major road reconstruction including; mass excavation/grading, drainage structures, retaining walls, concrete and asphalt paving, erosion control, and reclamation.
- **I-70/Post Blvd. Interchange, Colorado Department of Highways/Traer Creek Metropolitan District.** Mass excavation/grading, bridge demolition, pre-cast girder bridges, storm sewer, retaining walls, concrete and asphalt paving, erosion control, and reclamation
- **Hayden Meadows Reservoir, Lake County Government.** Mass excavation, lake liner & cover, riprap, outlet works, reclamation

- **Redland Mesa Development, Redlands Mesa, LLC.** Mass excavation, water, storm, sewer, and irrigation piping, concrete flatwork, asphalt paving
- **Straight Creek/I-70 Rehabilitation, Colorado Department of Highways.** Rock Scaling, mass excavation, erosion control, reclamation, asphalt paving
- **IKBar Ranch Development, Eagle County School District.** Mass excavation, water, storm, sewer, and irrigation piping, structural concrete, concrete flatwork, asphalt paving, erosion control, reclamation
- **Beaver Creek Snowmelt, Beaver Creek Metropolitan District.** Mass excavation, demolition, structural concrete vault construction, mechanical snowmelt system, concrete flatwork, retaining walls, storm sewer

1998-1999 **The Industrial Company (TIC).** *Project Engineer.* Duties included subcontract administration, acting as cost engineer, estimator, and quality control inspector.

- **Big Hill Strategic Petroleum Reserve Rehabilitation - Beaumont, TX.** United States Federal Government. Mechanical piping systems, electrical and instrumentation systems, structural concrete, site improvements.

1996-1997 **Trapper Mining Inc.** *Environmental/Engineering Intern*

- Surface coal mining operations including surveying, technical permitting, erosion control, and reclamation

KARL FRAKES
Superintendent/Foreman

Qualifications

Mr. Frakes joined American Civil Constructors, Inc. in 1998 as an operator and shaper in the company's golf course division. While highly qualified on most heavy equipment, Mr. Frakes has mastered the dozer creating the undulations needed in golf course work, drainage improvements, wetlands and berming. Mr. Frakes serves as a superintendent and foreman with extensive skills reading plans, surveying, implementing designs, managing crews and cost control.

Education

- OSHA 40
- First Aid/CPR
- Trenching/Excavation Safety
- Confined Space Access

Experience

1998 – Present **American Civil Constructors, Inc.** Project Superintendent

- I-70 Joint Repair Project -- Foreman on a structural repair project. 2009
- Lake Street Improvements – Streetscape construction with artistic features. 2008
- Vail's Front Door -- Site development and structural excavation 2007-2008
- Cornerstone Wetlands – Wetland construction associated with a golf course. 2007
- Crown Mountain Park -- Creation of a regional park in Eagle County. 2006
- Pradera Golf Course -- Golf course shaping and grading. 2005
- Preserve Drainage Improvements – Drainage way improvements/wetlands. 2005
- Lakota Canyon Ranch - Golf course shaping and grading. 2004
- Fossil Trace Golf Course - Golf course shaping and grading. 2003
- Common's Park – Park Construction/wetland mitigation. 1999

Other:

Colorado Road Racing - Novice

Tony Gregorich
Project/Field Engineer

Education

Colorado State University

Applied Human Sciences, Construction Management

2007 – 2012

Minor in Business Administration

Experience

Project Engineer

American Civil Constructors

May 2012– Present (4 months) Littleton, CO

-Responsible for assuring all on-site deliverables pertaining to the contract are submitted and tracked
-Confirm that materials and work are consistent with specifications, job costing and budget management
-In charge of subcontractor management, billings, schedule revisions and quality assurance
-Head project Engineer for Soil Repository Superfund Site in Leadville, CO

Construction Management Internship

GE Johnson Construction Company

May 2011– December 2011 (8 months) Colorado Springs, Colorado Area

-Assisted Project Manager and Superintendents by updating drawings when RFCs were finalized by using Auto CAD Software
-Was responsible for punch list completions and getting the subcontractors to complete their work
-Attended weekly foreman and owners meetings to grasp a better understanding of communication between each other
-Performed weekly compliance reports (ICRA/ILSM) for the hospital on the emergency department project and other various remodels
-Assisted with our Project Manager for getting estimates/pricing from the subcontractors

c) Submittal Procedures

ACC responsibilities are as follows: all submittals issued will be clearly identified, legible and will include the following as it appears in section 01330 sub-section 1.2 in the specifications book.

- Date of submission
- Project number
- Project name
- ACC, supplier, manufacturer or representatives identification
- Identification of products
- Reference to contract drawings and specification number, page and paragraph
- ASTM or Federal Standards numbers
- ACC's approval and certification statement

ACC will keep a log for each submittal and will include: a description, number, date transmitted to Engineer, date returned to ACC, if approve or not, date of resubmittal, date material released for fabrication, and actual delivery date.

d) Testing and Surveying Procedures

All testing should including the following on each document: test name, specification paragraph when requiring a test, amount of test frequency, and personal responsibility for each person. The testing will be procedures will be as follows: H-P Geotech will come to the site when testing is required from ACC, the tester will take a 5 gallon bucket from the designated area indicted by ACC, and the tester will abide by all safety regulations according to the safety and health plan. Once the sample has been taken it will be documented at what time of day the sample was taken and date from H-P Geotech. As the test results come in H-P Geotech will inform ACC and then ACC will inform CDM Smith of the official test results. ACC and CDM Smith will verify that the samples meet the specifications of the project and will agree to accept the material for approval or if a problem occurs will come to resolution. A record of each test will be kept for further reference and keep track of all the samples that were taken and when the testing took place.

Surveying will be taken place after each major excavation to get estimated excavation volumes. The following are site areas that will need to be surveyed for volumes quantities immediately after excavations: LSG stockpile area, LSG soil borrow area, Greenback clay borrow area topsoil and overburden, Greenback clay borrow area for clay hauling. Each quantity survey will be done after each activity listed above to get the bank cubic yards amount.

A weekly two week look-ahead schedule will be disturbed to everyone associated with the California Gulch project. The weekly schedule will show what will be done during the next two weeks and showing all surveying and testing activities. See attachment "A" for all testing and surveying scheduling/procedures.

Attachment "A"

Surveying			
Area to Survey	**Estimated Volume (BCY)**	**Time Period to Survey**	**Material Type**
LSG Stockpile Area	400	After Excavating the existing topsoil (Will have to measure in consideration to stockpile areas and agree upon quantity)	Topsoil
LSG Stockpile Area	900	After Excavating the existing overburden (Will have to measure in consideration to stockpile areas and agree upon quantity)	Overburden
LSG Overburden (Repository)	21,700	After Excavating and Screening of LSG Overburden	Overburden
LSG Overburden (Repository)	900	After Excavation of LSG Overburden (CSR Floor)	
Greenback Clay borrow area	780	After Excavating the existing topsoil	Topsoil
Greenback Clay borrow area	820	After Excavating the existing topsoil	Overburden
Greenback Clay borrow area	5,200	After Excavating and Hauling Clay to CSR Floor	Clay
Greenback Clay borrow area		After compacted overburden and topsoil has been placed	Topsoil and Overburden

Testing		
Area of Test	**Time Period of Test**	**Material Type**
LSG borrow area (Repository area)	During Screening of Repository area	2 inch minus
LSG borrow area (Repository area)	During Excavating of Repository area	Overburden
Greenback Clay borrow area	Before Hauling of Clay	Clay
Greenback Clay borrow area	During Hauling of Clay (Every 1,000 BCY)	Clay
LSG borrow area (Repository area)	Once clay has been placed and compacted	Clay (Moisture and Density Testing)
LSG borrow area (Repository area)	Once clay has been placed and compacted	Clay (Hydraulic Conductivity Testing)

e) Quality Control Procedures and Material Handling Plan for Clay Liner

(1) Preparatory Phase

(a) Review all contract requirements: QCS shall review contract requirements. QCS will obtain any quality tests or samples of materials per the contract requirements. H-P Geotech will perform proctor tests on backfill material. H-P Geotech will also perform Gradation, Liquid Limit, Moisture density, and compaction testing.
(b) Ensure compliance of component material to the contract requirements: Review testing reports to ensure they meet project specifications.
(c) Coordinate all submittals including certifications: QCS shall submit test results for each of the tests outlined.
(d) Ensure capability of equipment and personnel to comply with the contract requirements: Review contract documents and allocate applicable equipment/personnel. Ensure preliminary testing is accomplished: Refer to item c above. See below tables for specific requirements.
(e) Coordinate surveying and staking of the work: Staking not required for this item.

(2) Initial phase

(a) Review the contract requirements with personnel who will perform the work: QCS will review the required construction bid item being performed.
(b) Inspect start-up of work: QCS will inspect all construction work being performed.
(c) Establish standards of workmanship: QCS shall emphasize and implement a standard or workmanship. Work will be observed to generate a pattern or procedure that results in the necessary materials/methods etc. required.
(d) Provide training as necessary: QCS will provide necessary information or expertise when needed to obtain results necessary in accordance with the specifications.
(e) Establish detailed testing schedule based on the production schedule: QCS shall coordinate with Tester to ensure testing requirements are met.

(3) Follow-up phase

(a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies
(b) Inspect completed phases before final review and final inspection
(c) Provide feedback with any system changes or deficiencies
(d) Correct any system changes or deficiencies made/noticed
(e) Re-inspect to ensure changes were made according to the specifications and drawings

The specified equipment listed for the installation of clay barrier liner is as follows: compaction equipment, scarification equipment, steel wheeled equipment and hand operated tampers. Compaction equipment shall consist of one tamping foot roller which will be at least 40,000 pounds and should provide 110 square inches of drum surface. The outside length of the drum shall be greater or equal to the thickness of the loose lift thickness.

Scarification equipment shall consist of disks, rotor tillers and other equipment that might be necessary means to scarify the surface. The equipment shall provide uniformly disturbing upper 1 inch of the clay so it can get good bonding between lifts.

The steel wheeled rollers should consist of a smooth, non-vibratory wheel to smooth out the clay surface and will be at least 20,000 pounds.

The single drum roller that ACC will be using to compact the clay will be a Vibromax Model number VM115 D. Some of the critical dimensions are as follows:

- Operating Weight – 28660 lbs
- Max Speed – 7.9 MPH (but operator will not exceed 5 MPH when compacting clay)
- Drum Width – 82.7 inches
- Drum Diameter – 59.1 inches
- Static Linear Load – 194.9 lbs/inch
- Overall Length – 18.8 ft in
- Wheelbase – 9.8 ft in
- Ground Clearance – 17.6 in

The operator on the roller that will be used will have at least 500,000 square feet of clay linear experience, to ensure that the correct procedure is taken in effect.

Hand operated tampers will consist of rammers or other impact equipment, but no vibratory tampers will be used.

All equipment on site for the clay barrier layer will not brake suddenly, take sharp turns or excess the speeds of 5 miles per hour. The equipment for the clay liner can be found in the specification book under section 02377 1.3 through 1.3.4. ACC will be using a 815B Compactor.

Refer to Section 02377 Clay Barrier Layer, for procedures on moisture control placement, compaction and lift thickness; including procedures for reporting field test locations, etc. Protection from adverse weather conditions via installation of subsequent layers of geotextile and rock will be dealt with immediately to prevent any further problems. If any freezing or desiccation occurs refer to Section 02377 Clay Barrier Layer subsection 3.5.3 Protection, Freezing and Desiccation.

Physical Properties of Clay		
Property	Test Value	Test Method
Min. percent passing No. 4 sieve	80	ASTM D 422
Min. percent passing No. 200 sieve	50	ASTM D 1140
Min. liquid limit	35	ASTM D 4318
Min. plasticity index	10	ASTM D 4318
Max. plasticity index	40	ASTM D 4318
Max. hydraulic conductivity (cm/s)	1 x 10^-7	ASTM D 5084

Note 1: Screening will be done by the owner and not ACC.

Clay Material Properties		
Property	Frequency	Test Method
Particle size analysis (Note 1)	1,000 cubic yards	ASTM D 422
Atterberg limits (Note 1)	1,000 cubic yards	ASTM D 4318
Compaction	1,000 cubic yards	ASTM D 698
Hydraulic Conductivity	1,000 cubic yards	ASTM D 5084

Note 2: Compaction test results can be compared to previous results, see attachment A in the specifications book(Summary of Geotechnical Results for Greenback Clay samples can be found in the specification book, in the back of section 02377 (Clay Barrier Layer)).

Moisture Content and Density Tests of In-Place Clay		
Property	Frequency Per Lift	Test Method
Rapid Moisture Content	8,500 square feet	ASTM D 6938
Rapid Density	8,500 square feet	ASTM D 6938

Hydraulic Conductivity, Moisture, Thickness Tests of In-Place Clay		
Property	Frequency Per Lift	Test Method
Hydraulic Conductivity	50,000 square feet	ASTM D 5084
Moisture Content	50,000 square feet	ASTM D 2216
Thickness	10,000 square feet	Core sample

f) QC Procedures for Removal of oversized rock and organic matter

Removal of oversized stones will be placed as Lake County suggests for further use in the town of Leadville. If there is no suggested placement for the boulders, they will be placed at a designed site on the project to be determined by Lake County. If any oversized organic matter is discovered during the excavating process it will follow the Section 02910 Growth Media located in the project specification book for procedures. The organic matter will be placed and stockpiled at the Greenback stockpile area or other wised specified by Lake County

All locations for field density test, depth check locations and hydraulic conductivity sampling locations will also be specified by American Civil Constructors onsite. Once the testing results have been processed ACC will send out the final results to CDM Smith, Lake County and all others associated with the project.

After any major rain/snow storm an inspection will be performed by ACC for the protection of the liner, where any damaged material will be replaced immediately for preventing further damage.

g) Additional Procedures for Tracking Line Items

The following phase activities will be follow the procedures below them to keep track of what activities are going on during the duration of the project.

1. Temporary Access Improvement

a. Preparatory phase – A traffic control plan will be followed and signs will be installed to control the traffic on County Road 1 and other dirt roads around the jobsite. This traffic control plan will be located in the environmental protection plan and be in accordance with Section 01355 in the specification book. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.

2. Clearing and Grubbing
   a. Preparatory phase – All locations of clearing and grubbing will be shown on the contract drawings of where to stockpile all trees and other small branches and limbs. The larger trees will be stockpiled and indicted on the drawings of where to stockpile these. The clearing and grubbing work will follow the specification Section 02231. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
   b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
   c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.
3. Excavation of Existing Topsoil
   a. Preparatory phase – The excavation or 6-inch top layer of the LSG and Greenback areas will stockpiled at the areas indicted on the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.

b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. Erosion control items will be installed before the beginning of removal of topsoil to ensure that no sediment escapes from the jobsite. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.

4. Excavation of Overburden at LSG
   a. Preparatory phase – The excavation and regrade of overburden at the LSG areas will stockpiled at the indicted LSG stockpile area located on the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
   b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. Once the overburden is removed and compacted to grade this will create the CSR floor, leachate collection pond, and other features mentioned on the contract drawings. Screening will take place from this material to create the 2-inch minus soil and 2-inch to 12-inch rock to be used later for the leachate collection system, onsite riprap and other purposes. The remaining material not used will be stockpiled at the LSG stockpile area for future use. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
   c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.
5. Excavation of Overburden at Greenback
   a. Preparatory phase – The excavation of the overburden soil in the Greenback area will be stockpiled at the stockpile area as shown on the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
   b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of

equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.

c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.

6. Excavation of Clay at Greenback
   a. Preparatory phase – The excavation of the clay at the Greenback borrow area will be hauled in haul trucks to the repository area for the CSR liner system, according to the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
   b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
   c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.
7. Installation of Central Run-on Control Berm
   a. Preparatory phase – Once the clay liner has been installed a central run-on control berm will be installed in the middle of the repository area, according to the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
   b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
   c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.
8. Installation of Erosion Protection at CSR

a. Preparatory phase – Once everything is installed in the CSR area ACC will amend the soil stockpiles and perimeter run-on control berm, according to the contract drawings. Also seeding will be placed at these sites as well for erosion control protection. This activity will not only follow the contract drawings, but also follow with specifications Section 02370 Seeding and Erosion Control and 02910 Growth Media. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.

9. Restoration of Road/Runoff Channel at Greenback
    a. Preparatory phase – The road/runoff channel located southwest of the Greenback site will be restored after completion of construction in the Greenback area, according to the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02230 Riprap and Granular Fill Material and 02300 Earthwork. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel on the jobsite have the correct certifications and appropriate paper work required for this activity.
    b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.
    c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.
10. Restoration of Greenback Clay Borrow Area
    a. Preparatory phase – After overall completion of hauling of clay, the Greenback area will be restored, according to the contract drawings. This activity will not only follow the contract drawings, but also follow with specifications Section 02300 Earthwork, 02910 Growth Media and 02370 Seeding and Erosion Control. All equipment and necessary personnel will be delivered before the start of this activity to ensure that no delays will occur. Finally make sure that all personnel

on the jobsite have the correct certifications and appropriate paper work required for this activity.

b. Initial phase – Once everything is in order and ready to begin construction inspections of the equipment will be performed to ensure that each piece of equipment is running correctly and there are no needed repairs. The foreman/superintendent will go over the plan for completing this activity and what needs to be for each day during the activity.

c. Following-up – Once this activity phase has been completed the equipment will be final inspected to make sure that the equipment is clean from any lead particles and to see if any repairs are needed before the piece of equipment can leave the jobsite. If the piece of equipment is not leaving the jobsite, but is just moving to another location on site, it will still be inspected but not cleaned off yet of lead.

11. Item Compact/Excavation LSG Overburden

(1) Preparatory Phase

(a) Review all contract requirements: QCS shall review contract requirements. QCS will obtain any quality tests or samples of materials per the contract requirements. H-P Geotech will perform proctor tests on backfill material. H-P Geotech will also perform Gradation, Liquid Limit, Moisture density, and compaction testing.

(b) Ensure compliance of component material to the contract requirements: Review testing reports to ensure they meet project specifications.

(c) Coordinate all submittals including certifications: QCS shall submit test results for each of the tests outlined.

(d) Ensure capability of equipment and personnel to comply with the contract requirements: Review contract documents and allocate applicable equipment/personnel. Ensure preliminary testing is accomplished: Refer to item c above. See below tables for specific requirements.

(e) Coordinate surveying and staking of the work: Staking not required for this item.

(2) Initial phase

(a) Review the contract requirements with personnel who will perform the work: QCS will review the required construction bid item being performed.

(b) Inspect start-up of work: QCS will inspect all construction work being performed.

(c) Establish standards of workmanship: QCS shall emphasize and implement a standard or workmanship. Work will be observed to generate a pattern or procedure that results in the necessary materials/methods etc. required.

(d) Provide training as necessary: QCS will provide necessary information or expertise when needed to obtain results necessary in accordance with the specifications.

(e) Establish detailed testing schedule based on the production schedule: QCS shall coordinate with Tester to ensure testing requirements are met.

(3) Follow-up phase

(a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies
(b) Inspect completed phases before final review and final inspection
(c) Provide feedback with any system changes or deficiencies
(d) Correct any system changes or deficiencies made/noticed
(e) Re-inspect to ensure changes were made according to the specifications and drawings

Granular Fill Material	
ASTM C 136	Standard Test Method for Sieve Analysis of Fine and Course Aggregates
ASTM D 422	Particle-Size Analysis of Soils
ASTM E 11	Wire Cloth and Sieves for Testing Purposes

Class 4 Gravel-Used for road surface stabilization and road improvements	
U.S. Standard Sieve	Mass Percent Passing Square Mesh Sieves
2 inch	100
1 ½ inch	90-100
¾ inch	50-90
No. 4	30-50
No. 200	3-12

Class 6 Gravel-Used as bedding for culverts and Riprap	
U.S. Standard Sieve	Mass Percent Passing Square Mesh Sieves
¾ inch	100
No. 4	30-65
No. 8	25-55
No. 200	3-12

1-1/2-Inch Minus Filter Rock (Class B) will be placed over strip drains and polyethylene pipe (collection system)	
U.S. Standard Sieve	Mass Percent Passing Square Mesh Sieves
1 ½ inch	100
No. 4	20-60
No. 16	10-30
No. 50	0-10
No. 200	0-3

12. Item Screen LSG Overburden
(1) Preparatory Phase
(a) Review all contract requirements: QCS shall review contract requirements. QCS will obtain any quality tests or samples of materials per the contract requirements. H-P Geotech will perform proctor tests on backfill material. H-P Geotech will also perform Gradation, Liquid Limit, Moisture density, and compaction testing.

(b) Ensure compliance of component material to the contract requirements: Review testing reports to ensure they meet project specifications.
(c) Coordinate all submittals including certifications: QCS shall submit test results for each of the tests outlined.
(d) Ensure capability of equipment and personnel to comply with the contract requirements: Review contract documents and allocate applicable equipment/personnel. Ensure preliminary testing is accomplished: Refer to item c above. See below tables for specific requirements.
(e) Coordinate surveying and staking of the work: Staking not required for this item.

(2) Initial phase
(a) Review the contract requirements with personnel who will perform the work: QCS will review the required construction bid item being performed.
(b) Inspect start-up of work: QCS will inspect all construction work being performed.
(c) Establish standards of workmanship: QCS shall emphasize and implement a standard or workmanship. Work will be observed to generate a pattern or procedure that results in the necessary materials/methods etc. required.
(d) Provide training as necessary: QCS will provide necessary information or expertise when needed to obtain results necessary in accordance with the specifications.
(e) Establish detailed testing schedule based on the production schedule: QCS shall coordinate with Tester to ensure testing requirements are met.

(3) Follow-up phase
(a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies
(b) Inspect completed phases before final review and final inspection
(c) Provide feedback with any system changes or deficiencies
(d) Correct any system changes or deficiencies made/noticed
(e) Re-inspect to ensure changes were made according to the specifications and drawings
(f) All necessary tables/ additional material information is included above in Section for Compact/Excavation Overburden

The specific screening sizes will be as follows: 1. <2 inches, 2. <6 inches, 3. 2 to 12 inches Bi-product, and 4. > 6 inches riprap Bi-product. The 2-inch minus soil will be used for protective soil over the leachate collection system and the clay pond liner, and for the berm. Also the 2-inch minus will be used for stockpile for future use. The 6-inch minus will be screened of overburden from the LSG stockpile and will be used for future CSR construction.

For the oversized material of 2-inch to 12-inch rock, it will be used as drainage rock in the leachate collection system. The greater than 6-inch rock will be used as riprap channels and aprons which can be found on the contract drawings.

Further in-depth descriptions of the soil and rock usages can be found in the specification book under section 02300, 1.4.3 through 1.4.5.

13. Item Install Geotextile For Liner
    (1) Preparatory Phase
        (a) Review all contract requirements: QCS shall review contract requirements. QCS will obtain any quality tests or samples of materials per the contract requirements. H-P Geotech will perform proctor tests on backfill material. H-P Geotech will also perform Gradation, Liquid Limit, Moisture density, and compaction testing.
        (b) Ensure compliance of component material to the contract requirements: Review testing reports to ensure they meet project specifications.
        (c) Coordinate all submittals including certifications: QCS shall submit test results for each of the tests outlined.
        (d) Ensure capability of equipment and personnel to comply with the contract requirements: Review contract documents and allocate applicable equipment/personnel. Ensure preliminary testing is accomplished: Refer to item c above. See below tables for specific requirements.
        (e) Coordinate surveying and staking of the work: Staking not required for this item.

    (2) Initial phase
        (a) Review the contract requirements with personnel who will perform the work: QCS will review the required construction bid item being performed.
        (b) Inspect start-up of work: QCS will inspect all construction work being performed.
        (c) Establish standards of workmanship: QCS shall emphasize and implement a standard or workmanship. Work will be observed to generate a pattern or procedure that results in the necessary materials/methods etc. required.
        (d) Provide training as necessary: QCS will provide necessary information or expertise when needed to obtain results necessary in accordance with the specifications.
        (e) Establish detailed testing schedule based on the production schedule: QCS shall coordinate with Tester to ensure testing requirements are met.

    (3) Follow-up phase
        (a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies
        (b) Inspect completed phases before final review and final inspection
        (c) Provide feedback with any system changes or deficiencies
        (d) Correct any system changes or deficiencies made/noticed
        (e) Re-inspect to ensure changes were made according to the specifications and drawings

The engineer will be notified 24 hours before the delivery of geotextile rolls and unloading of the rolls. Once the rolls are on site they will be covered by waterproof wrapping until deployment, (if not already packaged that way) if samples are needed the sample will be taken and then the roll will be wrapped for protection.

Installation of the geotextile will be laid smooth and free of ruts or protrusions, making it so it is in direct contact with the subgrade. The overlap seams for the geotextile will be a minimum of 12 inches at all joints and where seams are going across the slope, the upper panel will be overlapped by the lower panel.

Minimum Physical Requirements for Drainage Geotextile			
Property	Units	Acceptable Values	Test Method
Grab Strength	LBS	200	ASTM D 4632
Mass per Unit Area	OZ/SY	8	ASTM D 5261
Puncture	LBS	110	ASTM D 4833
Trapezoid Tear	LBS	80	ASTM D 4533
Grab Elongation	PERCENT	50	ASTM D 4632
Mullen Burst	PSI	350	ASTM D 3786
Flow Rate	GAL/MIN/SF	90-110	ASTM D 4491
Apparent Opening	U.S. SIEVE	60-90	ASTM D 4751
Permittivity	SEC -1	1.5	ASTM D 4491
Ultraviolet Degradation	PERCENT	70% at 500 hours	ASTM D 4355

14. Item Install Leachate Collection Piping/Drainage
    (1) Preparatory Phase
        (a) Review all contract requirements: QCS shall review contract requirements. QCS will obtain any quality tests or samples of materials per the contract requirements. H-P Geotech will perform proctor tests on backfill material. H-P Geotech will also perform Gradation, Liquid Limit, Moisture density, and compaction testing.
        (b) Ensure compliance of component material to the contract requirements: Review testing reports to ensure they meet project specifications.
        (c) Coordinate all submittals including certifications: QCS shall submit test results for each of the tests outlined.
        (d) Ensure capability of equipment and personnel to comply with the contract requirements: Review contract documents and allocate applicable equipment/personnel. Ensure preliminary testing is accomplished: Refer to item c above. See below tables for specific requirements.
        (e) Coordinate surveying and staking of the work: Staking not required for this item.

    (2) Initial phase
        (a) Review the contract requirements with personnel who will perform the work: QCS will review the required construction bid item being performed.
        (b) Inspect start-up of work: QCS will inspect all construction work being performed.
        (c) Establish standards of workmanship: QCS shall emphasize and implement a standard or workmanship. Work will be observed to generate a pattern or procedure that results in the necessary materials/methods etc. required.

(d) Provide training as necessary: QCS will provide necessary information or expertise when needed to obtain results necessary in accordance with the specifications.
(e) Establish detailed testing schedule based on the production schedule: QCS shall coordinate with Tester to ensure testing requirements are met.

(3) Follow-up phase
(a) Conduct intermittent or continuous inspection during construction to identify and correct deficiencies
(b) Inspect completed phases before final review and final inspection
(c) Provide feedback with any system changes or deficiencies
(d) Correct any system changes or deficiencies made/noticed
(e) Re-inspect to ensure changes were made according to the specifications and drawings

The placement of the drainage piping will proceed as follows: excavate the trench to shown grade, place Class 6 gravel in trench; pipe will be laid on bedding of rock to the accuracy on the contract drawings. The ends of the pipe will be bolted together snugly. Piping will be held in place with jacks to make sure that the screened gravel backfill will bring both sides of the pipe together. The backfill rock will be compacted above the pipe with a minimum of 6 inches from the crown of the pipe.

Minimum Corrugated Metal Pipe Gauges	
Pipe Diameter (in)	Minimum Gauge
12 to 24	16
30 to 36	14
42 to 60	12

Potential equipment on site: D-6 dozer, T/A semi truck, lowboy trailer, pick-up 1/5 ton, pothole machine, water truck 2500, wheeler loader- 3.6 to 5.25 CY, Excavator, soil compactor, motor grader, backhoe loader and pneumatic roller 70".

h) Inspection/control procedures.

The Quality Control Manager will be responsible for reviewing and evaluating all test results, sampling of materials, material certifications and tracking all deficiencies from identification.

i) Deficiencies

All deficiencies will follow the following procedure to ensure that each deficiency is identified and dealt with: all employees working on the jobsite will be alert for any deficiencies noticed and if there are some they will notify the superintendent immediately. The superintendent will then notify ACC's project engineer if he cannot fix the problem. Once the problem has been resolved work will continue unless the problem keeps reoccurring, which it will then be brought to CDM Smith's and Lake County's attention. Any lack of material according to the quantity on the plans

will be further discussed and addressed immediately between ACC, CDM Smith and Lake County to keep the project on schedule.

Any deficiencies that will result in causing the schedule to be extended will be brought up immediately and will also be discussed during the weekly meetings. Once a solution has been issued for the deficiency it will be dealt with immediately and ACC will inform all agencies of when it got resolved and what the solution was.

j) Description of records to be maintained

All records and procedures of each activity included in the above sections will be discussed and followed by ACC and its subcontracts. The records will be recorded and documented accordingly to ensure that backup information is kept on file for future reference.

The record keeping will follow the following procedure: a journal will be kept by the onsite ACC superintendent for each day and the activities performed each day. A percentage will be estimated each day to figure out what percentage of work was completed for that day. Also a weekly schedule will be updated accordingly to show what the progress is for all major activities. Some of the major activities will be documented in the weekly schedule and filed away.

k) Subcontractors

Include the work of all subcontractors:

1: H-P Geotech – Material Testing
2: Inter-Mountain Engineering-Surveying
3: Metro Fence Company

H-P Geotech will interface with American Civil Constructors, Inc who will oversee and manage the Quality Control portion of the work. It will be the responsibility of both the Quality Control Supervisor and ACC to schedule, direct and evaluate the work for acceptance.

H-P Geotech will furnish an on-site technician who shall perform all necessary testing. The technician(s) shall furnish test result forms and data evaluation sheets. It will also be the responsibility of the Field / Laboratory Technician(s) to fill out the "*Inspector's Daily Record of Construction Operations*" or an approved alternate form. The Quality Control Supervisor will then review and approve the document. If the "*Daily Record*" is found to be incomplete, it will be returned for re-submittal.

l) Reporting Procedures

All procedures will be reported to ACC's project engineer verbally and then written up as a narrative and dated. The reports will be documented and presented to CDM Smith if need be.

Respectfully submitted,
American Civil Constructors, Inc.

Tony Gregorich
Field Engineer

CC. File

Attachment "A"

American Civil Constructors

American Civil Constructors, Inc.
Statement of Qualifications

COMPANY PROFILE

Company Overview

American Civil Constructors, Inc. proudly builds the communities we live in.

With over 40 decades of experience, ACC builds the infrastructure, reclaims our land and provides recreation facilities throughout the United States. Our true niche comes from challenging projects that incorporate a combination of our expertise which are performed primarily by our own forces.

Serving our clients through offices in Denver, Seattle, Dallas and the San Francisco Bay Area, ACC has built a reputation for exceptional service and a commitment to client satisfaction. By combining the resources of a national construction company with the personalized service of a hometown project partner, ACC goes to work every day offering the best of both worlds to our clients.

ACC is the product of a merger between Randall & Blake, Inc., which was founded in Littleton, Colorado on March 3, 1975, and West Coast Bridge. Since the two joined in 1999 several key companies have been added to create the complete compliment of services. Those companies went by the names of Pavement Specialists, Inc. and Hurlan Construction Company.

Infrastructure:
Structural/Mass Excavation
Wet & Dry Utilities
Drainage & Lake Facilities
Roads, Bridges, Interchanges
Marina/Landing Docks

Recreation:
Golf Course Construction
Design/Construction Sport Fields
Parks/Skate Parks
Trails and Open-space

Reclamation:
Landfill Opening/Closures
Tailings Remediation/Capping
Dredging
Seeding/Revegetation
River Restoration & Wetlands

Maintenance Services:
Commercial Landscape Maintenance
Concrete Grinding/Grooving
Right Of Way Maintenance
Snow Removal

Self-Perform Work Capabilities

From dirt work, structures and infrastructure to the final touches of the landscaping, ACC is known for our ability to turn-key most aspects of a project in-house with our own forces. This ability is born of our growth over the past 30 years with early experience in mined land reclamation, which encompasses skills in both the heavy civil and landscape arenas. ACC's limited use of subcontractors is typically in the areas of asphalt paving/striping, electrical and fencing – areas where the company wouldn't provide competitive pricing for our clients.

Pre-Construction Services

ACC provides preconstruction services to clients and potential clients in order to introduce them to our project team and demonstrate ACC's commitment to the project. These services include:

- Consult, advise and make recommendations to the owner and general on all aspects of planning for project construction.
- Review all plans and specifications. Advise and make recommendations with respect to such factors as construction feasibility, possible economies, time requirements for procurement and projected costs.
- Prepare a budget estimate based on all available information. Refine estimate as planning and design progress.
- Recommend for purchase long lead items to ensure delivery by the required date.
- Prepare a progress schedule for the project. Monitor and update schedule as changes occur.
- Prepare a Guaranteed Maximum Price for the owner prior to the start of construction.
- Assist the team with compliance of governmental requirements.

ACC Board of Directors

John Bert Sandman, President/CEO American Civil Constructors, Inc. 35 Years Construction/40+ General	225 Union Blvd. #500 Lakewood, CO 80228 303-730-4591
David Chandler, Director Chicago Growth Partners 30 Years Capitol Investor	303 W. Madison St. Suite 2500 Chicago, IL 60606 312-201-0720
Bill Kern, Director IPS Associates 25 Years Business Management	160 Bovea Road Suite 40 San Mateo, California 94402 650-578-6300
Richard Randall, Director Raco Land & Cattle 40 Years Construction	9888 Whistling Elk Drive Littleton, CO 80217 303-808-5688
Brian Shelton, Director CH2M Hill 7 Years Construction/23 Years	9091 South Jamaica Street Englewood, CO 80112 303-791-0900
Noel S. Wheeler, Director CLP Resources 30+ Years Recruiting/Resourcing	10539 Professional Circle, Suite 200 Reno, NV 89521 775-321-8000

ACC Officers

Name	Position	Construction	General
John B. Sandman	President, CEO	35	40
Jeff Rudolf	VP, Secretary, Treasurer	1	22
Eric Reger	VP/Assistant Secretary	35	39
Jeff Croll	VP/Assistant Secretary	30	30
David Lemesany	Vice President	32	32
Jeffrey Puls	Vice President	27	30
Randy Maher	Vice President	18	30
Todd Williams	Vice President	27	32
Victoria Aguilar	Vice President	1	14

Office Locations

ACC's corporate office is located in Lakewood, Colorado however the focus of this statement of qualification is the Rocky Mountain Heavy Civil Team. The RMHC team has been based out of Littleton, Colorado since 1975 – in their current office since 1980.

Randy Maher is the VP/Regional director in charge of this operation. Randy's direct line is 303-730-4521 and cell phone is 303-478-6243.

Colorado Main Office
1601 W. Belleview Ave.
Littleton, CO 80120
303.795.2582

Colorado North - Landscape
7795 W. 120th Ave
Broomfield, CO 80020
303.439.0040

Colorado East - Landscape
1970 S. Valencia St. Unit A
Denver, CO 80231
303.283.6705

Rocky Mountain Heavy Civil
4901 S. Windermere St.
Littleton, CO 80120
303.795.2582

South Region - Irving, Texas
3925 Carbon Road
Irving, TX 75038
972.827.0150

Northwest Region - Seattle
700 S. Riverside Dr.
Seattle, WA 98108
206.763.1230

West Coast Region - Bay Area
3701 Mallard Drive
Benicia, CA 94510
707.746.0936

Martinez California Office
921 Arnold Drive
Martinez, CA 94553
925.374.0060

Sacramento California Office
6301 Angelo Ct. #1
Loomis, CA 95650
916.652.9991

Corporate Office
225 E. Union Blvd. Ste. 500
Lakewood, CO 80228
303.795.2582

Rocky Mountain Heavy Civil Team

ACC's Rocky Mountain Heavy Civil team is made up of 232 members including the leadership team below, a full shop staff with over 30 mechanics/mechanic helpers, 3 administrative support staff, a divisional controller, and over 150 skilled laborers/operators. ACC verifies employee's employment eligibility through the Basic Pilot Program and have used the H2B Work Visa for more than 8 years.

Name	Position	Years w/ACC		Years of Exp.	
Randy Maher	V.P. / Rocky Mountain Heavy Civil	18	yrs.	20	yrs.
Ricky Maher	Operations Manager	18	yrs.	20	yrs.
Jeffrey L. Croll	V.P. / Asst. Sec	16	yrs.	29	yrs.
Bruce Hammers	Project Manager/Estimator	15	yrs.	22	yrs.
Grant Johns	Project Manager/Estimator	8	yrs.	14	yrs.
Jimmy Jones	Assistant Project Manager	1	yr.	6	yrs.
Scott McGilvrey	Operations Manager	16	yrs.	16	yrs.
Scott Alexander	Superintendent	16	yrs.	29	yrs.
David Anderson	Irrigation Manager	3	yrs.	6	yrs.
Travis Madsen	Project Engineer	3	yrs.	3	yrs.
Matt Reese	Project Engineer	5	yrs.	6	yrs.
Nick Polce	Project Engineer	5	yrs.	6	yrs.
Adam Orchard	Project Engineer	1	yr.	1	yrs.
Christopher Harz	Project Engineer	5	yrs.	14	yrs.
Parker Moore	Project Engineer	1	yr.	2	yrs.
Bart Wilson	Superintendent/Structures	1	yr.	24	yrs.
Ed Dillon	Superintendent/Structures	2	yrs.	27	yrs.
David Blowe	Superintendent/Earthwork	2	yrs.	7	yrs.
Gary Randall	Superintendent/Utilities	22	yrs.	25	yrs.
Ray Wendt	Superintendent/Special Projects	10	yrs.	20	yrs.
Wayne Metcalf	Superintendent/Earthwork	9	yrs.	40	yrs.
Brian Danner	Superintendent /Earthwork	1	yrs.	12	yrs.
Lyle Leitz	Superintendent/Structures	15	yrs.	35	yrs.
Lee Coppock	Superintendent/Earthwork	14	yrs.	25	yrs.
Wesley Trueblood	Superintendent	1	yr.	27	yrs.
William Neeman	Superintendent	9	yrs.	18	yrs.
Greg Leitz	Superintendent	7	yrs.	17	yrs.
Ron Ullery	Superintendent	10	yrs.	14	yrs.
Guadalupe Felix	Superintendent	2	yrs.	12	yrs.
Hipolito Sosa	Superintendent	17	yrs.	29	yrs.
J Guadalupe Acosta	Superintendent	10	yrs.	18	yrs.
Dwight McCormack	Superintendent	3	yrs.	17	yrs.
Kirk Haptonstall	Superintendent	9	yrs.	10	yrs.
Ed Weber	Superintendent	32	yrs.	32	yrs.
Efrain Morales	Superintendent	20	yrs.	24	yrs.

Annual Revenue/Capacity

ACC employs 1300 men and women throughout the United States with over 800 in the local Colorado market. All specialty craftsman, engineers and project leaders throughout the company are available to support other ACC teams as the project demands.

ACC is slated to perform over $250,000,000 in volume for 2008 - $45 million of that will be produced by the Rocky Mountain Heavy Civil team who the subject of this statement of qualifications.

Year	ACC Volume	ACC Projects	Rocky Mtn. Civil Volume	Rocky Mtn. Civil Projects
2008B	$250,000,000	321 + Maint.	$45,000,000	$32m Backlog
2007	$230,962,945	321 + Maint.	$37,556,336	31
2006	$258,219,000	416 + Maint.	$42,153,128	29
2005	$236,000,000	424 + Maint.	$29,886,954	25
2004	$207,000,000	489 + Maint.	$29,714,278	36
2003	$194,768,000	652 + Maint.	$38,990,245	43
2002	$203,805,000	829 + Maint.	$33,678,280	46

References

Vendor
LaFarge West
1400 west 64th Avenue
Denver, CO 80221
Contact: Kitty Miller
303-657-4557

Vendor
CPS Distributors
4275 Forest Street
Denver, CO 80216
Contact: Dale Fountain
303-394-6040

Client Reference: Avon Interchange

OAC Management Inc.
P.O. Box 3357
Edwards, CO 81632
Contact: Erik W. Peterson
970-390-0164

Client Reference: Terryall Reservoir

Federal Highway Administration
OPAL.FORBES@FHWA.DOT.GOV
Contact: Opal Forbes, Resident Engineer
720-963-3448

Financial/Bonding Capacity

BONDING
Agent: Gallagher Construction Services
580 California Street #1200
San Francisco, CA 94104

Bonding Company: CNA Companies
Single project bond limit - +$30 million
Aggregate bond limit $+175 million
ACC currently has over $80 million in available bonding capacity.

Rating and classification of bond as it appears in "Best's Rating Guide" AXV

BANKING RELATIONSHIP

Primary Lender:
JP Morgan Chase Bank
1125 17th St. 3rd Floor
Denver, Co 80202
Karen Lowe 303-244-3224
Credit Line: $25 Million

Checking Account
Vectra Bank
2000 S. Colorado Blvd.
Denver, CO 80222
Timothy Swiat 720-947-7677

INSURANCE

Broker: Willis of Seattle
505 Fifth Avenue South, Suite 200
Seattle, WA 98104

Arch Insurance Company	Policy #71PKG2133603	7/1/2007-7/1/2008
Worker's Compensation		$1 million
Employer's Liability		$1 million
General Liability		$2 million
General Aggregate		$4 million
Auto Liability		$1 million
National Union Fire Insurance CO:	Umbrella Policy	$20 million

Safety Performance

ACC EMR	
2007	0.92
2006	0.87
2005	0.87
2004	0.64
2003	0.65
2002	0.67
2001	0.58
2000	0.63

ACC regularly reviews its safety performance on a corporate level and by region. Corporately, ACC currently holds a .87 modifier and has a 3.74 incident rate as of December 31, 2007, which is below the industry standard of 7.6. ACC has consistently held an incident rate well below the industry standard and currently sits at 3.74 for the year.

ACC believes every employee is accountable for worker and public safety. To that end, ACC holds daily pre-shift safety meetings with all employees and performs job hazard analysis on all new projects and tasks. Paired with a strong safety program and commitment, ACC's team has been successful in maintaining consistent success.

RMHC	2000	2001	2002	2003	2004	2005	2006	2007
Hours	538,999	504,561	490,055	505,819	425,091	364,944	431,852	373,995
NON	27	27	20	15	8	5	12	13
REP	10	10	8	12	12	10	9	7
LT	0	0	1	1	0	1	0	0
TOTAL	37	37	29	28	20	16	21	20
IR	3.71	3.96	3.67	5.14	5.65	6.03	4.17	3.74

Hours: Man-hours completed in the year
Non: Non-Recordable Injuries
Rep: Reportable Injuries
LT: Lost Time Injuries

Job Site/Public Safety
ACC practices full site safety management from employee safety and subcontractor management to daily review identifying potential public hazards. ACC employs a full safety program and supplements it with key job-site practices that ensure the information is disseminated to the people who do the work.

A difference you can see... You can identify ACC employees by the personal protective equipment that is required at all times. While OSHA may require some of this PPE, other has been identified as a strong measure for preventing injury and keeping safety on each employee's mind while they progress through their day.

ACC subcontractors are contractually obligated to meet ACC's basic standard for public and employee safety including full compliance with OSHA, pre-employment drug testing and mandatory use of hardhats despite scope of work.

Accountability is the key to a strong safety program. This is why ACC educates employees, and subcontractors on expectations related to safety, and regularly review them to that standard. From job descriptions and employee reviews to weekly site visits from executive management, ACC has an expectation of safe practices while profitably building our work.

What can you expect from ACC

Pre-Shift Safety Training	Daily
Site Inspections	Weekly
Job Hazard Analysis	On-going
OSHA 8-hour (crew leaders)	Annual
First Aid/CPR (crew leaders)	Annual
Utility Locates	Addressed Monthly
Excavation Permits	Each excavation
SWMP Inspection	Every 14-days/Post-Event
Traffic Control Inspection	Hourly
Temp. Fencing Inspection	Daily
Job-Site Orientation	New Employee/New Subcontractor
Safety Mgr. Inspection	Weekly at a minimum
Executive Management Review	Weekly at a minimum
Utility/Electrical Training WAPA	Annual
Root Cause Analysis	Post accident/near-miss accident

Statement of CDOT Prequalification Status

ACC has maintained the status as a qualified CDOT contractor since 1975. Upon request ACC can provide CDOT's Notification of Prequalification for validation of current eligibility with an unlimited bid limit.

Litigation

ACC has no active contract related litigation, or any in the past 5 years.

Equipment List

ACC has over $25 million in heavy equipment assets and can provide a detailed list upon request. It should be noted that ACC has strong relationships with the key equipment vendors in Colorado including Honnen Equipment Company, World Wide Rental and Wagner Equipment. These long-term relationships provide us with flexibility to quickly ramp up to serve our workload.

