

GEOTECHNICAL ENGINEERING REPORT PROPOSED MONARCH MEADOWS RESIDENTIAL DEVELOPMENT 13400 SOUTH 4800 WEST HERRIMAN, UTAH

Prepared For

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Prepared By

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PSI PROJECT 710-25083

August 9, 2002



August 9, 2002

Mr. Doug Young Herriman Land, L.L.C. 3727 South State Street Salt Lake City, Utah 84115

Report of Geotechnical Exploration for Proposed Monarch Meadows Residential Development 13400 South 4800 West Herriman, Utah PSI Project No. 710-25083

Dear Mr. Young:

We are pleased to submit this report of our geotechnical engineering study for the proposed Monarch Meadows Residential Development to be constructed at approximately 13400 South 4800 West, Herriman, Utah. Details of our findings and recommendations along with the supporting field data are presented in the attached report.

A total of forty-two (42) test pits were excavated within the development area. The test pits revealed that subsurface conditions generally consists of up to 18 inches of silty topsoil underlain by stiff silt (ML) and/or clay (CL), medium dense to dense silty sand (SM), and silty gravel (GM). Collapsible soil was encountered throughout the site and extended to the depth explored in several of the test pits. Groundwater was not encountered during the field investigation.

Based upon our field and laboratory tests, the site appears to be generally suitable for the proposed development provided the recommendations of this report are properly followed. The proposed structures may be supported on conventional spread footings. For residences without basements, we recommend that collapsible soils be removed a minimum of 2 feet below foundations and be replaced with structural fill. Floor slabs may also be supported on 12 inches of properly placed and compacted structural fill below the collapsible soil. If basements are to be excavated, spread footings and floor slabs may be placed on the native soil. Footings may be designed using an allowable bearing capacity of up to 1,500 psf. Prior to placement of footings, we recommend

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inspection of footing subgrades on a lot by lot basis to ensure the removal of collapsible soil to a depth of at least 2 feet below founding bearing elevation. Additional details are provided in the attached report.

It has been a pleasure to serve you on this project. Please call us if you have any questions or need additional information.

Very truly yours,

PROFESSIONAL SERVICE INDUSTRIES, INC.

JASON D. CROSBY, P.E.

Manager, Geotechnical Services

BRIAN GARRETT, E.I.T.

Project Engineer

Reviewed By:

JAMES NIEHOFF, P.E.

Chief Engineer

JDC/JN/BG/ckh

Submitted in three copies.

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INTRODUCTION

Authorization and Purpose

This report presents the findings of a geotechnical study for the proposed Creek View Meadows Residential Development at approximately 13400 South 4800 West, Herriman, Utah. The services for this project were performed in general accordance with our proposal No. 710-25053 dated May 13, 2002 as authorized by Mr. Doug Young, Herriman Land, L.L.C.

The purpose of this exploration was to generally characterize subsurface conditions at the site and to provide recommendations regarding site development and parameters for foundation and floor slab design for the proposed construction.

Project Information

Based upon our discussions and upon provided plans, we understand that the proposed development will consist of overlot grading and construction of streets and utilities for a 200-acre subdivision for one to two story single family residences. It is anticipated that the proposed homes will be of typical wood frame construction possibly underlain by a full basement. This report was prepared with the anticipation that the maximum column loads (if any) will be about 50 kips and the maximum wall loads will range from 2 to 4 kips per linear foot

The geotechnical recommendations presented in this report are based on the available project information, building location, and the subsurface materials described in this document. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The proposed development is located at approximately 13400 South 4800 West, Herriman, Utah. The proposed site consists of about 200 acres of open farmland, and is currently covered with planted wheat. The site is neighbored by residential developments on the south and west, 4800 West Street on the east, and 13400 South Street on the north. The general site topography is rolling with a variable downward slope to the north/northeast.

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Regional Geology

Based on published maps, no known faults exist on the property or within the immediate vicinity. The nearest known fault of concern is the Wasatch Fault located about 12 miles to the east. We recommend that earthquake related design parameters be obtained from the International Building Code (IBC) 2000 Edition, using a Site Class Definition = D, and spectral accelerations $S_s = 1.15g$ and $S_L = 0.42g$ for a 2% probability of exceedence in 50 years. No other special seismic considerations are recommended for this site.

Site Analysis

Field Investigation

Subsurface conditions at the project site were evaluated by excavating a total of forty-two test pits (TP-1 through TP-42). The test pits were excavated throughout the proposed development and were located on the site by the owner prior to our arrival. The approximate locations of these pits are shown on Figure A-2, *Site Plan and Approximate Locations of Test Pits* presented in the Appendix. The test pits were excavated using a track hoe to a depth ranging from 10 to 14 feet below the existing ground surface.

Laboratory Testing

The soil samples collected were visually classified in accordance with the Unified Soil Classification System (USCS) in the field, placed in air-tight containers, and transported to our soil laboratory in Salt Lake City, Utah. Representative soil samples were tested to assess applicable properties of the soils, and included Atterberg Limits, mechanical sieve analysis, and collapse/swell analysis. The results of the analyses are presented in Figures A-46 to A-50 in the Appendix of this report.

Subsurface Conditions

Soil Profile

The test pits revealed that subsurface conditions generally consists of up to 18 inches of silty topsoil underlain by stiff silt (ML) and/or clay (CL), medium dense to dense silty sand (SM), and dense silty gravel (GM) extending to the maximum depth explored. For a detailed description of the conditions encountered at each test pit location, please refer to the Test Pit Logs, Figures A-3 through A-44 in Appendix A. Figure A-45 is the key to symbols and abbreviations used on the Test Pit Logs.

The above subsurface description is of a generalized nature, provided to highlight the major subsurface stratification features and material characteristics. The Test Pit Logs included in the Appendix should be reviewed for specific information as to individual test pit locations. The stratification shown on the Test Pit Logs represent the conditions only at the actual test pit locations. Variations may occur and should be expected

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between test pit locations. The stratification represents the approximate boundary between subsurface materials and the transition may be gradual. The samples that were not altered by laboratory testing will be retained for 30 days from the date of this report and then will be discarded.

Collapsible Soils

Collapsible soils occur naturally and are associated with relatively dry alluvial fans, colluvium and wind-blown deposits. These soils are typically comprised of silts and sands with a small amount of clay. Collapsible soils are characterized by low density, porous structures, high shear strength when dry, and susceptibility to large settlement when wetted.

Collapsible soil was encountered at many locations within the proposed Monarch Meadows Residential Development site. The depth of collapsible soil varied throughout the site and extended to the depth explored in several of the test pits.

Groundwater Measurements

Groundwater was not encountered during the field investigation. It should be noted that it is possible for the groundwater table to fluctuate during the year depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials. The groundwater levels presented in this report are the levels that were measured at the time of our field activities. We recommend that the building contractors evaluate the groundwater levels at the site at the time of the construction activities.

EVALUATION AND RECOMMENDATIONS

Geotechnical Discussion

The following geotechnical related recommendations have been developed on the basis of the subsurface conditions encountered and our understanding of the proposed development. Should changes in the project criteria occur, a review must be made by PSI to determine if modifications to our recommendations will be required.

Due to the presence of collapsible soils, we recommend that footings and slabs ongrade should bear on a minimum of 2 feet of new, properly compacted fill. The on-site soils may be used as structural fill. If basements are to be excavated, spread footings may be placed directly on native material. Footing bearing capacities and additional geotechnical details are provided in the following paragraphs.