Awards

Project/Project Management:

CDOT	Project Management Award Region 1: Eisenhower Tunnel (Greg Leitz/Ron Ullery)
CALTRANS	Tranny Award, Best Historical Retrofit, Feather River Bridge Rehab
FHWA	Partnership in Excellence Award, Bruce Hammers
CDOT	Project Management Award Region 1: Emergency Repair on I-70
CCA	Environmental Excellence Award, Hahn's Peak Highway
CCA	Environmental Excellence Award, I-70 at Straight Creek Slope Rehabilitation
CCM	Colo. Construction Magazine Gold Hard Hat Award, Fossil Trace Golf Course
CCM	Colo. Construction Magazine Bronze Hard Hat Award, Big Five Mine
CCM	Colo. Construction Magazine Silver Hard Hat Award, Castle Rock skate Park
AGC	Motorola Builds America Award for Project Partnering, Logan River GC
ETC...	Numerous golf construction and landscape awards

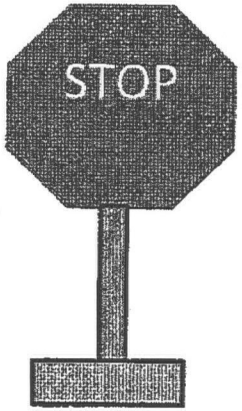
Safety Awards – Past 5 Years Heavy Construction

CCA	Zero Lost Time Accident Rate, 2006 Improved Safety Performance (reportable incident rate)
CCA	Excellence in Construction Safety Award, 2005
CCA	Excellence in Construction Safety Award, 2004
CCA	Excellence in Construction Safety Award, 2003
CCA	"Traveling Trophy" 1,600,000 No Lost Time Hours, 2002
CCA	Excellence in Construction Safety Award, 2001
CCA	"Traveling Trophy" 1,600,000 No Lost Time Hours, 2001
CCA	Zero Incident Rate, Over 300,000 Hours, Heavy Construction, 2001

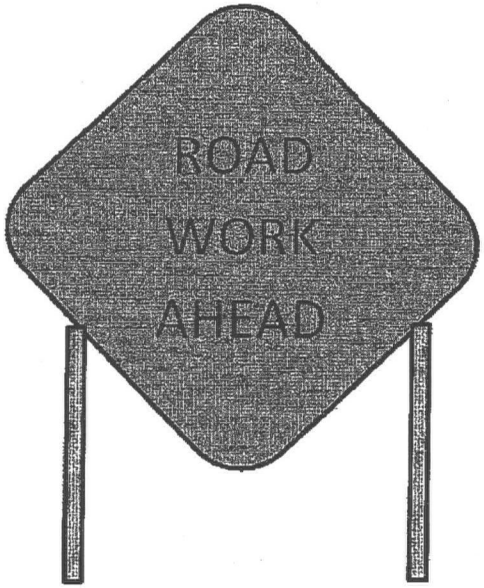
Section 10

Construction Site Plan

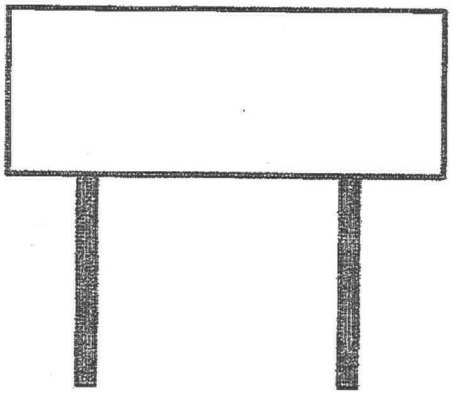
Installation of Signs and Fencing



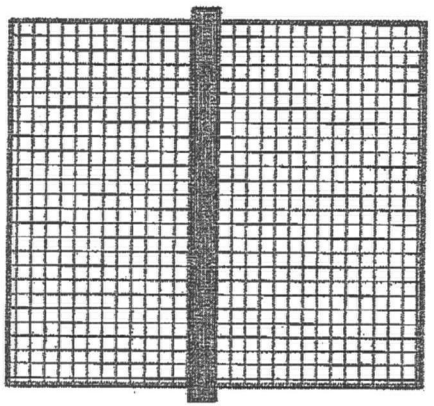
From top of stop sign to base of stop sign is 2.5 feet. The base of the stand to the top of the stop sign is 4 feet. These stop signs will be placed on each side of the bike path, one entering County Route 1 (turning right) and one for exiting from the LSG site.



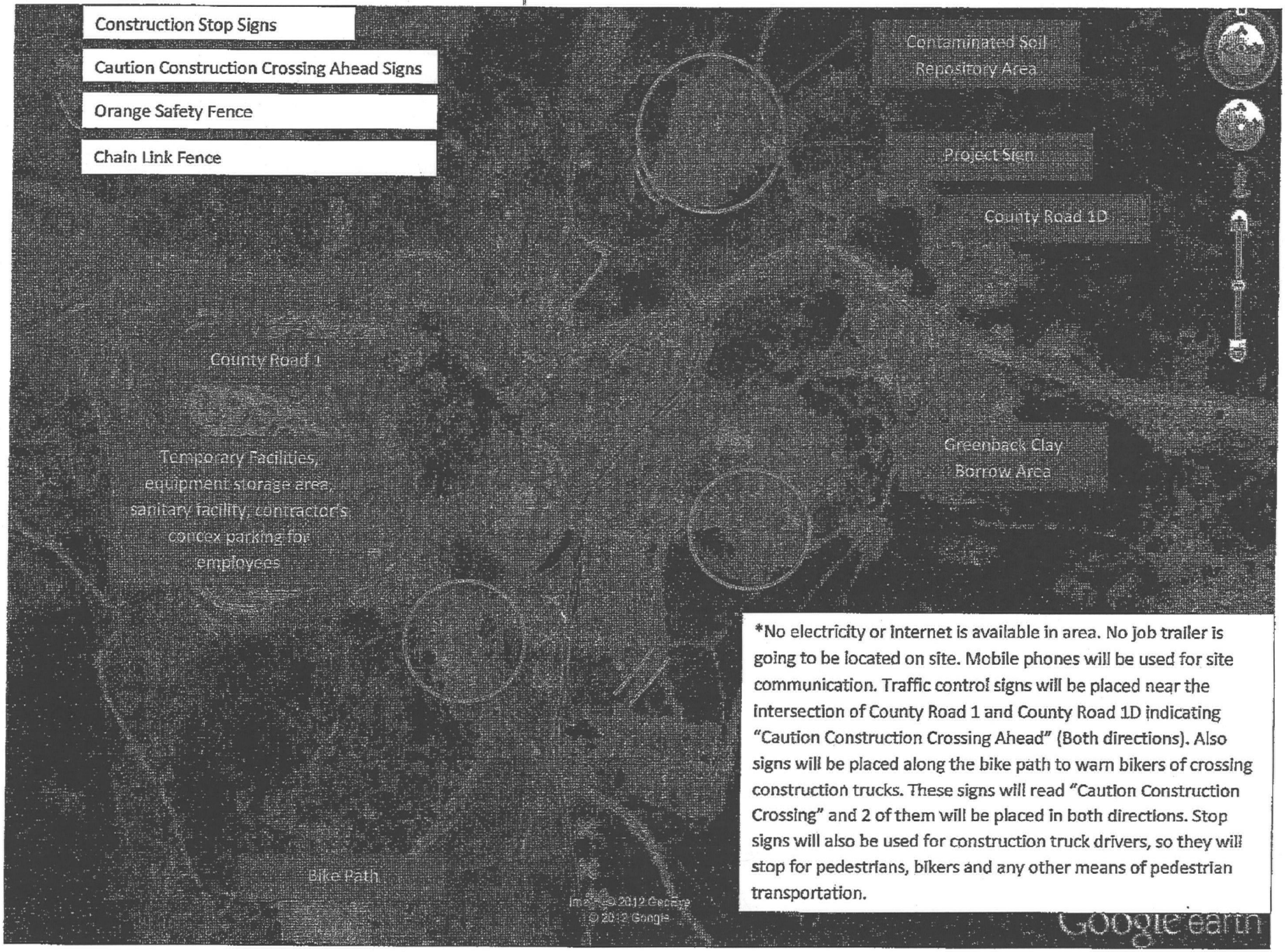
The sign is 4 feet on each side ar is 5 feet tall from the base of the legs to the top of the sign.



The TRUCKS ENTERING, CAUTION and CAUTION CONSTRUCTION CROSSING AHEAD signs are all going to be 36 inches long by 18 inches high. The height from the top of the sign to the base of the green post is 4.5 feet. The letters will be black on a white background.



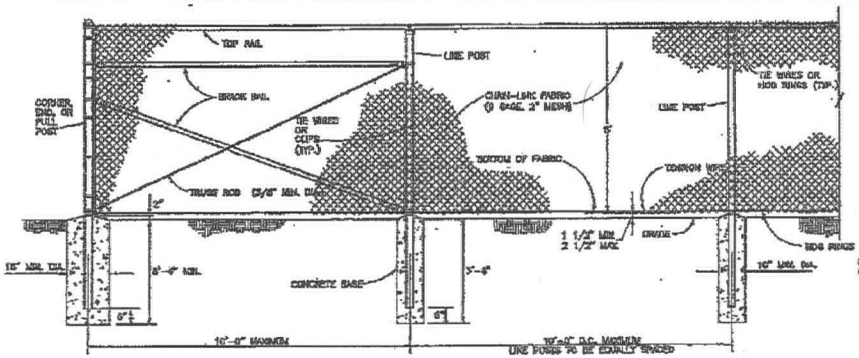
For the 4' orange safety fence it will be installed according to the plans, which is on the Southwest corner of the LSG site near the collapsed mine shaft and installe on the access road/runoff channel between the Greenback site and the bike path. The fencing will be cow tied on 5' T-Posts spaced every 10 feet and dug into the ground 6 to 9 inches It will be overlapped 6 inches every 100 feet, which the size of the rolls are.

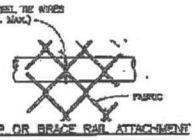


*No electricity or internet is available in area. No job trailer is going to be located on site. Mobile phones will be used for site communication. Traffic control signs will be placed near the intersection of County Road 1 and County Road 1D indicating "Caution Construction Crossing Ahead" (Both directions). Also signs will be placed along the bike path to warn bikers of crossing construction trucks. These signs will read "Caution Construction Crossing" and 2 of them will be placed in both directions. Stop signs will also be used for construction truck drivers, so they will stop for pedestrians, bikers and any other means of pedestrian transportation.

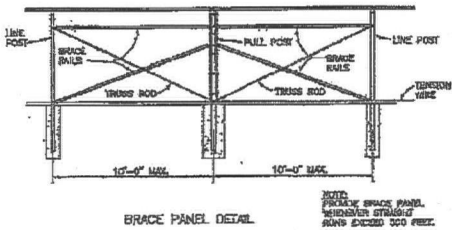
Chain Link Fence and Gate

Below are the details of the chain link fence and gate that will be installed at the conclusion of construction. The installation of the fence will go off of the plans below and the installation instructions from the supplier.



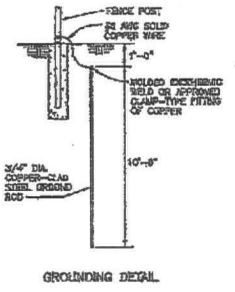


TOP OR BRACE RAIL ATTACHMENT

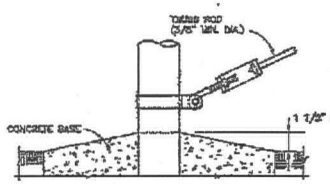


BRACE PANEL DETAIL

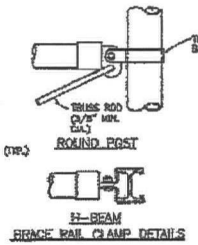
NOTE: PROVIDE BRACE PANEL WHENEVER STRAIGHT RUNS EXCEED 500 FEET.



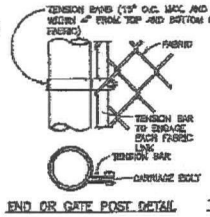
GROUNDING DETAIL



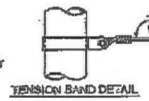
TRUSS ROD AND BAND



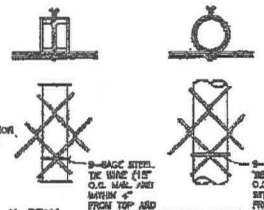
BRACE RAIL CLAMP DETAILS



END OR GATE POST DETAIL



TENSION BAND DETAIL

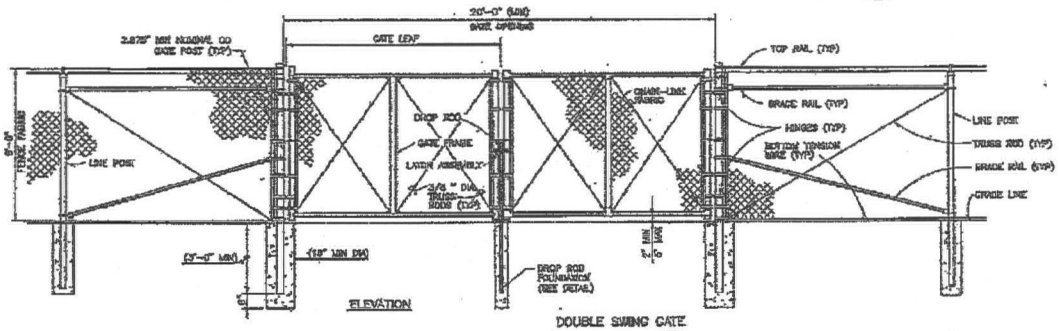


H-BEAM ROUND POST

LINE POST ATTACHMENTS

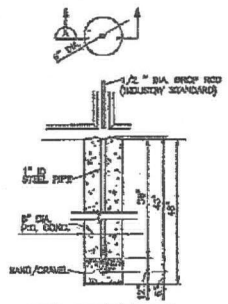
STEEL POST SCHEDULE

USE AND SECTION	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)		
	FABRIC WIDTH 72" OR LESS	FABRIC WIDTH 96" TO 96"	FABRIC WIDTH 108" AND OVER
CORNER, END & PULL POSTS			
TUBULAR – ROUND	2.375" O.D.	2.875" O.D.	4.00" O.D.
TUBULAR – SQUARE	2.00" SQ.	2.50" SQ.	3.00" SQ.
C-SECTION (ROLL-FORMED)	3.50" X 3.50"	3.50" X 3.50"	———
LINE POSTS			
TUBULAR – ROUND	1.90" O.D.	2.375" O.D.	2.875" O.D.
H-SECTION	2.25" X 1.70"	2.25" X 1.70"	2.25" X 1.70"
C-SECTION (ROLL-FORMED)	1.625" X 1.625"	2.25" X 1.50"	———
TOP, BOTTOM & BRACE RAILS			
TUBULAR – ROUND	1.66" O.D.		
TUBULAR – SQUARE	1.50" SQ.		
H-SECTION	1.625" X 1.25"		
C-SECTION (ROLL-FORMED)	1.625" X 1.25"		



ELEVATION

DOUBLE SWING GATE DETAIL B



DROP ROD FOUNDATION

CHAIN-LINK SECURITY FENCE DETAIL A

NOTES:

1. DETAILS SHOWN ARE TO CLARIFY REQUIREMENTS AND ARE NOT INTENDED TO LIMIT OTHER TYPES OF FENCE SECTIONS AND METHODS OF INSTALLATION THAT COMPLY WITH THE SPECIFICATIONS.
2. WIRE TIES, RAILS, POSTS, AND BRACES SHALL BE CONSTRUCTED ON THE SECURE SIDE OF THE FENCE ALIGNMENT. CHAIN-LINK FABRIC SHALL BE PLACED ON THE SIDE OPPOSITE THE SECURE AREA.
3. C-SECTION POSTS SHALL BE INSTALLED SO THAT THE VOID INSIDE THE POST IS COMPLETELY FILLED WITH CONCRETE UP TO THE TOP OF THE FOUNDATION.
4. SWING GATES SHALL BE CONSTRUCTED WITH DROP RODS, PADLOCKS AND LATCH ASSEMBLY.
5. ALL GATE FRAMES SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM F900 1.90" NOMINAL (ROUND) OR 2.00" NOMINAL (SQUARE). GATE FRAMES SHALL BE OF WELDED CONSTRUCTION OR SHALL BE ASSEMBLED USING HEAVY FITTINGS. AT CONTRACTORS OPTION A WELDED HORIZONTAL BRACE MAY BE USED IN LIEU OF TRUSS RODS TO BRACE ALL WELDED GATE FRAMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER BRACE CONSTRUCTION OF ALL GATES SUPPLIED.

Section 11

Material Handling Plan

TABLE OF CONTENTS

1. PURPOSE
2. SCOPE
3. RESPONSIBILITIES AND AUTHORITIES
4. PROCEDURE
5. SAFETY
6. ATTACHMENTS

APPROVED FOR CONSTRUCTION: _____

DATE: _____

1. PURPOSE

1.1. To define ACC's Clay Barrier Layer installation methods, including Subgrade Preparation

2. SCOPE

2.1. This Work Method addresses the procedures for verifying subgrade elevations and density, as well as clay barrier layer materials, moisture control and compaction.

3. RESPONSIBILITIES AND AUTHORITIES

3.1. The **Project Manager, Project Engineer** and **Superintendent** are responsible for the supervision and training of crews involved in the installation of the clay barrier layer. ACC will complete this portion of the project in its entirety with its own forces. 3rd Party testing verification will be performed by H-P Geotech including: Clay material properties, moisture content and density tests, and hydraulic conductivity tests.

4. PROCEDURES

Work:

4.1. SG Preparation & Verification

4.1.1. The repository shall be excavated to the lines and grades on the drawings. A verification survey will be completed and data points submitted to the engineer prior to installing the clay barrier layer. Once the subgrade survey is verified ACC will submit it to the engineer for review and approval prior to clay placement.

4.1.2. Upon completion of the excavation, a proof-roll with a minimum of five passes with loaded water truck will be completed by ACC. The engineer will be notified prior to this stage of the work so that it can be supervised as necessary.

4.2. Clay Source Preparation

4.2.1. All topsoil and overburden will be stripped off of the Greenback Clay source area. Geotechnical testing as well as visual inspection by the engineer will be needed to confirm that enough overburden has been removed and that the clay anticipated to be excavated and incorporated into the project meets the intent. ACC will notify the engineer and schedule this accordingly. Temperatures of high and low will be recorded during each day of placing the clay linear.

4.2.2.

4.3. Moisture Control

4.3.1. Moisture content will no less than 0.9% of optimum as determined by H-P Geotech and the moisture/density relationship of the material. ACC will accomplish this by processing the material at the Greenback clay source area. The material

will be ripped, excavated, and stockpiled as well as processed to the optimum moisture content via loader and water truck prior to being transported to the LSG repository. Should this method no yield acceptable results and a uniform mixture of clay/moisture, ACC will be prepared to process the clay at the LSG repository on grade via tractor and disc.

4.4. Compaction

4.4.1. The minimum allowable density is no less than 95% of maximum dry density based on ASTM D 698. ACC will use a CAT CP-563 84" vibratory pad foot roller, or equivalent, to accomplish this. ACC will establish a roller pattern and/or number of passes required to achieve the minimum allowable density. Should this piece of equipment not yield satisfactory results, a CAT 815 tamping foot soil compactor will be utilized. All equipment on site for the clay barrier layer will not brake suddenly, take sharp turns or excess the speeds of 5 miles per hour.

4.5. Scarification

4.5.1. One layer of scarification is anticipated in-between the two 6IN lifts of clay. This will be accomplished via scarification attachments on the onsite dozing equipment. Caution will be taken to not over scarify the first layer of clay as to not pull up any subgrade material into the clay layer.

4.6. Repair of Voids

4.6.1. Any voids created in the clay barrier layer will be repaired by removing any non-clay material, placing properly moisture conditioned clay backfill in lifts no greater than 3IN and tamping each lift. Hand operated tampers will consist of rammers or other impact equipment, no vibratory tampers will be used. Any voids needing repair will be marked via lathe for the engineer to review and approve. Once the repair has been addressed and fixed the mark that the lathe made will be repaired as well. Each repair will also be logged in an overall spreadsheet so that all voids are acknowledged and repaired by both ACC and the engineer.

4.7. Tolerances

4.7.1. The clay barrier layer will be no greater than 3IN above the grades on the drawings and will be verified via grade stakes driven into the subgrade and marked 12IN above and/or survey verification prior to subsequent layers being placed. No minimum tolerance will be accepted. Once these grade stakes are removed the hole created by the stakes will be repaired.

4.8. Testing

4.8.1. Clay Material Tests During Excavation

4.8.1.1. Material property testing will be completed by ACC and shall be approved by the engineer prior to hauling and installing the clay. During installation, a minimum of 5 tests will be completed per Section 02377 Table 2 – Clay Material Properties, including Particle size analysis, Atterberg limits, compaction, Natural Moisture content and Hydraulic Conductivity. The Natural Moisture Content will be compared to the requirements in the specifications book to see how much moisture conditioning will be needed.

4.8.2. Moisture Content and Density Tests of In-Place Clay

4.8.2.1. Moisture content and density tests of in-place clay will be performed by establishing a grid pattern prior to start-up and staggered for successive lifts. 1 test per 8,500 SF of clay will be performed in accordance with Section

02377 Table 3. It is estimated that 13 tests per layer, or 26 tests overall will be required. Any failing tests will be recorded and the representative area of that test will be reworked and re-tested until acceptable results yielded.

4.8.3. Hydraulic Conductivity, Moisture, and Thickness Tests of In-Place Clay

4.8.3.1. Hydraulic Conductivity Tests will be taken once per 50,000 SF per layer. It is estimated that 2 tests per lift and 4 overall will be required. Tests will be in accordance with Section 02377 Table 4. The in-place clay testing will require expediting, but the borrow area tests will not require expediting. Relatively undisturbed samples will be collected and transported in accordance with ASTM D-4220. Disturbed soil samples can be collected from borrow area for hydraulic testing will be remodeled at 95 percent the standard Proctor density with +/-1 percent the optimum moisture content. An example of hydraulic conductivity test results are displayed below in the attachment "Hydraulic Conductivity Example Test Results." Any failing results as defined as "any test more than one-half of one order of magnitude greater than the Maximum Allowable Hydraulic Conductivity" will trigger the need for three additional tests performed near the location of the original failing test. If all retests pass, no additional action shall be taken. IF any of the retests fail, the area shall be repaired out to the limits defined by passing hydraulic tests. All repairs shall be documented.

4.8.3.1.1. Moisture tests will be taken once per 50,000 SF per layer and in the same locations as the hydraulic conductivity tests per Section 02377 Table 4.

4.8.3.1.2. Thickness tests will be taken once per 10,000 SF via core sample. It is estimated that 11 tests will be required. Any area found not to be of adequate thickness will be corrected by adding & compacting additional properly processed clay material following the scarification procedure described above.

4.9. Test Results

4.9.1. All tests results will be recorded via H-P Geotech's Report of Nucluear Density testing, Moisture/Density Relationships, Hydraulic Conductivity, Gradation Test Results, etc. Each test will be numbered, recorded depth at sample taken and plotted on a map depicting the approximate location and lift in which the test represents. The locations of the testing will be seen on the "LSG Repository Plan" attachment and the recorded depth and other valued information of tests will be seen on "ACC example of testing log" attachment below. An overall log will be created to track **all** test results and whether they are for information only, passing, failing, and/or require additional testing/approval prior to final acceptance.

4.10. Protection

4.10.1. Moisture content will be maintained via subsequent layer installation as soon as possible. A light layer of water will be applied daily and as necessary to prevent any drying of the material prior to subsequent layer installation.

4.10.2. Freeze protection of in-place clay will include identifying any upcoming anticipated freezing events and placing the subsequent layer prior to this event. If construction has not progressed to a point in which the next layer can be installed, additional plating/clay material may need to be installed as a loose lift for overnight

protection. That material would then be removed, processed, and incorporated with the next day's clay production material.

4.10.3. Any erosion that occurs during the installation of the clay linear will be addressed and repaired back to the established grade.

4.11. Equipment

4.11.1. SG Prep – Vibromax VM115 D Vibratory Soil Smooth Drum Soil Compactor, 28,660 lbs, 60,000 lb Centrifugal Force, Drum = 82.7"W and 59.1"Dia.

4.11.2. Proof Rolling – Kenworth 3,900 g water truck – loaded >25 Tons

4.11.3. Clay Excavation and Moisture Conditioning – JD 750 Dozer, JD 724K Front End Loader, Kenworth 3,900 g water truck

4.11.4. Hauling – Tandem axel Dump Trucks

4.11.5. Spreading – CAT D6/JD 750 Dozer(s)

4.11.6. Compacting – CAT CP-563D Vibratory Pad Foot Soil Compactor (or equivalent), 24,856 lbs, 60,000 lb Centrifugal Force, Drum = 84"W and 61"Dia.

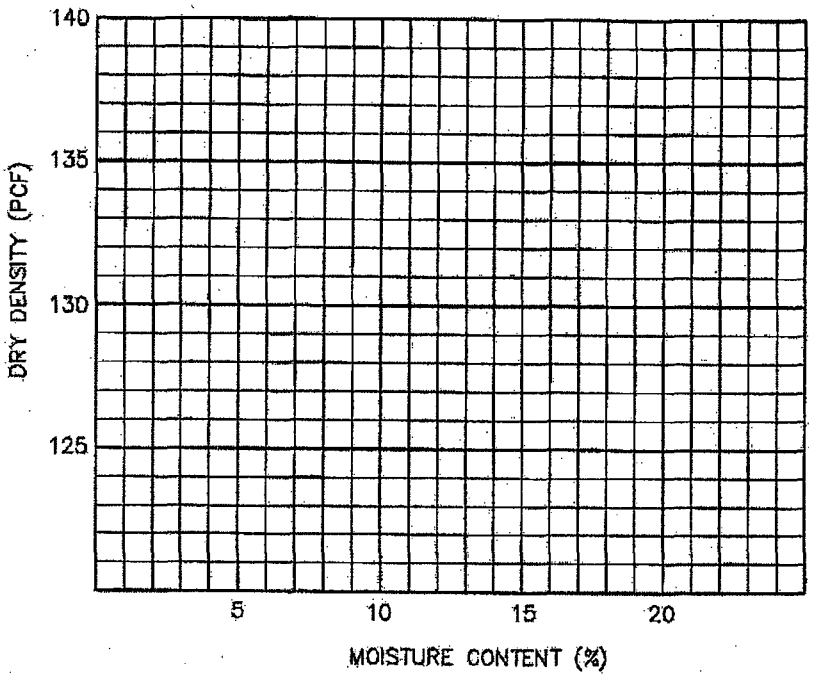
4.11.7. Scarification – CAT D6/JD 750 Dozer

4.11.8. Smooth Rolling – Vibromax VM 115 D Vibratory Soil Smooth Drum Soil Compactor, 28,660 lbs, 60,000 lb Centrifugal Force, Drum = 82.7"W and 59.1"Dia.

5 ATTACHMENTS

- HP Geotech Example Report for Nuclear Density Testing – additional forms for Moisture/Density Relationship, Gradation Test Results, etc. will be provided by HP Geotech
- ACC example of testing log to be maintained
- LSG Repository Plan view for plotting test result locations
- Hydraulic Conductivity Example Test Results

DRAFT



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
1	xxxxxxxx	Comp.	xx/xx/07	xxxx PCF	xxx %	ASTM D-698 Method C

GRAVEL xx % SAND xx % SILT AND CLAY xx %

LIQUID LIMIT xx % PLASTICITY INDEX xx %

SAMPLE OF: Slightly silty, very sandy gravel (GP-GM) LAB NO.: 238

407 xxxx	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	JOB NAME MOISTURE/DENSITY RELATIONSHIP	FIGURE x

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

Hepworth-Pawlak Geotechnical, Inc.
P.O. Drawer 1887
240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989
Fax: (970) 468-6891
Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: Job No.: Date:
Attn: Sheet No.: of

Project:

General Contractor: Earthwork Contractor:

Type & # of Earthmoving Units:

Type & # of Compaction Units:

Method of Moisture Conditioning:

Compaction Standard: ASTM D-698 (Standard) ASTM D-15[illegible] (Modified)

Test No.	Location	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			

FULL / PART Time Observation

The nuclear Densometer Method of testing was used in accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to those areas and elevations tested, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and conditions other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the time that our observer was not observing operations.

Soil Type:
A:
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To:

Progress Report:

Copies:

Field Observer Reviewed By

DRAFT

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

Hepworth-Pawlak Geotechnical, Inc.
P.O. Drawer 1887
240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989

Fax: (970) 468-5891
Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: Job No.: Date:
Attn: Sheet No.: of

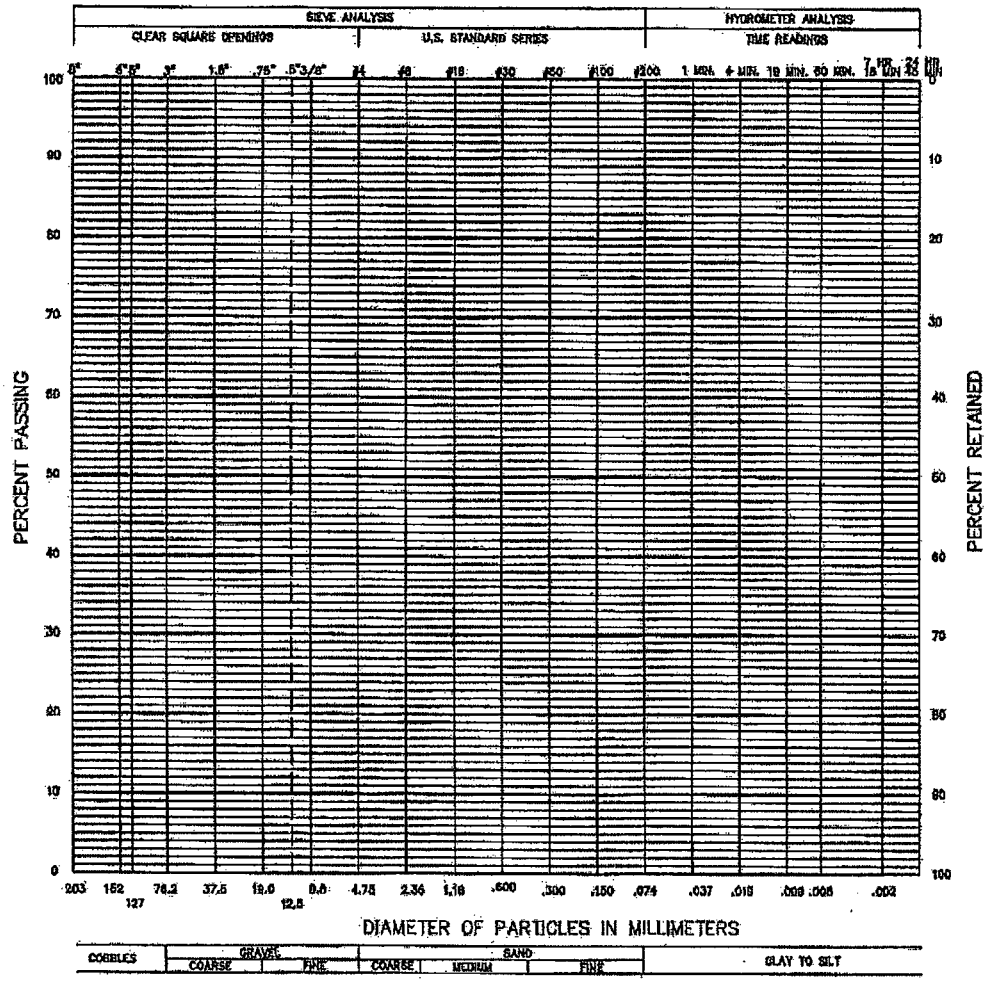
Project:

Test No.	Location	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			

DRAFT

Field Observer Reviewed By

DRAFT



GRAVEL XX % SAND XX % SILT AND CLAY XX %

LIQUID LIMIT XX % PLASTICITY INDEX XX %

SAMPLE OF: XXXXXXXXXXXXXXXXXXXX FROM: XXXXXXXX

407 XXXX	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	JOB NAME GRADATION TEST RESULTS	FIGURE X

Soil Tracking for California Gulch

*All locations of the samples will be identified by a stake for reference, but will only remain there for a few days because of the high traffic of equipment and excavation of clay. However the locations of the sampeles will be marked on the LSG Repository Plan and when clay samples are taken it will be plotted on the Greenback Clay Borrow Plan.

Test #	Name of Test	Type of Test	Location	Date	Elevation Depth	Pass/Fail	High Temp. F	Low Temp. F	Company Who Performed Test
1	Silty, Sandy Gravel with Cobbles	Moisture and Density	LSG Onsite Unscreened Overburden	8/8/2012	4 ft	N/A	78	45	H-P Geotech
2	Silty Sand and Gravel	Moisture and Density	LSG Onsite 2" Minus Screened	8/8/2012	Stockpile	N/A	78	45	H-P Geotech
3	Slightly Gravelly, Sandy Clay	Moisture and Density	Greenback Imported Clay	8/8/2012	2 ft	NO	78	45	H-P Geotech
4									
5									
6									
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8									
9									
10									
11									
12									
13									
14									
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48									
49									
50									

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT HP Geotechnical — JOB NO. 2158-79

BORING NO.	Combined Bulk Samples	SAMPLED	
DEPTH		TEST STARTED	08/08/11 CAL
SAMPLE NO.		TEST FINISHED	08/22/11 DPM
SOIL DESCR.	111217A	CELL NUMBER	19S
LOCATION	Town of Laveta	SATURATED TEST	Yes
CONF. PRES. PSF	936	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	445.3	480.9
Wt. Wet Soil & Pan (g)	459.1	494.6
Wt. Dry Soil & Pan (g)	410.2	410.2
Wt. Lost Moisture (g)	48.9	84.5
Wt. of Pan Only (g)	13.8	13.8
Wt. of Dry Soil (g)	396.4	396.4
Moisture Content %	12.3	21.3
Wet Density PCF	123.9	135.9
Dry Density PCF	110.3	112.0

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	3.010	(cm)	7.645
Vol. Bef. Consol. (cu ft)	0.00793		
Vol. After Consol. (cu ft)	0.00780		
Porosity %	38.22		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	4
Percentage of Pump setting	100
Q (cc/s)	1.16E-02
Height	3.004
Diameter	2.380
Pressure (psi)	1.031
Area after consol. (cm*cm)	28.953
Gradient	9.500
Permeability k (cm/s)	4.2E-05
Permeability k (m/s)	**4.2E-07**
Back Pressure (psi)	98.0
Cell Pressure (psi)	104.5
Ave. Effective Stress (psi)	5.985
Average temperature degree C:	23.4

Notes: Remolded -#4.
Data entry by: MLM Date: 08/25/2011
Checked by: DPM Date: 8/25/11
FileName: HEP0CBS2

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT HP Geotechnical

JOB NO. 2158-79

BORING NO.	Combined Bulk Samples	SAMPLED	
DEPTH		TEST STARTED	08/06/11 CAL
SAMPLE NO.		TEST FINISHED	08/22/11 DPM
SOIL DESCR.	111217A	SETUP NO.	19S
LOCATION	Town of Laveta	SATURATED TEST	Yes
CONF. PRES. PSF	936	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.3	10.6				
50.0	48.0	11.2	12.3	37.8	45.3	7.5	0.75
60.0	58.0	12.6	13.6	48.3	56.6	8.3	0.83
70.0	68.0	13.7	14.5	58.2	67.0	8.8	0.88
80.0	78.0	14.6	15.3	68.4	77.5	9.1	0.91
90.0	88.0	15.1	15.8	78.3	87.6	9.3	0.93
100.0	98.0	16.0	16.6	88.7	98.1	9.4	0.94
110.0		16.8	16.8	98.5	108.1	9.6	0.96

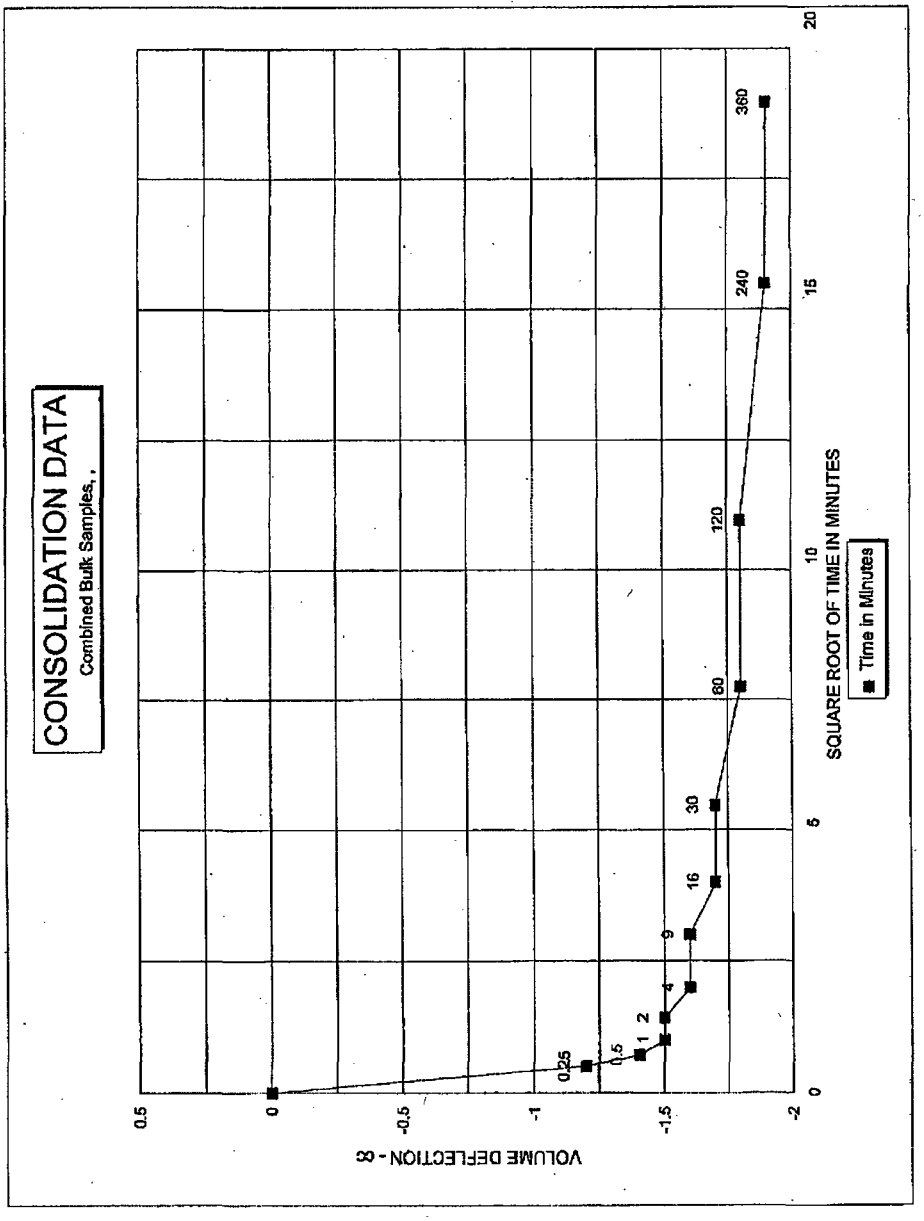
CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	16.80	0.00
0.25	0.50	18.00	-1.20
0.5	0.71	18.20	-1.40
1	1.00	18.30	-1.50
2	1.41	18.30	-1.50
4	2.00	18.40	-1.60
9	3.00	18.40	-1.60
16	4.00	18.50	-1.70
30	5.48	18.50	-1.70
60	7.75	18.60	-1.80
120	10.95	18.60	-1.80
240	15.49	18.70	-1.90
360	18.97	18.70	-1.90

Initial Height (in)	3.010	Init. Vol. (CC)	224.49
Height Change (in)	0.006	Vol. Change (CC)	16.90
Ht. After Cons. (in)	3.004	Cell Exp. (CC)	13.37
Initial Area (sq in)	4.550	Net Change (CC)	3.53
Area After Cons. (sq in)	4.488	Cons. Vol. (CC)	220.96

Data entry by: MLM Date: 08/25/2011
Checked by: [illegible] Date: 8/25/11
FileName: HEP0CBS2

ATT


CONSOLIDATION DATA
Combined Bulk Samples, ,
VOLUME DEFLECTION - dε
0.5
0
-0.5
-1
-1.5
-2
SQUARE ROOT OF TIME IN MINUTES
0
5
10
15
20
Time in Minutes
0.25
0.5
1
2
4
9
16
30
60
120
240
360

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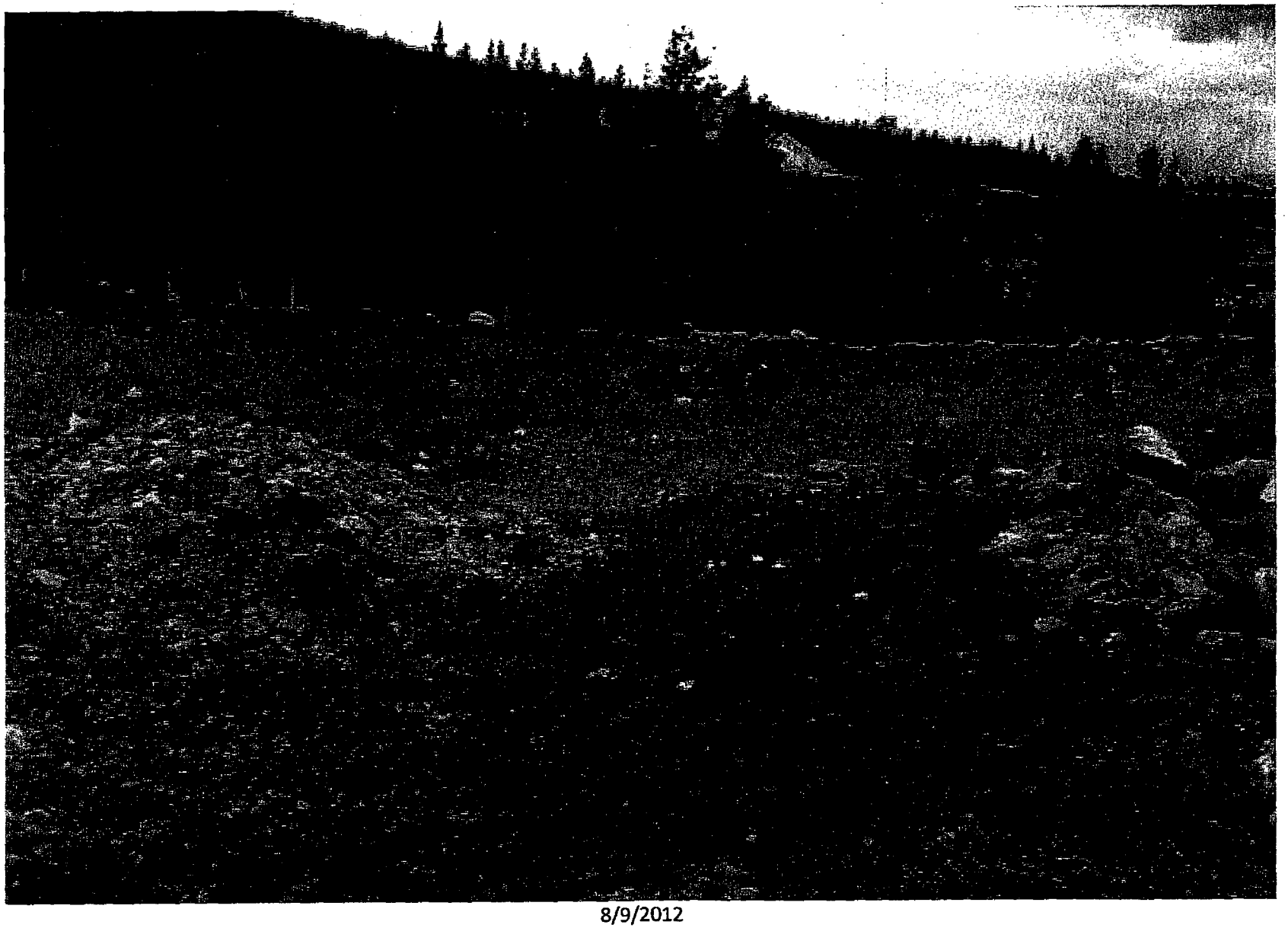
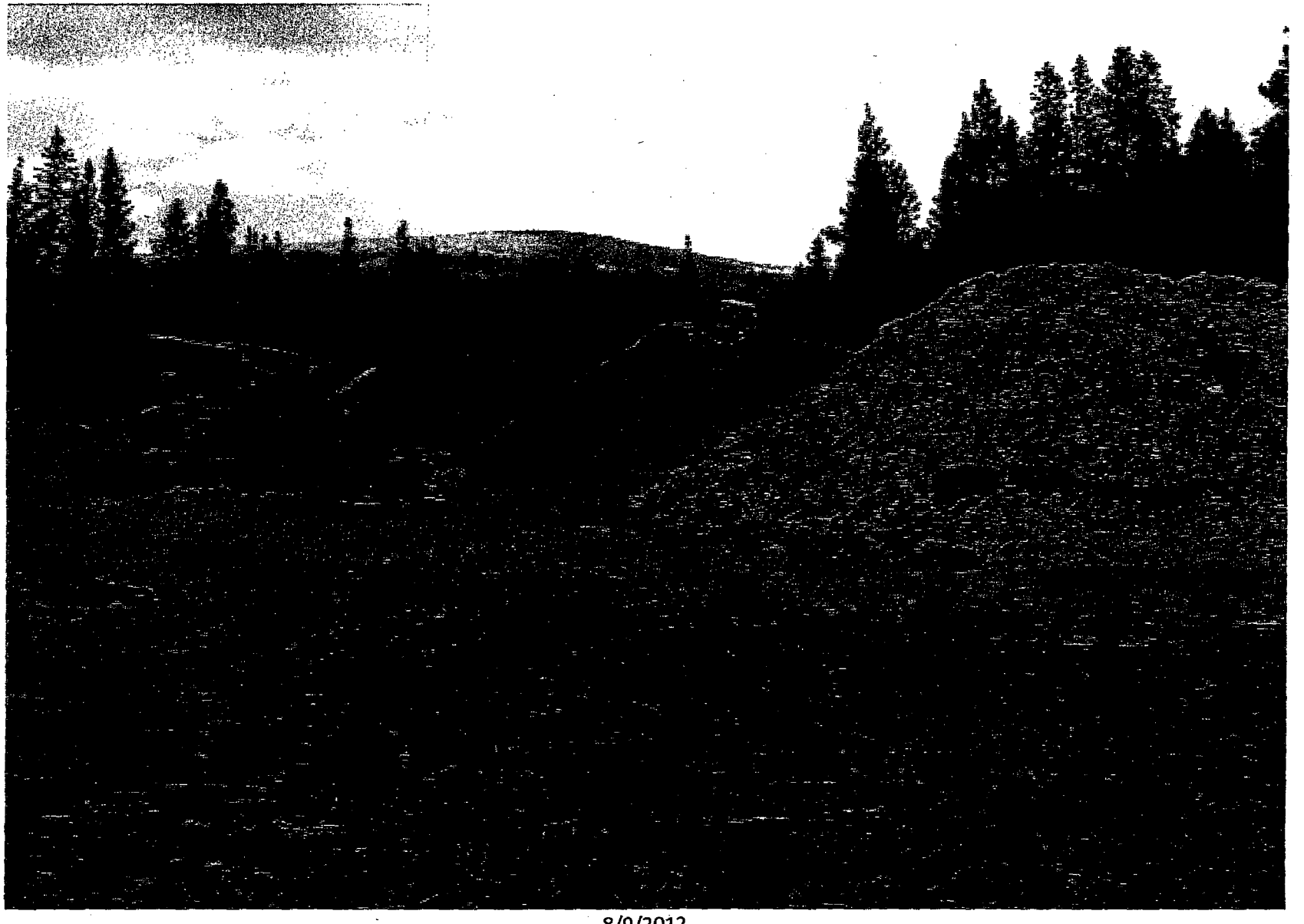
Section 12