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Site Preparation Recommendations

General Site Grading

Topsoil, man-placed fill or soft soils in the construction areas should be stripped from the site and either wasted or stockpiled for later use in landscaping. The building and roadway areas should be excavated to a depth of at least 2 feet below final grades. After stripping and excavating to the depth noted above, the building and road areas should be proof-rolled to a smooth, non-yielding surface with rubber tire equipment or a smooth-drum compactor. Soils that are observed to rut or deflect excessively under the moving load should be excavated and replaced with properly compacted structural fill. The proof-rolling and excavation activities should be witnessed by a representative of the geotechnical engineer and should be performed during a period of dry weather. If the subgrade is too soft/wet to proof-roll, we recommend that a stabilization fill be placed prior to placement of structural fill.

Stabilization Fill

Areas of extremely soft subgrade may require stabilization prior to structural fill placement. Additional lifts of stabilization fill may be required in areas of particularly poor subgrade. The stabilization fill can be counted as part of the required structural fill section below the footings. Exposed native subgrades not requiring stabilization should be proof-rolled with a heavy truck or similar equipment to check for soft spots. Soft spots detected should be removed and replaced with either stabilization fill as defined above or structural fill as defined below.

Structural Fill

Structural fill should consist of a well graded sand or gravel material which is free of organic or other deleterious materials, have a maximum particle size less than 4 inches, retain less than 30 percent on the ¾ inch sieve, and contain less than 25 percent fines (materials passing the No. 200 sieve). The liquid limit of the fines should not exceed 35 percent and the plasticity index should be less than 25. Structural fill should be placed in maximum lifts of 8 inches of loose material and compacted on a horizontal plane. Moisture should be maintained at moisture content within 2 percent of the optimum moisture determined by ASTM D 1557. Structural fill should be compacted to at least 95 percent of modified proctor maximum dry density (ASTM D 1557) in structurally loaded areas. Fills placed in landscape areas not supporting structural loads should be compacted to at least 90 percent of the modified proctor maximum dry density. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted-engineered fill should be tested by a representative of the geotechnical engineer prior to placement of subsequent lifts.

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Utility Trenches

Utility trenches may be backfilled with imported structural fill or the on-site soils. Backfill soils used in areas not structurally loaded should be placed in maximum 10-inch lifts and compacted to 90 percent of the modified Proctor (ASTM D 1557). The upper 2 feet of trench backfill within pavement sections or beneath footings should be compacted to 95 percent of the maximum density.

If unstable soils are encountered at invert elevations, it may be necessary to excavate an additional depth and replace the unstable soils with structural/stabilization fill. The depth of over-excavation, if necessary, should be determined by field observation.

Excavations

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor should evaluate the soil exposed in the excavations as part of the his/her safety procedures. In no case should slope height, slope inclination, or excavation depth including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

For temporary excavations not exceeding 4 feet in height, we recommend a maximum slope of 1 to 1 (H:V). For excavations up to 10 feet in height, we recommend slopes be limited to 1.5:1. If unstable soils or groundwater conditions are encountered during excavation, bracing, benching, shoring or flatter slopes may be necessary.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's (or other parties) compliance with local, state, and federal safety or other regulations.

Foundations

Provided that the sites are properly prepared as noted above and below, homes may be supported by spread footing foundations. For residences without basements, we recommend that collapsible soils be removed a minimum of 2 feet below foundations and be replaced with structural fill. If basements are to be excavated, spread footings may be placed directly on native soil. Footings constructed in this manner should be designed using an allowable bearing capacity of up to 1,500 psf. The following design parameters are recommended for footing construction:

- Footings should bear at a minimum depth of 30 inches below final grade for frost protection. For non-frost areas, such as interior footings, a minimum embedment depth of 18 inches is recommended.
- Foundations should have minimum widths of 18 inches for continuous wall footings and 24 inches for isolated column footings.

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- Structural fill should extend a minimum of ½ the depth of fill laterally away from the edge of the footing.
- The allowable bearing pressures presented above may be increased up to 33 percent for transient loading for such as wind and seismic load combinations.
- We recommend that the footings, foundations and below grade walls be designed in accordance with the IBC, 2000 edition.

Footings should not be installed on loose or disturbed soil or within ponded water. If unsuitable soils are encountered near the footing subgrade, they should be removed and replaced with properly compacted structural fill.

Estimated Settlement

If footings are design according to the recommendations described above, total estimated settlement under static conditions should not exceed one inch. Differential settlement is expected to approach 50 to 75 percent of the total settlement. Most of this settlement should occur during the construction phase.

Floor Slabs

Due to the collapsible characteristics of the on-site soils, concrete slab on grade floors should be supported on at least 24 inches of properly placed and compacted structural fill provided a minimum of 4 inches of free-draining gravel is placed immediately below the slabs and/or exterior flatwork. The free-draining gravel will enhance drainage.

The soil subgrade in the area of concrete slab-on-grade support is often disturbed during foundation and superstructure construction. We recommend that floor slab subgrades be evaluated by a representative of PSI immediately prior to beginning floor slab construction. If disturbed subgrade soils are present which cannot be adequately densified in place, such soils should be removed and replaced with additional structural/stabilization fill.

Surface Drainage Considerations

It is absolutely critical at this site that adequate surface drainage be maintained during and after construction. Water should not be allowed to collect near the foundations or floor slab areas of the building or in pavement areas. Undercut or excavated areas should be sloped towards one corner to facilitate removal of collected rainwater, groundwater seepage, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the buildings and beneath floor slabs. Grades should be sloped away from the building, and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill of the buildings.

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Lateral Resistance and Earth Pressure

Resistance to lateral loads on foundations may be achieved by frictional resistance between foundations and the load bearing soils, and by passive earth pressure from soils placed adjacent to the foundations. Retaining walls and below grade walls should be designed to resist pressures induced by the backfill soils. Basement walls or stem walls restrained at the top can be designed for "at rest" earth pressure conditions. Retaining walls that are free to deflect can be designed for "active" earth pressure conditions. The "passive" earth pressure state should be used for soils supporting retaining structures, such as toe backfill. Lateral earth pressures applied to walls may be computed by multiplying the vertical depth of the backfill by the appropriate equivalent fluid density. The table below presents recommended values of earth pressure coefficients using imported granular fill for the backfill materials, assuming an approximate angle of internal friction of 32 degrees, and the respective equivalent fluid densities, based on a total unit weight of 115 pcf.

Earth Pressure State	Earth Pressure Coefficient	Equivalent Fluid Density
At-Rest	0.47	54 pcf
Active	0.31	36 pcf
Passive	3.25	374 pcf

PSI recommends that only ½ the passive pressure be used in design due to the large movement required to mobilize this resistance. The design values and recommendations presented above assume that the backfill behind the walls will be horizontal with no surcharge loads and that a permanent drainage system will be installed behind the walls to prevent the development of hydrostatic pressures. Also, relatively free draining sands or crushed stone materials should be used as backfill behind retaining walls in place of the native clays.

For analysis of sliding resistance of the base of the retaining walls, the ultimate coefficient of friction may be taken as 0.4 between concrete and soil.

Pavement Recommendations

PSI understands that a flexible pavement is desired in the road areas for the development. We have prepared a pavement design section assuming anticipated soil characteristics and light traffic loads. For design purposes, we have assumed the subgrade to consist of the firm and unyielding, proof-rolled, non-organic native soils and/or structural/stabilization fill. We have further assumed a minimum subgrade California Bearing Ratio (CBR) value of 7. For the traffic loads, we anticipate 500 cars and 2 heavy trucks per day. Based on these assumptions, we recommend a minimum pavement section of 3 inches of bituminous concrete over 6 inches of aggregate base. The subgrade should also be scarified to a depth of 12 inches and recompacted to at least 95 percent of the maximum modified proctor dry density (ASTM D 1557). These design recommendations were based on AASHTO design procedures and the following assumptions:

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- Pavement to be placed only after the subgrade has been properly prepared,
- Construction materials such as bituminous concrete and aggregate base will meet project specifications requirements,
- Aggregate base and granular fill will be compacted to at least 95 percent of the maximum modified proctor dry density (ASTM D 1557) and bituminous concrete will be compacted to at least 95 percent of the Marshal mix design density.