Progress Photos

7/31/2012



8/9/2012



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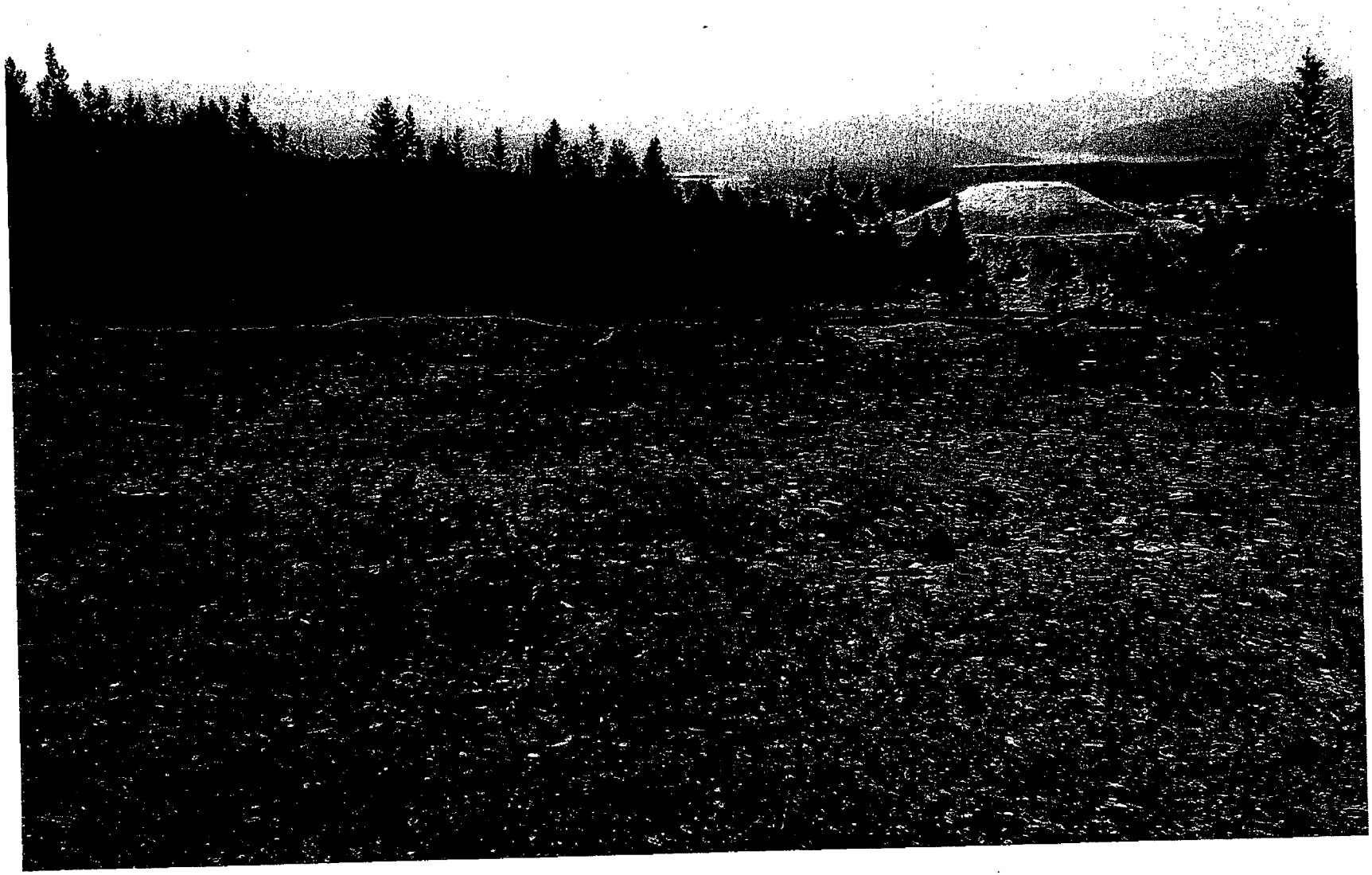
8/10/2012

8/15/2012

8/15/2012



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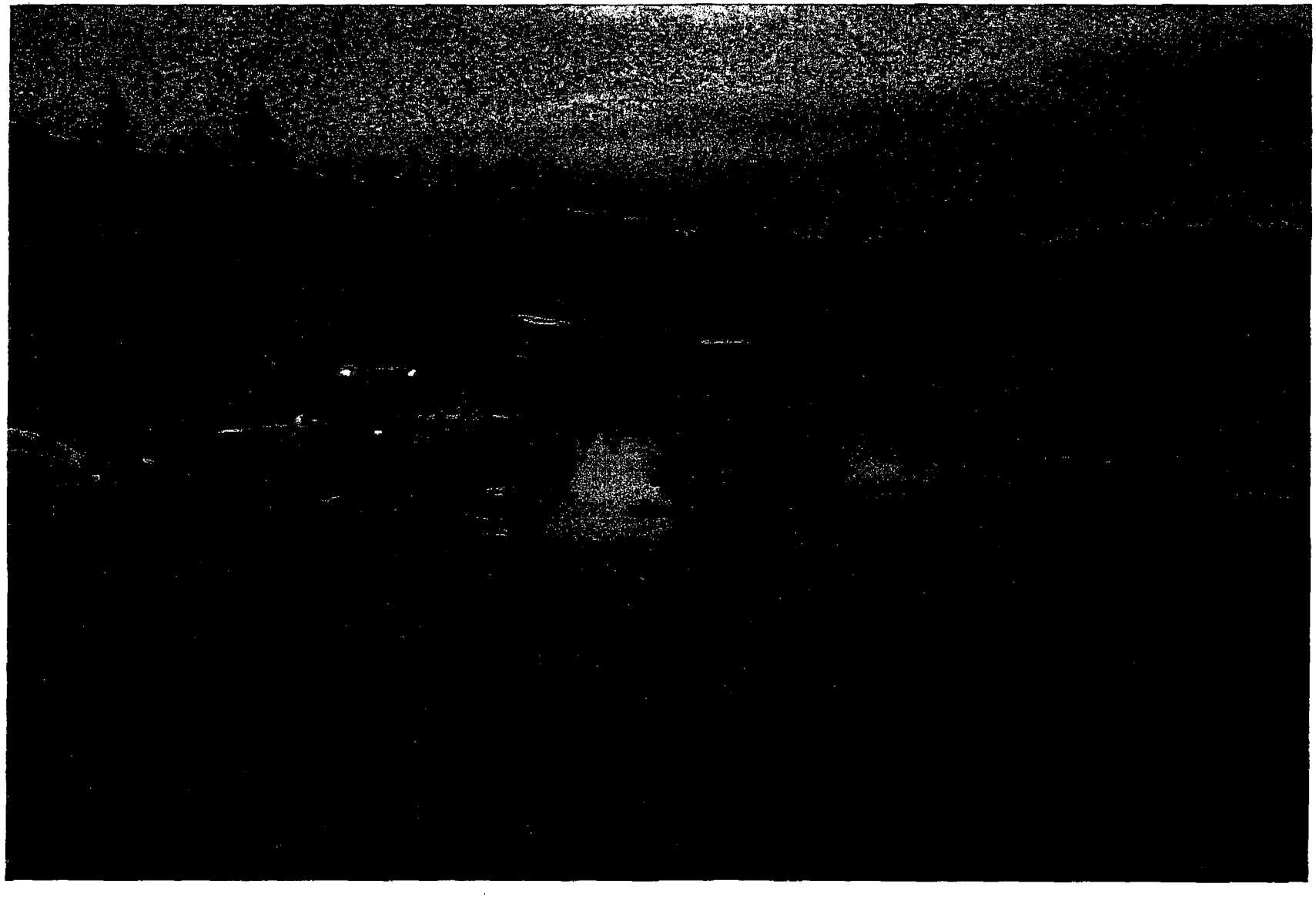

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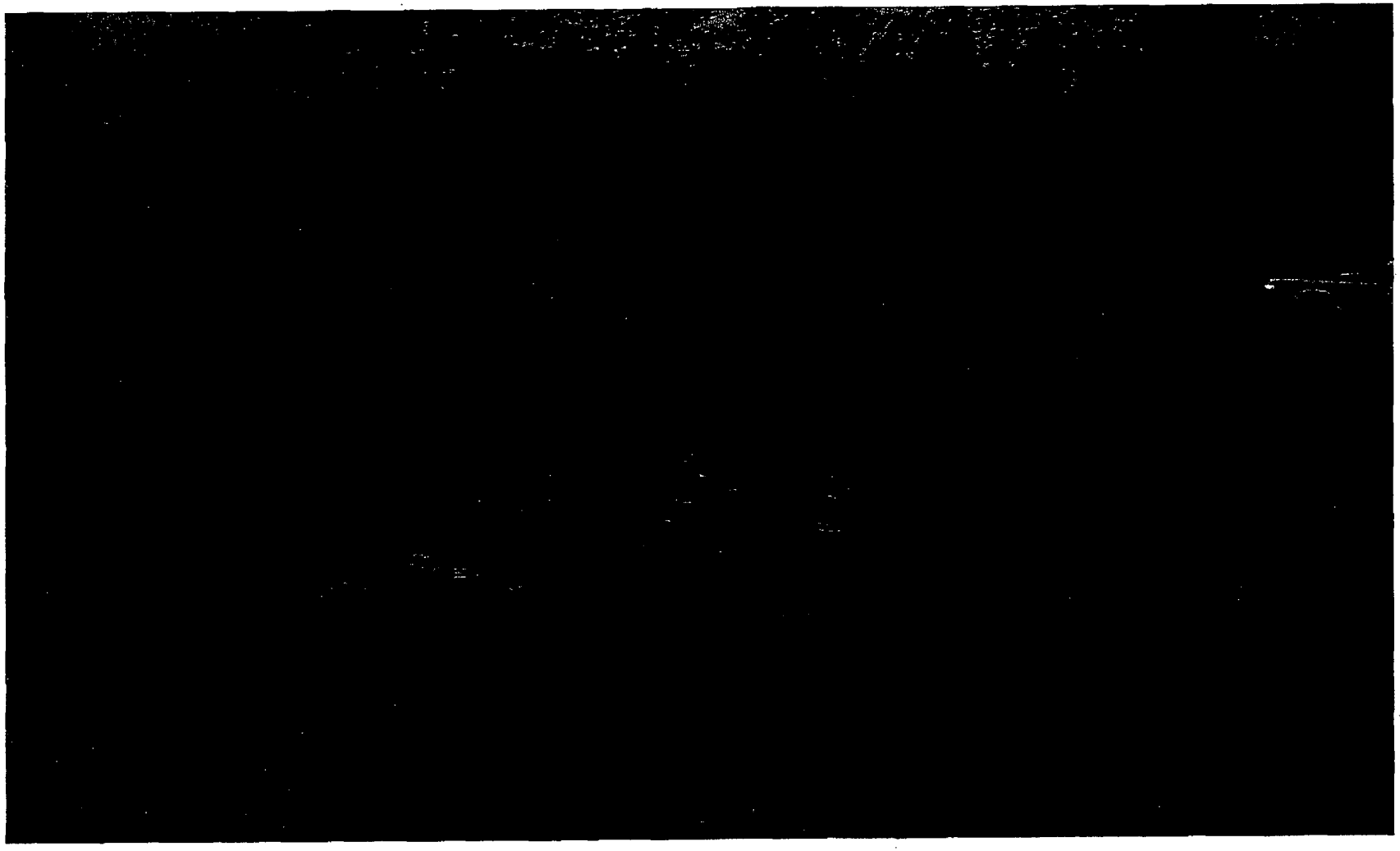

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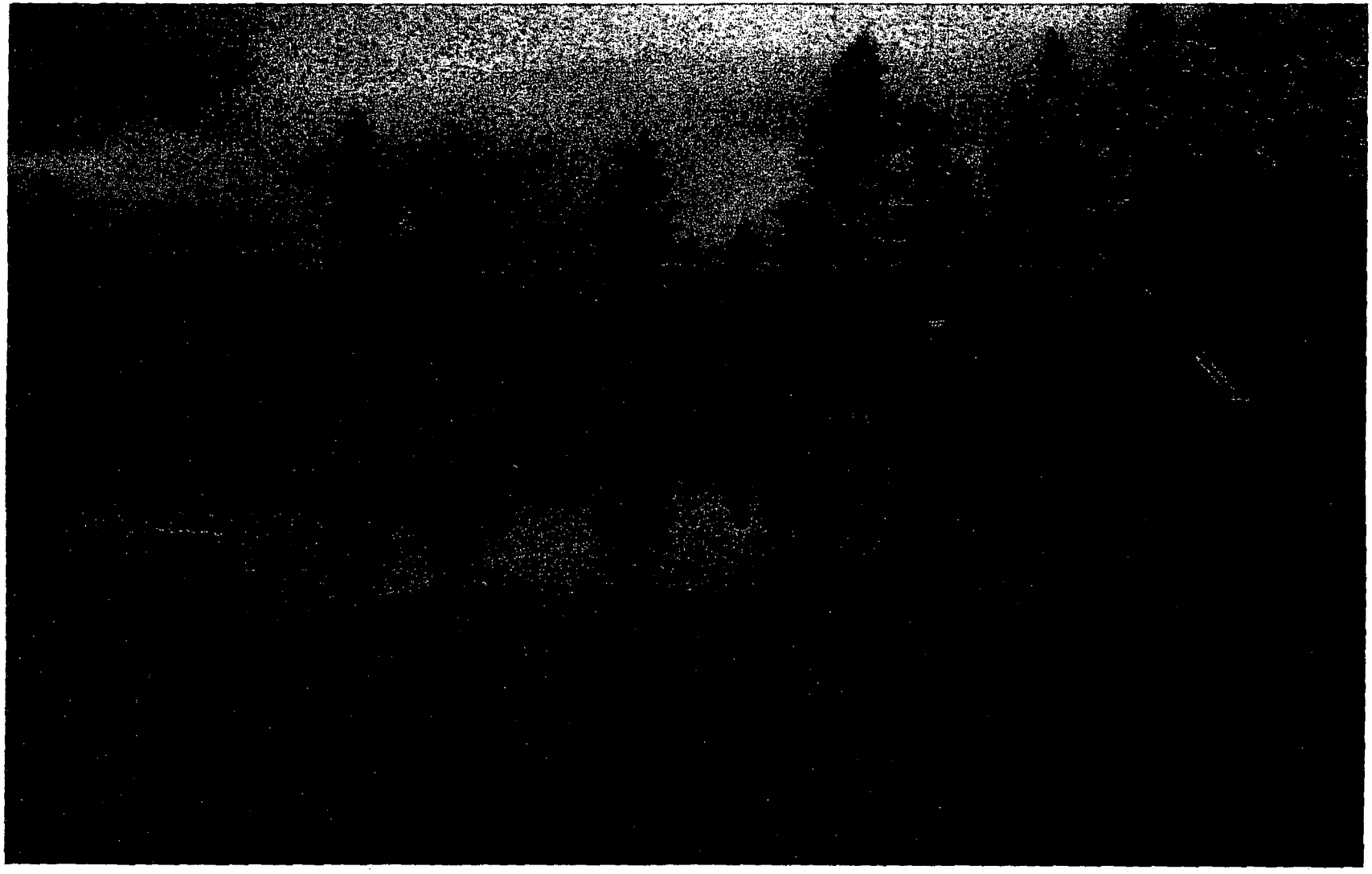

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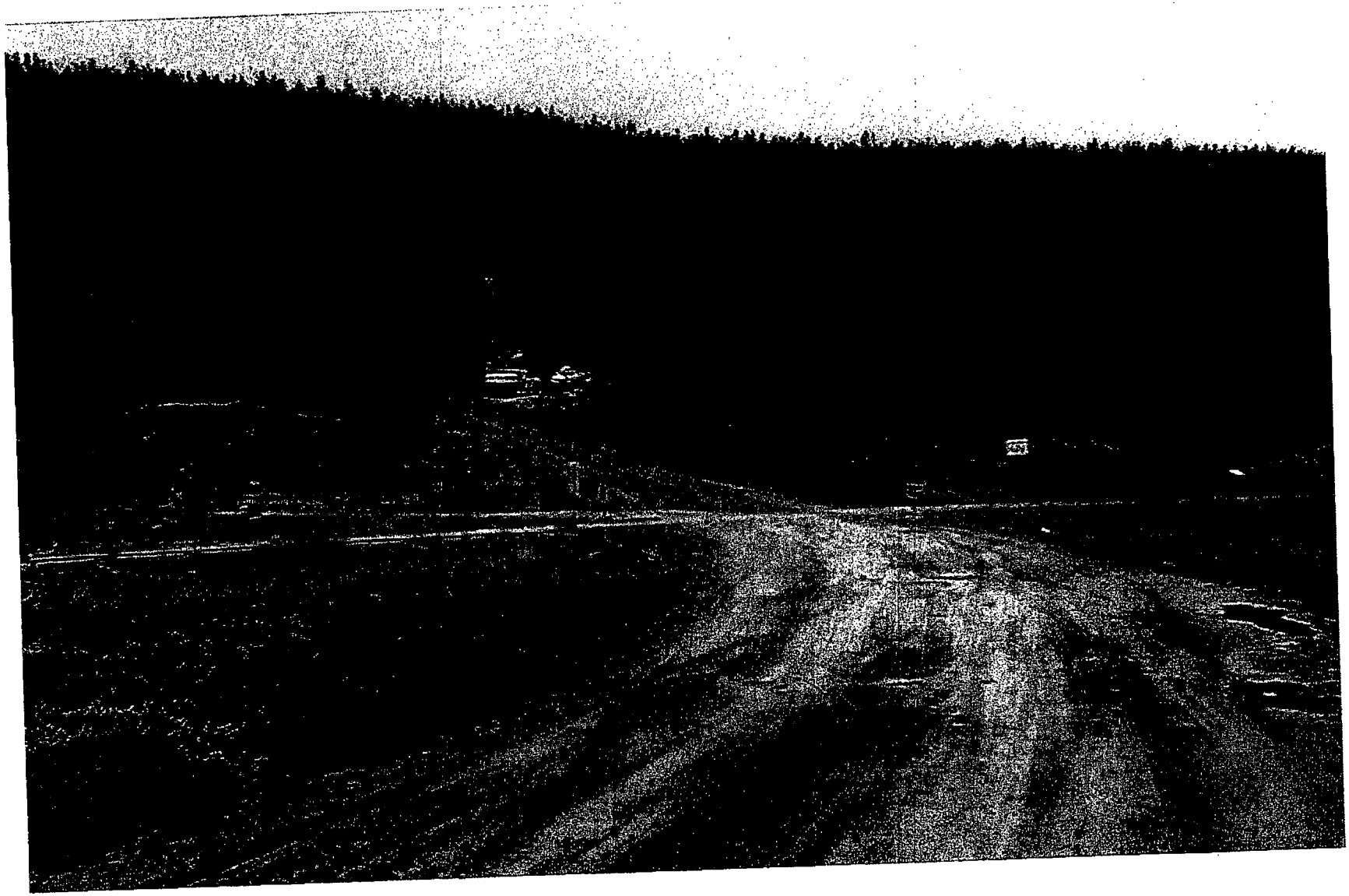
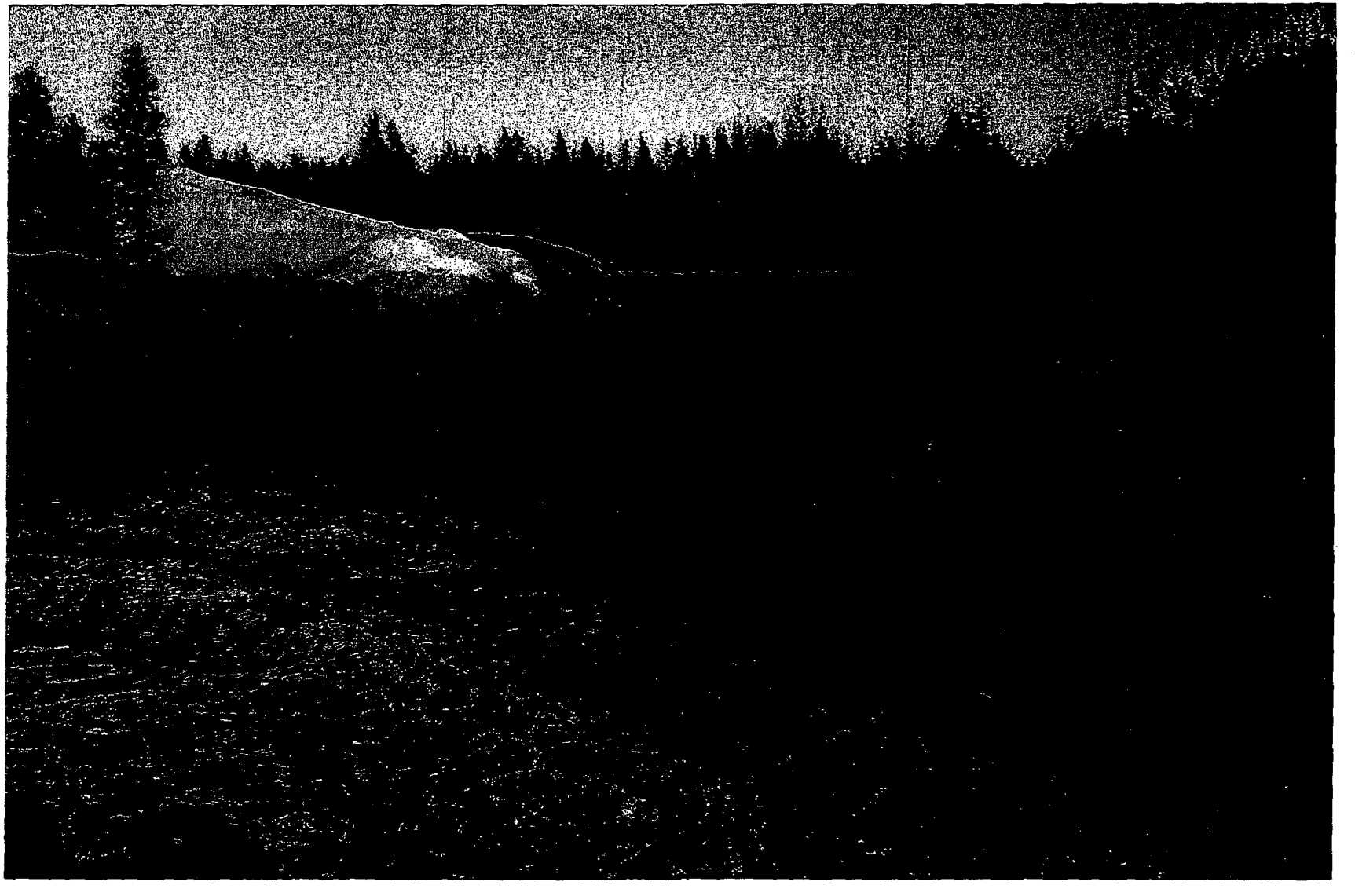


9/12/2012

9/17/2012



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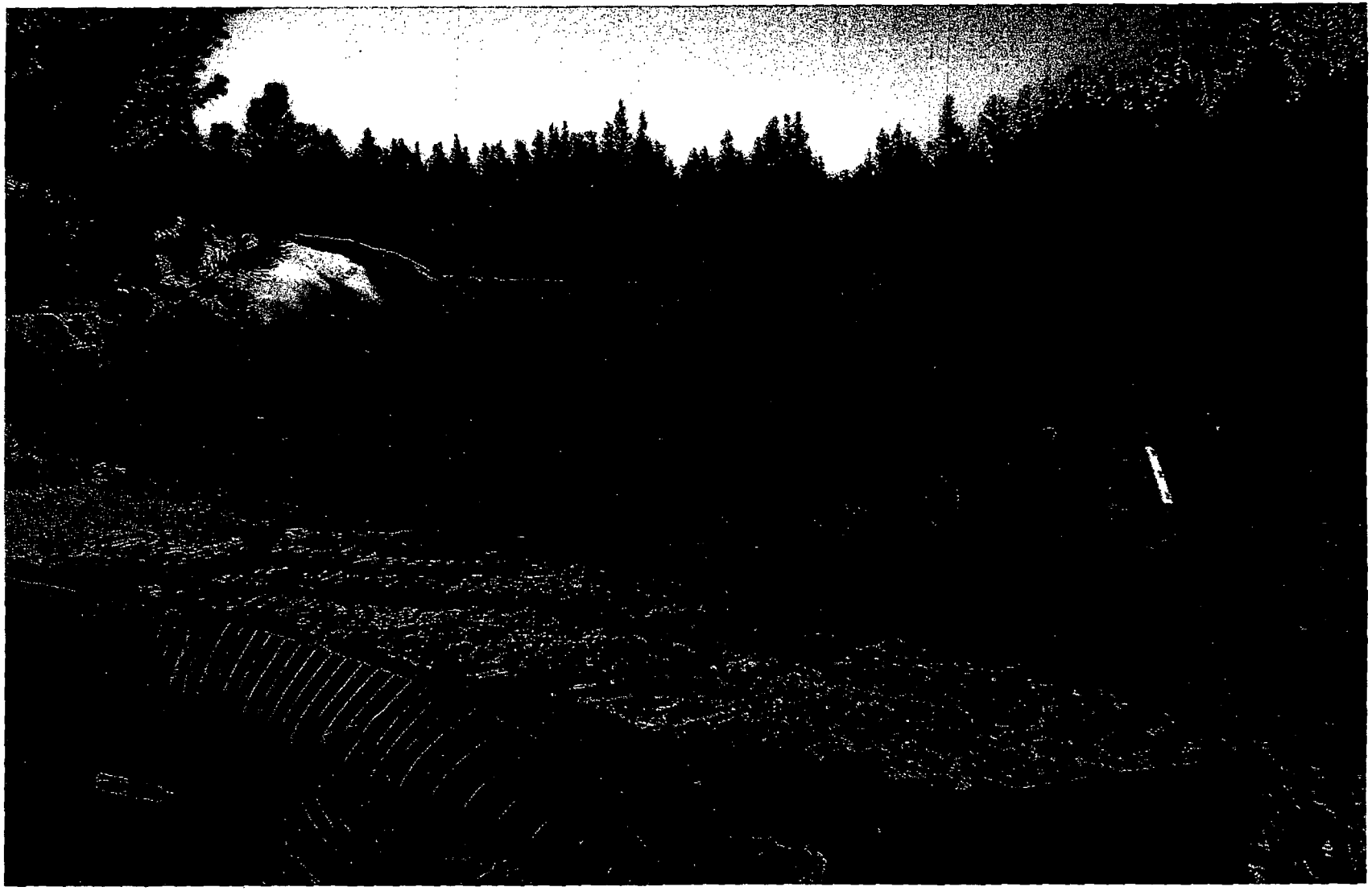
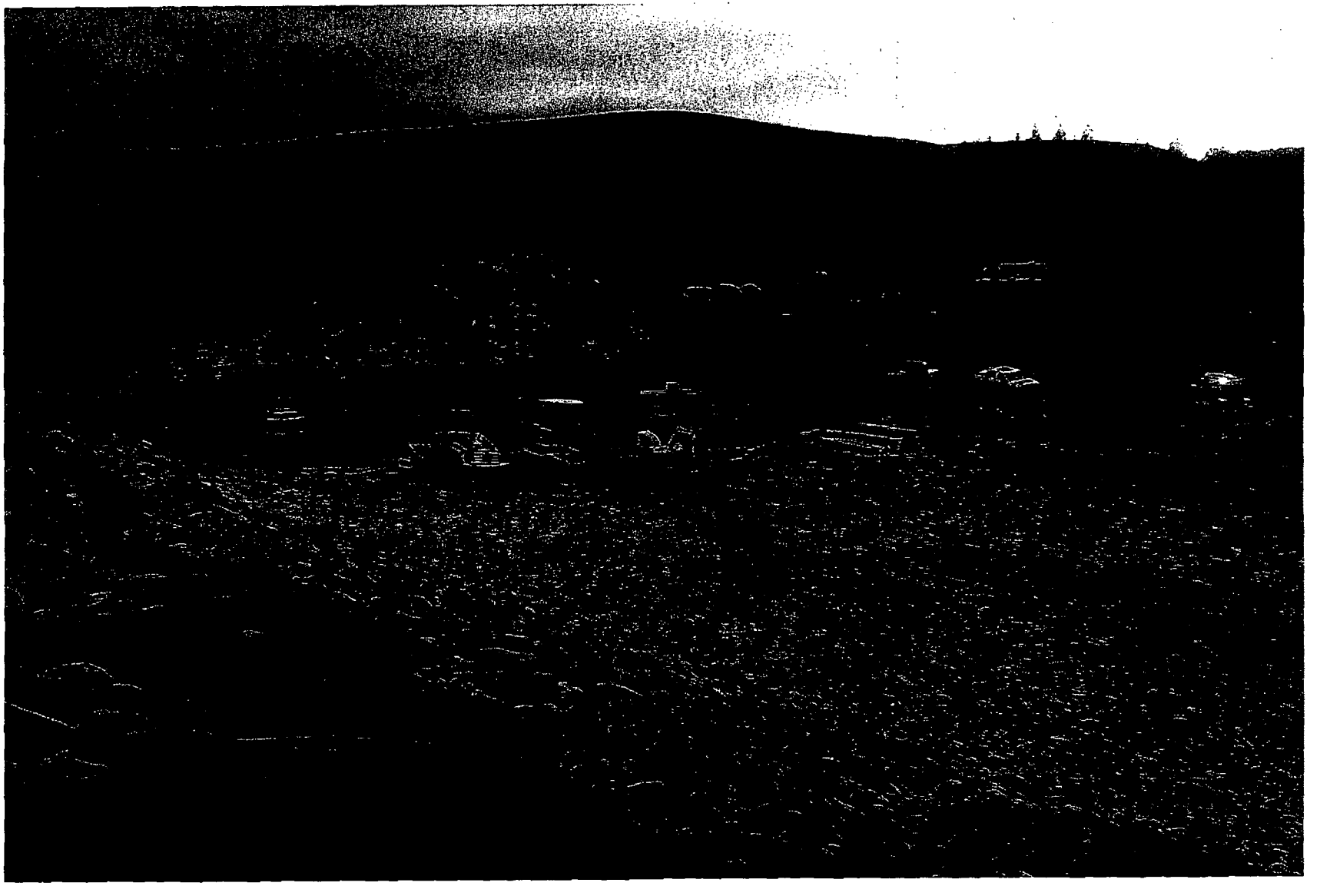


9/18/2012

9/21/2012

9/21/2012



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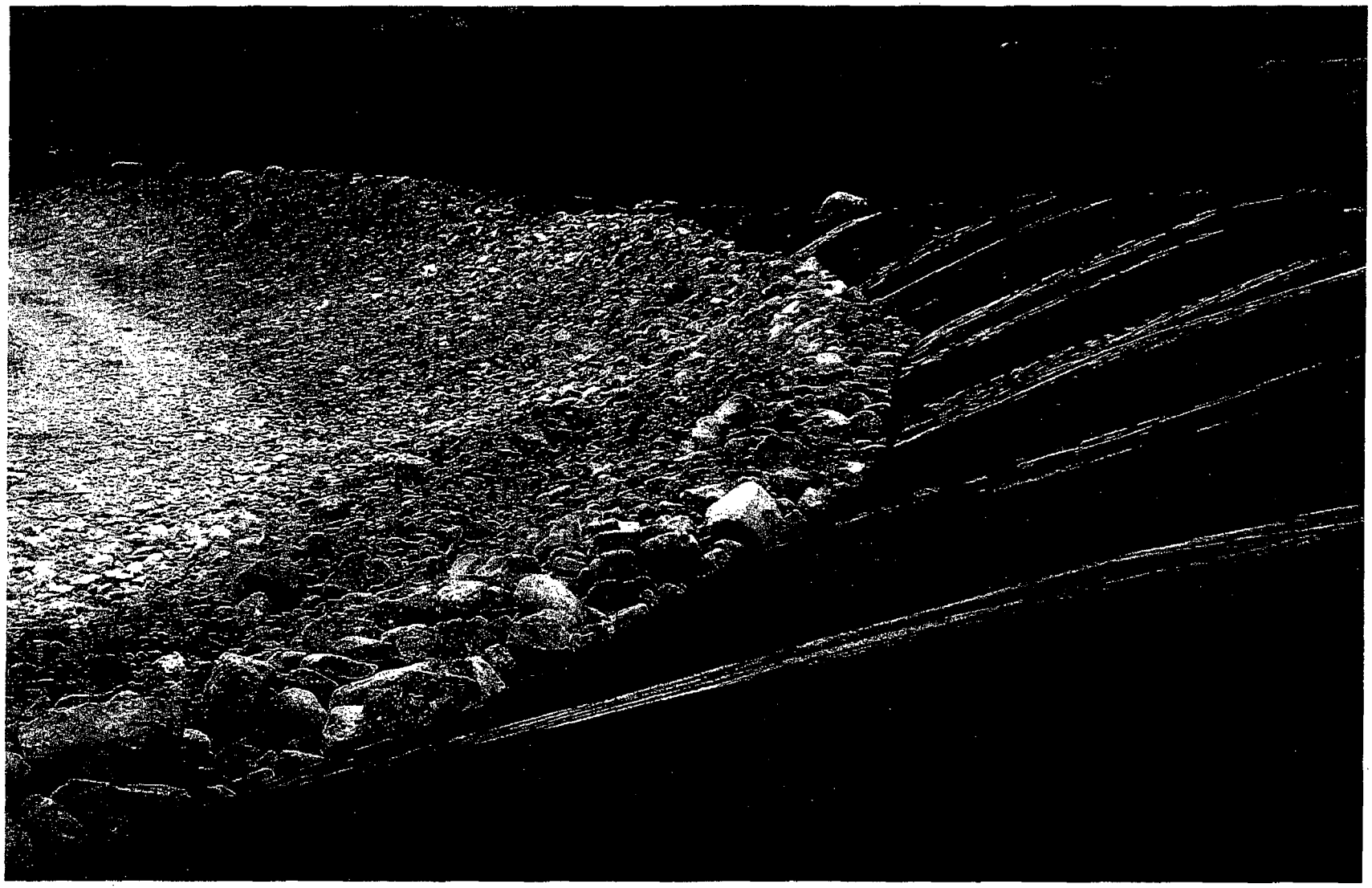

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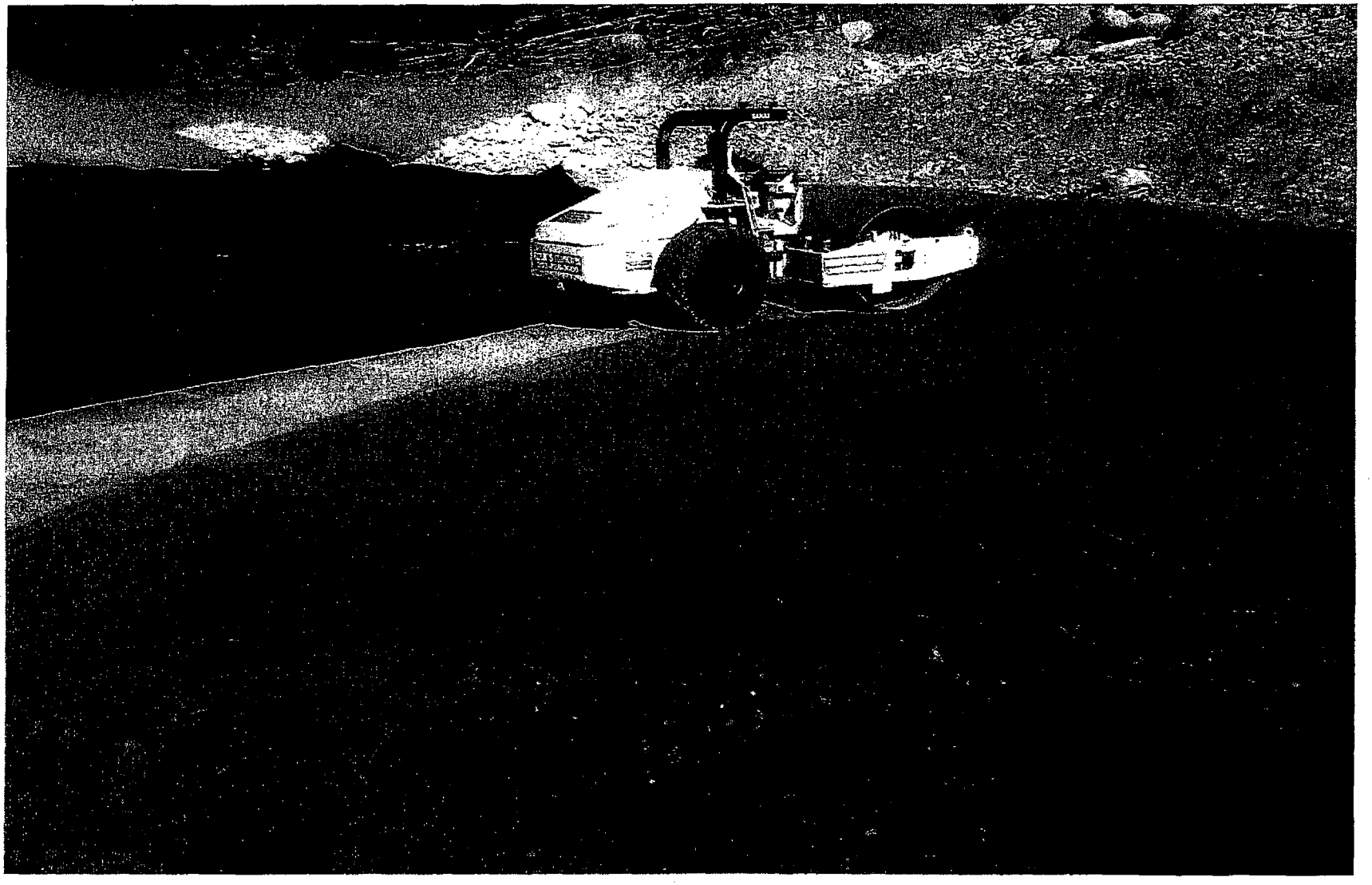

10/9/2012

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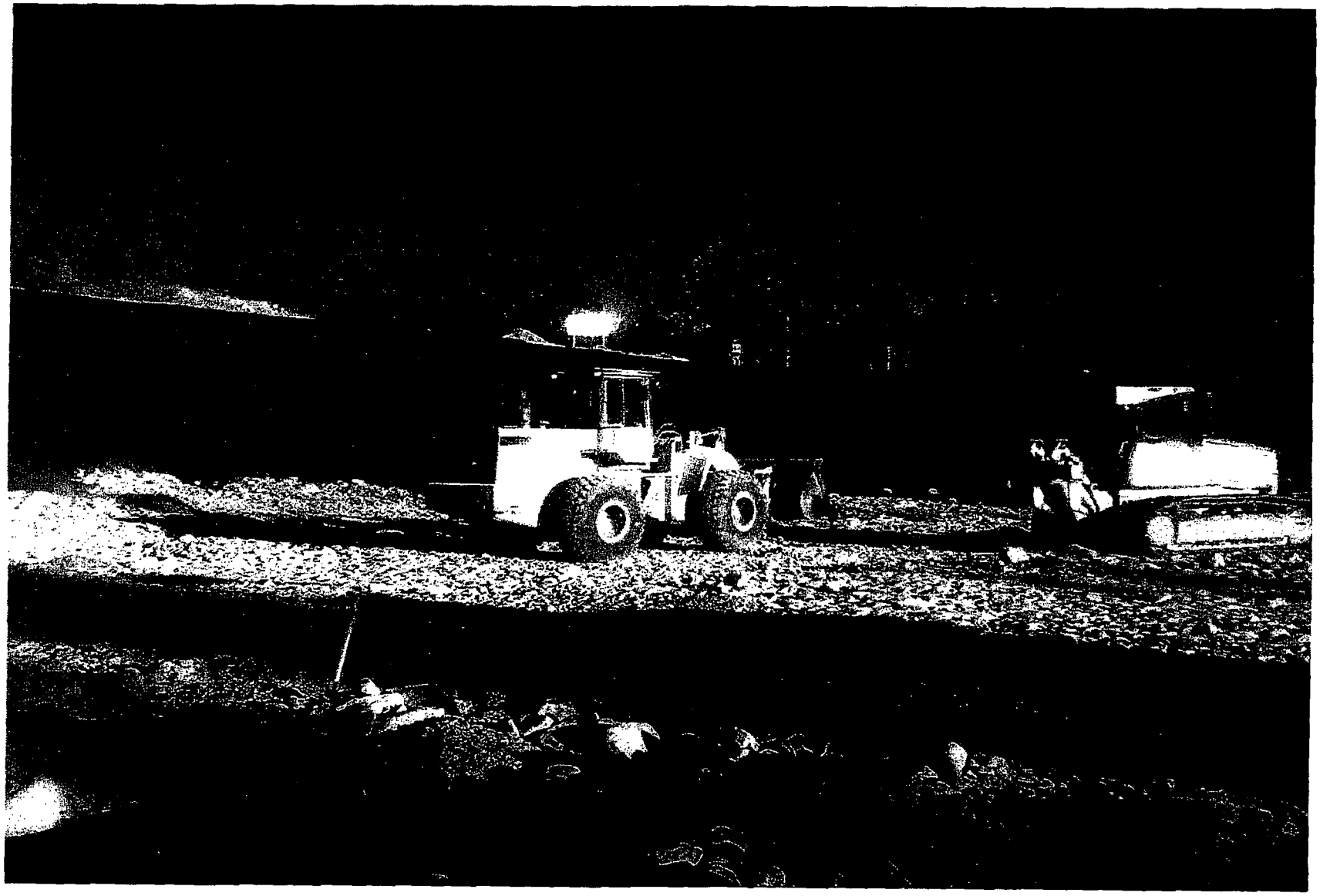

10/9/2012

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Section 13

Change Order

LAKE COUNTY, COLORADO

CHANGE ORDER

Change Order No: 1 Contract ID No. 2012-1 Date 9/28/2012

Contractor: American Civil Constructors, Inc.

Institution or Agency: LAKE COUNTY, COLORADO

Project No./Name: 2012-1/CALIFORNIA GULCH SUPERFUND SITE CONTAMINATED SOIL REPOSITORY

Your Change Order Proposal(s), dated 9/28/2012 is hereby being designated for approval of the following work:

(Note: If more space is needed for description of work, attach additional 8-1/2" x 11" sheets hereto.)

Due to the presence of rocks of unacceptable size within the clay in the planned clay borrow area, the Architect/Engineer has recommended expanding the clay borrow area in order to access clay of acceptable quality. The additional items of work, which have been negotiated between the Architect/Engineer and the Contractor, are as follows. Item numbers refer to the Schedule of Values.

Item 1.0 Mobilization: Additional Lump Sum of $3,000.

Item 4.0 Clear and Grub: Additional 42,700 SF at $0.30 per SF = $12,810.00.

Item 6.0 Excavate and Stockpile Existing Topsoil at Greenback Clay Borrow Area: Additional 326 BCY at $6.00 per BCY = $1,956.00.

Item 20.0 Place Topsoil at Greenback Borrow: Additional 326 BCY at $10.00 per BCY = $3,260.00.

Item 21.0 Amend Topsoil, provide seeding, erosion control at Greenback Area: Additional 42,700 SF at $0.50 per SF = $21,350.00.