Subgrades should be properly prepared as recommended above for asphalt pavements. Construction of concrete flatwork should be in accordance with Portland Cement Association (PCA) guidelines. Consideration should be given to constructing exterior concrete slabs over a minimum of 4 inches of an aggregate pad/structural fill leveling coarse.

ADDITIONAL INSPECTION RECOMMENDED

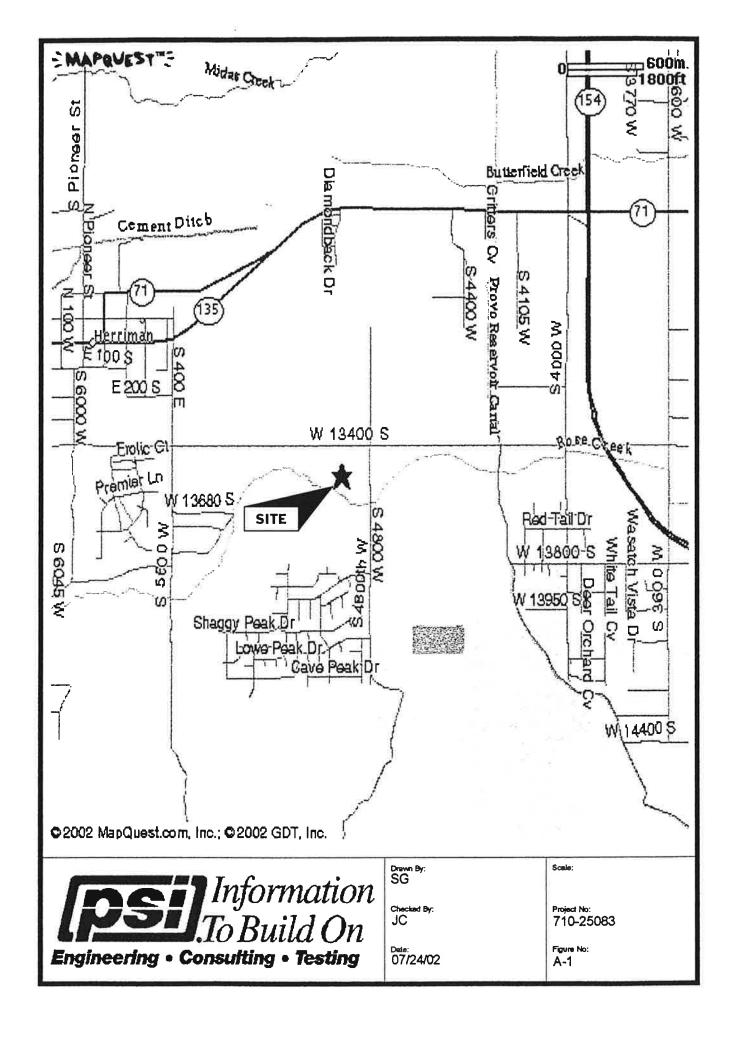
Due to the variable soil conditions and the potential for collapsible soil to be encountered, we recommend additional inspection to be performed on a lot by lot basis prior to placement of footings.

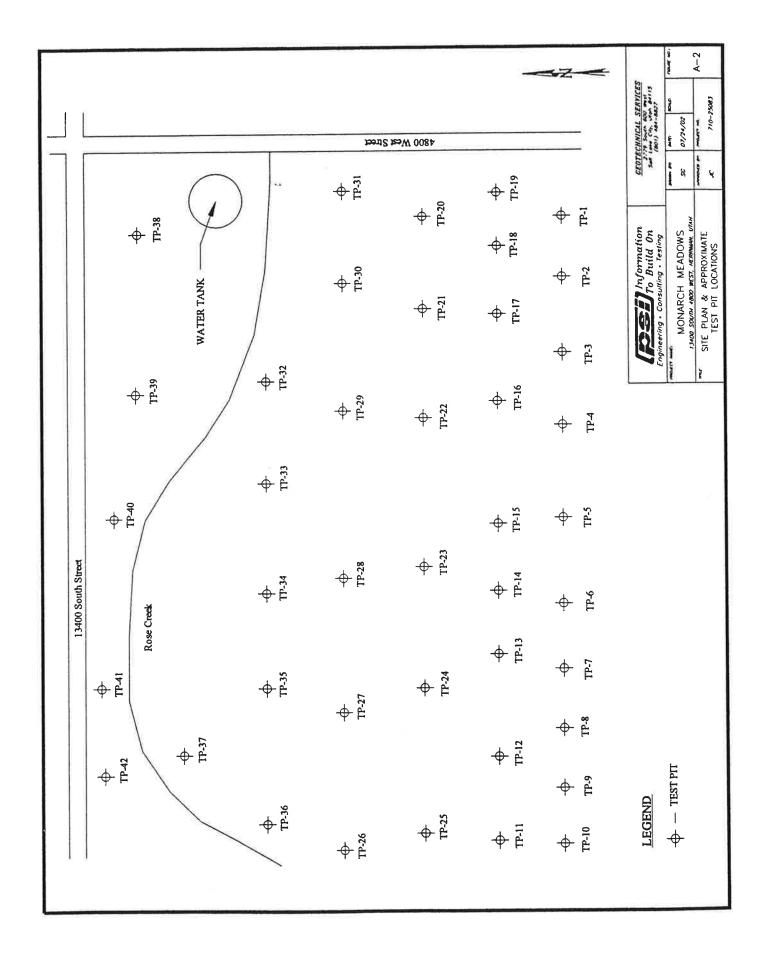
REPORT LIMITATIONS

The recommendations submitted are based on the available subsurface information obtained by PSI, and information provided by Herriman Land, L.L.C. and their design consultants. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation, or other recommendations are required. If PSI is not retained to perform these functions, PSI can not be responsible for the impact of those conditions on the performance of the project.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

APPENDIX





2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442 Fax: (801) 954-8485

LOG OF TEST HOLE: TP-1

Sheet 1 of 1

WATER LEVELS Drilling Method: PSI Job No.: 710-25083 Sampling Method: N/A ft Monarch Meadows Project: Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA** JSCS Classification Elevation, (feet) N in blows/ft @ Sample Type Graphic Log Recovery (%) Depth, (feet) X Sample No. ☑ PL X Moisture NOTES Moisture, LL MATERIAL DESCRIPTION STRENGTH, buf Qρ Surface Elev.: ft SILT, loose to medium stiff, dry, light brown, pinholes. ML 1 GRAVEL, silty, very dense, dry, light brown to GM SILT, with sand, loose to medium stiff, dry, light brown, pinholes. ML GRAVEL, silty, medium dense, dry, light brown GM SAND, silty, with gravel layers, medium dense, dry to moist, light brown, some pinholes. 2 SM 10 EOTP @ 13 feet. Groundwater was not encountered. Remarks: Completion Depth: 13.0 ft Sample Types: Date Boring Started: 7/15/02 **Auger Cutting** Shelby Tube Date Boring Completed: 7/15/02 Grab Sample Split-Spoon S.Greenberg Logged By: Mod. California Figure A-3 **Rock Core Drilling Contractor:**



PSI Job				683			- 1	Drilling Method:					1			LEVELS	
Project					adow			Sampling Method:					- 1	⊉ Whi			N/A ft
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Logged Drilling	By:				S.Gr	eenberg	Split-		irab Sa Iod. Ca							Figure A	\-4