Item 27.0 (NEW ITEM) Excavate existing overburden at Greenback Clay Borrow and Place and Compact in original excavation area: 2,243 BCY at $13.00 per BCY = $29,159.00.

It is agreed that the substantial completion date is revised to October 20, 2012.

Due to the additional days required for the work authorized by this change order, it is agreed that if weather conditions preclude ACC from performing weather/temperature sensitive operations, additional contract time will be added equal to the days lost due to those conditions.

This change order was originated by the Contractor ☐, Architect/Engineer ☒, County ☐, and I/We do hereby recommend acceptance and approval of the change to the Contractor's Agreement Dated 6/28/2012 which is by this reference, made a part hereof, and identified as Exhibit G with an increase ☒, a decrease ☐, no change ☐, of $71,535.00.

The Time of Completion is extended 10 calendar days ☒, is unchanged ☐, is reduced ☐ calendar days, from the total number of days listed in the Contractor's Agreement to complete the entire Project. The revised total number of days to complete the entire Project aggregating this Change Order and previously approved Change Order(s) per the Summary of Changes chart below, is 10 calendar days. If the completion date was extended or reduced, the new completion date of the Project is 3 months + 2 weeks + 3 days from the Notice to Proceed (7/3/2012 to 10/20/2012).

SUMMARY OF CHANGES			
	Description of Work/Date	Time of Completion from Notice to Proceed Extended/Reduced	Dollar Amounts
Original Contract	Construct Repository	3 mo + 1 week	$877,700.00
Change Order #1	Additional Work to Expand the Clay Borrow Area	Add 10 days	Add $71,535.00
Current Totals		3 mo+2 weeks+3days	$949,235.00

*Persons signing for Architect/Engineer/Contractor hereby swear and affirm that they are authorized to act on Architect/Engineer/Contractor's behalf and acknowledge that the County is relying on their representations to that effect. Principal is not a recognized title and will not be accepted.

CDM-Smith Architect/Engineer Firm	TODD BRANDON PROJECT ENGINEER Name and Title (print) Signature	9/28/12 Date
American Civil Constructors, Inc. Contractor (Name of Firm)	Jeffrey L Croll Name and Title (print) Signature	10/1/2012 Date
LAKE COUNTY, COLORADO	Name and Title (print) Principal Representative (Signature)	Date

CONTRACT STATUS

Original Contract Value	$877,700.00
Previous increases by CO/Amend	0
Previous decreases by CO/Amend	0
Value After Prior CO's/Amend	0
This CO/Amend Increases ☒ Decreases ☐	$71,535.00
CURRENT CONTRACT VALUE	$949,235.00

Chlorella
Sun Warrior
Ottawa Soy Protein

Appendix C

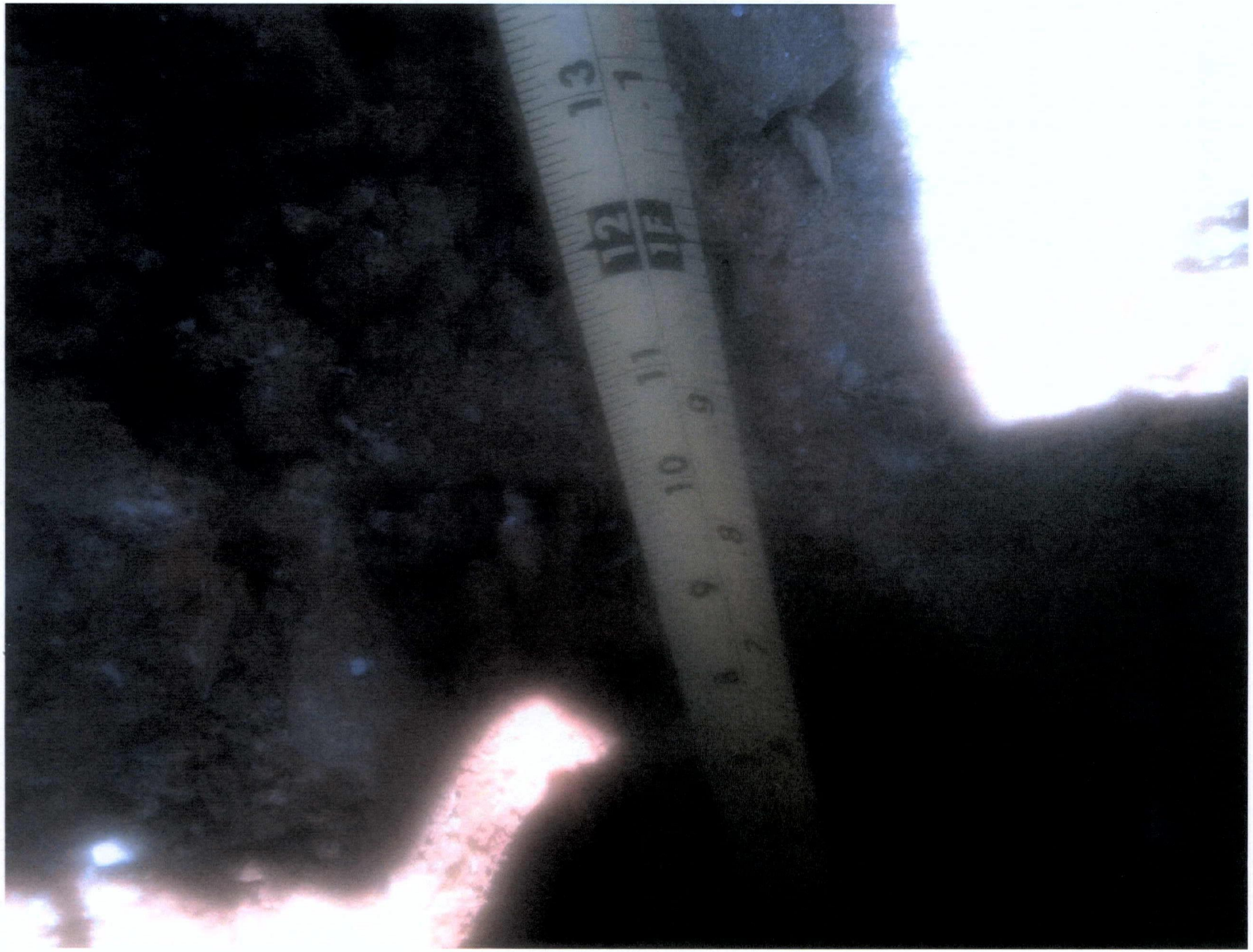
Field Thickness Test

*For all Thickness Testing locations, please refer to the LSG Testing Location Map mentioned in Final Testing Submittal (#48 D)

LSG Cell No. 2 Side Slope Thickness Test #79

Test Performed by American Civil Constructors, Tony Gregorich Project Engineer. Thickness of 12 inches, date of measurement 10-15-12

LSG Cell No. 2 Side Slope Thickness Test #80



Test Performed by American Civil Constructors, Tony Gregorich Project Engineer. Thickness of 12.25 inches, date of measurement 10-15-12

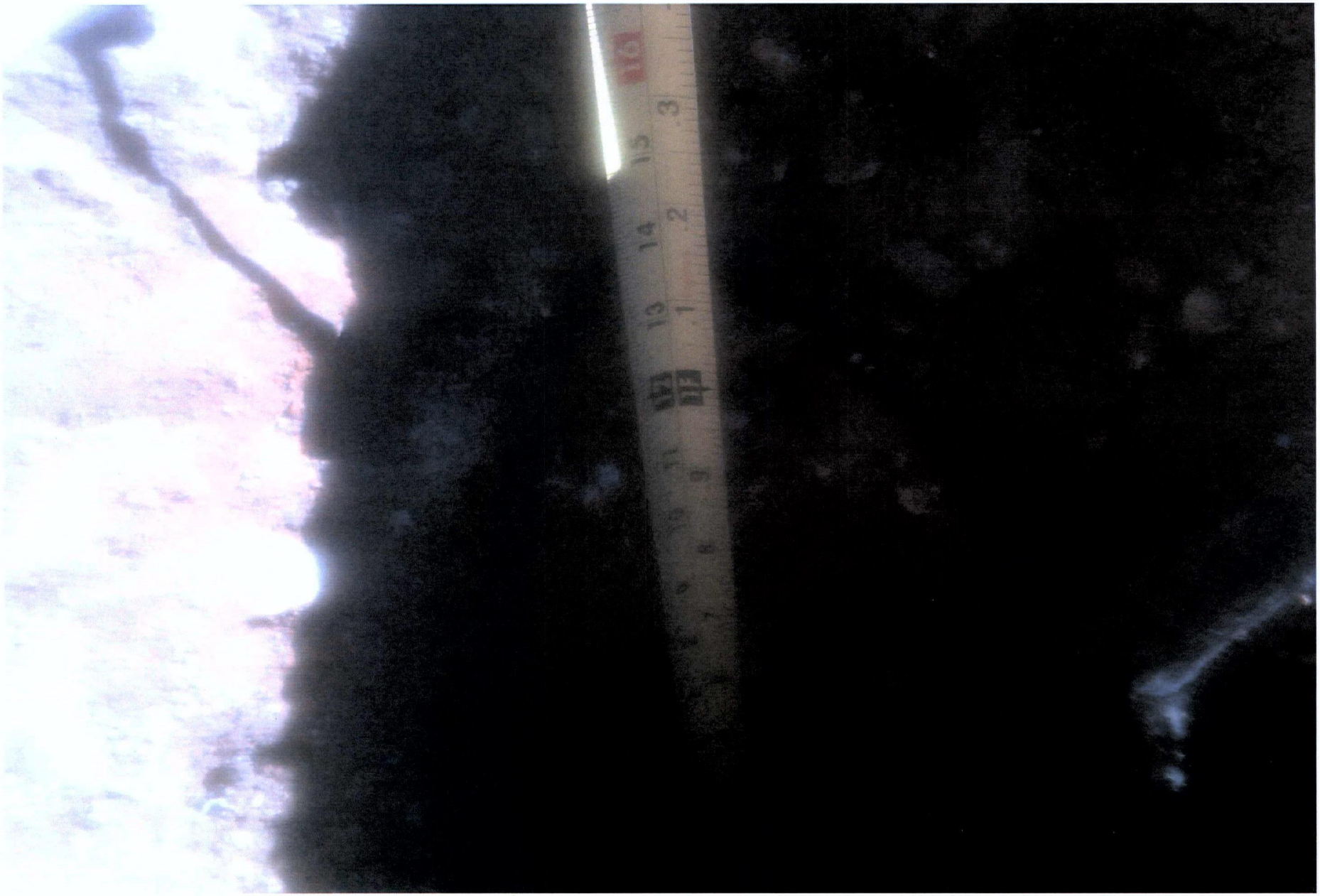
LSG Cell No. 1 Side Slope Thickness Test # 81

Test Performed by American Civil Constructors, Tony Gregorich Project Engineer. Thickness of 12.5 inches, date of measurement 10-16-12

LSG Cell No. 1 Side Slope Thickness Test # 82

Test Performed by American Civil Constructors, Tony Gregorich Project Engineer. Thickness of 12 inches, date of measurement 10-16-12

LSG Pond Side Slope Thickness Test # 83



Test Performed by American Civil Constructors, Tony Gregorich Project Engineer. Thickness of 13 inches, date of measurement 10-16-12

Soil Tracking Report

Soil Tracking for California Gulch

*All locations of the samples will be identified by a stake for reference, but will only remain there for a few days because of the high traffic of equipment and excavation of clay. However the locations of the samples will be marked on the LSG Repository Plan and when clay samples are taken it will be plotted on the Greenback Clay Borrow Plan.

*LSG Area #1 represents the East Portion of the Contaminated Soil Repository and LSG Area #2 represents the West Portion of the CSR.

*See attachment drawings for all locations of each test. For the daily clay temperature readings refer to the project records submittal (#56 A).

*Please be aware that "N/A" in the Pass/Fail column means that "Not Analyzed." Be aware also that locations may differ from HP Geotech report forms and the tracking table locations. Tracking table locations are based on the drawings provided and all locations are referenced from the point of interest stake on the West slope of the Contaminated Soil Repository.

Test #	Name of Test	Type of Test	Location	Date	Elevation Depth	Pass/Fail	High Temp. F	Low Temp. F	Company Who Performed Test	Location Description	Requirements	Lab Test Result Actual Number	Actual Results
1	Silty, Sandy Gravel with Cobbles	Atterberg, Gradation, Compaction	LSG Onsite Unscreened Overburden	8/8/2012	4 ft	N/A	78	45	H-P Geotech	Stockpile Area	General Samples	HP = 1	(LL = 22% PI = 4% Sand = 31%)
2	Slightly Gravelly, Sandy Clay	Atterberg, Gradation, Compaction	Onsite 2" Minus Screened	8/8/2012	2 ft	N/A	78	45	H-P Geotech	Stockpile Area	General Samples	HP = 2	(LL = 21% PI = 5% Sand = 41%)
3	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	8/8/2012	4 ft	PASS	65	43	ATT and H-P Geotech	65 ft from West Fence and 60 ft from South Fence	1000 CY	CL = 3	(LL = 30% PI = 12% Sand = 29%) (8.1 E-08 cm/s)
4	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	8/31/2012	5 ft	PASS	65	43	ATT and H-P Geotech	125 ft from West Fence and 61 ft from South Fence	1000 CY	CL = 4	(LL = 35% PI = 18% Sand = 42%) (8.1 E-08 cm/s)
5	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	9/6/2012	6 ft	FAILED Liquid Limit, HC PASS	67	42	ATT and H-P Geotech	60 ft from West Fence and 60 ft from South Fence	1000 CY	CL = 5	(LL = 32% PI = 13% Sand = 47%) (6.4 E-06 cm/s)
6	Greenback Clay Borrow Area	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay	9/6/2012	7 ft	FAILED Liquid Limit, HC PASS	67	42	ATT and H-P Geotech	130 ft from West Fence and 62 ft from South Fence	1000 CY	CL = 6	(LL = 33% PI = 15% Sand = 44%) (1.0 E-04 cm/s)
7	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	60 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
8	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	100 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
9	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	100 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
10	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	60 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
11	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	140 ft from West of Point of Interest Stake on Slope and 50 ft South	8500 SF		
12	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	H-P Geotech	150 ft from West of Point of Interest Stake on Slope and 40 ft North	8500 SF		
13	In Place Clay Liner Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, First Lift	9/11/2012	6 inches	PASS	61	38	ATT	Same as Test 12	50000 SF	12 In Place #1	(4.4 E-07 cm/s)
14	Moisture Content First Lift	Moisture Content	LSG Repository Clay Liner Area #1, First Lift	9/17/2012	6 inches	PASS	61	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	50000 SF	Figure 13 Pan # H-2	15.0% Moisture

15	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 20 ft North	10000 SF		
16	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12.5 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	10000 SF		
17	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	13 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 90 ft South	10000 SF		
18	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 90 ft South	10000 SF		
19	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 35 ft South	10000 SF		
20	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #1, Both Lifts	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 20 ft North	10000 SF		
21	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 20 ft North	8500 SF		
21	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 35 ft South	8500 SF		
22	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 90 ft South	8500 SF		
23	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 90 ft South	8500 SF		
24	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 35 ft South	8500 SF		
25	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	50 ft from West of Point of Interest Stake on Slope and 20 ft North	8500 SF		
26	Moisture Content Second Lift	Moisture Content	LSG Repository Clay Liner Area #1, Second Lift	9/17/2012	12 inches	PASS	57	37	H-P Geotech	130 from West of Point of Interest Stake on Slope and 30 ft North	50000 SF	Figure 13 Pan # B-2	15.9% Moisture
27	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	PASS	61	38	ATT	50 ft from West of Point on Interest Stake on Slope and 20 ft North	Retest	ATT #29 In Place	(5.0 E-07 cm/s)
28	Hydraulic Conductivity Second Lift Area #1 *(See Retested Sample Numbers 27,29,32)	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	FAILED	61	38	ATT	140 from West of Point of Interest Stake on Slope and 90 ft South	50000 SF	ATT #28 In Place	(3.4 E-06 cm/s)
29	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	9/19/2012	12 inches	PASS	61	38	ATT	40 ft from West of Point of Interest Stake on Slope and 90 ft South	Retest	ATT #34 Retest	(4.1 E-07 cm/s)
30	Greenback Clay Borrow Area	Atterberg, Gradation, Compaction	Greenback Imported Clay New Area	10/4/2012	6 ft	PASS	52	36	H-P Geotech	100 ft from West Stake and 200 ft South	1000 CY	CL = 7	(LL = 31% PI = 13%)
31	Greenback Clay Borrow Area *(After clay was proccesed and conditioned it meet the Maximum Allowable HC value once placed in the LSG area)	Hydraulic Conductivity and Atterberg, Gradation, Compaction	Greenback Imported Clay New Area	10/4/2012	4 ft	FAILED	52	36	ATT and H-P Geotech	150 ft from West Stake and 300 ft South	1000 CY	CL = 8	(LL = 29% PI = 10%) (2.6 E-04 cm/s)

32	Hydraulic Conductivity Second Lift Area #1	Hydraulic Conductivity	LSG Repository Clay Liner Area #1, Second Lift	10/4/2012	12 inches	PASS	52	36	ATT	40 ft from West of Point of Interest Stake on Slope and 60 ft North	Retest	ATT #33 Retest	(3.8 E-07 cm/s)
33	Moisture Content Pond 1st Lift	Moisture Content	Pond 1st Lift	10/3/2012	6 inches	PASS	54	36	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 115 ft North	50000SF	Figure 14 Pan # S	15.3% Moisture
34	Moisture Content Pond 2nd Lift	Moisture Content	Pond 2nd Lift	10/3/2012	12 inches	PASS	52	36	H-P Geotech	Stockpile Area	50000SF	Figure 14 Pan # V	15.2% Moisture
35	Hydraulic Conductivity Second Lift Pond *(Within the given allowable range (1.5 E-1) advised from CDM Smith. Also note that Test # 36 is within the allowable range and was taken from the same batch of clay as Test # 35)	Hydraulic Conductivity	Pond 2nd lift	10/5/2012	12 inches	FAILED	43	34	ATT	135 ft from West of Point of Interest Stake on Slope and 100 ft North	50000SF	ATT 35 In Place	(6.0 E-07 cm/s)
36	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	53	27	ATT	195 ft from West of Point of Interest Stake on Slope and 20 ft North	50000SF	ATT 37 In Place	(4.5 E-07 cm/s)
37	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	135 ft from West of Point of Interest Stake on Slope and 95 ft North	Contingency		
38	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	140 ft from West of Point of Interest Stake on Slope and 105 ft North	Contingency		
39	Hydraulic Conductivity Pond	Hydraulic Conductivity	Pond 2nd lift	10/9/2012	12 inches	N/A	53	27	ATT	140 ft from West of Point of Interest Stake on Slope and 95 ft North	Contingency		
40	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	190 ft from West of Point of Interest Stake on Slope and 25 ft North	Contingency		
41	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	200 ft from West of Point of Interest Stake on Slope and 15 ft North	Contingency		
42	Hydraulic Conductivity Second Lift Area #2	Hydraulic Conductivity	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	N/A	53	27	ATT	190 ft from West of Point of Interest Stake on Slope and 5 ft North	Contingency		
43	Hydraulic Conductivity Between both clay lifts	Hydraulic Conductivity	Near Central Berm	10/10/2012	12 inches	FAILED	57	30	ATT	150 ft from West of Point of Interest Stake on Slope and 140 ft South	50000SF	#43 Test	(1.9 E-06 cm/s)
44	Moisture Content First Lift	Moisture Content	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	From Stockpile	50000SF	Figure 15 Pan # 5	14.7% Moisture
45	Moisture Content Second Lift	Moisture Content	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	41	H-P Geotech	From Stockpile	50000SF	Figure 15 Pan # Y	18.4% Moisture
46	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 145 ft North	8500 SF		
47	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 130 ft North	8500 SF		
48	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	120 ft from West of Point of Interest Stake on Slope and 110 ft North	8500 SF		
49	Rapid Density and Moisture	Moisture and Density	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 120 ft North	8500 SF		

50	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 140 ft North	8500 SF		
51	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 inches	Moisture Low due to 12+ Hour Delay	52	36	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 110 ft North	8500 SF		
52	Rapid Density and Moisture	Moisture and Density	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	115 ft from West of Point of Interest Stake on Slope and 125 ft North	8500SF		
53	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 35 ft North	8500 SF		
54	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 5 ft South	8500 SF		
55	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	190 ft from West of Point of Interest Stake on Slope and 50 ft South	8500 SF		
56	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 95 ft South	8500 SF		
57	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 30 ft South	8500 SF		
58	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 55 ft South	8500 SF		
59	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 70 ft South	8500 SF		
60	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 45 ft South	8500 SF		
61	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	240 ft from West of Point of Interest Stake on Slope and 15 ft South	8500 SF		
62	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 25 ft North	8500SF		
63	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 45 ft South	8500 SF		
64	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	195 ft from West of Point of Interest Stake on Slope and 40 ft South	8500 SF		
65	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	235 ft from West of Point of Interest Stake on Slope and 35 ft South	8500 SF		
66	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 40 ft North	8500 SF		

67	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	160 ft from West of Point of Interest Stake on Slope and 45 ft North	8500 SF		
68	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 50 ft North	8500 SF		
69	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 90 ft North	8500 SF		
70	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 15 ft South	8500 SF		
71	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	26	H-P Geotech	225 ft from West of Point of Interest Stake on Slope and 30 ft North	8500 SF		
72	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12 inches	PASS	52	26	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 55 ft North	8500 SF		
73	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	PASS	54	32	H-P Geotech	260 ft from West of Point of Interest Stake on Slope	8500 SF		
74	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	250 ft from West of Point of Interest Stake on Slope and 20 ft South	8500 SF		
75	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	245 ft from West of Point of Interest Stake on Slope and 55 ft South	8500 SF		
76	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	PASS	54	32	H-P Geotech	185 ft from West of Point of Interest Stake on Slope and 95 ft South	8500 SF		
77	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	150 ft from West of Point of Interest Stake on Slope and 145 ft South	8500 SF		
78	Rapid Density and Moisture	Moisture and Density	LSG Repository Clay Liner Area #2, Second Lift	10/10/2012	12 inches	Moisture Low due to 12+ Hour Delay	54	32	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 65 ft North	8500 SF		
79	Thickness	Thickness	LSG Repository Clay Liner Area #1, Second Lift	10/15/2012	12 inches	PASS	57	29	ACC	10 ft from West of Point of Interest Stake on Slope and 40 ft North	10000SF		
80	Thickness	Thickness	LSG Repository Clay Liner Area #1, Second Lift	10/15/2012	12.25 inches	PASS	57	29	ACC	70 ft from West of Point of Interest Stake on Slope and 150 ft South	10000SF		
81	Thickness	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/16/2012	12.5 inches	PASS	48	27	ACC	180 ft from West of Point of Interest Stake on Slope and 100 ft South	10000SF		
82	Thickness	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/16/2012	12 inches	PASS	48	27	ACC	240 ft from West of Point of Interest Stake on Slope and 50 ft North	10000SF		

83	Thickness	Thickness	Pond 2nd Lift	10/16/2012	13 inches	PASS	48	27	ACC	140 ft from West of Point of Interest Stake on Slope and 105 ft North	10000SF		
46A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	6.5 inches	PASS	54	41	H-P Geotech	130 ft from West of Point of Interest Stake on Slope and 145 ft North	10000SF		
47A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	6 inches	PASS	54	41	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 130 ft North	10000SF		
48A	Thickness First Lift	Thickness	Pond 1st Lift	10/3/2012	7 inches	PASS	54	41	H-P Geotech	120 ft from West of Point of Interest Stake on Slope and 110 ft North	10000SF		
49A	Thickness First Lift *(Test failed but was retested near by "Test Number 48A" because HP Geotech suspected rod hit a rock in the most bottom part of the clay layer)	Thickness	Pond 1st Lift	10/3/2012	5.5 inches	FAILED	54	41	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 120 ft North	10000SF		
50A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	135 ft from West of Point of Interest Stake on Slope and 140 ft North	10000SF		
51A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12.5 inches	PASS	52	36	H-P Geotech	110 ft from West of Point of Interest Stake on Slope and 110 ft North	10000SF		
52A	Thickness Second Lift	Thickness	Pond 2nd Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	115 ft from West of Point of Interest Stake on Slope and 125 ft North	10000SF		
53A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 35 ft North	10000SF		
54A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 5 ft South	10000SF		
55A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6 inches	PASS	52	36	H-P Geotech	190 ft from West of Point of Interest Stake on Slope and 50 ft South	10000SF		
56A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	13.5 inches	PASS	52	36	H-P Geotech	170 ft from West of Point of Interest Stake on Slope and 95 ft South	10000SF		
57A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 30 ft South	10000SF		
58A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/4/2012	12.5 inches	PASS	52	36	H-P Geotech	175 ft from West of Point of Interest Stake on Slope and 55 ft South	10000SF		
59A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	6.5 inches	PASS	52	36	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 70 ft South	10000SF		
60A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 45 ft South	10000SF		
61A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/4/2012	7 inches	PASS	52	36	H-P Geotech	240 ft from West of Point of Interest Stake on Slope and 15 ft South	10000SF		

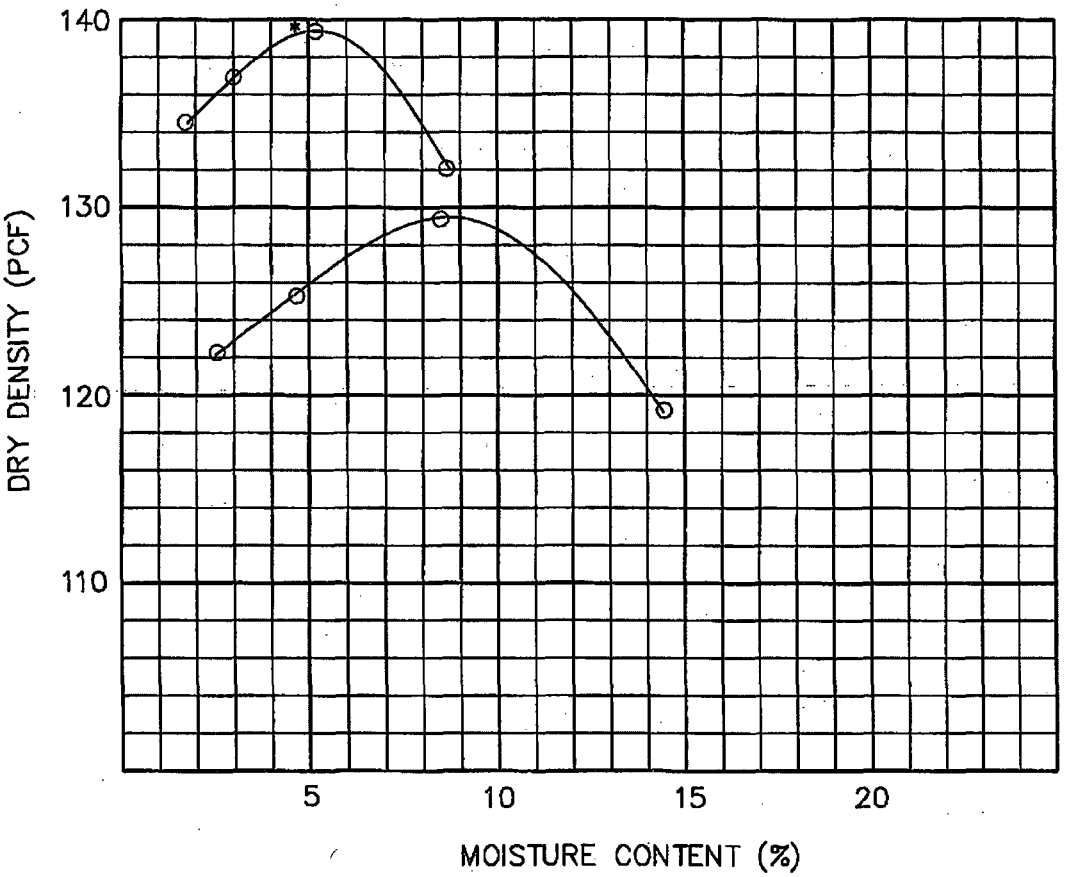
62A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	6 inches	PASS	43	34	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 25 ft North	10000SF		
63A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 45 ft South	10000SF		
64A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12.5 inches	PASS	43	34	H-P Geotech	195 ft from West of Point of Interest Stake on Slope and 40 ft South	10000SF		
65A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/5/2012	12 inches	PASS	43	34	H-P Geotech	235 ft from West of Point of Interest Stake on Slope and 35 ft South	10000SF		
66A	Thickness First Lift	Thickness	LSG Repository Clay Liner Area #2, First Lift	10/5/2012	7.5 inches	PASS	43	34	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 40 ft North	10000SF		
67A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12.5 inches	PASS	51	26	H-P Geotech	160 ft from West of Point of Interest Stake on Slope and 45 ft North	10000SF		
68A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	220 ft from West of Point of Interest Stake on Slope and 50 ft North	10000SF		
69A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/8/2012	12 inches	PASS	51	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 90 ft North	10000SF		
70A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	12.5 inches	PASS	52	26	H-P Geotech	230 ft from West of Point of Interest Stake on Slope and 15 ft South	10000SF		
71A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	13 inches	PASS	52	26	H-P Geotech	225 ft from West of Point of Interest Stake on Slope and 30 ft North	10000SF		
72A	Thickness Second Lift	Thickness	LSG Repository Clay Liner Area #2, Second Lift	10/9/2012	13.5 inches	PASS	52	26	H-P Geotech	200 ft from West of Point of Interest Stake on Slope and 55 ft North	10000SF		

Required Testing Frequencies

	Actual Tests Performed
Clay Material Tests During Excavation = 5 tests minimum	5
Moisture Content and Density Tests of In-Place Clay = 26 tests minimum	45
Hydraulic Conductivity and Moisture Content of In-Place Clay = 4 tests minimum	7 (HC) 6 (Moisture)
Thickness Tests of In-Place Clay = 11 tests minimum	33

All Tests Results

AUG 29 REC'D



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
1	Onsite Unscreened	Comp.	8/8/12	*139.5 PCF	*5.2 %	ASTM D-698 Method C

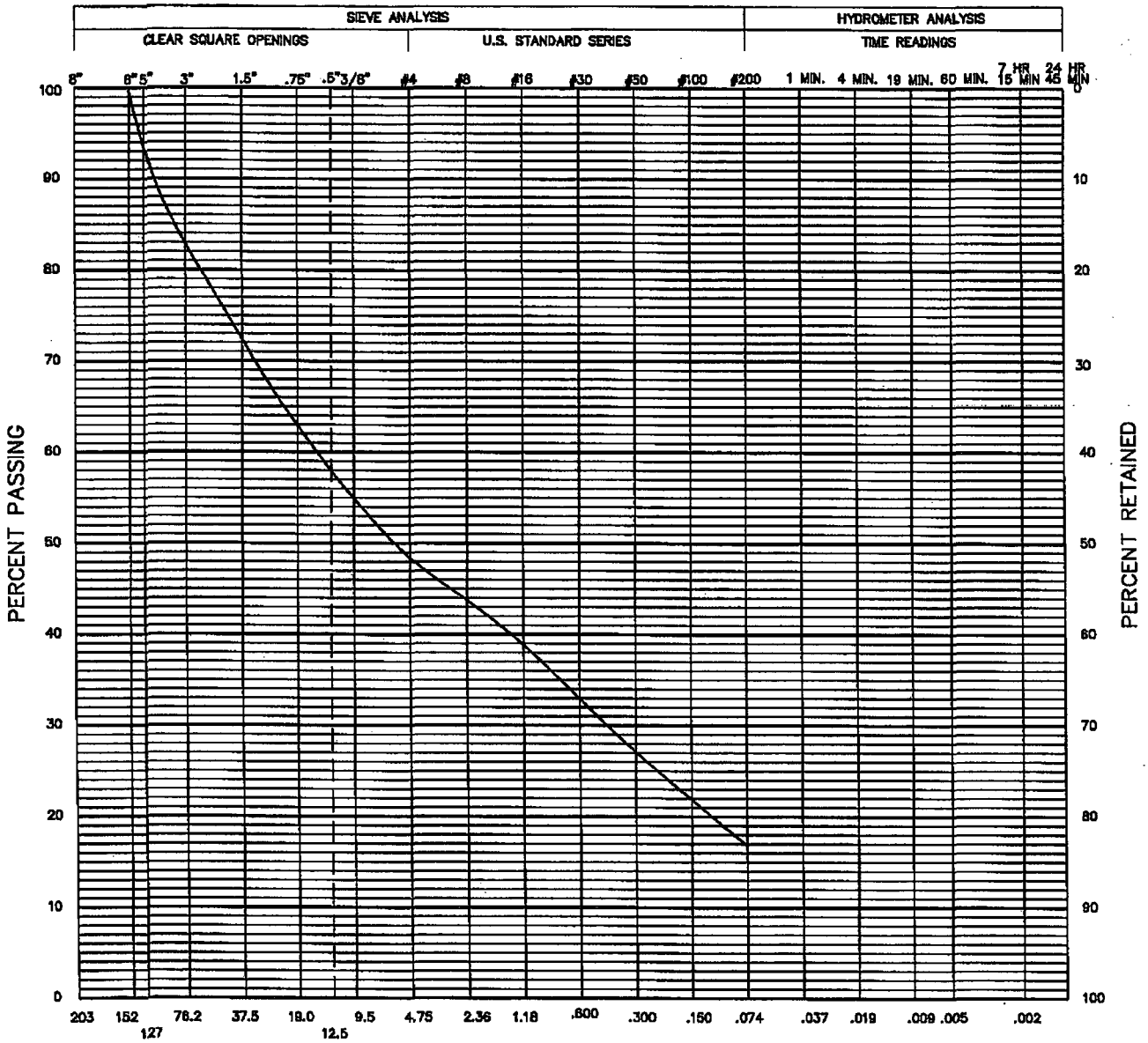
GRAVEL 52 % SAND 31 % SILT AND CLAY 17 %

LIQUID LIMIT 22 % PLASTICITY INDEX 4 %

SAMPLE OF: Silty, Sandy Gravel with Cobbles (GM) LAB NO.: 096

* This material is considered untestable according to ASTM D-698. The optimum moisture and density were corrected using ASTM D-4718 due to oversized particles within sample.

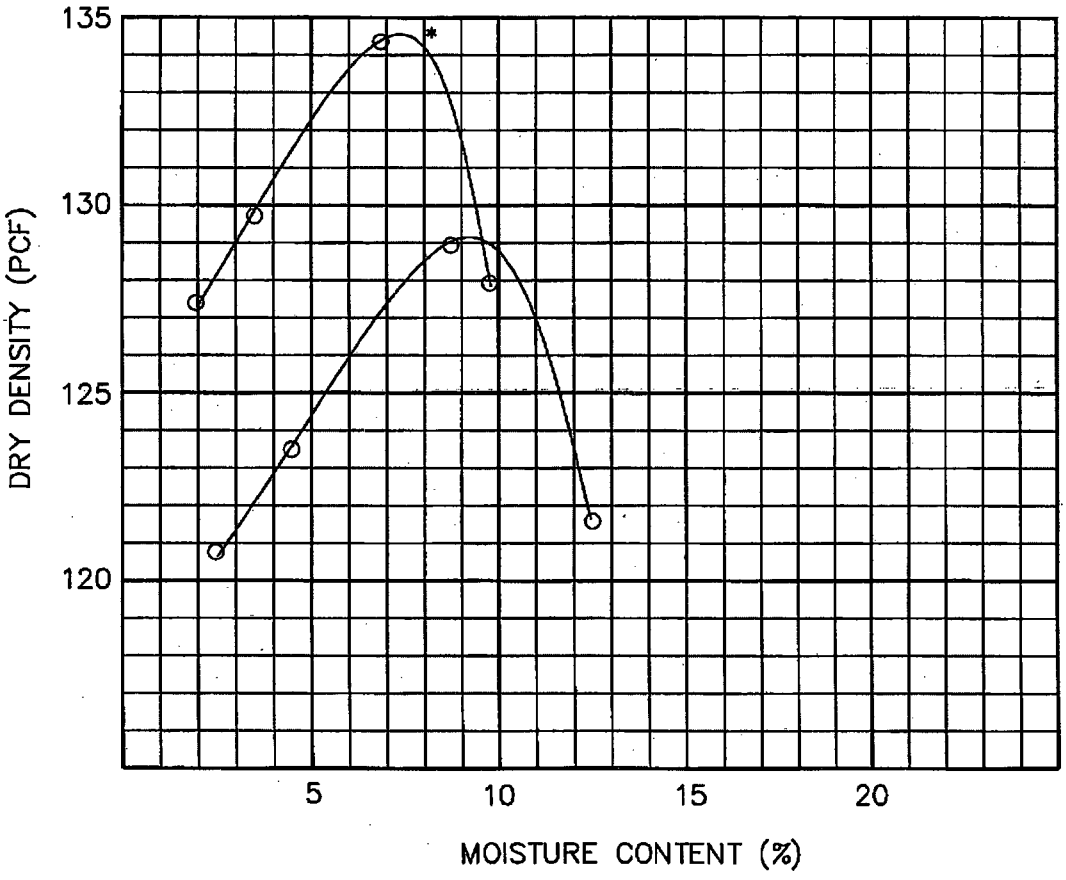
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 1



GRAVEL	52 %	SAND	31 %	SILT AND CLAY	17 %
LIQUID LIMIT	22 %			PLASTICITY INDEX	4 %

SAMPLE OF: Silty, Sandy Gravel with Cobbles (GM) FROM: Onsite Unscreened

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 2



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
2	Onsite Minus 2" Screened	Comp.	8/8/12	*134.5 PCF	*7.4 %	ASTM D-698 Method C

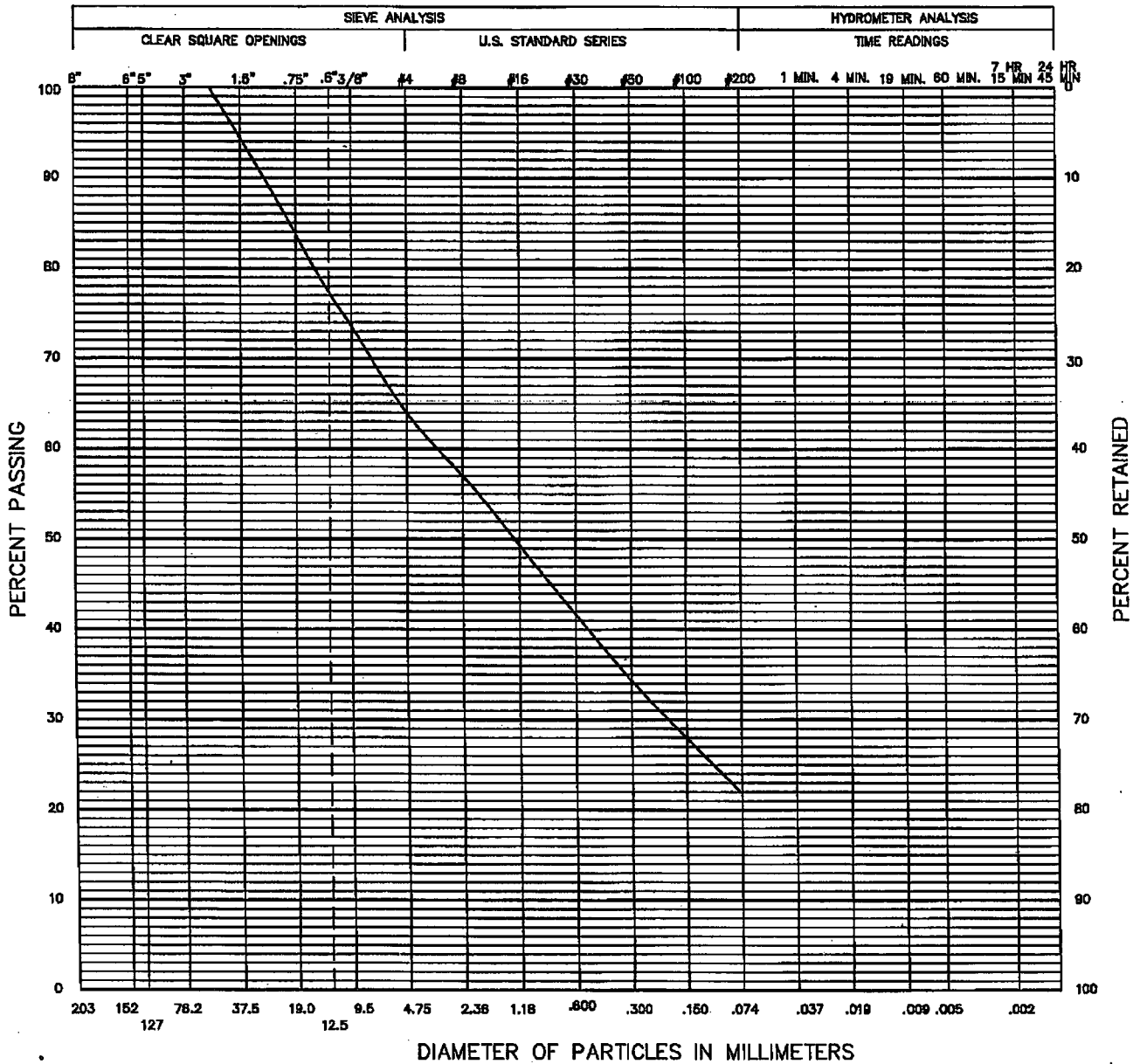
GRAVEL 37 % SAND 41 % SILT AND CLAY 22 %

LIQUID LIMIT 21 % PLASTICITY INDEX 5 %

SAMPLE OF: Silty Sand and Gravel (SM-GM) LAB NO.: 097

* The optimum moisture and density were corrected using ASTM D-4718 due to oversized particles within sample.