Sheet 1 of 1

WATER LEVELS Dritting Method: 710-25083 PSI Job No .: Sampling Method: ✓ While excavating N/A ft Monarch Meadows Project: Hammer Type: 13400 South and 4800 West After excavating N/A ft Location: Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA** USCS Classification N in blows/ft Elevation, (feet) Depth, (feet) Sample Type Recovery (%) * Graphic Log Sample No. PL X Moisture NOTES Moisture, ш MATERIAL DESCRIPTION STRENGTH, buf * Qp Surface Elev.: ft SILT, loose to medium stiff, dry, light brown, pinholes. ML 1 GRAVEL, silty, with sand, dense, dry, gray. GM SAND, silty, medium dense, dry to moist, brown to light brown, pinholes. SM 2 GRAVEL, silty, with cobbles, dense, dry, light brown to gray. GM EOTP @ 13 feet. Groundwater was not encountered. Remarks: Sample Types: 13.0 ft Completion Depth: 7/15/02 Date Boring Started: Shelby Tube Auger Cutting Date Boring Completed: 7/15/02 Grab Sample Split-Spoon S.Greenberg Logged By: Mod. California Figure A-5 **Rock Core Drilling Contractor:**



Sheet 1 of 1 WATER LEVELS Drilling Method: 710-25083 PSI Job No.: Sampling Method: ☑ While excavating **Project**: Monarch Meadows N/A ft Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION Blows per 6-Inch **TEST DATA** JSCS Classification Elevation, (feet) N in blows/ft @ Sample Type Recovery (%) Depth, (feet) Graphic Log * Sample No. PL X Moisture Moisture, **NOTES** LL MATERIAL DESCRIPTION SPT STRENGTH, tal Qρ Surface Elev.: ft SILT, loose to medium stiff, dry, light brown, pinholes. ML SAND, silty, medium dense, dry to moist, light brown to gray, pinholes. SM GRAVEL, sitty, with cobbles and boulders, dense, dry, gray. GM EOTP @ 10 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/15/02 Auger Cutting Shelby Tube Date Boring Completed: 7/15/02

Split-Spoon

Rock Core

Logged By:

Drilling Contractor:

S.Greenberg

Grab Sample

Mod. California

Figure A-6



Sheet 1 of 1

WATER LEVELS Drilling Method: 710-25083 PSI Job No.: Sampling Method: ☑ While excavating Monarch Meadows N/A ft Project: Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA** USCS Cleasification Elevation, (feet) N in blows/ft Sample Type Recovery (%) Graphic Log Sample No. Depth, (feet) X Moisture **NOTES** LL MATERIAL DESCRIPTION STRENGTH, tef Qp * Surface Elev.: ft SILT, soft, dry, light brown. ML GRAVEL, silty, with sand, cobbles, and boulders, dense, dry, gray. GM EOTP @ 10 feet. Groundwater was not encountered. Sample Types: Remarks: Completion Depth: 10.0 ft Date Boring Started: 7/15/02 Shelby Tube Auger Cutting 7/15/02 Date Boring Completed: Grab Sample Split-Spoon S.Greenberg Logged By: Mod. California Rock Core Figure A-7 **Drilling Contractor:**



PSI Job No.: 710-25083 Project: Monarch Meadows							Drilling Method:								LEVELS	
Project							Sampling Method: Hammer Type:						Ź Mµ			N/A ft
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13400 South and 4800 West

710-25083

Monarch Meadows

Herriman, Utah

PSI Job No .:

Project:

Location:

LOG OF TEST HOLE: TP-7

Sheet 1 of 1

WATER LEVELS

While excavating N/A ft

After excavating N/A ft

Longitude:													¥ 24 l	nours lat	er N/Aft
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	- 5					SILT, with cobbles, brown. GRAVEL, silty, with dense, dry, gray. EOTP @ 10 feet. Groundwater was r	, medium stiff, dry, light	GM			Ο		.0	QU 40	
Date Bo Date Bo Logged	ate Boring Started: ate Boring Completed: ogged By:				10.0 f 7/15/0 7/15/0 S.Gre)2	Sample Types: Auger Cutting Split-Spoon Rock Core	Shelby Tu Grab Sar Mod. Cali	nple	Rema	rks:			•	Figure A-9

Drilling Method: Sampling Method:

Hammer Type:

Latitude:



Sheet 1 of 1 WATER LEVELS Drilling Method: PSI Job No.: 710-25083 Sampling Method: ☑ While excavating Monarch Meadows N/A R Project: Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Latitude: Herriman, Utah Longitude: 24 hours later N/A ft STANDARD PENETRATION Blows per 6-inch **TEST DATA** USCS Classification Elevation, (feet) N in blows/ft @ Sample Type Recovery (%) Graphic Log Depth, (feet) Sample No. * PL Moisture, X Moisture **NOTES** MATERIAL DESCRIPTION SPT STRENGTH, buf Qр ж Surface Elev.: ft SILT, with cobbles, medium stiff, dry, light brown. ML GRAVEL, sitty, with sand and cobbles, dense, dry, gray. GM EOTP @ 10 feet. Groundwater was not encountered. Sample Types: Completion Depth: 10.0 ft

Date Boring Started:

Date Boring Completed:

Logged By: **Drilling Contractor:** 7/15/02

7/15/02

S.Greenberg

Auger Cutting Split-Spoon **Rock Core**

Shelby Tube Grab Sample Mod. California Remarks:

Figure A-10



PSI Job No.: 710-25083 Project: Monarch Meadows							Drilling Meth							٧	VATE	R LEV	'ELS		
Project								Sampling Me							¥ wh	ile exca	vating	N/A	ft
Locatio	ก:					4800 West		Hammer Tyr	pe:							er excav		N/A	
		He	HILL	nan, U	Itah			Latitude:							l i	hours la			
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)		RIAL DESC	Longitude:		USCS Classification	SPT Blows per 6-inch	Moisture, %		N in bk Moisture	PENETR DATA DATA DATA DATA DATA DATA DATA DA	PL LL 50	N	N/A OTES	π
	0	Ш	Н			Surface Elev.: ft SILT, soft to media		light brown				-	0	_	20 (Qu 40			-
	- 5 -			2		SAND, silty, loose moist, light brown.	to medium d	ense, dry to		ML									
1																			
Complet	ion De	epth:			13.0 ft	1	Sample Ty	nes'				Rem	arke.						
Date Bo					7/15/0	1	10000					1,6111	airo,						
					7/1 5/ 0		Auger C			elby To									
	te Boring Completed:					enberg	Split-Sp			ab Sar									
	ogged By: rilling Contractor:					5.,201g	Rock Co		Mo	d. Cal	ifornia						Figur	e A-11	

2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442

Drilling Contractor:

LOG OF TEST HOLE: TP-10

Figure A-12

Fax: (801) 954-8485 Sheet 1 of 1 WATER LEVELS 710-25083 Drilling Method: PSI Job No .: Sampling Method: Project: Monarch Meadows N/A ft Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-inch TEST DATA **USCS Classification** Elevation, (feet) N in blows/ft • Sample Type Depth, (feet) Graphic Log Recovery (%) Sample No. X Moisture Moisture, **NOTES** ш MATERIAL DESCRIPTION STRENGTH, buf Qp Surface Elev.: ft GRAVEL, silty, dense, dry, gray. GM SAND, silty, loose to medium dense, dry to moist, light brown to gray. SM SILT, with organic material, moist, light brown to gray, pinholes. 2 ML EOTP @ 13 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/15/02 Auger Cutting Shelby Tube Date Boring Completed: 7/15/02 Split-Spoon Grab Sample Logged By: S.Greenberg Rock Core Mod. California