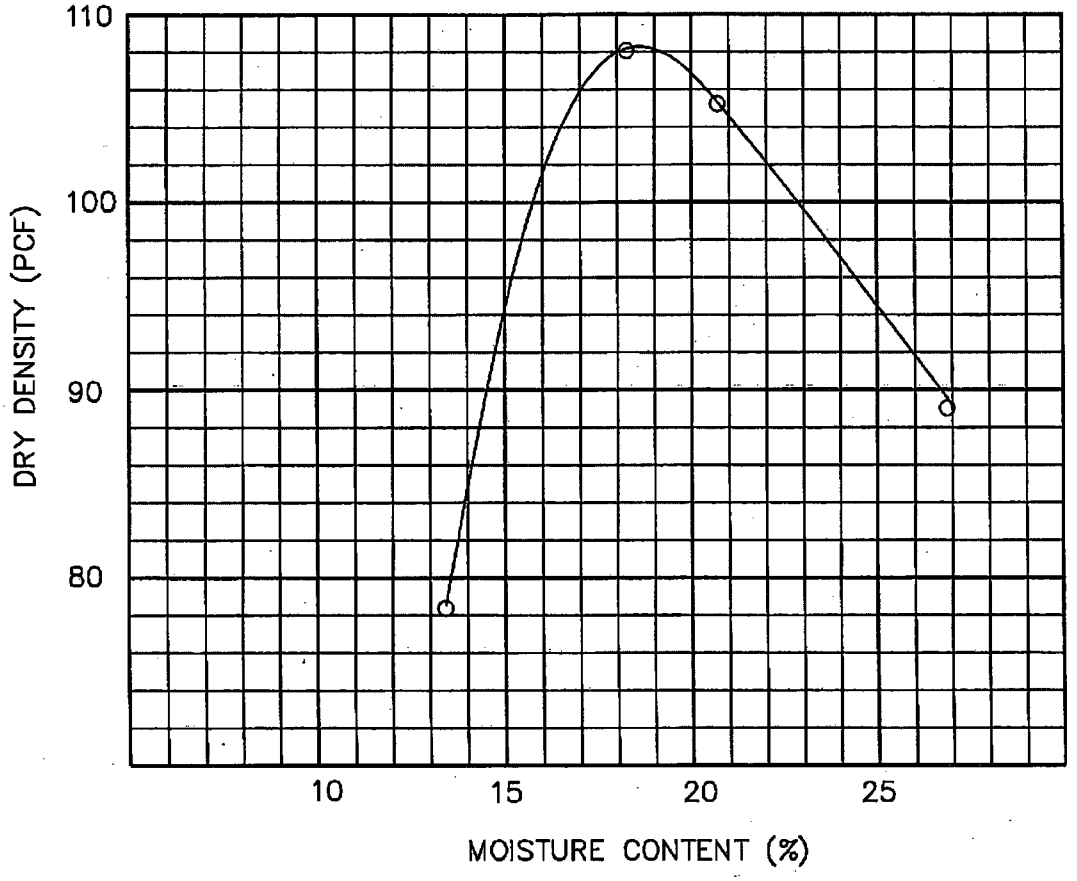
412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 3



GRAVEL	37 %	SAND	41 %	SILT AND CLAY	22 %
LIQUID LIMIT	21 %			PLASTICITY INDEX	5 %

SAMPLE OF: Silty Sand and Gravel (SM–GM) FROM: Onsite minus 2" screened

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 4



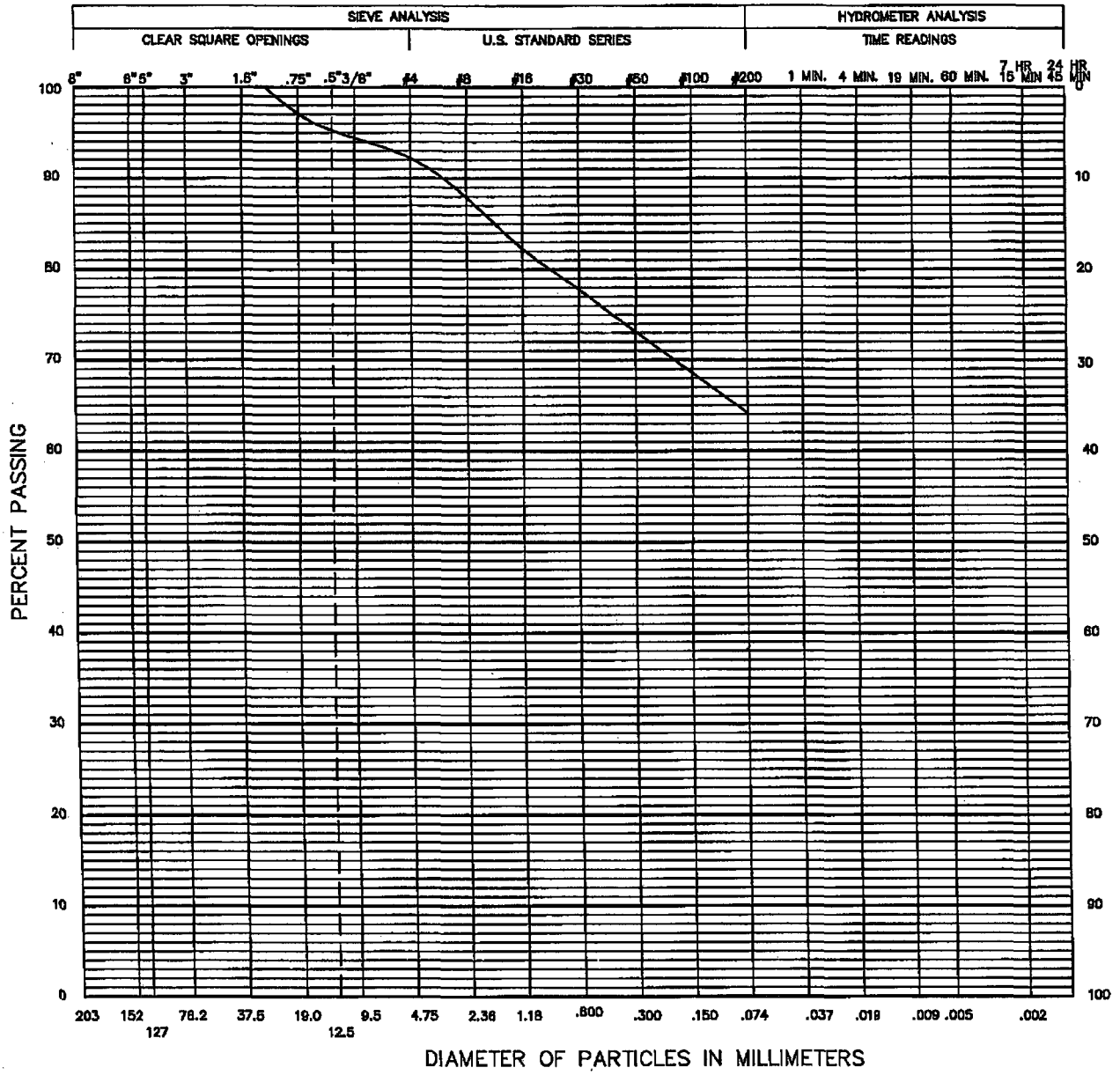
SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
3	Imported Clay	Comp.	8/8/12	108.2 PCF	18.5 %	ASTM D-698 Method A

GRAVEL 7 % SAND 29 % SILT AND CLAY 64 %

LIQUID LIMIT 30 % PLASTICITY INDEX 12 %

SAMPLE OF: Slightly Gravelly, Sandy Clay (CL) LAB NO.: 098

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 5

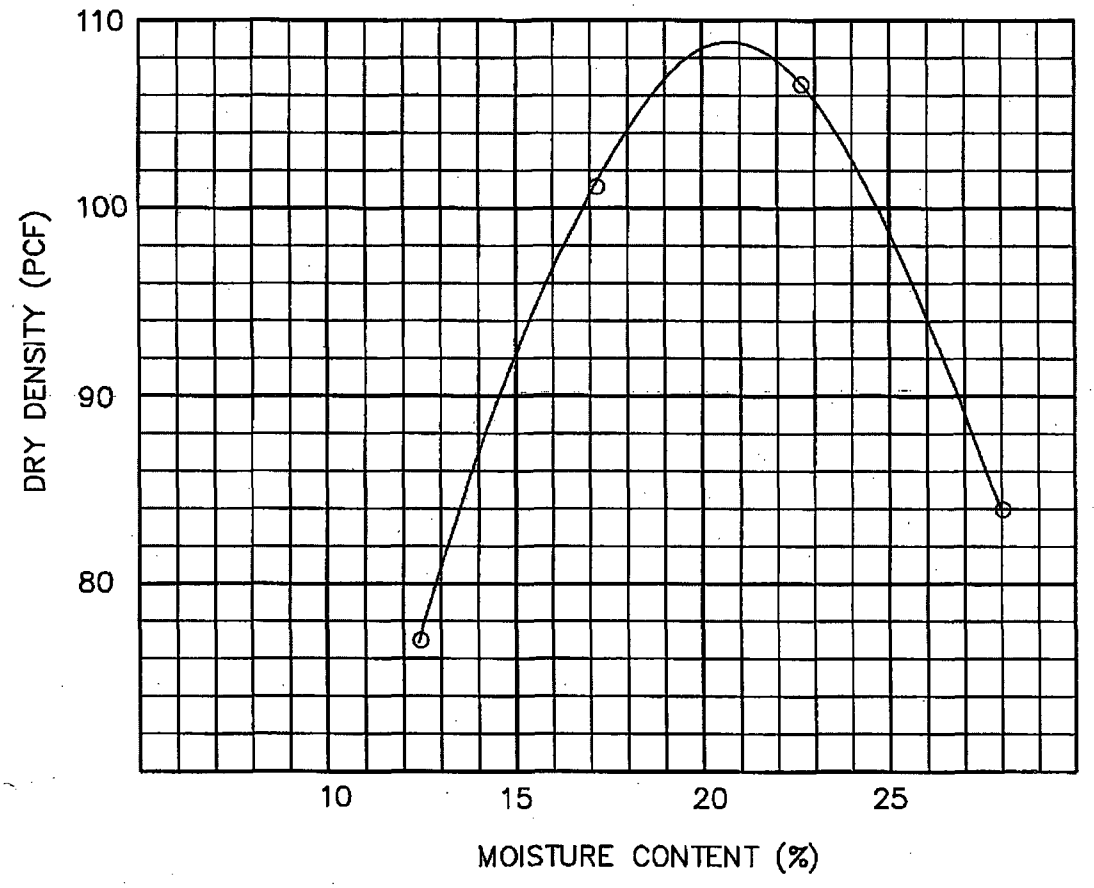


GRAVEL	7 %	SAND	29 %	SILT AND CLAY	64 %
LIQUID LIMIT	30 %			PLASTICITY INDEX	12 %

SAMPLE OF: Slightly Gravelly, Sandy Clay (CL) FROM: Imported Clay

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 6

SEP 1 1 REC'D



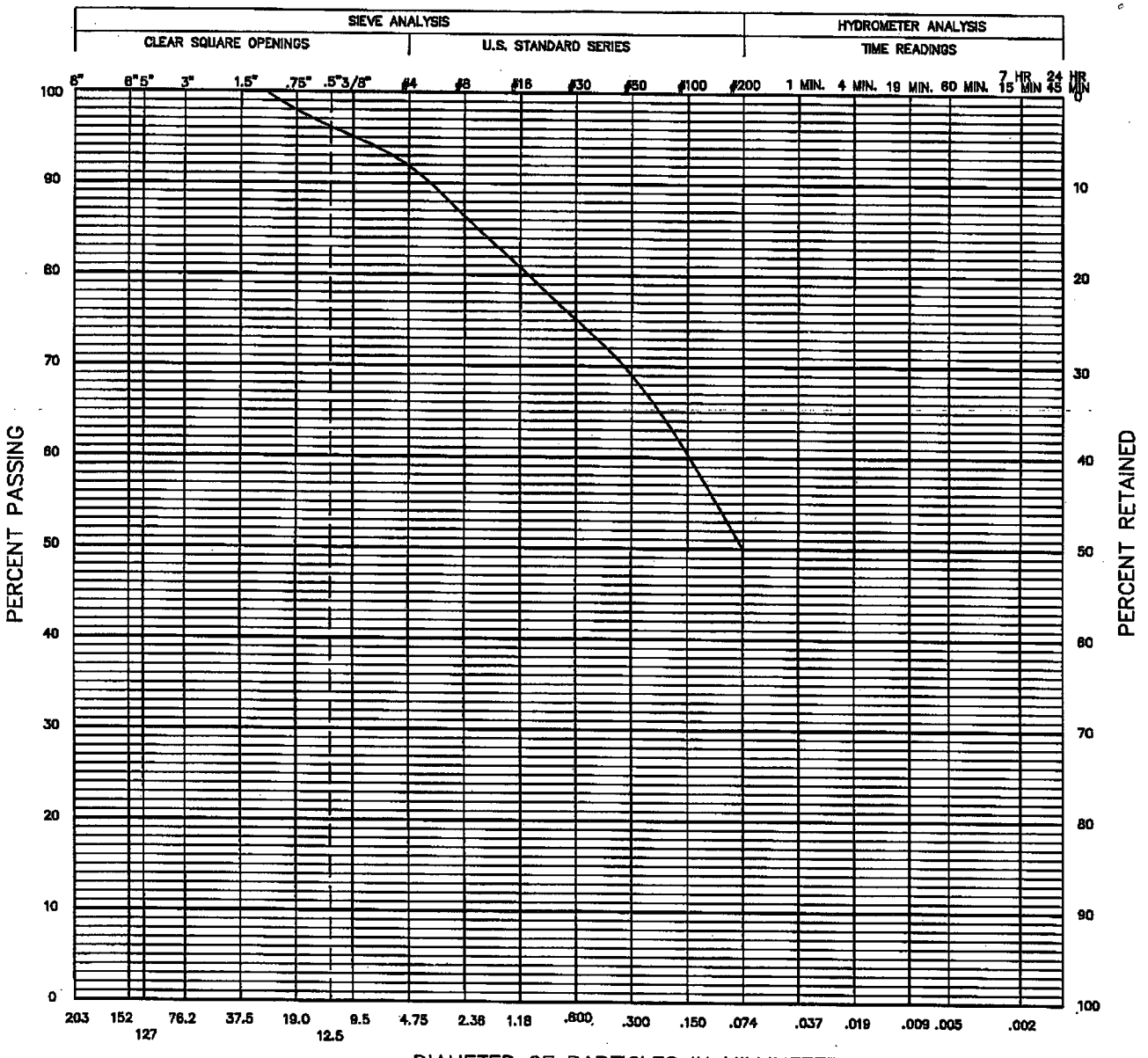
SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
4	Borrow Area Very Sandy Clay	Comp.	8/31/12	109.0 PCF	20.8 %	ASTM D-698 Method A

GRAVEL 8 % SAND 42 % SILT AND CLAY 50 %

LIQUID LIMIT 35 % PLASTICITY INDEX 18 %

SAMPLE OF: Slightly Gravelly, Very Sandy Clay (CL) LAB NO.: 127

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 7

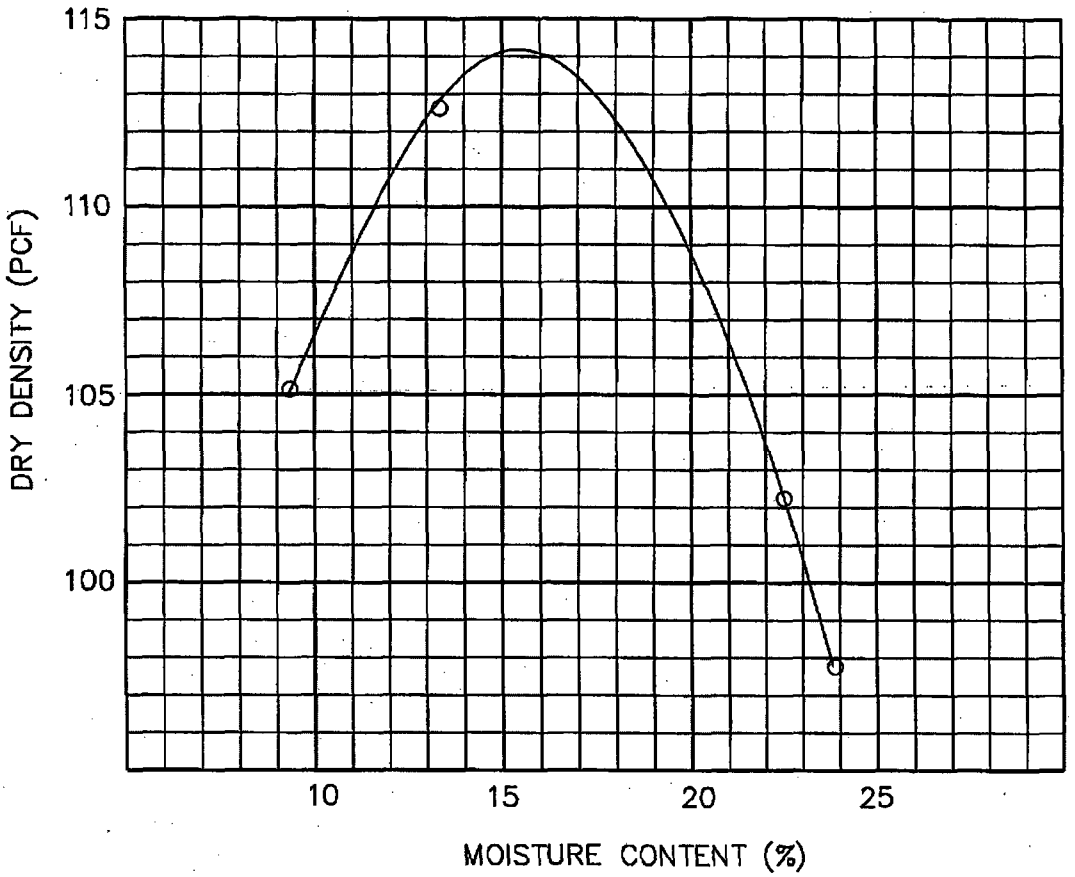


GRAVEL	8 %	SAND	42 %	SILT AND CLAY	50 %
LIQUID LIMIT	35 %			PLASTICITY INDEX	18 %

SAMPLE OF: Slightly Gravelly, Very Sandy Clay (CL)

FROM: Borrow Area – Very Sandy Clay Sample #4

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 8



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
5	Borrow Area	Comp.	9/6/12	114.2 PCF	15.2 %	ASTM D-698 Method A

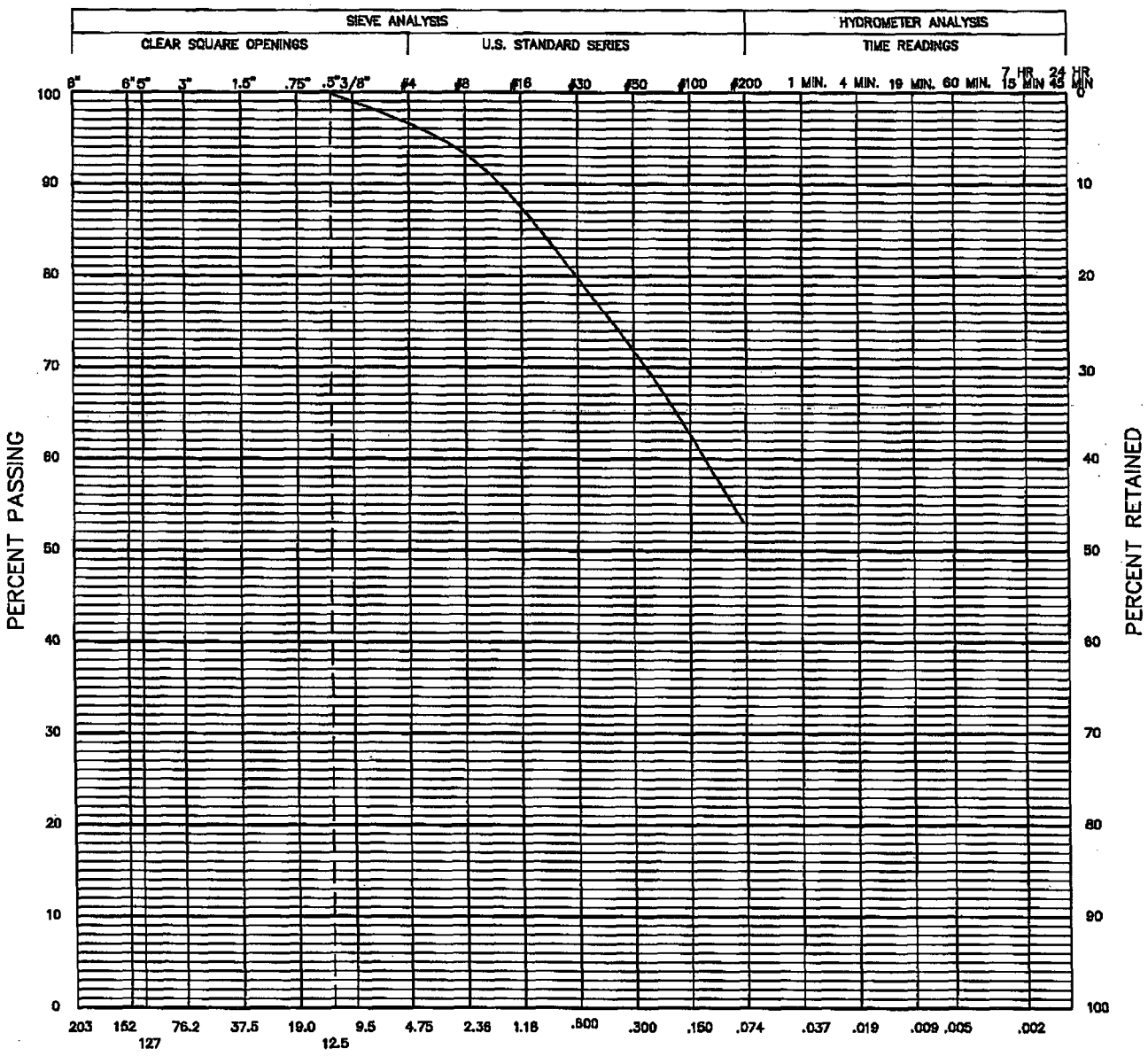
GRAVEL 3 % SAND 44 % SILT AND CLAY 53 %

LIQUID LIMIT 33 % PLASTICITY INDEX 15 %

SAMPLE OF: Very Sandy Clay (CL) LAB NO.: 133

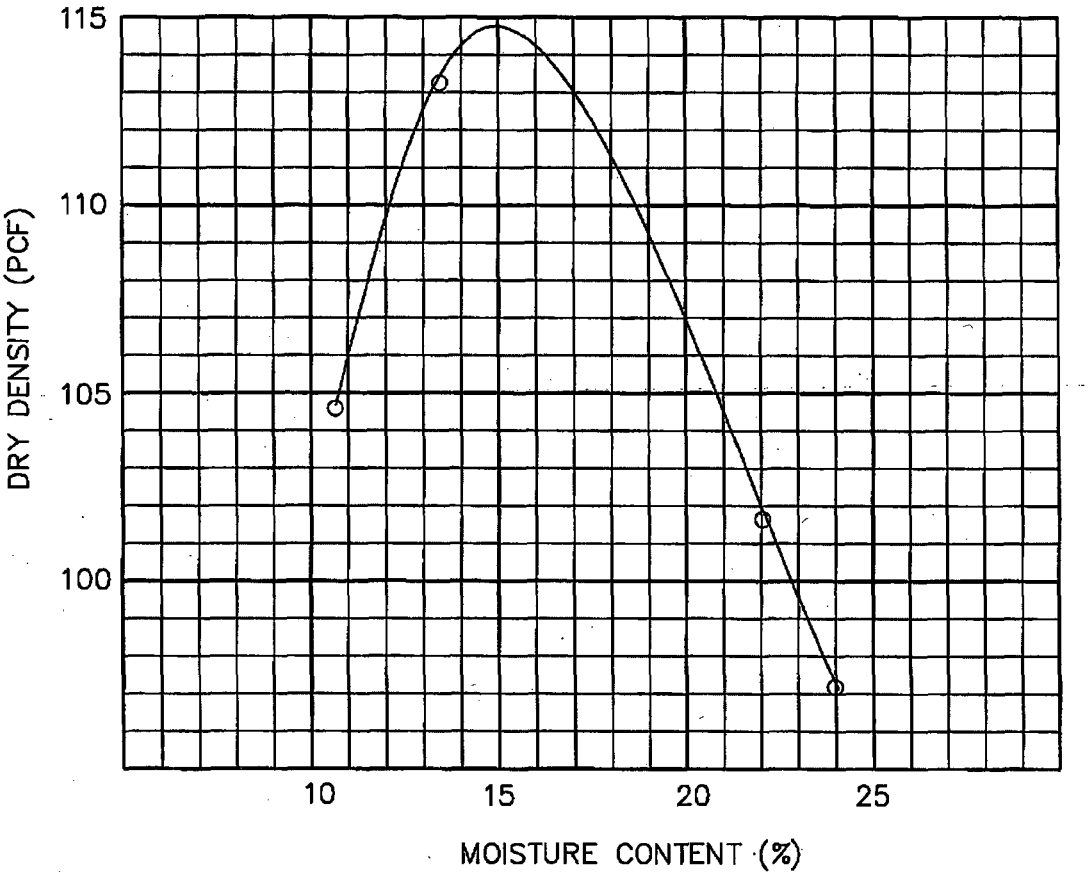
SAMPLE I.D.: ACC CL -, 5

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 9



GRAVEL	3 %	SAND	44 %	SILT AND CLAY	53 %
LIQUID LIMIT	33 %			PLASTICITY INDEX	15 %
SAMPLE OF:	Very Sandy Clay (CL)			FROM:	Borrow Area
SAMPLE I.D.:	ACC CL – 5			LAB NO.:	133

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 10



SAMPLE NO.	LOCATION	DEPTH	DATE	MAXIMUM DRY DENSITY	OPTIMUM MOISTURE	PROCTOR METHOD
6	Borrow Area	Comp.	9/6/12	114.7 PCF	14.9 %	ASTM D-698 Method A

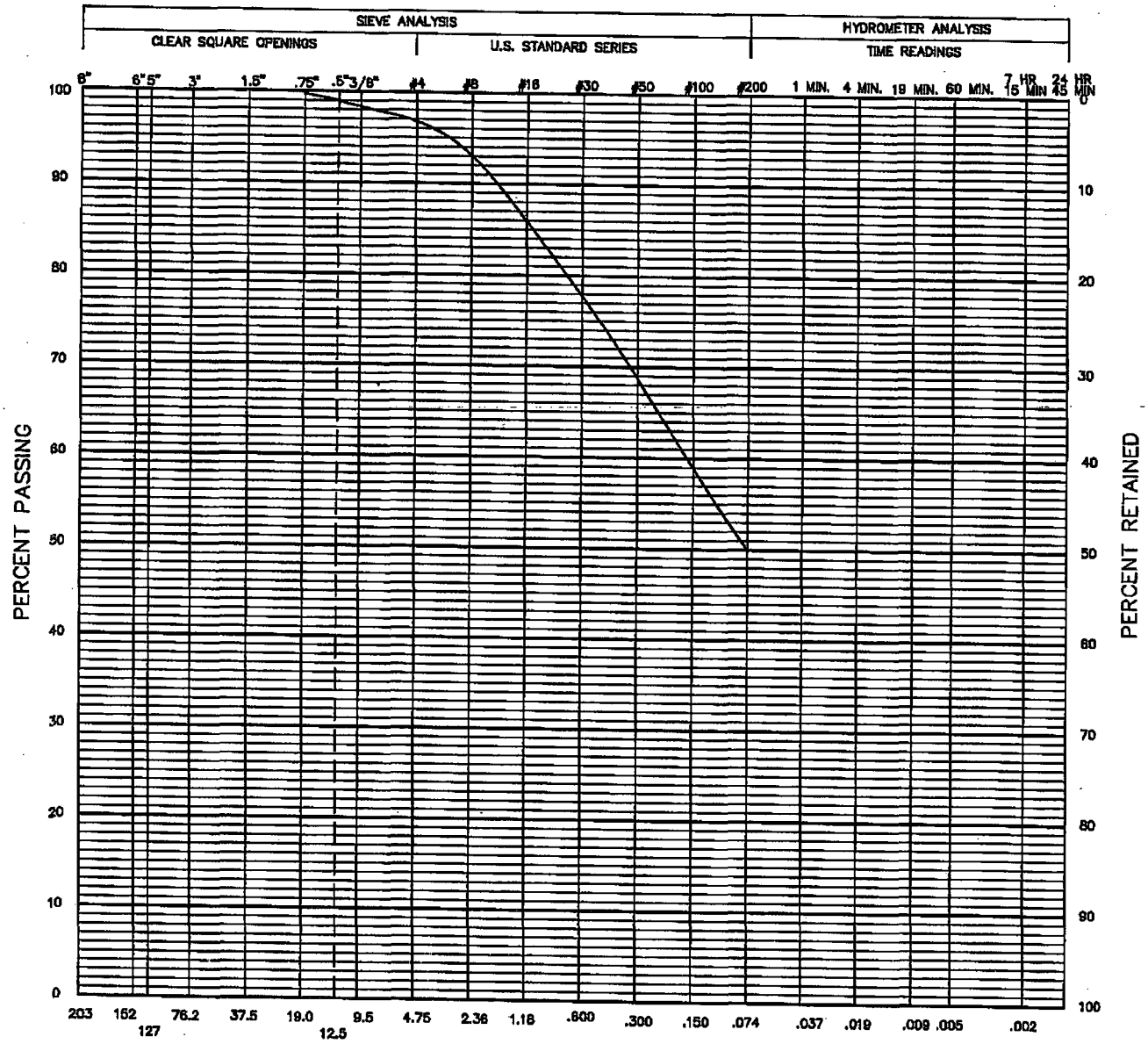
GRAVEL 3 % SAND 47 % SILT AND CLAY 50 %

LIQUID LIMIT 32 % PLASTICITY INDEX 13 %

SAMPLE OF: Very Sandy Clay (CL) LAB NO.: 134

SAMPLE I.D.: ACC CL – 6

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH MOISTURE/DENSITY RELATIONSHIP	FIGURE 11



GRAVEL	3 %	SAND	47 %	SILT AND CLAY	50 %
LIQUID LIMIT	32 %			PLASTICITY INDEX	13 %
SAMPLE OF: Very Sandy Clay (CL)				FROM: Borrow Area	
SAMPLE I.D.: ACC CL – 6				LAB NO.: 134	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 12

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

SEP 2 1 REC'D

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P.O. Drawer 1887
240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989
Fax: (970) 468-5891
Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/11/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, Loader, Haul Trucks

Type & # of Compaction Units: Sheepsfoot Roller, Smooth Drum Roller

Method of Moisture Conditioning: Water Truck, Natural Moisture

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	60 Feet East, 50 Feet North	+6"	114.7	14.9	109.0	17.7	95	95	A
2	100 Feet East, 50 Feet North	+6"	114.7	14.9	114.2	15.0	99	95	A
3	100 Feet East, 70 Feet South	+6"	114.7	14.9	109.2	16.7	95	95	A
4	60 Feet East, 70 Feet South	+6"	114.7	14.9	112.6	14.9	98	95	A
5	140 Feet East, 50 Feet South	+6"	114.7	14.9	109.0	16.1	95	95	A
6	150 Feet East, 40 Feet North	+6"	114.7	14.9	110.5	17.0	96	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope.

Testing depths represent approximate compacted clay fill thickness. Nuclear density testing was performed in backscatter mode with no probe penetration.

At the time of our site visit the contractor was beginning with the placement of the second 6-inch clay fill lift. Varying amounts of gravel and cobble were observed in the material being placed. The contractor informed us that this material had been approved.

Obtained a sample of proposed clay fill soils from the borrow area from roughly -8 feet. Gravel and cobbles were observed in the material in excess of previously obtained and laboratory tested samples. H-P Geotech recommended not placing until material could be approved for oversize aggregate.

Jared Cohen — **Field Observer**

Chad Bringle — **Reviewed By**

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

Hepworth-Pawlak Geotechnical, Inc.
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240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989
Fax: (970) 468-5891
Hpgeo4@hpgeotech.com

Report of Construction Activities

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/17/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

Weather Conditions and Temperature: Partly Cloudy, 45° F

Major Equipment on Site: (2) Dozer, Loader, Smooth Drum Roller, Sheepsfoot Roller

Contractor's Construction Activities:
Final grading and compaction efforts for the western portion of the basin.

Screening and placing on site rip rap soils along the southern reclamation basin slope; western portion.

H-P Geotech's Site Activities:
As requested, H-P Geotech was on site to test and observe clay fill placements for the base of the reclamation basin. While on site we observed the second clay lift placement for the western portion of the basin where the contractor was working.

In place rapid nuclear moisture density testing was performed yielding satisfactory results (Page 2 of 2).

Infrared temperature reading were performed encompassing the area of placed clay fill yielding temperature readings between 50° to 52° F at the ground surface (1:00 pm).

Representative clay fill samples were obtained for both 6-inch lift placements and returned to our laboratory for moisture content determination (Figure 13).

Lift thickness estimation testing was performed in 6 locations encompassing the western portion placement area. Due to the varying amount of gravel and cobble within the placed soils, hand drive core sampling for depth verification was not completed successfully. In place of hand drive coring, t-probe penetration depths were utilized to estimate the clay fill thickness. We requested that the contractor repair the probe penetration locations. Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope:

1) 130 Feet East, 20 Feet North = 12"
2) 130 Feet East, 35 Feet South = 12.5"
3) 130 Feet East, 90 Feet South = 13"
4) 50 Feet East, 90 Feet South = 12"
5) 50 Feet East, 35 Feet South = 12"
6) 50 Feet East, 20 Feet North = 12"

Verbal Communication With: Tony Gregorich with ACC

Jared Cohen	Chad Bringle
Field Observer	**Reviewed By**

HP Geotech
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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 09/17/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, Loader, Haul Trucks

Type & # of Compaction Units: Sheepsfoot Roller, Smooth Drum Roller

Method of Moisture Conditioning: Water Truck, Natural Moisture

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	130 Feet East, 20 Feet North	+12"	114.7	14.9	109.5	15.8	95	95	A
2	130 Feet East, 35 Feet South	+12"	114.7	14.9	113.7	15.6	99	95	A
3	130 Feet East, 90 Feet South	+12"	114.7	14.9	109.6	15.6	96	95	A
4	50 Feet East, 90 Feet South	+12"	114.7	14.9	112.8	15.5	98	95	A
5	50 Feet East, 35 Feet South	+12"	114.7	14.9	114.0	15.0	99	95	A
6	50 Feet East, 20 Feet North	+12"	114.7	14.9	113.8	16.6	99	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Test locations represent approximate ground linear distance from control point #49 located on the top of the western slope.

Testing depths represent approximate compacted clay fill thickness.

Nuclear moisture density testing was performed in the backscatter mode with no probe penetration.

Jared Cohen
Field Observer

Chad Bringle
Reviewed By

HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

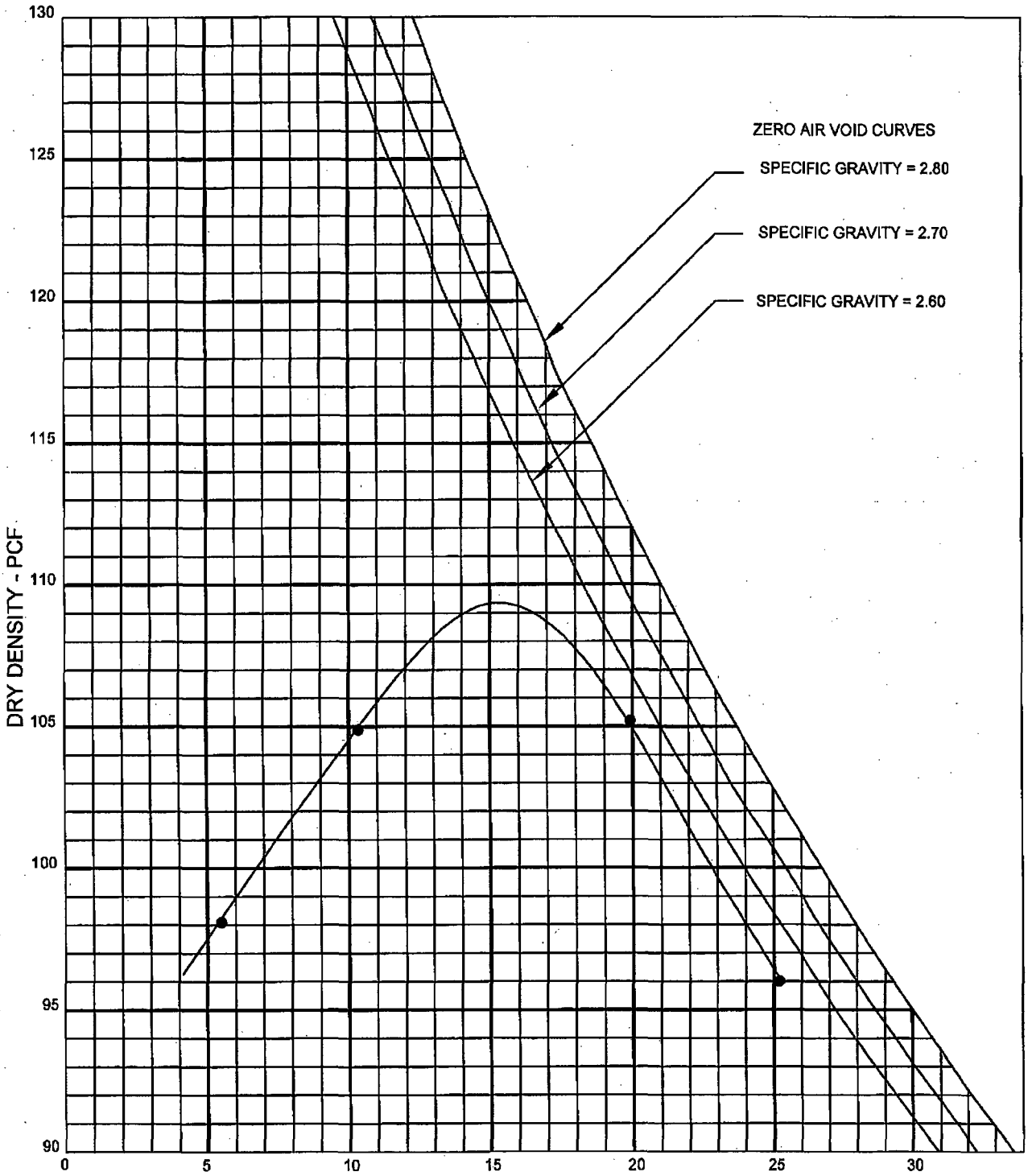
Project Name: California Gulch, Leadville, Colorado.

Project Number: 412 147A **Date: 09/17/2012** **Figure: 13**

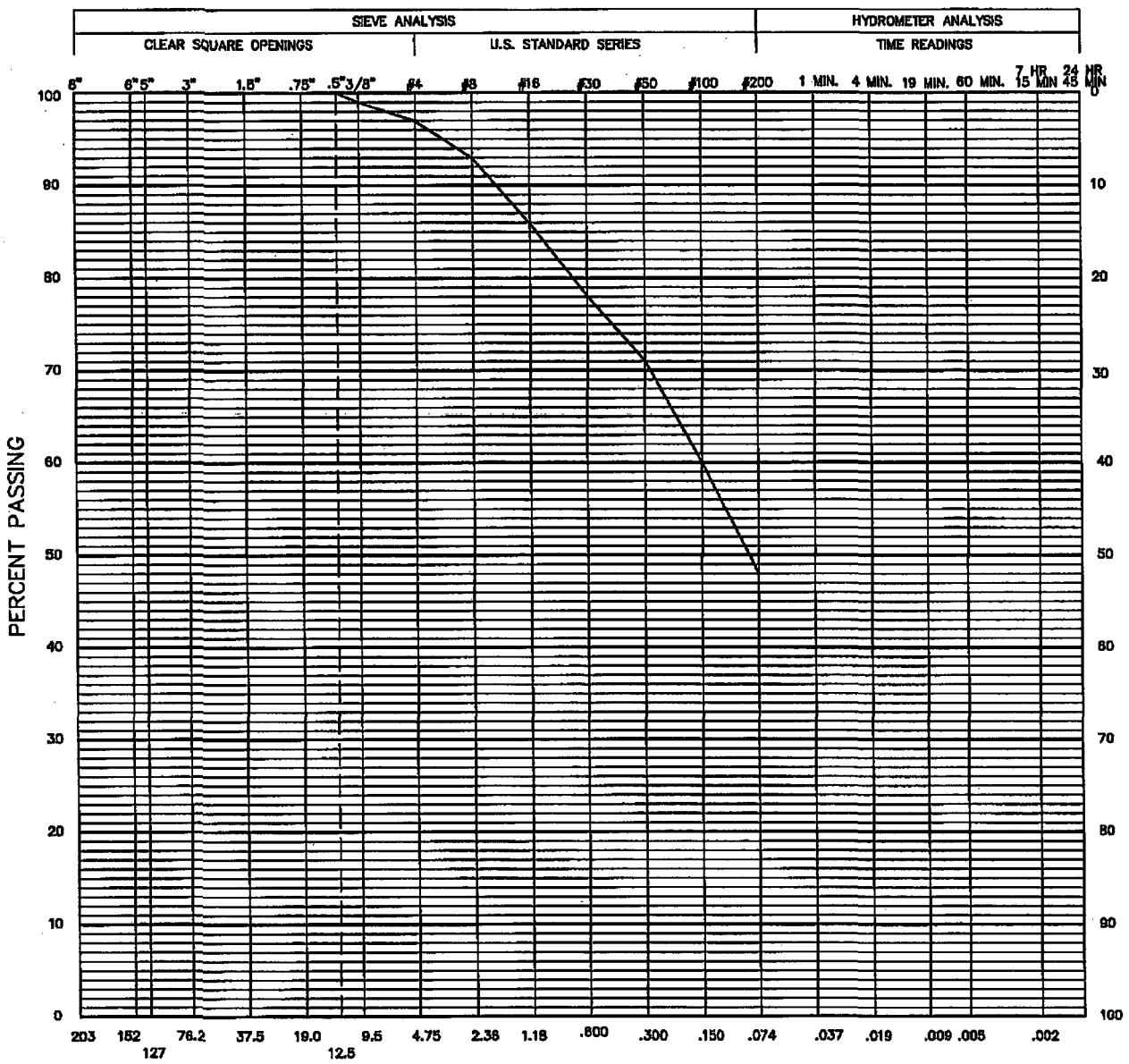
Moisture Content	
Location	130' East, 35' South Of Control Point #49
Depth	@ +6 Inches
Pan #	H-2
Pan Wt. (g)	163.3
Wet Soil & Pan (g)	688.6
Dry Soil & Pan (g)	620.1
Dry Soil (g)	456.8
Water (g)	68.5
Moisture (%)	15.0

Moisture Content	
Location	130' East, 30' North Of Control Point #49
Depth	@ +12 Inches
Pan #	B-2
Pan Wt. (g)	162.3
Wet Soil & Pan (g)	942.8
Dry Soil & Pan (g)	836.0
Dry Soil (g)	673.7
Water (g)	106.8
Moisture (%)	15.9

Figure 13

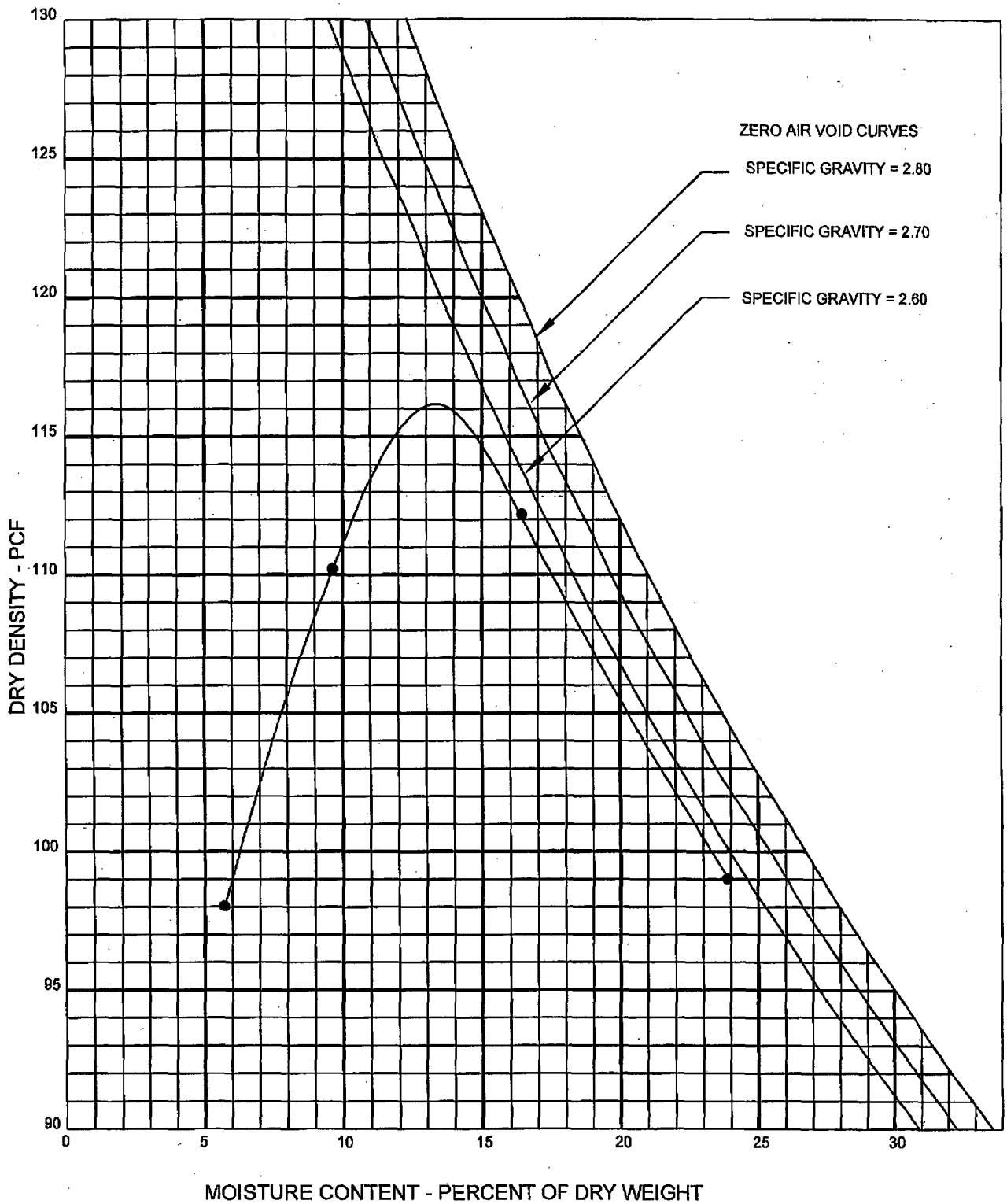


LOCATION : California Gulch Borrow Area; Sample I.D. ACC CL-7	MOISTURE-DENSITY RELATIONSHIPS
SOIL DESCRIPTION : Very Clayey SAND (SC)	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.
MAX. DRY DENSITY : 109.6 PCF OPT. MOIST. CONTENT : 15.4 %	PROCEDURE : ASTM D 698 METHOD A
LIQUID LIMIT : 31 PLASTICITY INDEX : 13	JOB NO. : 412147A
GRAVEL : 3 % SAND : 49 % SILT AND CLAY (−200) : 48 %	DATE : 10/3/2012, Lab No. 185 | Fig. 16

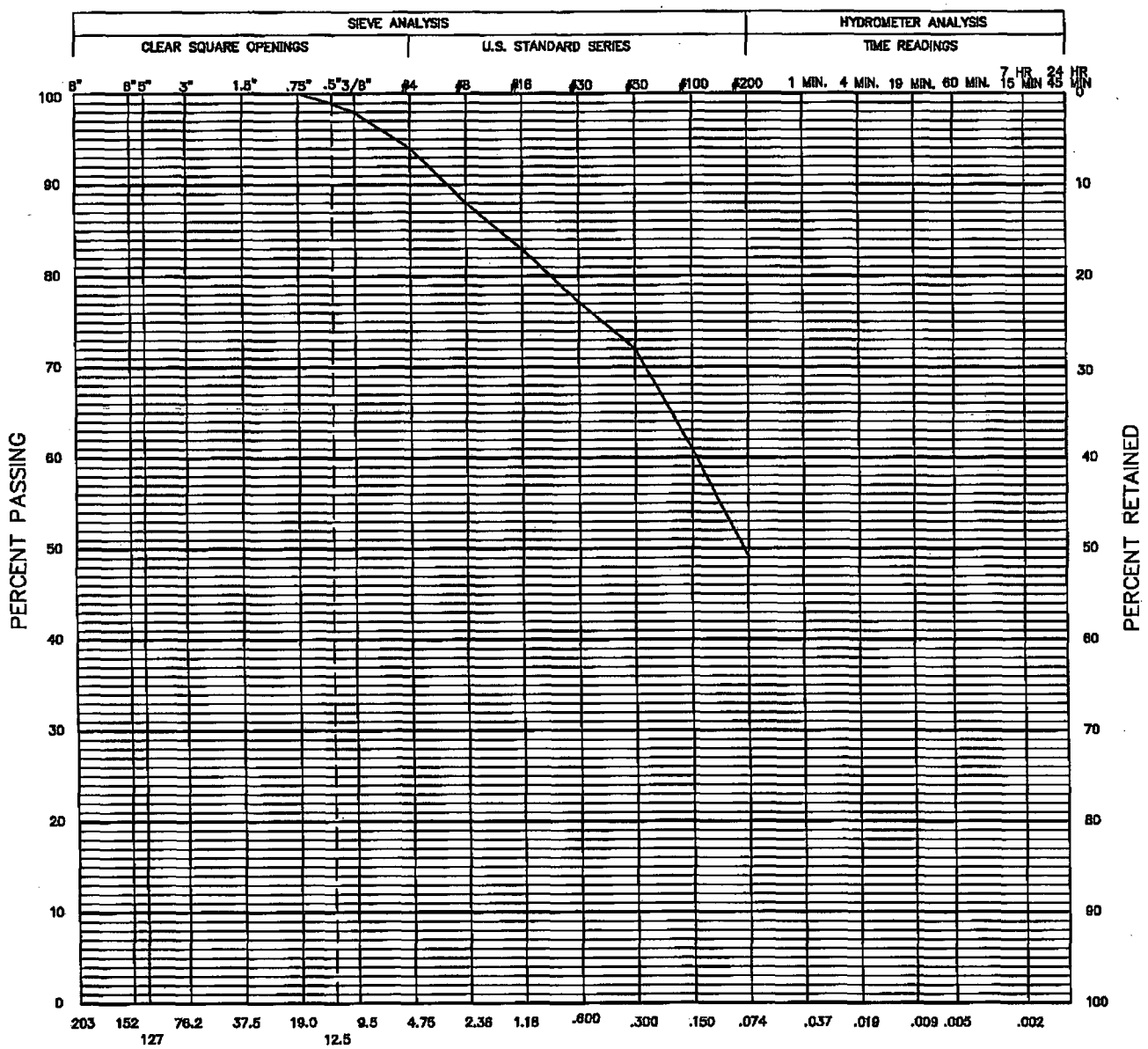


GRAVEL	3 %	SAND	49 %	SILT AND CLAY	48 %
LIQUID LIMIT	31 %			PLASTICITY INDEX	13 %
SAMPLE OF: Very Clayey Sand (SC)				FROM: Borrow Area	
SAMPLE I.D.: ACC CL – 7				LAB NO.: 185	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 17



LOCATION : California Gulch Borrow Area; Sample I.D. ACC CL-8	MOISTURE-DENSITY RELATIONSHIPS
SOIL DESCRIPTION : Very sandy CLAY (CL)	HEPWORTH-PAWLAK GEOTECHNICAL, Inc.
MAX. DRY DENSITY : 116.1 PCF OPT. MOIST. CONTENT : 13.2 %	PROCEDURE : ASTM D 698 METHOD A
LIQUID LIMIT : 29 PLASTICITY INDEX : 10	JOB NO. : 412147A
GRAVEL : 6 % SAND : 45 % SILT AND CLAY (−200) : 49 %	DATE : 10/3/2012, Lab No. 186 | Fig. 18



GRAVEL	6 %	SAND	45 %	SILT AND CLAY	49 %
LIQUID LIMIT	29 %			PLASTICITY INDEX	10 %
SAMPLE OF: Very Sandy Clay (CL)				FROM: Borrow Area	
SAMPLE I.D.: ACC CL – 8				LAB NO.: 186	

412 147A	HP Geotech HEPWORTH-PAWLAK GEOTECHNICAL	CALIFORNIA GULCH GRADATION TEST RESULTS	FIGURE 19

HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

Project Name: California Gulch, Leadville, Colorado.

Project Number: 412 147A **Date: 10/03/2012** **Figure: 14**

Moisture Content	
Location	Northwest Corner of the Lower Pond Basin
Date	10/03/2012
Depth	@ +6 Inches
Pan #	S
Pan Wt. (g)	107.96
Wet Soil & Pan (g)	1384.17
Dry Soil & Pan (g)	1215.20
Dry Soil (g)	1107.24
Water (g)	168.97
Moisture (%)	15.3
Notes:	Sampled From Lower Basin During Placement

Moisture Content	
Location	Center of the Lower Pond Basin
Date	10/03/2012
Depth	@ +12 Inches
Pan #	V
Pan Wt. (g)	508.46
Wet Soil & Pan (g)	1453.50
Dry Soil & Pan (g)	1328.74
Dry Soil (g)	820.28
Water (g)	124.76
Moisture (%)	15.2
Notes:	Sampled From Stockpile Prior to Placement

Figure 14

HP Geotech
HEPWORTH-PAWLAK GEOTECHNICAL

Project Name: California Gulch, Leadville, Colorado.

Project Number: 412 147A **Date: 10/04/2012 & 10/05/2012** **Figure: 15**

Moisture Content		Moisture Content	
Location	East Portion of the Upper Main Basin	Location	East Portion of the Upper Main Basin
Date	10/04/2012	Date	10/05/2012
Depth	@ +6 Inches	Depth	@ +12 Inches
Pan #	5	Pan #	Y
Pan Wt. (g)	506.27	Pan Wt. (g)	467.63
Wet Soil & Pan (g)	1339.17	Wet Soil & Pan (g)	1440.01
Dry Soil & Pan (g)	1232.16	Dry Soil & Pan (g)	1289.11
Dry Soil (g)	725.89	Dry Soil (g)	821.48
Water (g)	107.01	Water (g)	150.90
Moisture (%)	14.7	Moisture (%)	18.4
Notes:	Sampled From Stockpile Prior to Placement; Additional Moisture Conditioning Observed During Placement	Notes:	Sampled From the East Portion of the Main Basin During Placement

Figure 15

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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/03/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Haul Truck

Type & # of Compaction Units: Smooth Drum Roller

Method of Moisture Conditioning: Water Truck at Borrow Site

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	80 Feet East, 16 Feet South	+6"	114.7	14.9	111.3	16.4	97	95	A
2	122 Feet East, 16 Feet South	+6"	114.7	14.9	117.2	13.8	100	95	A
2A	Retest of Test #2	+6"	114.7	14.9	116.0	15.7	100	95	A
3	80 Feet East, 65 Feet South	+6"	114.7	14.9	116.8	16.1	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations tested, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to where the drainage channel meets wood line at the northwest corner of the site. Temperatures of soils across the basin ranged from 55° to 60° F. Depth of lift across the lower pond basin ranged between 5.5 and 7 inches. Contractor plans to complete the 2nd lift in the lower northwest pond basin tonight and tomorrow morning and move to the eastern portion of the main basin (area 2) for the first lift, Thursday afternoon and Friday morning. Two samples of clay material were obtained from the borrow area for laboratory analysis and 2 samples from the lower basin for moisture content. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner — **Field Observer**
Jared Cohen — **Reviewed By**

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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/04/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Loader, Track-hoe, Haul Truck

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck at Borrow Site

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	88 Feet East, 31 Feet South	+12"	114.7	14.9	120.1	14.4	100	95	A
2	85 Feet East, 60 Feet South	+12"	114.7	14.9	125.5	13.1	100	95	A
3	60 Feet East, 45 Feet South	+12"	114.7	14.9	121.1	14.7	100	95	A
4	90 Feet East, 70 Feet South	+6"	114.7	14.9	114.3	14.9	99	95	A
5	115 Feet East, 115 Feet South	+6"	114.7	14.9	119.2	14.9	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to where the drainage channel meets wood line at the northwest corner of basin. Below optimum moisture % in the lower pond basin (Tests 1, 2 & 3) attributed to 12+ hour delay between time of placement and time of testing. Moisture sample from 10/03/2012 representative of moisture % at time of placement. Lower basin (+12") temps. 38° to 42° F at 9:45 am. Central portion, upper part of basin (+6"), tests 4 to 7, temps. 42° to 44° F at 9:55 am. Depths in lower basin were estimated between 12 to 14 inches total. Central portion, upper basin, 6 to 8 inches for the 1st lift. Second lift to be completed in upper basin today. Tests 8 to 14 were taken at 4:45 pm with temps. at 42° to 44° F and moderate 10 to 15 mph winds; includes upper lift in central portion of upper basin and first lift in the eastern portion of upper basin. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner — **Field Observer**

Jared Cohen — **Reviewed By**

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Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/04/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
6	105 Feet East, 175 Feet South	+6"	114.7	14.9	119.8	15.0	100	95	A
7	85 Feet East, 240 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A
8	110 Feet East, 80 Feet South	+12"	114.7	14.9	117.3	15.8	100	95	A
9	90 Feet East, 130 Feet South	+12"	114.7	14.9	118.2	15.3	100	95	A
10	120 Feet East, 15 Feet South	+12"	114.7	14.9	110.1	16.9	96	95	A
11	100 Feet East, 230 Feet South	+12"	114.7	14.9	133.7	15.7	100	95	A
12	125 Feet East, 195 Feet South	+6"	114.7	14.9	115.4	15.3	100	95	A
13	150 Feet East, 162 Feet South	+6"	114.7	14.9	111.3	15.2	97	95	A
14	170 Feet East, 215 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A

Tom Brunner
Field Observer

Jared Cohen
Reviewed By

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Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/05/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Mini-hoe, Dozer, Loader, Track-hoe

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	130 Feet East, 150 Feet South	+6"	114.7	14.9	117.3	16.3	100	95	A
2	145 Feet East, 220 Feet South	+12"	114.7	14.9	114.3	15.9	99	95	A
3	125 Feet East, 190 Feet South	+12"	114.7	14.9	113.7	17.1	99	95	A
4	170 Feet East, 185 Feet South	+12"	114.7	14.9	111.3	16.1	97	95	A
5	190 Feet East, 120 Feet South	+6"	114.7	14.9	111.5	16.6	97	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
All test locations relative to drainage channel at northwest corner of basin at wood line. Contractor currently placing material on eastern wall of main basin. Temperatures taken at 2:45 pm of the material ranged between 41° and 44°F. Depths of Lift 1 ranged from 6 to 8 inches and for Lift 2, 12 to 12+ inches. Water truck brought over from borrow area to water banks and floor of basin to ensure proper moisture content with drying from moderate 10 to 15 mph winds throughout the day. Samples obtained by H-P Geotech for lab moisture content analysis. Sample taken by Tony Gregorich (ACC) for hydraulic conductivity analysis. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner — **Field Observer**

Jared Cohen — **Reviewed By**

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Report of Construction Activities

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: **412 147A** Date: 10/08/2012
Sheet No.: 1 of 2

Project: California Gulch, Leadville, Colorado.

Weather Conditions and Temperature: Mostly Sunny, 35° to 40° F

Major Equipment on Site: Dozer, Mini-hoe

Contractor's Construction Activities:
Placing fabric over top of the Area #2 clay fill placement.

H-P Geotech's Site Activities:

Performed temperature testing on the surface of the Area #2 clay fill placement (10:30 to 10:45 am):

1. 45 Feet West, 45 Feet South of the Approximate Northeast Corner = 44° F
2. 15 Feet West, 45 Feet South of the Approximate Northeast Corner = 42° F
3. 45 Feet West, 150 Feet South of the Approximate Northeast Corner = 33° F
4. 15 Feet West, 150 Feet South of the Approximate Northeast Corner = 31° F
5. Slope, Approximate Southeast Corner = 28° F
6. Approximate Center of the South Slope, Area #2 = 31° F
7. Approximate Center of the Lower Pond Basin = 32° F

Verbal Communication With: Tony Gregorich with ACC

Jared Cohen
Field Observer / Reviewed By

HP Geotech
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Report of Nuclear Density Testing

Client: American Civil Constructors
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/08/2012
Sheet No.: 2 of 2

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: Mini-hoe, Dozer

Type & # of Compaction Units: None at the time of our site visit.

Method of Moisture Conditioning: None at the time of our site visit.

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	45 Feet West, 45 Feet South of the Approximate Northeast Corner	+12"	114.7	14.9	110.5	16.2	96	95	A
2	15 Feet West, 45 Feet West of the Approximate Northeast Corner	+12"	114.7	14.9	109.1	15.9	95	95	A
3	Halfway up Slope, 30 Feet South of the Approximate Northeast Corner	+12"	114.7	14.9	108.8	14.5	95	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
We were informed that the areas tested were placed, moisture conditioned and compacted on Friday and Saturday.

Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration.

Copies:

Jared Cohen
Field Observer / Reviewed By

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Report of Nuclear Density Testing

Client: **American Civil Constructors** Job No.: 412 147A Date: 10/09/2012
Attn: Anthony Gregorich Sheet No.: 1 of 1
4901 South Windermere Street
Littleton, CO 80120

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, Loader, Track-hoe, Mini-hoe

Type & # of Compaction Units: Smooth Drum Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	135 Feet East, 115 Feet South	+12"	114.7	14.9	122.3	15.2	100	95	A
2	130 Feet East, 70 Feet South	+12"	114.7	14.9	114.5	15.9	100	95	A
3	105 Feet East, 45 Feet South	+12"	114.7	14.9	115.5	15.5	100	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
At 11:45 am, material temperatures ranged from 48° to 50° F across floor of basin. Depth tests within upper (main) basin and lower pond all showed minimum 12+ inch thickness up to approximately 14 to 15 inches. Tony Gregorich (ACC) took several additional hand drive samples for hydraulic conductivity testing. All test locations relative to drainage channel at northwest corner of site where it meets wood line. Testing depths represent approximate compacted clay fill thickness. Nuclear moisture density testing was performed in the backscatter mode with no probe penetration. T-probe penetration depths were utilized to estimate the approximate clay fill thickness.

Copies:

Tom Brunner — **Field Observer**

Jared Cohen — **Reviewed By**

HP Geotech
HEPWORTH - PAWLAK GEOTECHNICAL

Hepworth-Pawlak Geotechnical, Inc.
P.O. Drawer 1887
240 Annie Road
Silverthorne, Colorado 80498
Phone: (970) 468-1989
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Hpgeo4@hpgeotech.com

Report of Nuclear Density Testing

Client: **American Civil Constructors**
Attn: Anthony Gregorich
4901 South Windermere Street
Littleton, CO 80120

Job No.: 412 147A Date: 10/10/2012
Sheet No.: 1 of 1

Project: California Gulch, Leadville, Colorado.

General Contractor: American Civil Constructors Earthwork Contractor: American Civil Constructors

Type & # of Earthmoving Units: (2) Dozer, (2) Loader, Track-hoe, Mini-hoe

Type & # of Compaction Units: Smooth Drum Roller, Sheepsfoot Roller

Method of Moisture Conditioning: Water Truck

Compaction Standard: **ASTM D-698 (Standard)**

Test No.	Location Reclamation Basin	Depth or Elev.	Laboratory		Field		Comp. (%)	Min. Comp. Req. (%)	Soil Type
			Max. Dry Dens. (pcf)	Opt. Moist (%)	Dry Dens. (pcf)	Moist (%)			
1	East Berm, 45 Feet South, 20 Feet Above Toe of Slope	-0-	114.7	14.9	109.8	15.9	96	95	A
2	East Berm, 0 Feet South, 10 Feet Above Toe of Slope	-0-	114.7	14.9	115.1	13.7	100	95	A
3	East Berm, 115 Feet South, 30 Feet Above Toe of Slope	-0-	114.7	14.9	113.6	13.4	99	95	A
4	Southeast Corner of South Berm, 25 Feet Above Toe of Slope	-0-	114.7	14.9	111.5	15.9	97	95	A
5	South Berm, 30 Feet West, 15 Feet Above Toe of Slope	-0-	114.7	14.9	110.9	12.5	97	95	A
6	South Berm, 90 Feet West, 30 Feet Above Toe of Slope	-0-	114.7	14.9	111.7	13.0	97	95	A

PART Time Observation

The nuclear Densometer Method of testing was used in substantial accordance with ASTM D-2922 and D-3017. This report presents opinions formed as a result of our observations of fill placements. The site conditions noted and test results reported apply only to the locations and elevations listed, at the time of our observation. No assumptions may be formulated as to site conditions and level of compaction during times when our observer was not present, and at locations other than those reported. We have relied on the contractor to continue to apply the recommended compactive effort and moisture to fill during the times when our observer was not observing operations.

Soil Type:
A: Very Sandy Clay
B:
C:

Preliminary Observations and / or Testing Results Verbally Reported To: Tony Gregorich with ACC

Progress Report:
Berm covered in geotextile at time of arrival. Placement of rock and gravel across basin floor. East berm was worked yesterday, 10/09/2012, by tracking with dozer and watering from above with hose. Smooth drum roller then used to approximately 30 feet up from toe of slope per CDM instructions on site visit 10/04/2012 to not roll above where smooth drum could not reach without assistance. South berm placed last week, 10/01 to 10/05/2012. Time lapse between time of placement and time of testing resulted in moisture percentages less than actual percentages at time of placement. Western berm not accessible for testing.

Copies:

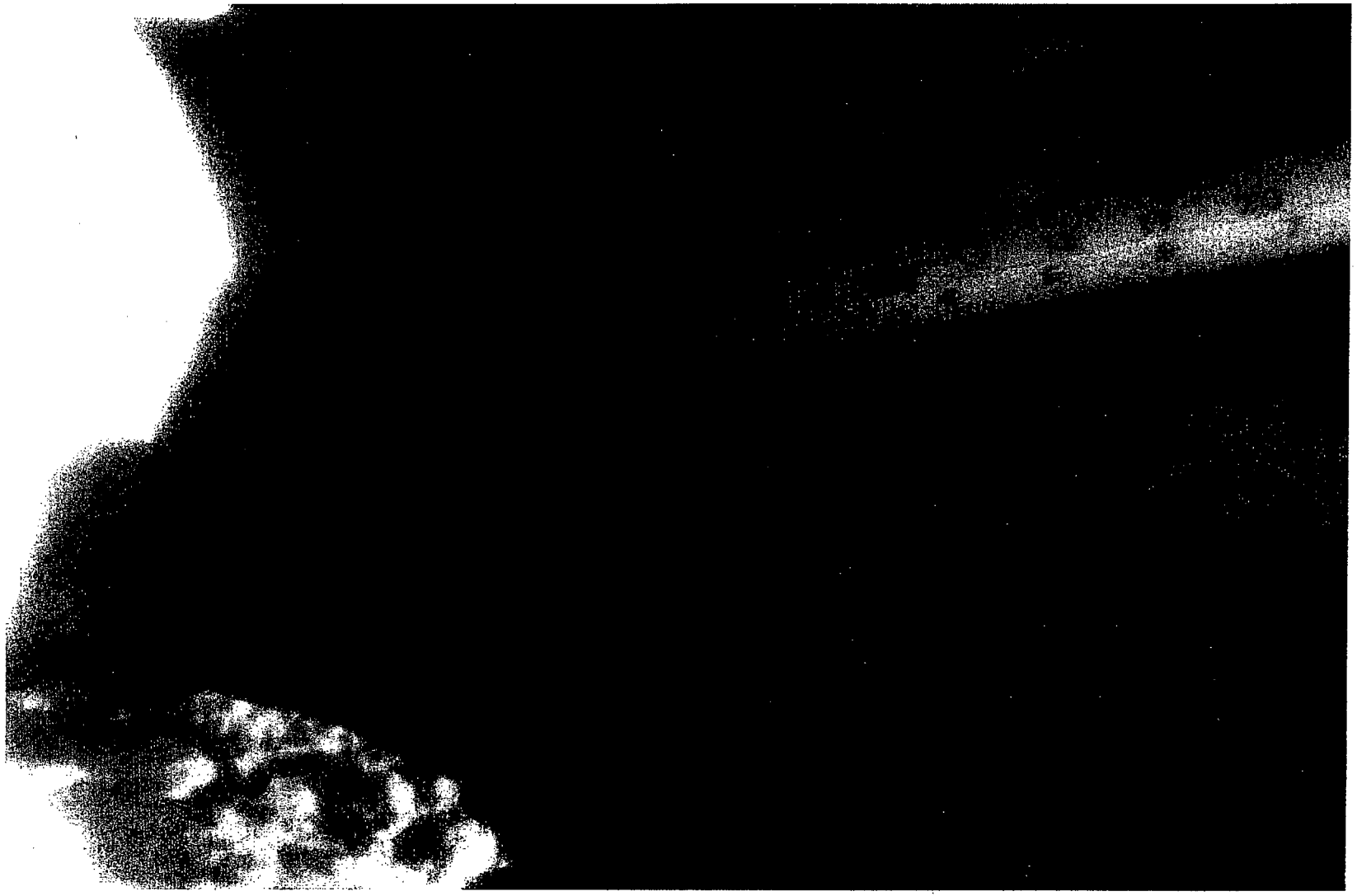
Tom Brunner — **Field Observer**
Jared Cohen — **Reviewed By**

Thickness Test #79

Thickness Test #80

Thickness Test #81

Thickness Test #82



Thickness Test #83

PERMEABILITY TRIAXIAL
Flow Pump
ASTM 5084

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC Composite	SAMPLED	
DEPTH		TEST STARTED	09/13/12 CAL
SAMPLE NO.	CL-3 & CL-4	TEST FINISHED	09/19/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	9P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	449.4	455.4
Wt. Wet Soil & Pan (g)	455.9	462.0
Wt. Dry Soil & Pan (g)	378.0	378.0
Wt. Lost Moisture (g)	77.9	84.0
Wt. of Pan Only (g)	6.6	6.6
Wt. of Dry Soil (g)	371.4	371.4
Moisture Content %	21.0	22.6
Wet Density PCF	125.0	130.6
Dry Density PCF	103.3	106.5

Init. Diameter (in)	2.410	(cm)	6.121
Init. Area (sq in)	4.562	(sq cm)	29.432
Init. Height (in)	3.003	(cm)	7.628
Vol. Bef. Consol. (cu ft)	0.00793		
Vol. After Consol. (cu ft)	0.00769		
Porosity %	38.56		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.966
Diameter	2.388
Pressure (psi)	1.053
Area after consol. (cm*cm)	28.900
Gradient	9.827
Permeability k (cm/s)	8.1E-08
Permeability k (m/s)	**8.1E-10**
Back Pressure (psi)	88.0
Cell Pressure (psi)	90.0
Ave. Effective Stress (psi)	1.474

Average temperature degree C: 23.1
NOTE: Remolded moisture content appears to be greater than optimum.

Data entry by: DAW Date: 09/20/2012
Checked by: CM Date: 9/20/12
FileName: HEP0CL34

ADVANCED TERRA TESTING, INC.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC Composite	SAMPLED	
DEPTH		TEST STARTED	09/13/12 CAL
SAMPLE NO.	CL-3 & CL-4	TEST FINISHED	09/19/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	9P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.9	17.7				
50.0	48.0	18.7	19.9	38.9	48.2	9.3	0.93
60.0	58.0	20.2	21.3	49.0	58.0	9.0	0.90
70.0	68.0	21.3	22.2	58.9	68.2	9.3	0.93
80.0	78.0	23.1	24.1	68.9	78.2	9.3	0.93
90.0	88.0	24.3	25.1	78.8	88.2	9.4	0.94
100.0		25.1	25.2	88.9	98.4	9.5	0.95

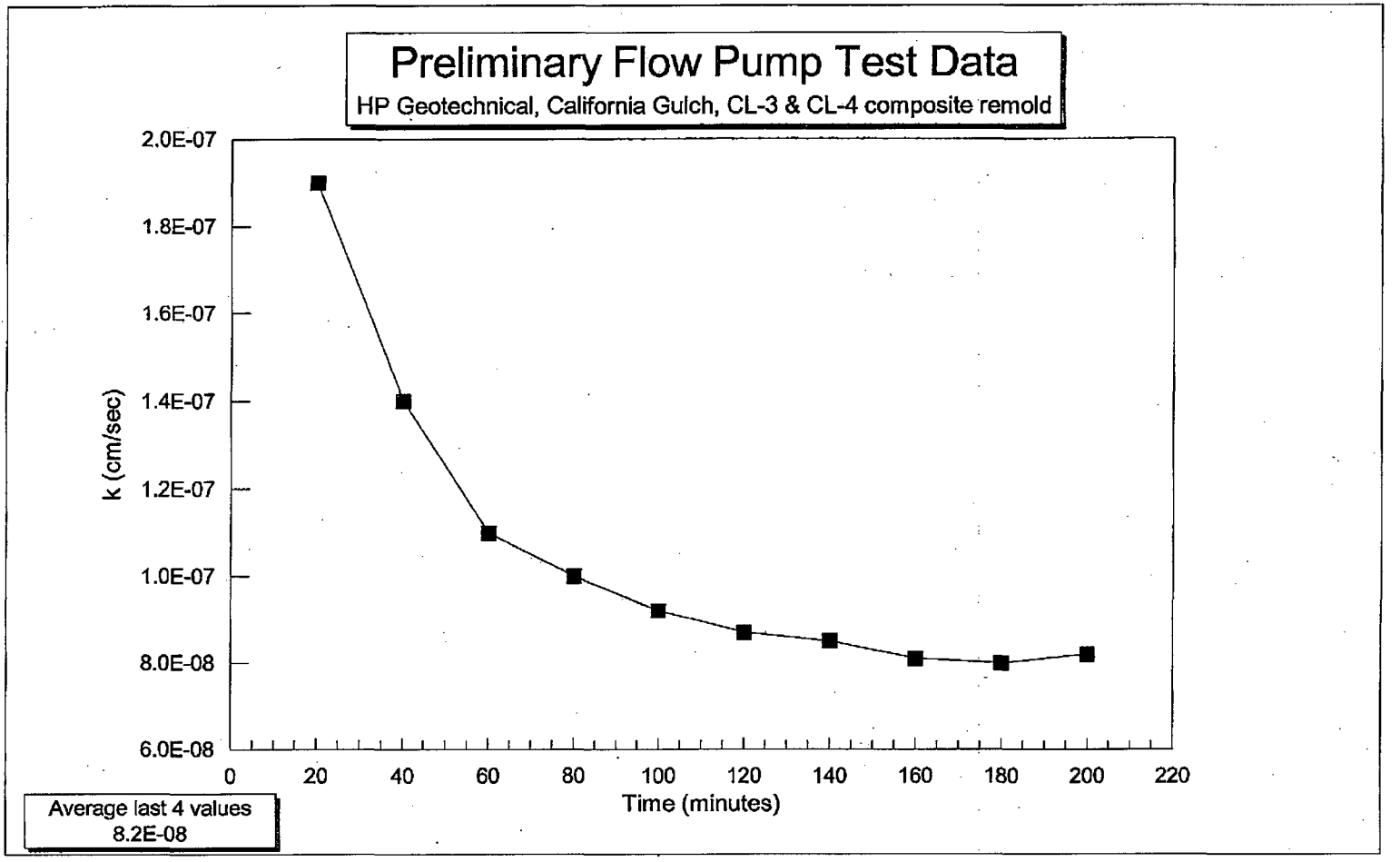
CONSOLIDATION DATA

NOTE: No consolidation data to report.

Initial Height (in)	3.003	Init. Vol. (CC)	224.52
Height Change (in)	0.037	Vol. Change (CC)	21.25
Ht. After Cons. (in)	2.966	Cell Exp. (CC)	14.49
Initial Area (sq in)	4.562	Net Change (CC)	6.76
Area After Cons. (sq in)	4.479	Cons. Vol. (CC)	217.76

Data entry by: DAW Date: 09/20/2012
Checked by: CH Date: 9/20/12
FileName: HEP0CL34

ADVANCED TERRA TESTING, Inc. ATT



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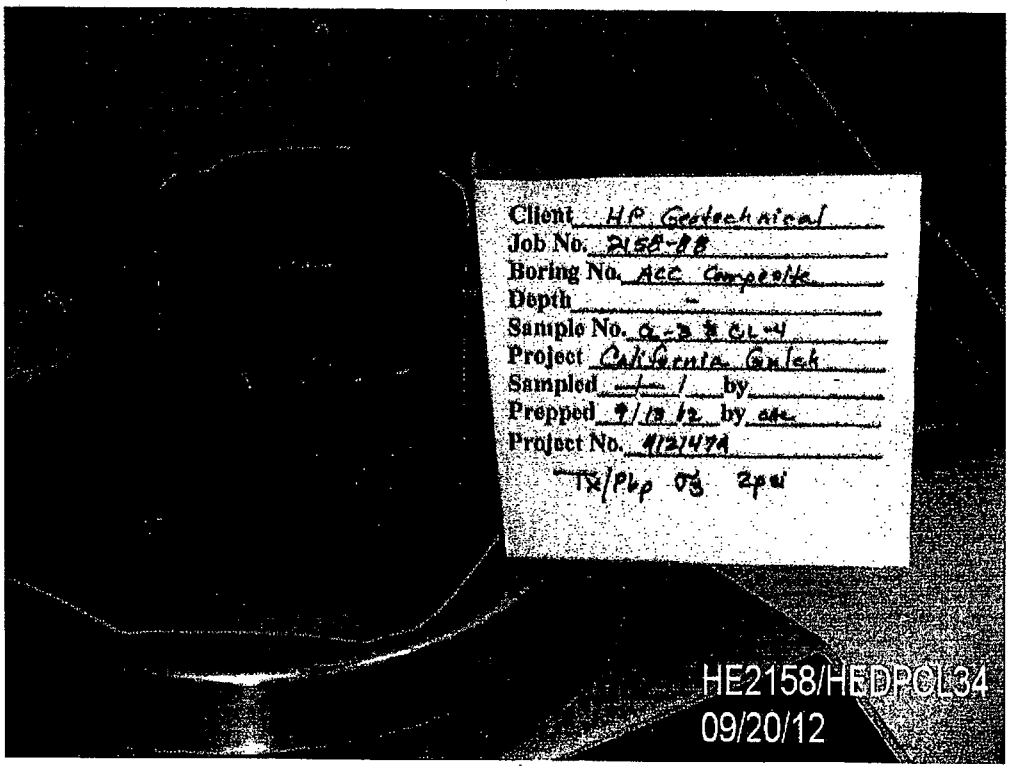
File Name: HEFPCL34

Date: 9/19/2012
Date Checked: 9/20/12


Client HP Geotechnical
Job No. 2158-88
Boring No. ACC Composite
Depth -
Sample No. A-3 & CL-4
Project California Gulch
Sampled -/-/ by
Prepped 9/19/12 by ade
Project No. 112/472
Tx/Perm 0% 2psi
HE2158/HEDPCL34
09/20/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical Inc	JOB NO.	2158-88
BORING NO.	ACC CL-5	SAMPLED	
DEPTH		TEST STARTED	9/14/12 CAL
SAMPLE NO.	133	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	449.0	468.5
Wt. Wet Soil & Pan (g)	457.2	476.7
Wt. Dry Soil & Pan (g)	397.9	397.9
Wt. Lost Moisture (g)	59.2	78.8
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	389.8	389.8
Moisture Content %	15.2	20.2
Wet Density PCF	125.7	131.0
Dry Density PCF	109.1	109.0

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	2.990	(cm)	7.595
Vol. Bef. Consol. (cu ft)	0.00787		
Vol. After Consol. (cu ft)	0.00789		
Porosity %	35.26		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.973
Diameter	2.416
Pressure (psi)	0.326
Area after consol. (cm*cm)	29.571
Gradient	3.035
Permeability k (cm/s)	6.4E-06
Permeability k (m/s)	**6.4E-08**
Back Pressure (psi)	68.0
Cell Pressure (psi)	70.0
Ave. Effective Stress (psi)	1.837
Average temperature degree C:	23.1

Notes: Remolded Sample.

Data entry by: MLM Date: 09/19/2012
Checked by: CAE Date: 9/19/12
FileName: HEP05133

ADVANCED TERRA TESTING, INC.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical Inc	JOB NO.	2158-88
BORING NO.	ACC CL-5	SAMPLED	
DEPTH		TEST STARTED	9/14/12 CAL
SAMPLE NO.	133	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.2	15.0				
50.0	48.0	16.0	17.8	39.3	47.9	8.6	0.86
60.0	58.0	18.1	19.2	49.1	58.3	9.2	0.92
70.0	68.0	19.5	20.3	58.9	68.3	9.4	0.94
80.0		20.6	20.8	69.1	78.8	9.7	0.97

NO CONSOLIDATION DATA

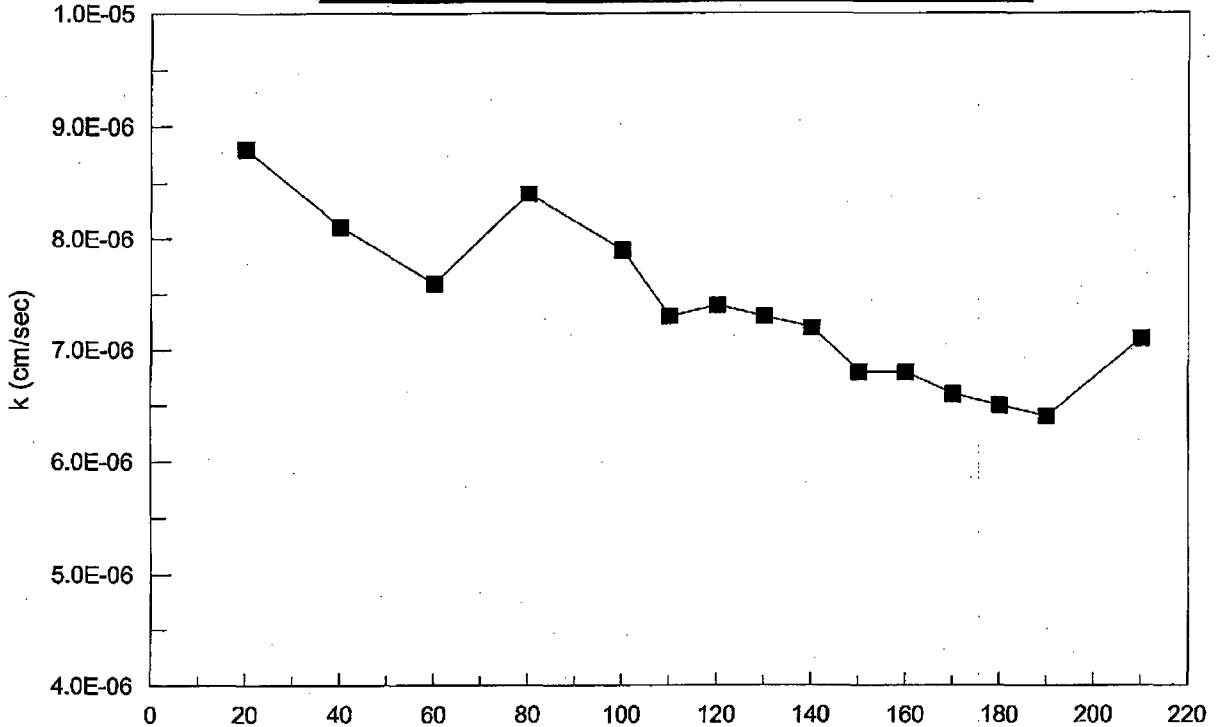
Initial Height (in)	2.990	Init. Vol. (CC)	222.99
Height Change (in)	0.017	Vol. Change (CC)	17.40
Ht. After Cons. (in)	2.973	Cell Exp. (CC)	17.75
Initial Area (sq in)	4.550	Net Change (CC)	-0.35
Area After Cons. (sq in)	4.583	Cons. Vol. (CC)	223.34

Data entry by: MLM Date: 09/19/2012
Checked by: ARC Date: 9/19/12
FileName: HEP05133

ADVANCED TERRA TESTING, Inc. ATT

Preliminary Flow Pump Test Data

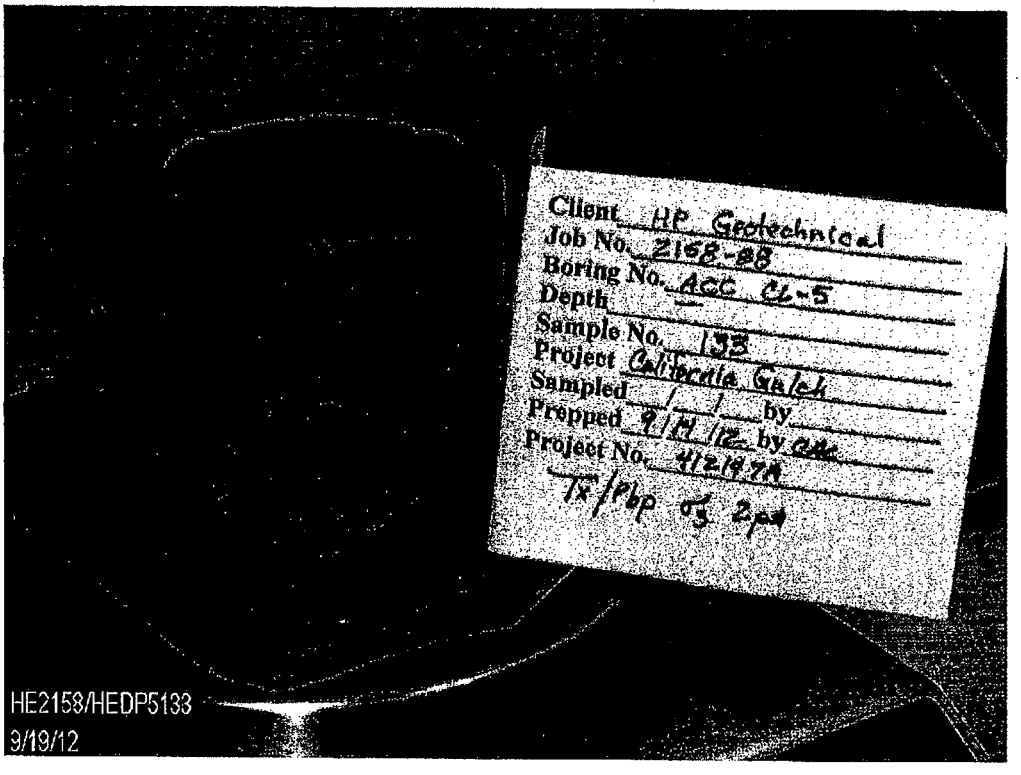
HP Geotechnical, California Gulch, ACC CL-5 #133



Average last 4 values
6.7E-06

Data Entered By: CAL
Data Checked By: CAL
File Name: HEFP5133

Date: 9/18/2012
Date Checked: 9/19/2012


Client HP Geotechnical
Job No. 2158-88
Boring No. ACC CL-5
Depth
Sample No. 133
Project California Gulch
Sampled / / by
Prepped 9/14/12 by GMC
Project No. 412.19.78
TX/Rep of 3 2pm
HE2158/HEDP5133
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC CL-6	SAMPLED	--
DEPTH	--	TEST STARTED	9/14/12 CAL
SAMPLE NO.	134	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	10P
LOCATION	CALIFORNIA GULCH	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	450.5	468.0
Wt. Wet Soil & Pan (g)	457.2	474.7
Wt. Dry Soil & Pan (g)	398.2	398.2
Wt. Lost Moisture (g)	59.0	76.5
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	391.5	391.5
Moisture Content %	15.1	19.5
Wet Density PCF	125.9	136.1
Dry Density PCF	109.4	113.9

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	2.995	(cm)	7.607
Vol. Bef. Consol. (cu ft)	0.00789		
Vol. After Consol. (cu ft)	0.00758		
Porosity %	35.61		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	5
Percentage of Pump setting	100
Q (cc/s)	5.81E-03
Height	2.975
Diameter	2.368
Pressure (psi)	0.218
Area after consol. (cm*cm)	28.408
Gradient	2.028
Permeability k (cm/s)	1.0E-04
Permeability k (m/s)	**1.0E-06**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.891

Average temperature degree C: 22.7
Notes: Remolded Sample.