2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442 Fax: (801) 954-8485

LOG OF TEST HOLE: TP-11

PSI Job No.: 710-25083 Project: Monarch Meadows							Drilling Method						l			LEVELS	<u> </u>	
Project					adow	5	1	Sampling Meth							∑ Whil	e excav	ating	N/A ft
Location						4800 West		Hammer Type:	:					- 1	Y Afte			N/A ft
		He	rrim	an, U	tah			Latitude:							¥ 24 h		_	N/A ft
								Longitude:									31 	T AVI
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIA	AL DESC	RIPTION	USCS Classification		SPT Blows per 6-inch	Moisture, %	× M	TEST N in blo loisture	i L		NOTE	:S
₩	-	_	"		12				5	1	JP.			SIREN	3TH, bef ₩	00		- 1
	22					Surface Elev.: ft							0			2U 40		
	0	Ш	\Box			SILT, loose to mediu	m stiff, dry	, fight brown,				1						ı
						pinholes.			MI									
						SAND, silty, medium gray.	dense, dry	y, light brown to	SM	1								
	- 5 -			1		SILT, stiff, dry to mo	ist brown t	to light brown, ir	on									
oxide stains, pinholes.							S.											
				2					М	-								
	- 10 -																	
		000	w I			GRAVEL, sandy, de	nse, dry, re	eddish brown.	G	•								
						Groundwater was no	ot encounte	ered.										
Comple	etion D	epth:		-	13.0	t I	Sample T	ypes:				Rem	arks:	J			-	
Date B					7/15/		-		Shelb	/ Tub.								
Date B				d:	7/15/			Cutting	Grab									
Logged		-			S.Gr	eenberg	Split-S										Figure :	1-12
Drilling		actor:					Rock (√оге	Mod.	Janto	7118	_					Figure /	7-10



Sheet 1 of 1

WATER LEVELS **Drilling Method:** PSI Job No.: 710-25083 Sampling Method: Project: Monarch Meadows ▼ While excavating N/A ft Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION Blows per 6-Inch **TEST DATA** USCS Classification Elevation, (feet) N in blows/it @ Sample Type Depth, (feet) Recovery (%) Graphic Log Sample No. * X Moisture Moisture, **NOTES** LL MATERIAL DESCRIPTION SPT STRENGTH, tsf ж Qp Surface Elev.: ft SILT, with sand, loose to stiff, dry, light brown to gray, pinholes. ML SAND, silty, loose to medium dense, dry to moist, light brown to gray. SM GRAVEL, silty, dense, dry, reddish brown. GM EOTP @ 13 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/15/02 Auger Cutting Shelby Tube 7/15/02 Date Boring Completed: Split-Spoon Grab Sample Logged By: S.Greenberg **Rock Core** Mod. California Figure A-14 Drilling Contractor:



PSI Job			6083				Drilling Metho									VATE		ELS	
Project Locatio					eadow	rs 4800 West		Sampling Me Hammer Typ									ile exca		N/A ft
Locatio	11.			an, U		4000 11680		Latitude:	٠.								er excav	_	N/A ft
								Longitude:			,		_			¥ 24	hours la	ter	N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)		RIAL DESC	CRIPTION		USCS Classification	SPT Blows per 6-inch	Moisture, %		× 1	TEST N in bk Noisture	STH, buf	PL LL 50		OTES
	-0-	Ш	П					ight brown.					Ť				20 10		
	to Rosing Started: 7/15/02				th cobbles an	d boulders,		ML											
	Completion Depth:						Sample Ty	pes:				Rem	ark	s:	***************************************				
	ate Boring Started:						Auger C	1	Sh	elby Tu	ube								
	te Boring Completed:				7/15/0 S.Gre		Split-Sp			ab San									
	gged By:				э. ⊍Г е	enberg	Rock Co			d. Cali								Figur	e A-15



Sheet 1 of 1

WATER LEVELS **Drilling Method:** PSI Job No.: 710-25083 Sampling Method: ▼ While excavating Monarch Meadows N/A ft Project: Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 8-inch **TEST DATA** USCS Classification Elevation, (feet) N in blows/It Recovery (%) Sample Type Depth, (feet) Graphic Log Sample No. Moisture, X Moisture NOTES MATERIAL DESCRIPTION STRENGTH, buf Ж Qp Surface Elev.: ft SILT, with cobbles, loose, dry, light brown. ML GRAVEL, silty, with cobbles and boulders, dense, dry, gray. GM EOTP @ 11 feet. Groundwater was not encountered. Remarks: Completion Depth: 11.0 ft Sample Types: Date Boring Started: 7/16/02 **Auger Cutting** Shelby Tube Date Boring Completed: 7/16/02 Grab Sample Split-Spoon Logged By: S.Greenberg Figure A-16 Mod. California **Rock Core Dritting Contractor:**



PSI Job			083				Drilling Method									RLEVE	LS	
Project					adow			Sampling Meth							∇ whi	le excav	vating	N/A ft
Locatio	n:					4800 West		Hammer Type Latitude:	:							r excav		N/A ft
		He	mm	an, U	tan			Lamude: Longitude:								ours lat		N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIA Surface Elev.: ft	L DESC	i - I		USCS Classification	SPT Blows per 6-inch	Moisture, %	× M	DARD P TEST N in blo Moisture	ENETRA DATA WEATR © Z S STH, bsf	ATION		OTES
	-0-	П	Н				ose, dry, li	ght brown.	_			+				20 40		
	Surface Elev.: ft SILT, with cobbles, loose, GRAVEL, silty, with cobble dense, dry, gray. EOTP @ 10 feet. Groundwater was not ence			encounte	d boulders,		ML GM											
	ompletion Depth: ate Boring Started:				10.0 t 7/16/0	m	Sample Ty	_				Rem	arks:					
	te Boring Started: te Boring Completed:			7/16/0		Auger C		_	elby Ti									
						enberg	Split-Sp			b Sar							_	
	gged By: illing Contractor:				· .		Rock C	ore	Мо	d. Cai	lfornia						Figure	A-17



PSI Job No.: 710-25083 Project: Monarch Meadows								Drilling Metho							٧	VATER	RLEVE	ELS
Project							1	Sampling Me						[∇ Whi	le exca	vating	N/A ft
Locatio	m:					4800 West		Hammer Typ Latitude:	e:						▼ Afte	r excav	ating	N/A ft
		пе	स (धि	an, U	uali			Lautude. Longitude:							<u>¥</u> 24 f			N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIA Surface Elev.: ft	AL DESC	·		USCS Classification	SPT Blows per 6-inch	Moisture, %	× 1	DARD F TEST N in bio Moisture	EŅETRA DATA was/ft @ @ # STH, baf		NC	DTES
	-0-	Ш	H			SILT, with cobbles, lo	ose, dry, li	ght brown.				+-	-		<u> </u>	10 30		
	- 5 -	7.50 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2				GRAVEL, silty, with ordense, dry, gray.	cobbles and	d boulders,		GM								
Comple	tion D	enth:			10.0 f		Sample Ti-	D.00.				Rema	rke:	L	L			
			:		10.0 f 7/16/0	n -	Sample Ty		.		. 1	Rema	IIKS.					
	Boring Completed: 7/16/02							Cutting	_	elby Tu								
Logged	Ву:						Split-Sp			ab San								4.40
Drilling (ogged By: S.Greenberg illimg Contractor: -						Rock Co	ore	Mo	d. Cali	iomia						Figure	A-18