Data entry by: MLM Date: 09/19/2012
Checked by: [signature] Date: 9/19/12
FileName: HEP06134

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-88
BORING NO.	ACC CL-6	SAMPLED	–
DEPTH	--	TEST STARTED	9/14/12 CAL
SAMPLE NO.	134	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147A	SETUP NO.	10P
LOCATION	CALIFORNIA GULCH	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

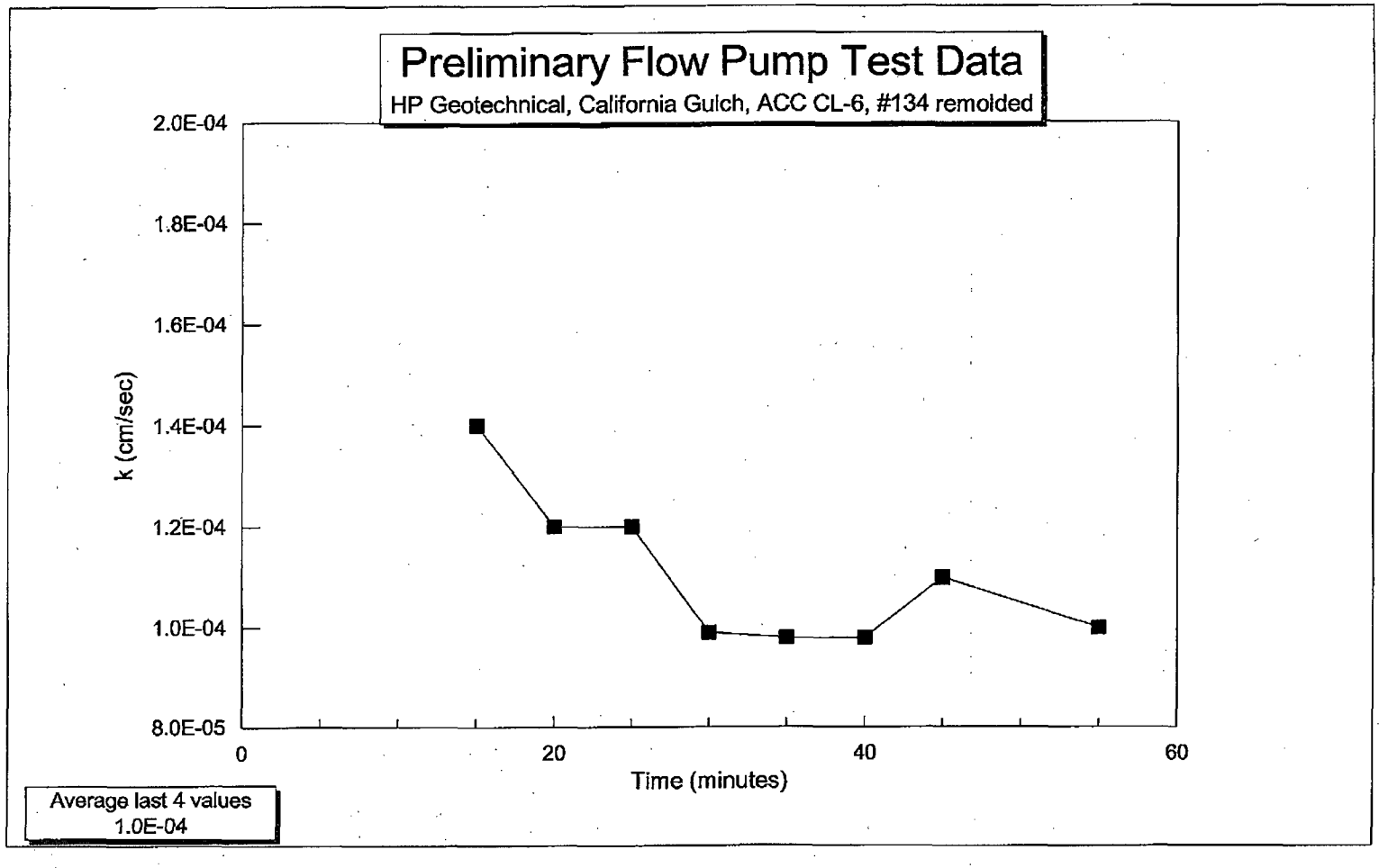
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.1	14.7				
50.0	48.0	15.1	16.6	39.0	47.6	8.6	0.86
60.0	58.0	17.3	18.4	48.9	58.0	9.1	0.91
70.0		19.0	19.2	58.8	68.3	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	2.995	Init. Vol. (CC)	223.37
Height Change (in)	0.020	Vol. Change (CC)	16.40
Ht. After Cons. (in)	2.975	Cell Exp. (CC)	7.74
Initial Area (sq in)	4.550	Net Change (CC)	8.66
Area After Cons. (sq in)	4.403	Cons. Vol. (CC)	214.71

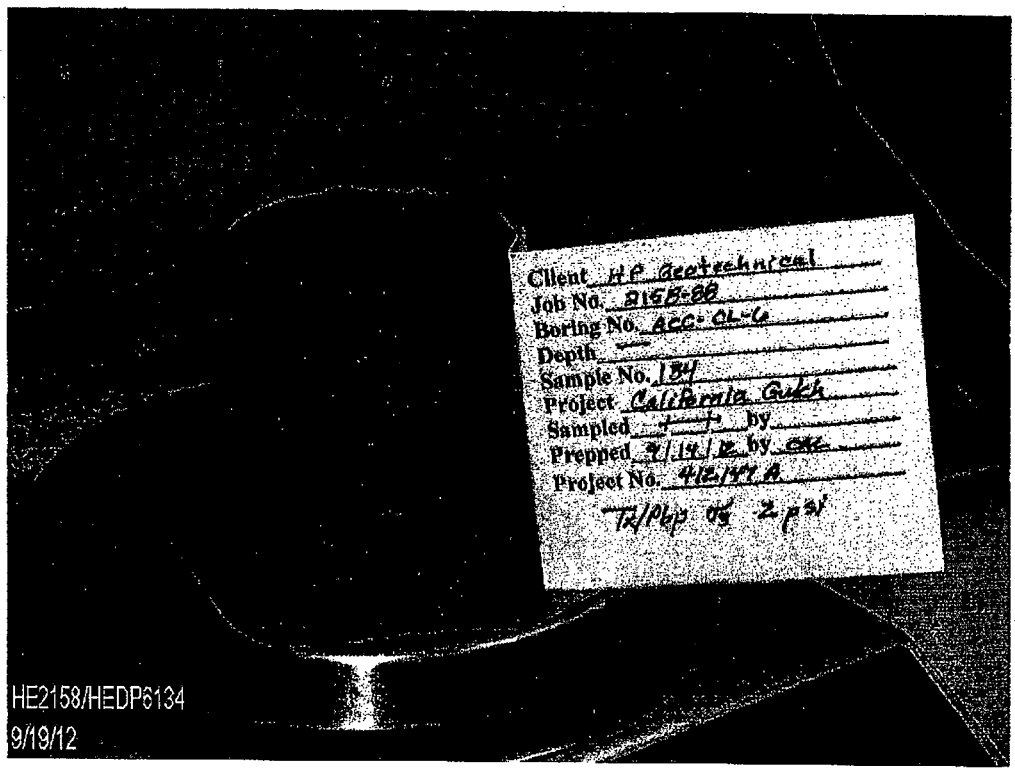
Data entry by: MLM Date: 09/19/2012
Checked by: Date: 9/19/12
FileName: HEP06134

ADVANCED TERRA TESTING, Inc. ATT



Data Entered By: CAL
Data Checked By: JM
File Name: HEFP6134

Date: 9/18/2012
Date Checked: 9/19/12


Client HP Geotechnical
Job No. 2158-08
Boring No. ACC-CL-6
Depth
Sample No. 134
Project California Gulch
Sampled / / by
Prepped 9/14/12 by CKC
Project No. 412.177.A
Tx/Phi 05 2 psi
HE2158/HEDP6134
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-88
BORING NO.	NW 71 ft LSG Repository	SAMPLED	
DEPTH		TEST STARTED	9/13/12 CAL
SAMPLE NO.	12 In Place #1	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147 A	CELL NUMBER	7S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	308.8	315.8
Wt. Wet Soil & Pan (g)	317.2	324.2
Wt. Dry Soil & Pan (g)	276.9	276.9
Wt. Lost Moisture (g)	40.2	47.3
Wt. of Pan Only (g)	8.4	8.4
Wt. of Dry Soil (g)	268.6	268.6
Moisture Content %	15.0	17.6
Wet Density PCF	133.0	141.6
Dry Density PCF	115.7	120.4

Init. Diameter (in)	1.936	(cm)	4.917
Init. Area (sq in)	2.944	(sq cm)	18.993
Init. Height (in)	3.005	(cm)	7.633
Vol. Bef. Consol. (cu ft)	0.00512		
Vol. After Consol. (cu ft)	0.00492		
Porosity %	33.93		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.998
Diameter	1.900
Pressure (psi)	0.308
Area after consol. (cm*cm)	18.286
Gradient	2.844
Permeability k (cm/s)	4.4E-07
Permeability k (m/s)	**4.4E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.846
Average temperature degree C:	22.7

Data entry by: MLM Date: 09/19/2012
Checked by: CAL Date: 9/29/12
FileName: HEP07112

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-88
BORING NO.	NW 71 ft LSG Repository	SAMPLED	
DEPTH		TEST STARTED	9/13/12 CAL
SAMPLE NO.	12 In Place #1	TEST FINISHED	9/18/12 CAL
SOIL DESCR.	412147 A	SETUP NO.	7S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

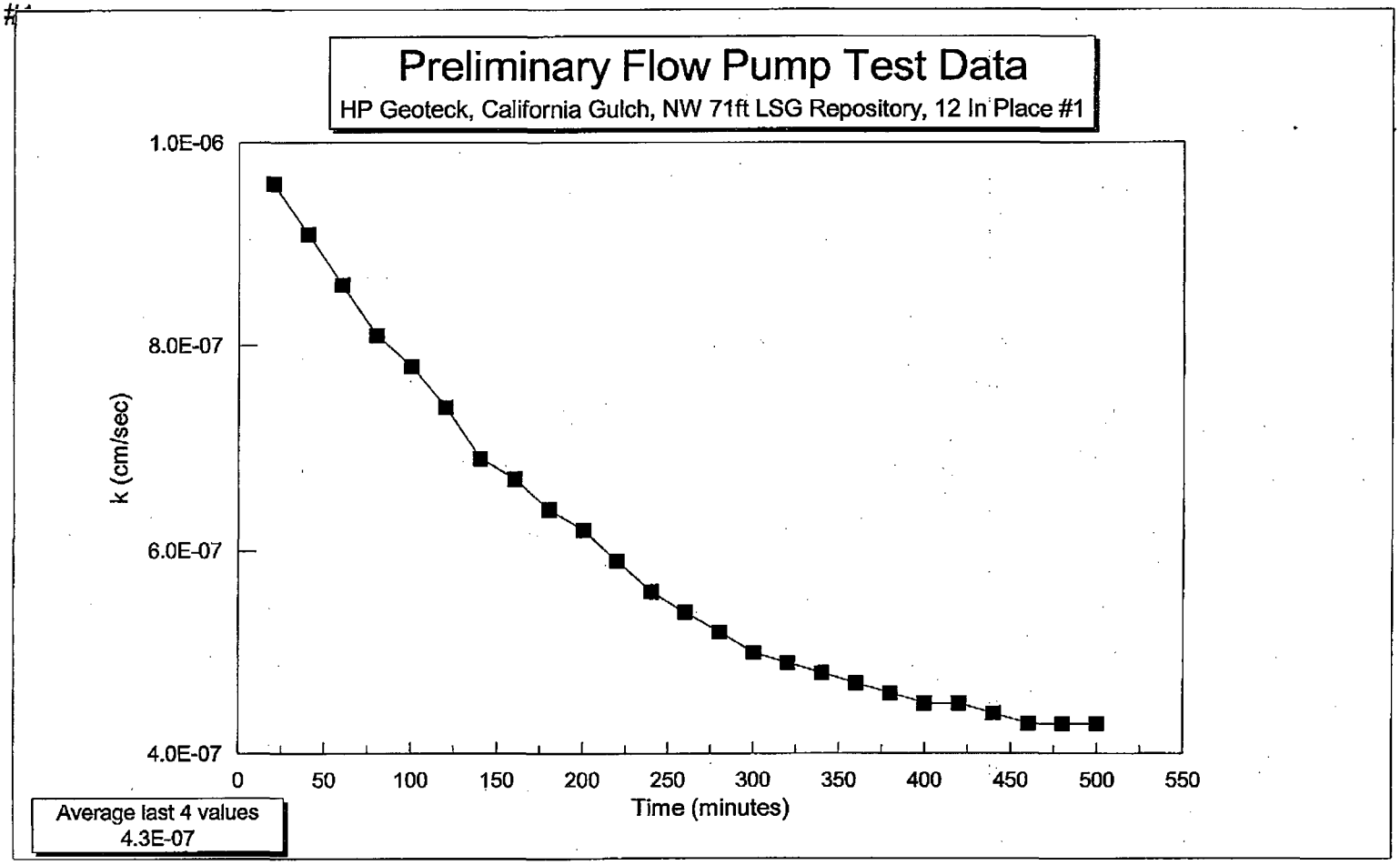
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.3	10.6				
50.0	48.0	15.2	16.3	38.7	48.0	9.3	0.93
60.0	58.0	16.8	17.8	48.9	58.3	9.4	0.94
70.0		18.5	18.7	58.9	68.6	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	3.005	Init. Vol. (CC)	144.99
Height Change (in)	0.007	Vol. Change (CC)	16.70
Ht. After Cons. (in)	2.998	Cell Exp. (CC)	10.99
Initial Area (sq in)	2.944	Net Change (CC)	5.71
Area After Cons. (sq in)	2.834	Cons. Vol. (CC)	139.27

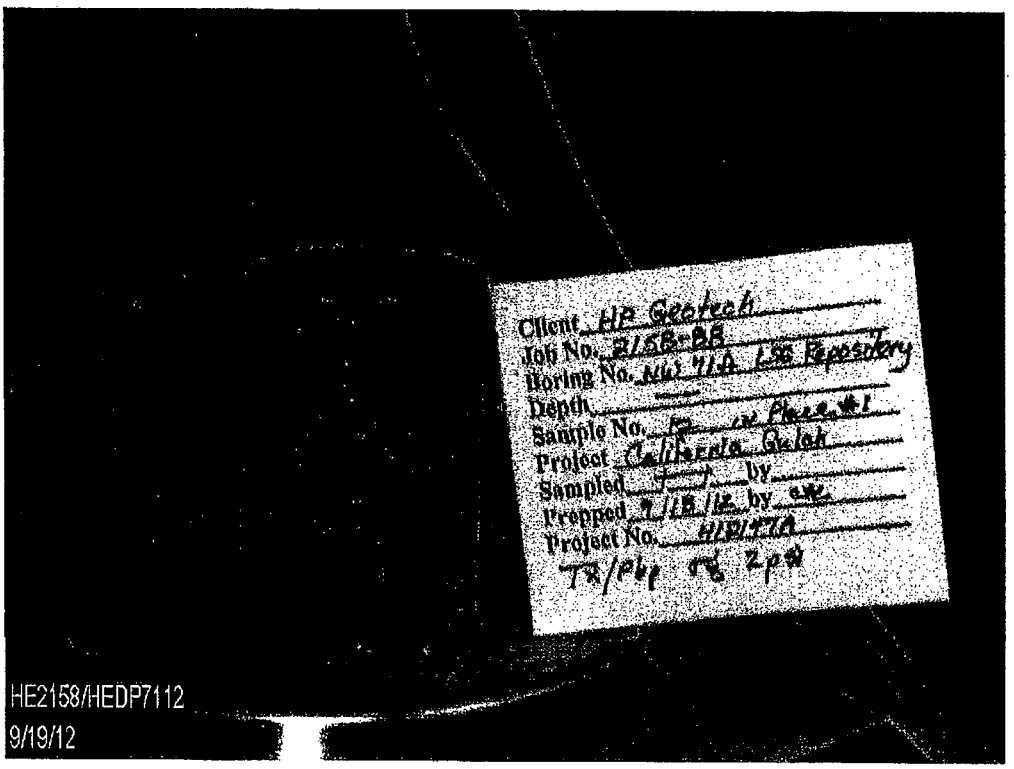
Data entry by: MLM Date: 09/19/2012
Checked by: Cdr Date: 9/19/12
FileName: HEP07112

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: DPM
Data Checked By: JM
File Name: HEFP7112

Date: 09/17/2012
Date Checked: 9/19/12


Client HP Geotech
Job No. 21-58-88
Boring No. MW-11A LSS Repository
Depth
Sample No. Bag at Plate #1
Project Calliente Gulch
Sampled by
Prepped 7/18/12 by
Project No. HP1112
TX/PL of 2p#
HE2158/HEDP7112
9/19/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#29 In Place	TEST FINISHED	10/06/12 CAL
SOIL DESCR.	#2012-1	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	300.4	315.6
Wt. Wet Soil & Pan (g)	307.1	322.2
Wt. Dry Soil & Pan (g)	274.8	274.8
Wt. Lost Moisture (g)	32.3	47.4
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	268.1	268.1
Moisture Content %	12.0	17.7
Wet Density PCF	128.6	134.4
Dry Density PCF	114.8	114.2

Init. Diameter	(in)	1.936	(cm)	4.917
Init. Area	(sq in)	2.944	(sq cm)	18.993
Init. Height	(in)	3.023	(cm)	7.678
Vol. Bef. Consol.	(cu ft)	0.00515		
Vol. After Consol.	(cu ft)	0.00518		
Porosity %		32.35		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.022
Diameter	1.941
Pressure (psi)	1.307
Area after consol. (cm*cm)	19.094
Gradient	11.972
Permeability k (cm/s)	5.0E-07
Permeability k (m/s)	**5.0E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.347

Average temperature degree C: 21.9

Notes: Filling required due to gravel. Sample diameter is less than specification for nominal particle size in sample.

Data entry by: MLM Date: 10/09/2012

Checked by: afk Date: 10/09/2012

FileName: HEP0CG29

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#29 In Place	TEST FINISHED	10/06/12 CAL
SOIL DESCR.	#2012-1	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

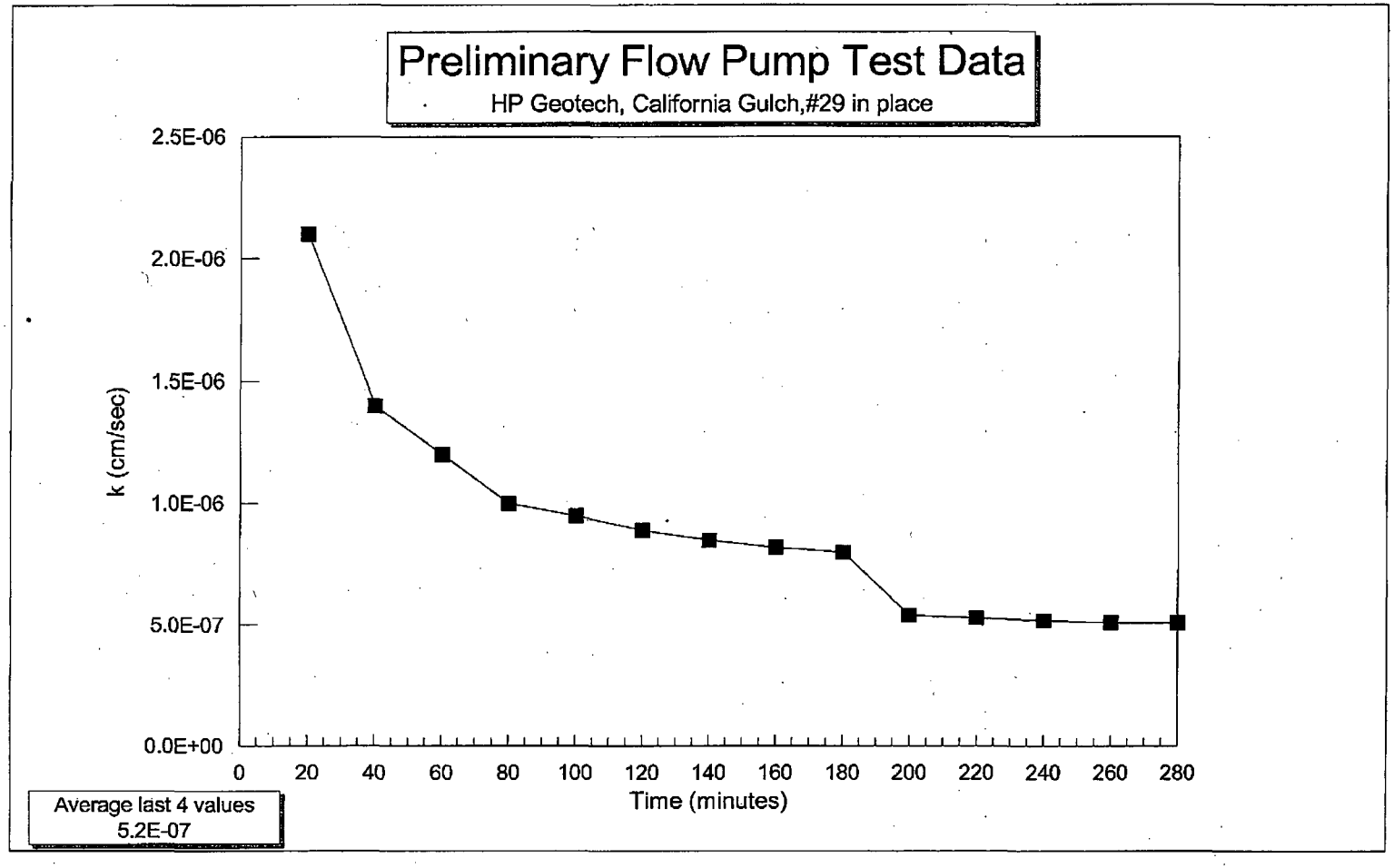
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.2	10.1				
50.0	48.0	8.1	9.2	38.9	48.0	9.1	0.91
60.0	58.0	9.6	10.6	48.7	58.0	9.3	0.93
70.0		10.8	11.0	58.8	68.5	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	3.023	Init. Vol. (CC)	145.85
Height Change (in)	0.001	Vol. Change (CC)	8.60
Ht. After Cons. (in)	3.022	Cell Exp. (CC)	9.34
Initial Area (sq in)	2.944	Net Change (CC)	-0.74
Area After Cons. (sq in)	2.960	Cons. Vol. (CC)	146.59

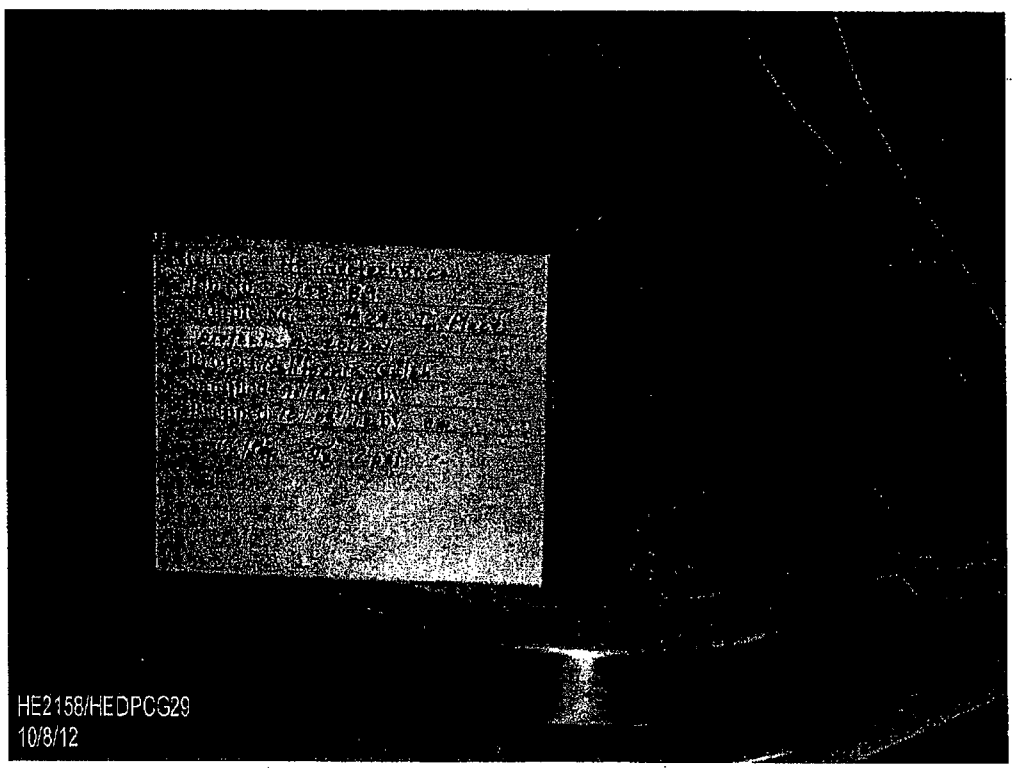
Data entry by: MLM Date: 10/08/2012
Checked by: CH Date: 10/9/12
FileName: HEP0CG29

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: _____
File Name: HEFPCG29

Date: 10/06/2012
Date Checked: 10/08/2012



HE2158/HEDPCG29
10/8/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#28 In Place	TEST FINISHED	10/05/12 CAL
SOIL DESCR.	#2012-1	CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	247.3	254.3
Wt. Wet Soil & Pan (g)	254.0	261.0
Wt. Dry Soil & Pan (g)	222.7	222.7
Wt. Lost Moisture (g)	31.3	38.3
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	216.0	216.0
Moisture Content %	14.5	17.8
Wet Density PCF	130.8	130.7
Dry Density PCF	114.2	111.0

Init. Diameter (in)	1.920	(cm)	4.877
Init. Area (sq in)	2.895	(sq cm)	18.680
Init. Height (in)	2.488	(cm)	6.320
Vol. Bef. Consol. (cu ft)	0.00417		
Vol. After Consol. (cu ft)	0.00429		
Porosity %	31.55		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	9
Percentage of Pump setting	100
Q (cc/s)	2.28E-04
Height	2.479
Diameter	1.951
Pressure (psi)	0.314
Area after consol. (cm*cm)	19.294
Gradient	3.506
Permeability k (cm/s)	3.4E-06
Permeability k (m/s)	**3.4E-08**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.843

Average temperature degree C: 22.0

Notes: Filling required due to disturbances caused by sampling gravel. Sample diameter is smaller than specification for nominal particle size in sample.

Data entry by: MLM Date: 10/09/2012

Checked by: ehe Date: 10/09/2012

FileName: HEP0CG28

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	9/19/12
DEPTH		TEST STARTED	10/03/12 CAL
SAMPLE NO.	#28 In Place	TEST FINISHED	10/05/12 CAL
SOIL DESCR.	#2012-1	SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

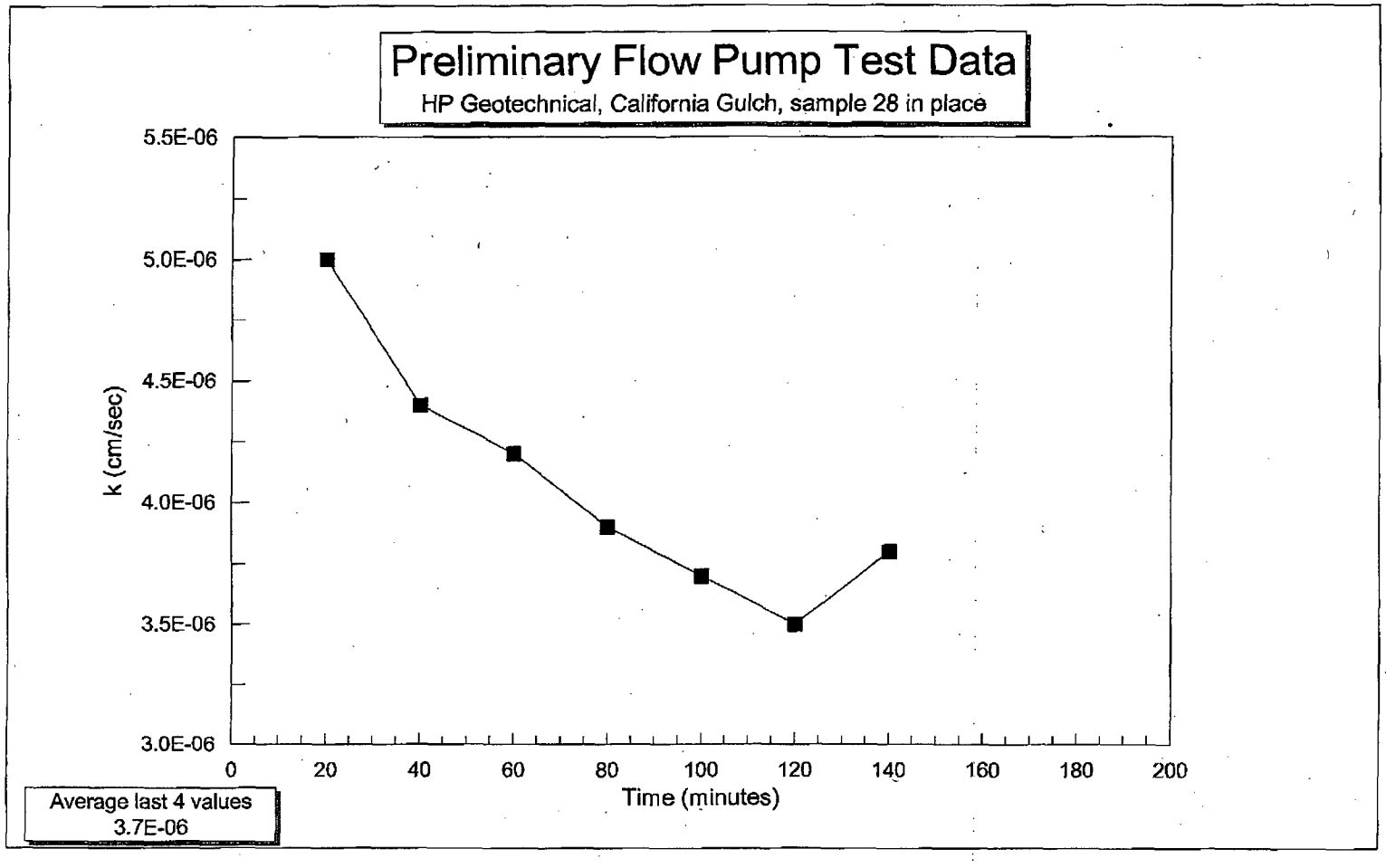
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.6	9.9				
50.0	48.0	9.2	10.3	38.9	47.9	9.0	0.90
60.0		10.8	11.0	48.7	58.2	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	2.488	Init. Vol. (CC)	118.07
Height Change (in)	0.009	Vol. Change (CC)	9.40
Ht. After Cons. (in)	2.479	Cell Exp. (CC)	12.85
Initial Area (sq in)	2.895	Net Change (CC)	-3.45
Area After Cons. (sq in)	2.991	Cons. Vol. (CC)	121.51

Data entry by: MLM Date: 10/08/2012
Checked by: CAL Date: 10/09/12
FileName: HEP0CG28

ADVANCED TERRA TESTING, INC. ATT



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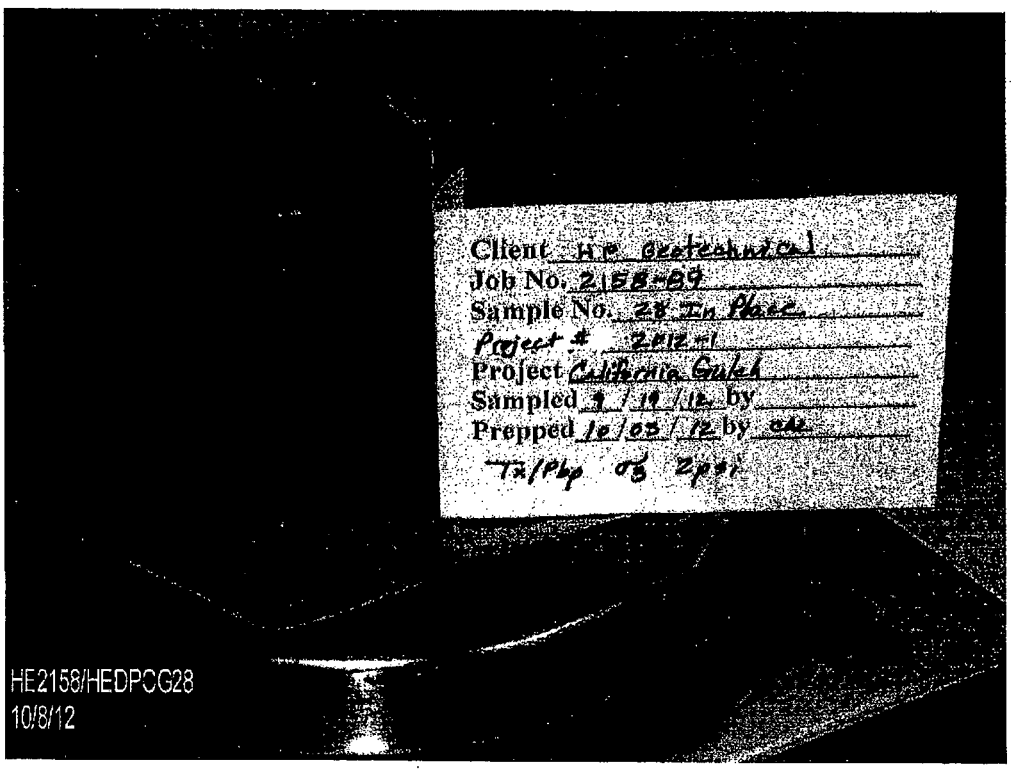
File Name: HEFPCG28

Date: 10/05/2012
Date Checked: 10/08/2012


Client H.P. Geotechnical
Job No. 2158-09
Sample No. 28 In Place
Project # 2012 #1
Project California Gulch
Sampled 9 / 19 / 12 by
Prepped 10 / 03 / 12 by CAE
Tx/Plp of 2psi
HE2158/HEDPCG28
10/8/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#34 In Place	TEST FINISHED	10/11/12 CAL
SOIL DESCR.		CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	257.2	264.3
Wt. Wet Soil & Pan (g)	265.4	272.5
Wt. Dry Soil & Pan (g)	233.2	233.2
Wt. Lost Moisture (g)	32.1	39.2
Wt. of Pan Only (g)	8.2	8.2
Wt. of Dry Soil (g)	225.0	225.0
Moisture Content %	14.3	17.4
Wet Density PCF	131.0	130.4
Dry Density PCF	114.6	111.0

Init. Diameter (in)	1.925	(cm)	4.890
Init. Area (sq in)	2.910	(sq cm)	18.778
Init. Height (in)	2.570	(cm)	6.528
Vol. Bef. Consol. (cu ft)	0.00433		
Vol. After Consol. (cu ft)	0.00447		
Porosity %	31.00		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	2.547
Diameter	1.965
Pressure (psi)	0.649
Area after consol. (cm*cm)	19.556
Gradient	7.053
Permeability k (cm/s)	4.1E-07
Permeability k (m/s)	**4.1E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.676
Average temperature degree C:	22.5

Data entry by: DAW Date: 10/12/2012
Checked by: DMC Date: 10-12-12
FileName: HEP0341P

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#34 In Place	TEST FINISHED	10/11/12 CAL
SOIL DESCR.		SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

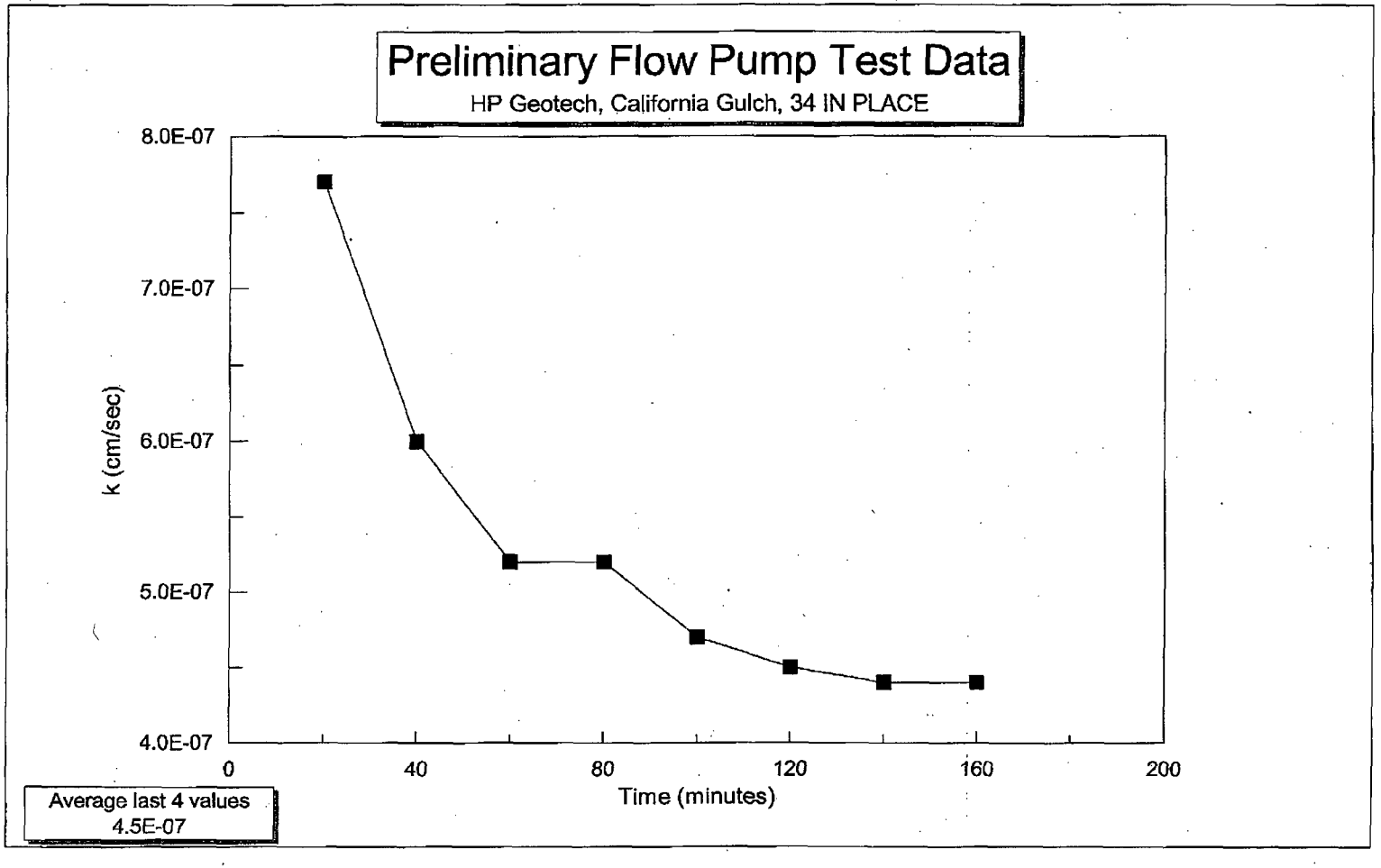
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.7	10.3				
50.0	48.0	9.4	10.4	38.6	47.6	9.0	0.90
60.0		10.3	10.5	48.5	58.2	9.7	0.97

NO CONSOLIDATION DATA

Initial Height (in)	2.570	Init. Vol. (CC)	122.59
Height Change (in)	0.023	Vol. Change (CC)	8.90
Ht. After Cons. (in)	2.547	Cell Exp. (CC)	12.85
Initial Area (sq in)	2.910	Net Change (CC)	-3.95
Area After Cons. (sq in)	3.031	Cons. Vol. (CC)	126.54

Data entry by: DAW Date: 10/12/2012
Checked by: CH Date: 10-12-12
FileName: HEP0341P

ADVANCED TERRA TESTING, Inc. ATT



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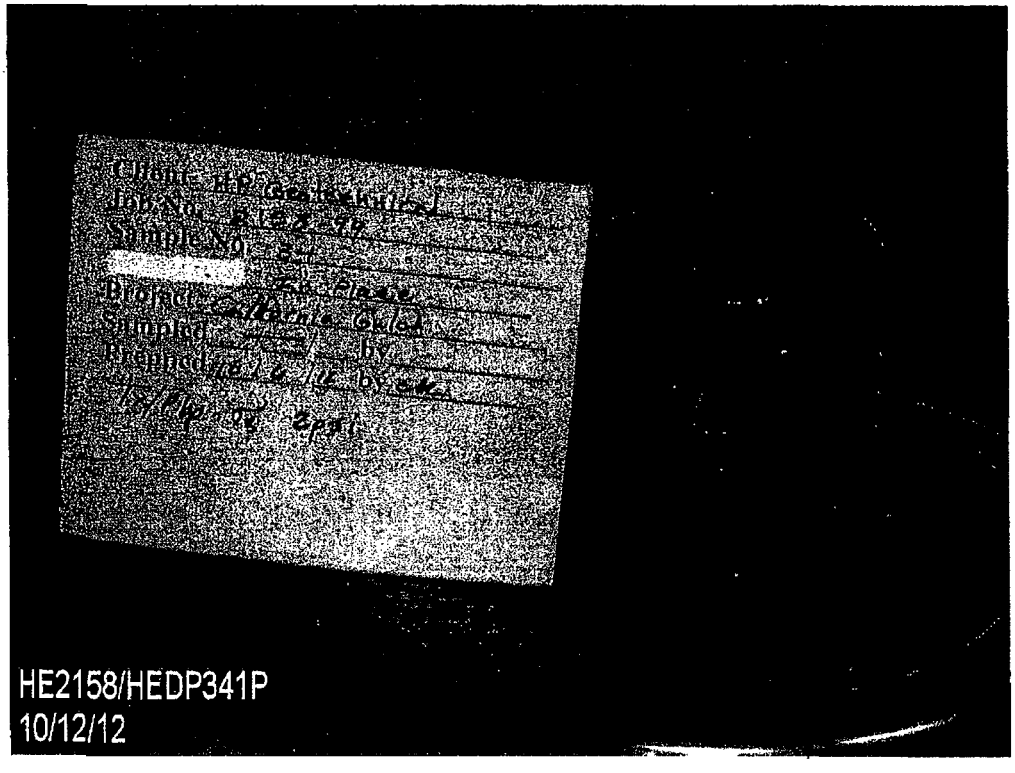
File Name: HEFP34IP

Date: 10/11/2012
Date Checked: 10/12/12


HE2158/HEDP341P
10/12/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/24/12 CAL
SAMPLE NO.	ACC CL-8	TEST FINISHED	11/02/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	1440	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	440.4	467.5
Wt. Wet Soil & Pan (g)	446.9	474.1
Wt. Dry Soil & Pan (g)	390.1	390.1
Wt. Lost Moisture (g)	56.8	84.0
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	383.5	383.5
Moisture Content %	14.8	21.9
Wet Density PCF	122.7	128.8
Dry Density PCF	106.9	105.6

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	3.007	(cm)	7.638
Vol. Bef. Consol. (cu ft)	0.00791		
Vol. After Consol. (cu ft)	0.00801		
Porosity %	37.05		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	5
Percentage of Pump setting	100
Q (cc/s)	5.81E-03
Height	3.005
Diameter	2.421
Pressure (psi)	0.081
Area after consol. (cm*cm)	29.699
Gradient	0.746
Permeability k (cm/s)	2.6E-04
Permeability k (m/s)	**2.6E-06**
Back Pressure (psi)	68.0
Cell Pressure (psi)	70.0
Ave. Effective Stress (psi)	1.960
Average temperature degree C:	23.3

Notes: Remolded Sample.

Data entry by: MLM Date: 11/05/2012
Checked by: ewe Date: 11/06/12
FileName: HEP0CL8R

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/24/12 CAL
SAMPLE NO.	ACC CL-8	TEST FINISHED	11/02/12 CAL
SOIL DESCR.	412147A	SETUP NO.	7P
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	1440	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

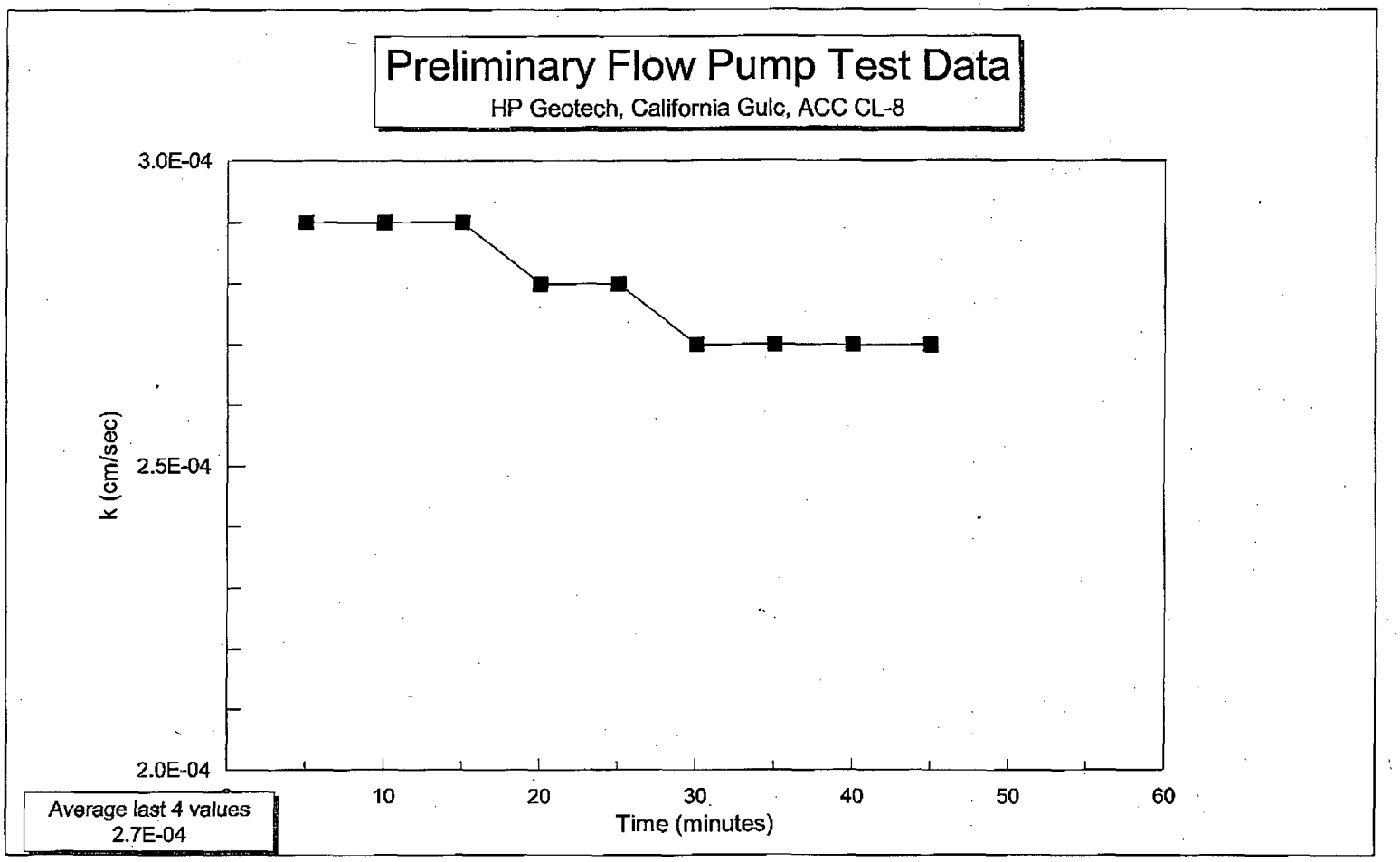
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.1	13.5				
50.0	48.0	13.2	14.4	38.9	46.6	7.7	0.77
60.0	58.0	14.5	15.4	48.9	57.1	8.2	0.82
70.0	68.0	15.6	16.5	58.9	67.6	8.7	0.87
80.0		17.0	17.1	68.1	77.7	9.6	0.96

NO CONSOLIDATION DATA

Initial Height (in)	3.007	Init. Vol. (CC)	224.08
Height Change (in)	0.002	Vol. Change (CC)	15.10
Ht. After Cons. (in)	3.005	Cell Exp. (CC)	17.75
Initial Area (sq in)	4.547	Net Change (CC)	-2.65
Area After Cons. (sq in)	4.603	Cons. Vol. (CC)	226.72

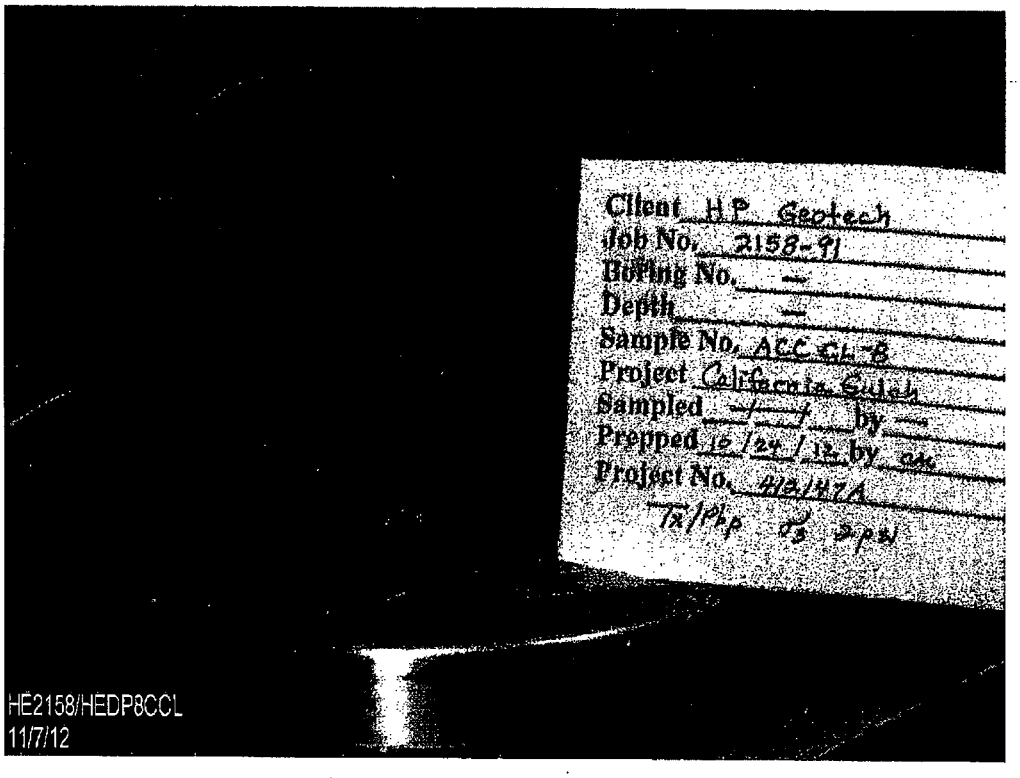
Data entry by: MLM Date: 11/05/2012
Checked by: Date: 11/6/12
FileName: HEP0CL8R

ADVANCED TERRA TESTING, INC. ATT



Data Entered By: CAL
Data Checked By: ym
File Name: HEFPCL8R

Date: 11/02/2012
Date Checked: 11/05/2012


Client HP Geotech
Job No. 2158-91
Boring No. —
Depth —
Sample No. ACC Sh-B
Project California Gulch
Sampled —/—/— by —
Prepped 10/24/12 by SM
Project No. 4/2/47A
12/PLP σ3 2 psi
HE2158/HEDP8CCL
11/7/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#33 Retest	TEST FINISHED	10/10/12 CAL
SOIL DESCR.		CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	296.2	302.0
Wt. Wet Soil & Pan (g)	304.6	310.3
Wt. Dry Soil & Pan (g)	267.4	267.4
Wt. Lost Moisture (g)	37.1	42.9
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	259.1	259.1
Moisture Content %	14.3	16.6
Wet Density PCF	132.0	135.2
Dry Density PCF	115.4	116.0

Init. Diameter (in)	1.915	(cm)	4.864
Init. Area (sq in)	2.880	(sq cm)	18.583
Init. Height (in)	2.969	(cm)	7.541
Vol. Bef. Consol. (cu ft)	0.00495		
Vol. After Consol. (cu ft)	0.00493		
Porosity %	30.76		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	2.954
Diameter	1.915
Pressure (psi)	0.874
Area after consol. (cm*cm)	18.588
Gradient	8.190
Permeability k (cm/s)	3.8E-07
Permeability k (m/s)	**3.8E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.563
Average temperature degree C:	22.3

Data entry by: DAW Date: 10/11/2012
Checked by: CAL Date: 10-12-12
FileName: HEP033RT

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-89
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/06/12 CAL
SAMPLE NO.	#33 Retest	TEST FINISHED	10/10/12 CAL
SOIL DESCR.		SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

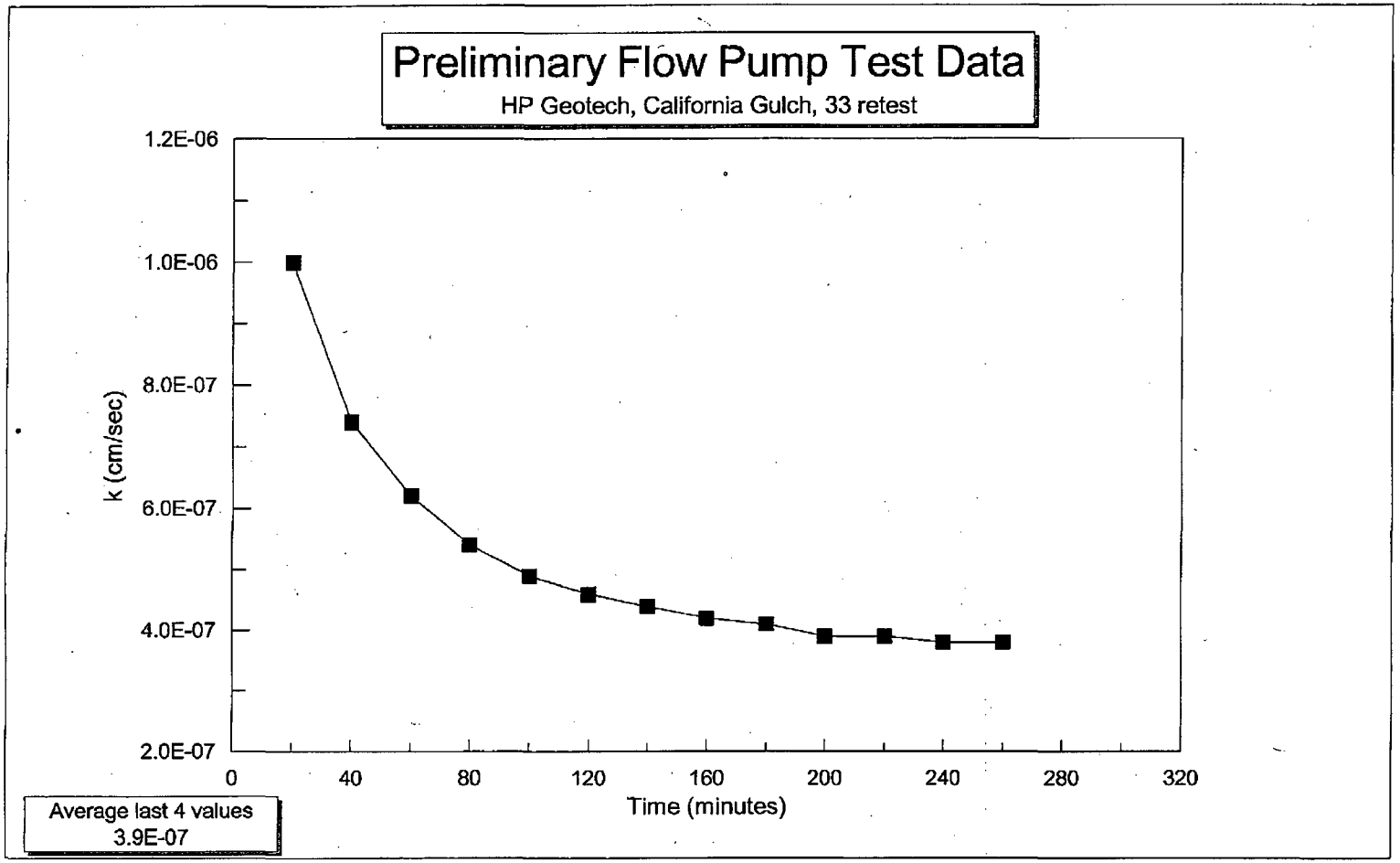
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.2	9.8				
50.0	48.0	9.6	10.5	38.7	47.3	8.6	0.86
60.0		10.2	10.4	48.5	58.1	9.6	0.96

NO CONSOLIDATION DATA

Initial Height (in)	2.969	Init. Vol. (CC)	140.16
Height Change (in)	0.015	Vol. Change (CC)	9.10
Ht. After Cons. (in)	2.954	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.880	Net Change (CC)	0.67
Area After Cons. (sq in)	2.881	Cons. Vol. (CC)	139.49

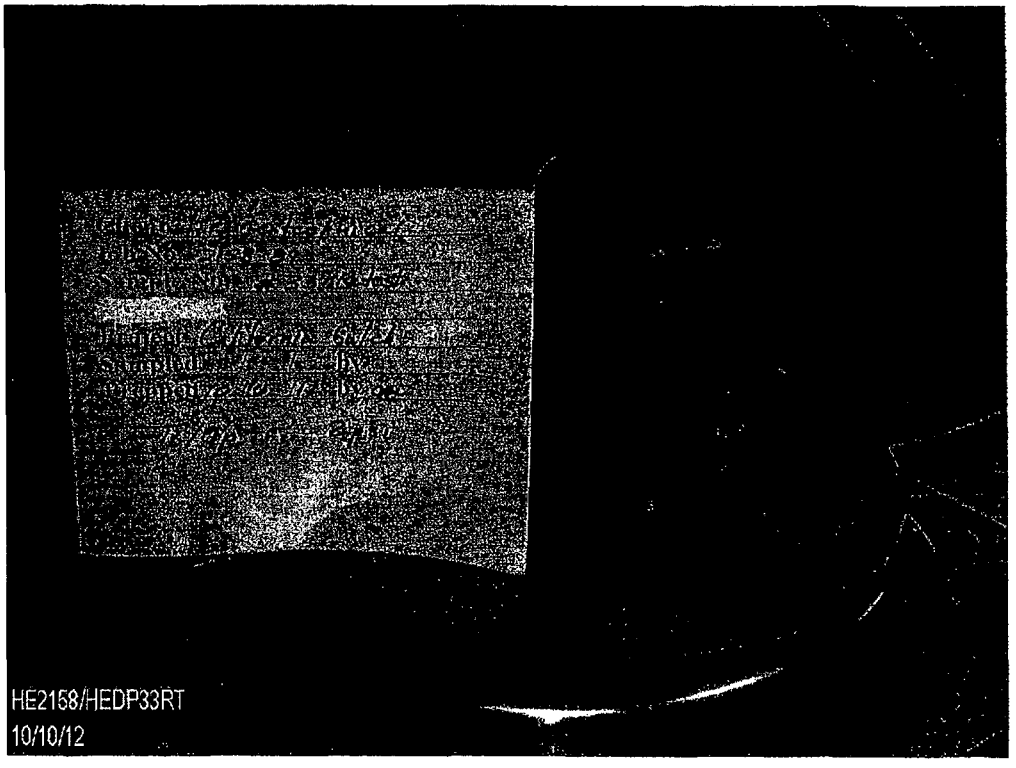
Data entry by: DAW Date: 10/11/2012
Checked by: CA Date: 10-12-12
FileName: HEP033RT

ADVANCED TERRA TESTING, Inc. ATT



Data Entered By: CAL
Data Checked By: CAL
File Name: HEFP33RT

Date: 10/10/2012
Date Checked: 10/12/12


HE2158/HEDP33RT
10/10/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	S 185 ft E 170 ft	SAMPLED	
DEPTH		TEST STARTED	10/12/12 CAL
SAMPLE NO.	35 In-Place	TEST FINISHED	10/16/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	304.6	309.6
Wt. Wet Soil & Pan (g)	311.2	316.3
Wt. Dry Soil & Pan (g)	269.0	269.0
Wt. Lost Moisture (g)	42.3	47.3
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	262.3	262.3
Moisture Content %	16.1	18.0
Wet Density PCF	130.0	134.0
Dry Density PCF	111.9	113.5

Init. Diameter (in)	1.926	(cm)	4.892
Init. Area (sq in)	2.913	(sq cm)	18.797
Init. Height (in)	3.064	(cm)	7.783
Vol. Bef. Consol. (cu ft)	0.00517		
Vol. After Consol. (cu ft)	0.00509		
Porosity %	32.82		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.038
Diameter	1.921
Pressure (psi)	1.123
Area after consol. (cm*cm)	18.689
Gradient	10.232
Permeability k (cm/s)	6.0E-07
Permeability k (m/s)	**6.0E-09**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.439
Average temperature degree C:	23.5

Notes: Filling required due to gravel.

Data entry by: MLM Date: 10/17/2012
Checked by: CM Date: 10/17/12
FileName: HEP0CG35

ADVANCED TERRA TESTING, INC. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	S 185 ft E 170 ft	SAMPLED	
DEPTH		TEST STARTED	10/12/12 CAL
SAMPLE NO.	35 In-Place	TEST FINISHED	10/16/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

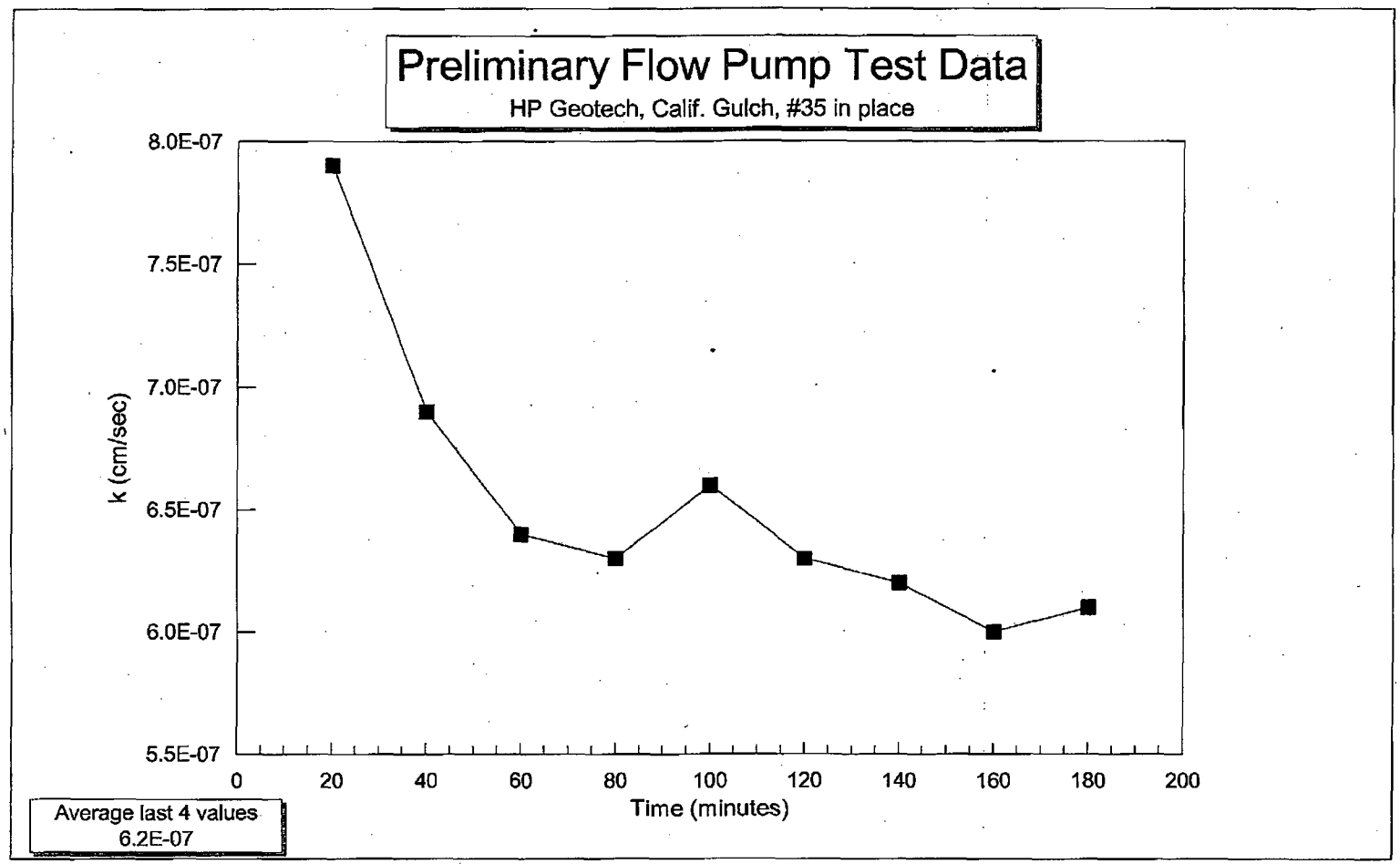
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.8	11.1				
50.0	48.0	10.6	11.8	38.6	48.0	9.4	0.94
60.0		12.3	12.6	48.7	58.2	9.5	0.95

NO CONSOLIDATION DATA

Initial Height (in)	3.064	Init. Vol. (CC)	146.31
Height Change (in)	0.026	Vol. Change (CC)	10.50
Ht. After Cons. (in)	3.038	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.913	Net Change (CC)	2.07
Area After Cons. (sq in)	2.897	Cons. Vol. (CC)	144.24

Data entry by: MLM Date: 10/17/2012
Checked by: ark Date: 10/17/12
FileName: HEP0CG35

ADVANCED TERRA TESTING, INC. ATT



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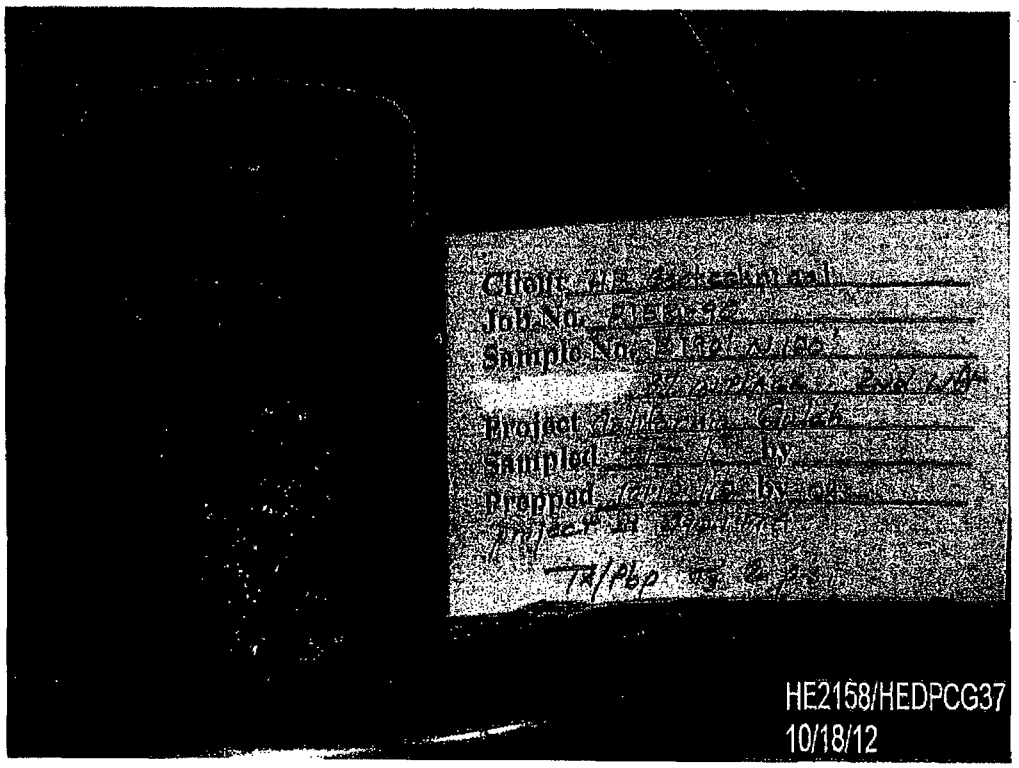
Date: 10/16/2012
Date Checked: 10/17/12


HE2158/HEDPCG37
10/18/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	E 190' N 120'	SAMPLED	
DEPTH	2nd lift	TEST STARTED	10/12/12 CAL
SAMPLE NO.	37 In Place	TEST FINISHED	10/17/12 CAL
SOIL DESCR.	#412147A	CELL NUMBER	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	313.6	318.7
Wt. Wet Soil & Pan (g)	320.3	325.4
Wt. Dry Soil & Pan (g)	279.8	279.8
Wt. Lost Moisture (g)	40.5	45.6
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	273.1	273.1
Moisture Content %	14.8	16.7
Wet Density PCF	132.8	130.7
Dry Density PCF	115.6	112.0

Init. Diameter (in)	1.929	(cm)	4.900
Init. Area (sq in)	2.922	(sq cm)	18.856
Init. Height (in)	3.079	(cm)	7.821
Vol. Bef. Consol. (cu ft)	0.00521		
Vol. After Consol. (cu ft)	0.00538		
Porosity %	29.97		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	3.062
Diameter	1.965
Pressure (psi)	1.458
Area after consol. (cm*cm)	19.575
Gradient	13.180
Permeability k (cm/s)	4.5E-07
Permeability k (m/s)	**4.5E-09**
Back Pressure (psi)	58.0
Cell Pressure (psi)	60.0
Ave. Effective Stress (psi)	1.271
Average temperature degree C:	22.5

NOTE: Filing required due to gravel.

Data entry by: DAW Date: 10/18/2012
Checked by: CH Date: 10/19/12
FileName: HEP0CG37

ADVANCED TERRA TESTING, Inc. ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotechnical	JOB NO.	2158-90
BORING NO.	E 190' N 120'	SAMPLED	
DEPTH	2nd lift	TEST STARTED	10/12/12 CAL
SAMPLE NO.	37 In Place	TEST FINISHED	10/17/12 CAL
SOIL DESCR.	#412147A	SETUP NO.	21S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.7	9.9				
50.0	48.0	9.1	10.0	38.4	47.7	9.3	0.93
60.0	58.0	10.0	10.8	48.6	58.0	9.4	0.94
70.0		10.8	10.9	58.5	68.2	9.7	0.97

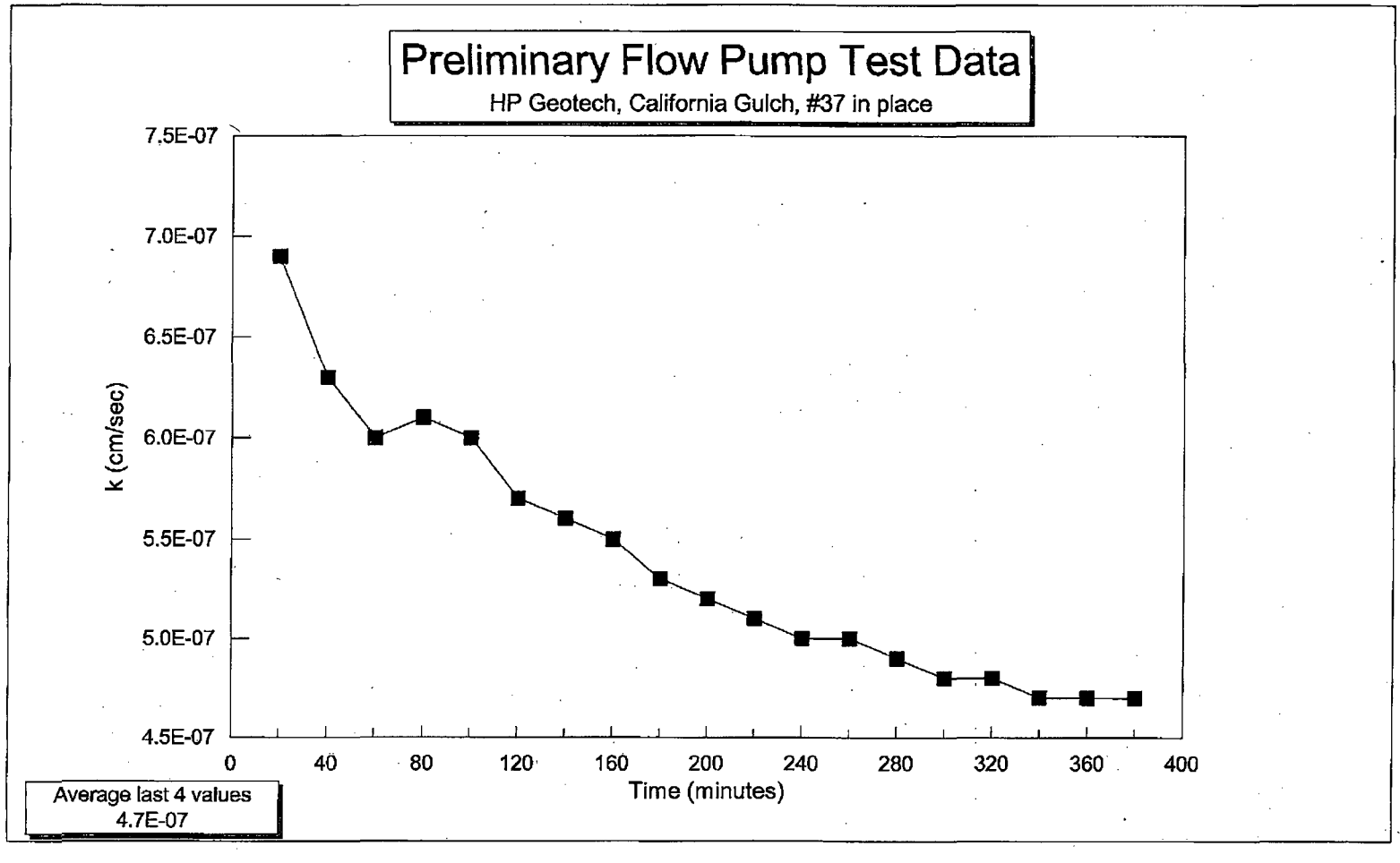
NO CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)

Initial Height (in)	3.079	Init. Vol. (CC)	147.48
Height Change (in)	0.017	Vol. Change (CC)	8.90
Ht. After Cons. (in)	3.062	Cell Exp. (CC)	13.69
Initial Area (sq in)	2.922	Net Change (CC)	-4.79
Area After Cons. (sq in)	3.034	Cons. Vol. (CC)	152.27

Data entry by: DAW Date: 10/18/2012
Checked by: CH Date: 10/19/12
FileName: HEP0CG37

ADVANCED TERRA TESTING, Inc. ATT



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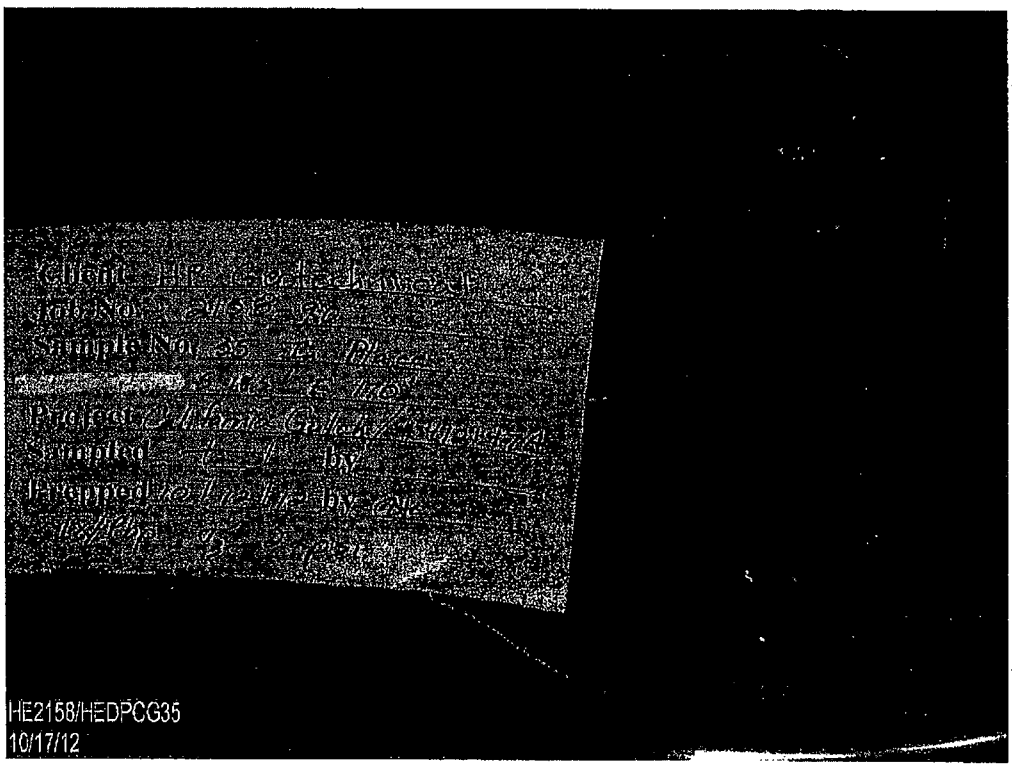
Date: 10/17/2012
Date Checked: 10/18/12


HE2158/HEDPCG35
10/17/12

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD
ASTM D 5084

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/19/12 CAL
SAMPLE NO.	#43 between 2 clays	TEST FINISHED	10/25/12 CAL
SOIL DESCR.	412147A	CELL NUMBER	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	300.3	308.5
Wt. Wet Soil & Pan (g)	307.0	315.2
Wt. Dry Soil & Pan (g)	270.4	270.4
Wt. Lost Moisture (g)	36.6	44.8
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	263.7	263.7
Moisture Content %	13.9	17.0
Wet Density PCF	131.8	136.5
Dry Density PCF	115.8	116.7

Init. Diameter (in)	1.928	(cm)	4.897
Init. Area (sq in)	2.919	(sq cm)	18.836
Init. Height (in)	2.972	(cm)	7.549
Vol. Bef. Consol. (cu ft)	0.00502		
Vol. After Consol. (cu ft)	0.00498		
Porosity %	31.75		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	9
Percentage of Pump setting	100
Q (cc/s)	2.28E-04
Height	2.964
Diameter	1.923
Pressure (psi)	0.695
Area after consol. (cm*cm)	18.744
Gradient	6.490
Permeability k (cm/s)	1.9E-06
Permeability k (m/s)	**1.9E-08**
Back Pressure (psi)	48.0
Cell Pressure (psi)	50.0
Ave. Effective Stress (psi)	1.653
Average temperature degree C:	22.3

Data entry by: DAW Date: 10/26/2012
Checked by: ctr Date: 10/26/12
FileName: HEP0CG43

ADVANCED TERRA TESTING, INC.
ATT

TRIAXAL COMPRESSION TEST DATA

CLIENT	HP Geotech	JOB NO.	2158-91
BORING NO.		SAMPLED	
DEPTH		TEST STARTED	10/19/12 CAL
SAMPLE NO.	#43 between 2 clays	TEST FINISHED	10/25/12 CAL
SOIL DESCR.	412147A	SETUP NO.	19S
LOCATION	California Gulch	SATURATED TEST	Yes
CONF. PRES. PSF	288	TEST TYPE	TX/Pbp/Tap Water

SATURATION DATA

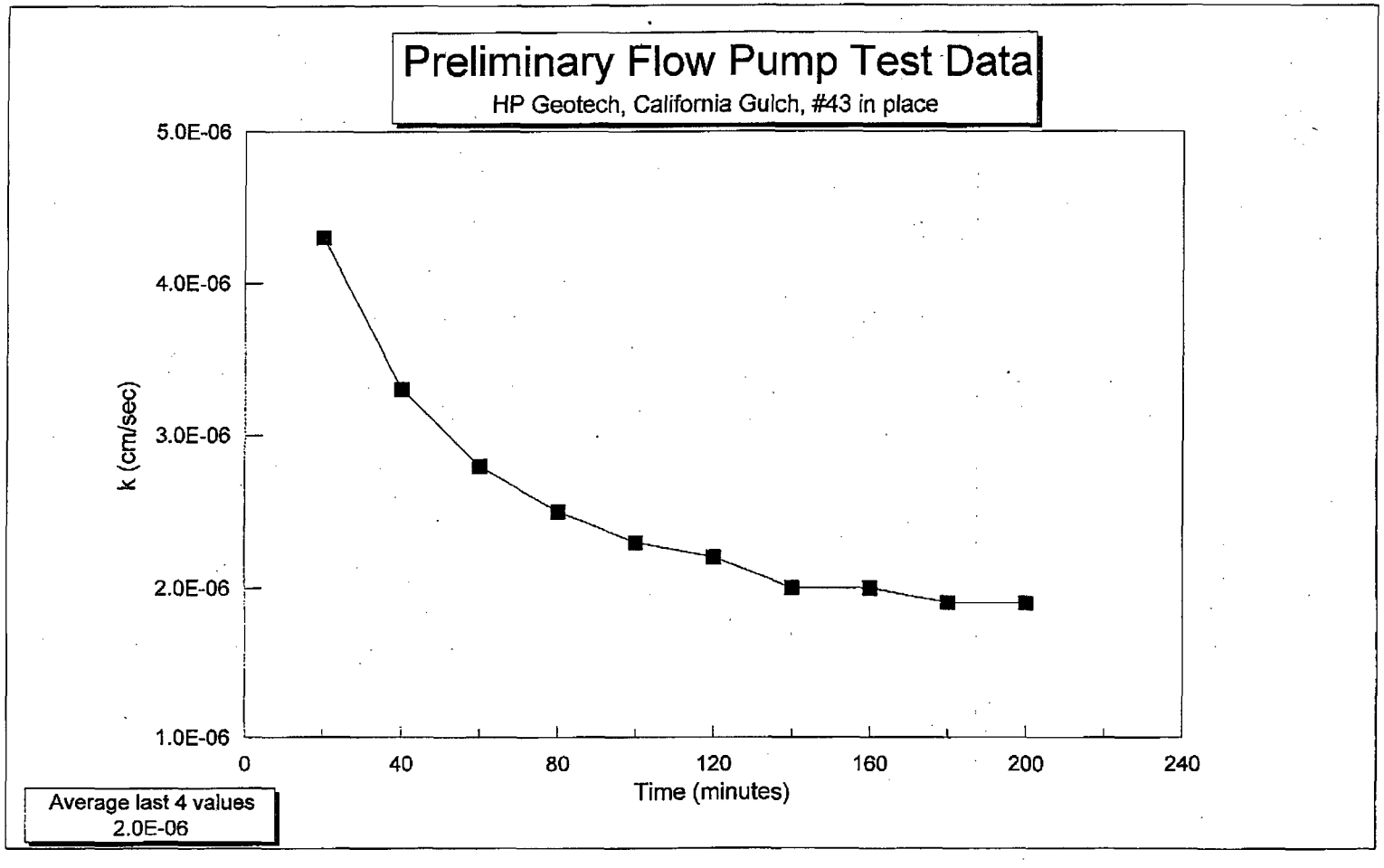
Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.9	9.5				
50.0	48.0	9.6	10.5	39.0	48.4	9.4	0.94
60.0		11.0	11.2	48.7	58.3	9.6	0.96

NO CONSOLIDATION DATA

Initial Height (in)	2.972	Init. Vol. (CC)	142.21
Height Change (in)	0.008	Vol. Change (CC)	9.50
Ht. After Cons. (in)	2.964	Cell Exp. (CC)	8.43
Initial Area (sq in)	2.919	Net Change (CC)	1.07
Area After Cons. (sq in)	2.905	Cons. Vol. (CC)	141.14

Data entry by: DAW Date: 10/26/2012
Checked by: Date: 10/26/12
FileName: HEP0CG43

ADVANCED TERRA TESTING, INC. ATT



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File Name: HEFPCG43

Date: 10/25/12
Date Checked: 10/26/12

HE2158/HEDPCG43
10/26/12

Appendix D

California Gulch Superfund Site
Contaminated Soil Repository
Operation and Maintenance Manual

Written by: Tony Gregorich

American Civil Constructors

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- Index 2
- Contractors, Subcontractors and Vendors 3-4
- Warranted Pipe 5-7
- Warranted Erosion Control 8-9
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- Inspection Procedures 11
- Warranties 12-15

1. American Civil Constructors
    a. Tony Gregorich
    b. Project Engineer
    c. Responsible for work completed by ACC
    d. ACC will provide a one year warranty on all work performed by ACC
    e. 4901 S. Windermere St. Littleton, CO 80120 303-944-6576
2. Hanes Geo Components
    a. Nick Robinette
    b. Inside Sales/Estimator
    c. Responsible for all the following materials: 14 gauge wire-backed SF-90 silt fence, steel T-Posts painted w/anchor, 100% coconut erosion control blanket w/bio-net, E-staple bio-degradable stakes, terratex no8 and orange diamond grade plastic safety fence.
    d. Hanes will provide an exclusive warranty that shall remain in effect for 60 days after the date of delivery
    e. 14200 E 35th Pl. Aurora, CO 80011 303-307-8111
3. Metro Fencing
    a. Scott Parks
    b. Project Manager
    c. Responsible for all of the work completed by Metro Fencing (Chain Link Fence)
    d. Metro Fencing will provide a one year warranty upon substantial completion
    e. 8335 Quebec Street Commerce City, CO 80022 303-469-1317
4. Grand Junction Piping
    a. Don Reinhard
    b. Utility Sales
    c. Responsible for the following items: ADS N-12 Perf Pipe 6", ADS N-12 WT Pipe 6" AASHTO M252, Duckbill Check Valve 6" TFT-2, ADS N-12 WYE 6" WT, ADS AdvanEDGE Coupling 18", ADS AdvanEDGE End Cap, ADS AdvanEDGE X N-12 ADPTR 18x6, CSP Galv 24" 16GA 2-2/3x1/2 and FES Type 1 w/STRP & BLT 24" 16GA.
    d. N/A
    e. 240 Airpark Drive Gypsum, CO 81637 970-524-4440
5. Ewing Irrigation
    a. Mark Creighton
    b. Project Manager
    c. Responsible for ADS AdvanEDGE 18" strip drain material.
    d. N/A
    e. 3441 E Harbour Drive Phoenix, AZ 85034 214-697-4846
6. Inter-Mountain Engineering
    a. Duane Fehringer
    b. Project Manager
    c. Responsible for all survey work during the job
    d. N/A
    e. P.O. Box 978 Avon, CO 81620 970-949-5072

7. Hepworth-Pawlak Geotechnical, Inc
    a. Chad Bringle
    b. Project Manager
    c. Responsible for all testing done during construction
    d. N/A
    e. 240 Annie Road P.O. Drawer 1887 Silverthorne, CO 80498 970-468-1989

Warranted Piping

1. Central Drain Pipes
2. ADS N-12 Perf pipe 6"
3. Installed in the middle of Cell 1 and 2 for the leachate collection system
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. End Drain Pipe
2. ADS N-12 WT Pipe 2" AASHTO M252
3. Installed at the end of the leachate collection system, where the pipe enters into the pond
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. Backflow Preventer
2. Duckbill Check Valve 6" TFT-2
3. Installed at the end of the end drain pipe, on the slope of the pond
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576

12. 1 Week from notice

1. Drain Pipe Connector
2. ADS N-12 WYE 6" WT
3. Installed from the 6" central drain pipes to connect to the lateral strip drains
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. Extender coupling for strip drain
2. ADS AdvanEDGE Coupling 18"
3. One installed in Cell #1 to extend one of the lateral strip drains
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. Strip Drain End Caps
2. ADS AdvanEDGE End Cap
3. Installed at all ends of the lateral strip drains
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A

11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. 6" to 18" Connector
2. ADS AdvanEDGE X N-12 ADPTR 18x6
3. Installed from the 6" connector pipe to the 18" strip drain
4. Mike Sims 720-272-0897
5. Don Reinhard 240 Airpark Drive Gypsum, CO 81637 970-524-4440
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Don Reinhard 970-524-4440 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. Lateral Strip Drain
2. ADS AdvanEDGE 18"
3. Installed in Cell 1 and 2 for all proposed lateral strip drain on the contract documents
4. Mike Sims 720-272-0897
5. Mark Creighton 214-697-4846
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Mark Creighton or Tony Gregorich 303-944-6576
12. 1 Week from notice

Warranted Erosion Control Items

1. Erosion Control Blanket
2. 100% Coconut Erosion Control Blanket w/Bio-Net 8'x112.5'
3. Installed on all greater than 2 to 1 slopes: along the bottom of the 2 inch minus pile and along the perimeter berm
4. Nick Robinette 303-307-8111
5. Nick Robinette 303-307-8111
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Nick Robinette 303-307-8111 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. 6" Staples
2. 6" E-Staples Bio-Degradable Stakes
3. Installed to hold down the erosion control blanket: along the bottom of the 2 inch minus pile and along the perimeter berm
4. Nick Robinette 303-307-8111
5. Nick Robinette 303-307-8111
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Nick Robinette 303-307-8111 or Tony Gregorich 303-944-6576
12. 1 Week from notice

1. Geotextile Fabric
2. TerraTex NO8 15'x300'
3. Installed 2 layers of fabric on both Cells, extended all the up the slopes and over 4 feet into the bottom of the anchor trench. Installed one layer of fabric in-between the clay layer and 2 inch minus located in the pond area. Installed one layer of fabric under all riprap channels in the LSG area.
4. Nick Robinette 303-307-8111
5. Nick Robinette 303-307-8111
6. 60 day warranty upon delivery and 1 year warranty for installed material
7. N/A

8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Nick Robinette 303-307-8111 or Tony Gregorich 303-944-6576
12. 1 Week from notice

Warranted Fence

1. All Fencing Products
2. 2 7/8" , 2 3/8" & 1 7/8" SS 40 posts set in concrete footings; 1 5/8" top, brace rails and bottom 7 ga tension wire; 2" x 72" x 9 ga chain link
3. The 6' chain link fence is installed by the road on top of the LSG area. The gate is installed in front of the access road to the Repository Area.
4. Scott Parks 303-469-1317
5. Scott Parks 303-469-1317
6. 1 year warranty on the chain link fence
7. N/A
8. 10/24/2012 – 10/24/2013
9. Additional costs would be required to extend the warranty period
10. N/A
11. Scott Parks 303-469-1317
12. 1 Week from notice

*All material warranties can be viewed at the end of this document.

Inspection Procedures

Seeding and erosion control inspections will be done during the peak vegetation growth period. ACC will provide an inspector that is qualified to do the inspection walk with the Engineers during this time. There will be two inspections throughout the one year warranty of the project. A six month inspection will be scheduled for the end of the month in April of 2013. A final inspection will be scheduled eleven months after completion of the project or during the month of September 2013. Each inspection will be agreed upon by the Engineer, Principal Representative and Contractor in writing ten days before the anticipated date. Prior to the inspections ACC will provide documentation of the qualified third party inspector to the Engineer for approval.

Seeding will be maintained as required in Section 02370, Paragraph 3.5 of the specifications for the California Gulch Superfund Site. It will be maintained for three full years as of October 24, 2012 to October 24, 2015. Seeding establishment will require one full growth year to show signs of growth media (around November 15, 2013).

Seeding Success/Failure Inspections will be conducted at the beginning of the germination stage and continue monthly during the establishment period. See Section 02370, Paragraph 3.5.2 for required criteria that has to meet during the seeding establishment time period. Maintenance during the seed establishment period will follow the Specification Section 02370, Paragraphs 3.5.3 a-d.

Material Warranties

1. Chain Link Fence
2. Erosion Control
3. Piping

Metro Fence Company INC.
Colorado Fence Association

8335 Quebec Street
Commerce City, CO 80022
(303) 469-1317
Fax (303) 469-1338

October 24, 2012

WARRANTY

RE: California Gulch Superfund site

We hereby warrant that the fencing which we have installed at **California Gulch Superfund site** has been done in strict accordance with the drawings and specifications and that the work installed will fulfill the requirements of those specifications. We agree to repair or replace or cause to be repaired or replaced any or all of work which may prove to be defective in workmanship or materials, together with any adjacent work which requires repair or replacement because of our defective work, within a period of twelve months starting from Date of Substantial Completion" .

The aforesaid Guarantee does exclude service, repair or replacement of material which is damaged due to severe weather, other acts of God, vandalism, abuse or misuse.

Signed: Scott Parks
Scott Parks Project Manager

Limited Warranty

BY PURCHASING OR UTILIZING THE HANES PRODUCT YOU HEREBY AGREE TO ACCEPT THE FOLLOWING TERMS AND CONDITIONS:

HANES warrants that at the time of delivery the Product (1) shall be free of any security interests, liens or similar encumbrances, (2) conform to the "Product Specifications" set out below and (3) be free from defects in materials or workmanship ("The EXCLUSIVE WARRANTY"). The EXCLUSIVE WARRANTY shall remain in effect for 60 days after the date of delivery.

THE EXCLUSIVE WARRANTY DOES NOT APPLY TO: (a) any Product that has been modified, altered, or repaired or improperly transported, stored, installed, used or maintained; (b) damage caused by use of any Product for purposes other than that for which it was designed; or (c) damage caused by unavoidable acts of nature or acts of persons, including, without limitation, vandalism.

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IN NO EVENT SHALL HANES BE LIABLE FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OR FOR ANY LABOR OR INSTALLATION COSTS, ENGINEERING, FREIGHT, DISPOSAL CHARGES, TAXES OR OTHER COSTS IN CONNECTION WITH CLAIMS ARISING OUT OF THIS CONTRACT OR THE SALE OR USE OF THE PRODUCT. THE FOREGOING SHALL NOT APPLY TO THE EXTENT PROHIBITED BY LAW.

There are no third-party beneficiaries to this EXCLUSIVE WARRANTY.

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1. PRICES: All prices for Advanced Drainage Systems, Inc. ("Seller") products are subject to change or withdrawal without notice. Unless otherwise stated by Seller, prices, terms of payment and pricing policies will be those set forth in Seller's published price list or Seller's pricing policies in effect at the time of shipment.

2. CREDIT APPROVAL: All sales and shipments are subject at all times to credit approval by Seller.

3. TAXES: Any taxes which seller may be required to pay or collect upon the sale, delivery, storage, processing, use or consumption of any of the products covered hereby shall be for the account of Buyer who shall promptly pay the amount thereof to Seller upon demand.

4. TRANSPORTATION AND RISK OF LOSS: Unless otherwise specified on the reverse hereof, delivery of products hereunder shall be f.o.b. point of shipment.

5. PATENTS: If suit is brought against Buyer alleging that the manufacture or sale of any article sold hereunder infringes any U.S. Patent, Seller shall defend Buyer and pay any awards against Buyer for such infringement, provided Buyer gives Seller prompt written notice and permits Seller to defend.

6. PERMISSIBLE VARIATIONS: Variations in the products as to components, dimensions quantity and the like shall be permissible and not cause for Buyer's rejection or revocation if within applicable ASTM and/or SCS product specifications in effect at the time of manufacture.

7. INSPECTION AND REJECTIONS: Any claim by Buyer based upon any claimed defect in the products ascertainable upon visual inspection thereof, including without limitation any claim relating to size, type, quantity, shipping or animal damage and the like must be presented to Seller or its representative within 15 days following date of receipt of the product by Buyer. Buyer's receipt of any product delivered hereunder shall be an unqualified acceptance, and a waiver by Buyer, of any and all such claims with respect to such product unless Buyer gives Seller notice of claim within 15 days after such receipt. SUCH CLAIMS MUST BE MADE WITHIN SAID TIME AND ARE NOT WITHIN THOSE ITEMS COVERED AND GUARANTEED BY THE GUARANTEE POLICY WHICH IS SET FORTH IN THE IMMEDIATELY FOLLOWING PARAGRAPH. No claim of any kind, except as to claims against those qualities specifically guaranteed in the following paragraph, whether as to products delivered or for nondelivery of products, and whether or not based on negligence, or tort, shall be greater in amounts than the purchase price of the products in respect to which such claim is made.

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11. Buyer shall pay reasonable attorney collection fees as permitted by state law where any action to collect is brought.

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13. ADDITIONAL OR INCONSISTENT TERMS: ANY ADDITIONAL OR INCONSISTENT TERMS OR CONDITIONS ON BUYER'S PRINTED FORMS SHALL NOT APPLY. ACCEPTANCE OF ANY GOODS SHIPPED WILL CONFIRM BUYER'S ASSENT TO THESE TERMS AND CONDITIONS WITHOUT MODIFICATION.

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