PSI Job No.: 710-25083 Project: Monarch Meadows								Drilling Metho									VATE		
Project Locatio						vs 4800 West		Sampling Met Hammer Type									ile exca		
	•••			ian, L		11600		Latitude:	٠.								er excav		
1					_			Longitude:			r		_			¥ 24	hours la	ter	N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	Surface Elev.: fi				USCS Classification	SPT Blows per 6-inch	Moisture, %	×	Mois	EST in blo ture	ENETR DATA wa/R @ III STH, baf	PL LL 50		NOTES
						SILT, with cobbles	s, loose, dry, li	ght brown.											
	5 - 5 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -					GRAVEL, sitty, with dense, dry, gray.				GM									
`omale*	ion Da	nth:			0.00		0				г	<u>_</u> _	ļ	_					
omplet Date Bo					0.0 ft 7/16/0		Sample Typ		.			Rem	arks:						
ate Bo	ing Co			7	7/16/0	2	Auger Co			by Tub San									
ogged l Orilling C		tor:			S.Gre	enberg	Rock Co		-	d. Cafr								Figur	re A-19
			-	_														.54	



PSI Job No.: 710-25083 Project: Monarch M			5083				Drilling Method:						٧	VATE	R LEVE	ELS	
Project								Sampling Method:						∑ wh	ile exca	vating	N/A ft
Locatio	ın:					4800 West		Hammer Type: Latitude:						¥ Afte			N/A ft
		П	SLLTL	nan, L	/tan			Lautide:						¥ 24 I		_	N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL D	DESC		USCS Classification	SPT Blows per 6-inch	Moisture, %	× 1	TEST N in blo Moisture	PENETR. DATA Wa/it © Gat Gat Gat Gat Gat Gat Gat Ga		NC	DTES
	0	Ш	H			SILT, gravelly, loose to sti	iff, dry	y, light brown			+-	10			20 4.0		
	pinholes. 1 SAND, silty, medium dens brown to brown, pinholes.					se. dr		ML									
		11	1						CM								
	- 5 -			2		SAND, with gravel, dense brown to gray.	, dry t	to moist, light	SM								
1									SP								
	- 10 -					EOTP @ 11 feet.											
Comple					11.0 ਜ	Groundwater was not ence					Rema	nrks:					
Date Bo	ate Boring Started:			•	7/16/0)2 III A.		-	elby Tu	the		19471					
	te Boring Completed:				7/16/0	¹² 171 c.	olit-Sp		ab San								
	gged By: illing Contractor:				s.Gre		ock C		d. Cali							Figure	A-20



PSI Jo			5083			Drilling Method:		1)	WATER LEVELS										
Project:					eadow		Sampling Method:					\	☑ While excavating			N/A ft			
					4800 West	Hammer Type:									N/A ft				
		He	min	ian, L	ltah	J	Latitude:						After excavating 24 hours later						
							Longitude:	ç	SPT Blows per 6-inch	T	STANDARD PENETRATION TEST DATA				ter	N/A ft			
eet	କୃ	8	2	<u>o</u>	8			USCS Classification	يق	8			ows/ft 🖸						
٦, (ر	(£	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL REGG	DIDTION	₹	, e		X	<i>l</i> oisture	2	PL LL	NO	TES			
Elevation, (feet) Depth, (feet)		줐	칠	ם	8	MATERIAL DESC	RIPTION	8	§	Moisture,	1		25	50	110				
		ö	Sar	Sa	Se l			SS	<u> </u>	ž									
ш	i		H		-			ຶ່	μŽ			STREN	GTH, tsf	Qp					
						Surface Elev.: ft			0,		0			Qu 4.0					
	0	Ш				SILT, with gravel, loose to stiff,	dry, light brown,												
						pinholes.		ML											
	- 5 -					SAND, with silt and gravel, loos dense, dry to moist, light brown	e to medium to gray.												
	_							SP											
	- - 10 -																		
		FOTP @ 13 feet				EOTP @ 13 feet.													
	Groundwater was not enco					Groundwater was not encounted	ered.												
0	No. 5					1													
Comple			ı -		13.0 ft	n = ' '	222			Rem	arks:								
Date Bo					7/16/0 7/16/0		Cutting St	nelby Ti	ube										
Date Bo Logged		оттри	sted			enberg Split-Sp		ab Şar											
Drilling (ctor:			J.GIE	Rock Co													



PSI Job No.:		71	0-25	083				Drilling Method:						٧	VATER			
Project				adow			Sampling Method:						∑ Whi	le exca				
Locatio					4800 West	Hammer Type: Latitude:							After excavating		ating	N/A ft		
		Пе	HTIM	an, U	tan			Longitude:						24 hours late		ter	N/A ft	
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL DI	ESC	sification oer 6-Inch				×	NDARD F TEST N in blo Moisture	PL LL 50		OTES		
	-0-		Н	_		CLAY, soft to dense, dry, li	ght I	brown, pinholes.			+	10	Τ	1	QU 4.0	-		
				3		SAND, silty, medium dense brown, iron oxide. GRAVEL, silty, with sand, obrown. EOTP @ 13 feet. Groundwater was not enco	e, dr	y to moist, light e, dry, reddish	CL SM									
Completion Depth: 13.0 ft Sample 7						e Ti	mes.	l		Ren	arks:		L		-			
Date Bo			:		7/16/0	n	-			.	1/611	ui No.						
Date Boring Completed:					7/16/0	12 11 AU			nelby Ti								ì	
Logged	Ву:					enberg X Sp		rab Sar							pa			
Dritting (Contra	ctor:		12		∐ Ro	ck C	ore MM	od. Cal	потна	Figure A-22							

2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442

Logged By:

Drilling Contractor:

LOG OF TEST HOLE: TP-21

				Fax	ax: (801) 954-8485												Sheet	1 of 1
PSI Jol	710-25083 Drilling Method:												WATER LEVELS					
Project				adow	rs .		Sampling Met			ł				N/A ft				
Locatio						4800 West		Hammer Type							₩ While excavating			
	He	errin	nan, L	ltah			Latitude:						After excavation			N/A ft		
			_					Longitude:					-		¥ 24 I	nours lat	ter	N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATER Surface Elev.: ft		CRIPTION	USCS Classification	1 1 6 1 1			DARD PENETRATION TEST DATA N in blows/ft Aloisture PL 23 LL STRENGTH, baf # Qp 20 Qu 40			NOTES		
	-0-	Ш				SILT, soft to stiff, d		m.										
	- 5 -					GRAVEL, silty, with brown to gray.	n cobbles, de	ense, dry, light	GM									
Comple Date Bo	ning St ning C	barted		. ·	12.0 ft 7/16/0 7/16/0	12	Sample Ty Auger C	Cutting	Shelby I		Re	ema	rks:					
_ogged Drilling (ctor:			S.Gre	enberg		Rock Core Mod									Figure	A-23



Sheet 1 of 1

WATER LEVELS **Drilling Method:** PSI Job No.: 710-25083 Sampling Method: Project: Monarch Meadows N/A ft Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Latitude: Herriman, Utah Longitude: 24 hours later N/A ft STANDARD PENETRATION SPT Blows per 6-Inch **TEST DATA** USCS Classification Elevation, (feet) N in blows/ft • Depth, (feet) Sample Type Recovery (%) Graphic Log Sample No. Moisture, X Moisture **NOTES** ш MATERIAL DESCRIPTION STRENGTH, tsf * Qp Surface Elev.: ft SILT, soft to stiff, dry, light brown. ML GRAVEL, sitty, with sand and cobbles, dense, dry, gray. GM EOTP @ 12 feet. Groundwater was not encountered. Completion Depth: 12.0 ft Sample Types: Remarks: Date Boring Started: 7/16/02 **Auger Cutting** Shelby Tube Date Boring Completed: 7/16/02 Split-Spoon Grab Sample Logged By: S.Greenberg Rock Core Mod. California Figure A-24 Drilling Contractor:



PSI Jol		710	0-25	083			Drilling Method									RLEV	ELS
Project					adow		Sampling Meth							∇ whi	le exca	vating	N/A ft
Locatio	n:					4800 West	Hammer Type: Latitude:	:						Afte			N/A ft
		ne	mm	an, U	tan		Longitude:							¥ 24 t			N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL DES Surface Elev.: ft				SPT Blows per 6-Inch	Moisture, %	× N	DARD F TEST N in bio foisture	DATA WENT G A STH, buf	ATION		DTES
	-	Ш				SILT, soft to stiff, dry, light bro	wn.										
	- 5 -	20 20 20 20 20 20 20 20 20 20 20 20 20 2				GRAVEL, sitty, with sand and dry, gray. EOTP @ 10 feet. Groundwater was not encount	cobbles, dense,	G									
Comple					10.0 fi		ypes:			T	Rema	rks:				4	
Date Bo					7/16/0		Cutting	Shelb	y Tu	be							
Date Bo Logged		ompie	ted		7/16/0 S.Gre	2 Soft S	-	Grab									
Loggea Drilling (ctor:		in in	o.ure	enberg Rock (Mod.								Figure	e A-25



	710-						Drilling Method:								RLEVELS
•	Mon					1	Sampling Method	:					▼ Whi		
	Herri				4800 West		Hammer Type: Latitude:						Afte		
							Longitude:						¥ 24 h	ours lat	ter N/A ft
Elevation, (feet) Depth, (feet)	Graphic Log	Salliple Lype	Sample No.	Recovery (%)	MATERI	AL DESC	CRIPTION	USCS Claseification	SPT Blows per 6-inch	Moisture, %	× A	TEST N in blo Moisture	STH, terf		NOTES
1 0 11	Ш	1			SILT, soft to stiff, dr	y, light brow	m.								
					CRAVEL sith; with	sand dense	e dry light brown	ML							
	200000000000000000000000000000000000000				GRAVEL, silty, with to brown.	sand, dens	e, dry, light brown	GM							-
- 10 - 0 C	00000000000000000000000000000000000000				EOTP @ 12 feet. Groundwater was n	ot encounte	ered.								`
Completion Dep				12.0 f		Sample Ty	/pes:			Rem	arks:				
Date Boring Star Date Boring Con		ed.		7/16/0 7/16/0		Auger (Shelby T							
Logged By: Driking Contracto		Ju.			enberg	Split-Sp Rock C		Grab Sai Mod. Cal							Figure A-26



Sheet 1 of 1

WATER LEVELS **Dritting Method:** PSI Job No.: 710-25083 Sampling Method: Project Monarch Meadows ☑ While excavating N/A ft Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION Blows per 6-inch **TEST DATA USCS Cleesification** Elevation, (feet) N in blows/ft Sample Type Depth, (feet) Recovery (%) Graphic Log Sample No. * Moisture, X Moisture **NOTES** LL MATERIAL DESCRIPTION SPT STRENGTH, tsf Qp Ж Surface Elev.: ft CLAY, with gravel, loose to stiff, dry, light brown, pinholes. CL GRAVEL, with sand, dense, dry, reddish brown. GW SAND, silty, medium dense, dry to moist, brown. SM GRAVEL, silty, with sand and cobbles, dense, dry, gray. GM EOTP @ 13 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/16/02 Auger Cutting Shelby Tube 7/16/02 Date Boring Completed: Split-Spoon Grab Sample Logged By: S.Greenberg **Rock Core** Mod. California Figure A-27 **Drilling Contractor:**



Sheet 1 of 1

PSI Job No.: Project:

710-25083

Monarch Meadows

Location:

13400 South and 4800 West

Herriman, Utah

Drilling Method: Sampling Method:

Hammer Type: Latitude:

WATER LEVELS

✓ While excavating N/A ft N/A ft

After excavating

							Longitus	le:						<u>¥</u> 24 1	hours lat	ter N/A fi
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	Surface Elev.: 1			USCS Classification	SPT Blows per 6-inch	Moleture, %	× ,	IDARD F TEST N in bio Moisture	DATA MINITED TO THE TENT TO T		NOTES
				1		SILT, soft to stiff,	dry, light brown, pinhok	≘\$.	ML							
	- 5 -			2		SAND, silty, dry to pinholes.	o moist, light brown to b	rown,	SM							
	- 10 -					GRAVEL, silty, de	ense, dry, gray.		GM							
		₽DIC				EOTP @ 12 feet. Groundwater was	not encountered.									
Comp	letion De	anth:			12.0 f											
Date E Date E Logge	Boring St Boring C	tarted: omple		7	7/16/0 7/16/0	12	Sample Types: Auger Cutting Split-Spoon Rock Core	👸 Gra	elby Tu b Sam d. Calif	be ple	Rema	rks:				Figure A-28



PSI Jol				683				Drilling Method:								RLEVELS	
Project					adow			Sampling Method:						⊉ wh	ile exca	rating N/	A ft
Locatio	n:					4800 West		Hammer Type: Latitude:						¥ Afte	er excav	ating N/	Αħ
		пе	erriri	an, U	næn			Longitude:						¥ 24 1	nours lat		Aπ
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL Surface Elev.: ft	DESC		USCS Classification	SPT Blows per 6-inch	Moisture, %	× 1	DARD F TEST N in bk Moisture	PENETRO DATA DWINT © A STH, tuf		NOTES	
-	-0-	Ш	Н			SILT, with gravel, loose	e to stiff,	dry, light brown.			-	Ť			20 4.0		
						GRAVEL, silty, with saidry, gray.			ML								
	- 5 -					CLAY, sandy, medium brown.	dense, d	dry to moist, light	GM								
	 - 10 - 								CL								
						EOTP @ 13 feet. Groundwater was not e	encounte	red.									
Comple					13.0 f		ample Ty	pes:			Rem	arks:					
Date Bo Date Bo					7/16/0 7/16/0		Auger C		helby To	-							
Logged		omple				enberg	Split-Sp		rab Sar								
Drillina (ctor:					Rock C	ore 📈 M	od. Cal	ifornia						Figure A-29	9



PSIJO				5083			Drilling Method:								RLEVE	:LS
Project					eadov		Sampling Method	d:					∑ w⊦	ile exca	vating	N/A ft
Locatio	n:					4800 West	Hammer Type:							er excav		N/A ft
		He	ıılıı	an, U	tah		Latitude:									
			_				Longitude:		_				¥ 24	hours la	ter	N/A ft
			П						-		STA	IDARD F		ATION		
2	_	_						USCS Classification	SPT Blows per 6-inch	1	1		DATA		1	
(fe	e	<u> </u>	Ě	ŝ	8	300		2	9	*	1		O fivewo	PL	ľ	
Ĕ,	۳	皇		ě	<u>}</u>	MATERIAL DES	CRIPTION	1 2	<u> </u>	g	×	Moisture	- 4	Ц	NC.	TES
aççi	Depth, (feet)	Graphic Log	튑	Sample No.	ă	IVIA I ENIAL DES	CICIP HON	경	8	Moisture,	1		-	50		
Elevation, (feet)	മ്	Ö	Sample Type	တိ	Recovery (%)			ြင္ဆ	<u>1</u> 5	Ž						
ш			Н		-			š	[1	١.	STREN		_		
	_					Surface Elev.: ft			۳ ا			25	*	Qp Qυ 40		9
	-0	Π	П			SILT, loose to stiff, dry, light b	rown.									
		Ш	Н					ML	1			1				
			Н													
		عاط	1			GRAVEL, silty, with sand and	cohbles dense	-								
		°P°	1			dry, gray.	0000100, 00120,			- 1		1				
		40]													
	- 4	.KC	1						l				1 8			
	1	SH	1													
		30.	1							1						
	- 1	. 10	1					GM		1						
	- 5 -	340	1						l							
		6C	1 1													
	ال ا	$^{\circ}\Omega^{\circ}$							1							
	7	4,2	П						l	1						
		K														
1	- 1					SAND, silty, medium dense, d	ry to moist, light	7								
	- [11				brown.	,, 							1		
1	- +	111														
	L				i i											
-	- 4				1											
- 1	L															
	- 10 -				8 H			SM								
L																
1				- 1										1		
		111		- 4				1								
	1															
	ſ				1	EOTP @ 13 feet.		Ţ		1						
	- 1			- 3		Groundwater was not encounted	ered.		ľ	-1			k j			
	- 1															
1	- 1			1									1			
	- 1			1				1 1					1			
1		- 1		1				1 1								
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- 1																1
					1			1 1								
- 1				8	- 1											
		- 1						1 1								
								<u> </u>								
Complet					2.5 ft		ypes:			Rema	ırks:			,		
Date Bo					7/16/0		Cutting III s	Shelby Tu	_{ibe}							
Date Bo		omple	ted:		7/16/0	12 S-54 S	parties.	Grab San								1
Logged		.		5	.Gre	enberg Rock C	200	Aod. Cali							Ciarras	۱ ۸ ۵ ۸
Drilling C	ormac	KOT:			5	III WOOK C	M I	Call	Dirie						Figure	M-30



PSI Jol				5083				Drilling Method							٧	VATE	RLEVE	LS
Project					adow			Sampling Meth							∇ wh	ile exca	vating	N/A ft
Locatio	n:			Soutt an, U		4800 West		Hammer Type Latitude:	:							er exca		N/A ft
		ne	HIII	ian, U	rcan			Lauwe. Longitude:								hours la		N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIA Surface Elev.: ft	AL DESC	RIPTION		USCS Clessification	SPT Blows per 6-inch	Moisture, %	×	TEST N in bk Moisture	PENETR DATA DWE/R G G GTH, tsf	PL LL 50	NO	OTES
	-0-	Ш	Н			SILT, loose to stiff,	dry, light bro	own.	-			+	0		20 (Qu 40		
		20.00				GRAVEL, sitty, with				ML								
	- 5 -																	
						SAND, clean, soft to moist, light brown to	gray.	ense, dry to		SP								
						SAND, silty, medium brown.	i dense, dry	to moist, light		SM					(₹			
	- 10 -				-	EOTP @ 13 feet. Groundwater was no	encounter	ed.										
Complete					25.0		0											
Complet Date Bo					2.5 ft 7/16/0	2	Sample Typ					Rema	ırks:					1
Date Bo					/16/0. //16/0:		Auger C			iby Tu								
Logged I	Ву:					enberg	Split-Spe			b San								
Driffing C		tor:					Rock Co	ле 🔀	Mod	d. Cali	fornia						Figure	A-31



Sheet 1 of 1

WATER LEVELS Drilling Method: PSI Job No.: 710-25083 Sampling Method: Project: Monarch Meadows 🔽 While excavating N/A ft Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Herriman, Utah Latitude: ¥ 24 hours later Longitude: N/A ft STANDARD PENETRATION Blows per 6-inch TEST DATA **USCS Cleasification** Elevation, (feet) N in blows/ft 🔾 Sample Type Depth, (feet) Graphic Log Sample No. Recovery (%) PL X Moisture **NOTES** MATERIAL DESCRIPTION LL SPT STRENGTH, tef ж Qp Surface Elev.: ft SILT, with gravel, loose to stiff, dry, light brown. ML SAND, silty, medium dense, dry to moist, gray, iron oxide stains. SM 1 GRAVEL, sitty, dense, dry, gray. GM SAND, silty, medium dense, moist, gray, iron oxide stains, pinholes. SM 2 EOTP @ 13 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/16/02 Shelby Tube **Auger Cutting** Date Boring Completed: 7/16/02 Split-Spoon Grab Sample S.Greenberg Logged By: Mod. California Rock Core Figure A-32 Driffing Contractor:



PSI Jo				5083			Drilling Method:						V	VATE	RLEVELS
Projec					adow		Sampling Method:						∑ wh	ile exca	vating N/A fi
Location	on:					4800 West	Hammer Type:							er excav	
		н	emm	an, L	tah		Latitude:							hours la	_
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL DESC	Longitude:	USCS Classification	SPT Blows per 6-inch	Moisture, %		TEST	PENETR DATA DWs/ft ©		notes
ā					E	Surface Elev.: ft		Sn	SPT		•			Qp Qu 40	
						SILT, with gravel, loose, dark be	rown, dry.	ML							
						GRAVEL, silty, dense, dry, light	brown.	GM							
		.ok				SAND, clean, medium dense, d		SP							
	-					SAND, sitty, medium dense, dry	y, light brown.								
	- 5 -							ѕм							
						SILT, medium stiff, moist, light t	proum trop evide								
				1		stains.	orown, iron oxide								
								ML							
	- 10 -														
				2		SAND, silty, medium dense, dry oxide stains.	, light brown, iron	SM				2-			
					1	EOTH @ 12.5 feet. Groundwater was not encounted	red.								
Comple	tion D	an#-			255			l:		Ť					
Comple					12.5 ft 7/17/0	2	(1904)			Rema	ırks:				
Date Bo					7/17/0		utting Si	nelby Tu	.be						
Logged		ompre	cu.		3.Gan	rett X Split-Sp		ab San	nple						
Drilling (ctor.			,.Gail	Rock Co		od. Cali							Figure A-33



Sheet 1 of 1

WATER LEVELS PSI Job No.: 710-25083 **Dritting Method:** Sampling Method: Project: Monarch Meadows N/A ft 13400 South and 4800 West Hammer Type: Location: After excavating N/A ft Herriman, Utah Latitude: 24 hours later Longitude: N/A ft STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA USCS Classification** Elevation, (feet) Sample Type N in blows/ft Depth, (feet) Graphic Log Sample No. Recovery (%) PL Moisture, **NOTES** MATERIAL DESCRIPTION ш STRENGTH, tsf * Qр Surface Elev.: ft SILT, loose, dry, dark brown, pinholes. ML GRAVEL, silty, dense, dry, gray to brown. **GM** 1 SILT, medium stiff, dry, brown, pinholes. ML GRAVEL, silty, dense, dry, light brown. GM SILT, medium stiff, moist, brown, small pinholes. ML 2 EOTH @ 12.5 feet. Groundwater was not encountered. Completion Depth: 12.5 ft Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: B.Garrett **Rock Core** Mod. California Figure A-34 **Drilling Contractor:**



Sheet 1 of 1

710-25083 Dritting Method: WATER LEVELS PSI Job No.: Project: Monarch Meadows Sampling Method: ▼ While excavating N/A ft Location: 13400 South and 4800 West Hammer Type: After excavating N/A ft Herriman, Utah Latitude: 24 hours later Longitude: N/A ft STANDARD PENETRATION SPT Blows per 6-Inch **TEST DATA** USCS Classification Elevation, (feet) Sample Type N in blows/ft • Depth, (feet) Graphic Log Recovery (%) Sample No. PL Moisture, **NOTES** MATERIAL DESCRIPTION ш STRENGTH, buf Qp Surface Elev.: ft SILT, loose, dry, dark brown. ML SILT, medium stiff, dry, light brown, pinholes. ML GRAVEL, silty, with cobbles, dense, dry, light brown. GM SILT, sandy, medium stiff, moist, brown, iron oxide stains. 2 ML EOTP @ 13 feet. Groundwater was not encountered. Completion Depth: 13.0 ft Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: **B.Garrett** Rock Core Mod. California Figure A-35 **Drilling Contractor.**



PSI Jol				5083	adow	_	Drilling Method: Sampling Method	1 :						ie exca	C LEVE	N/A ft
Project Locatio						4800 West	Hammer Type:									
	•••			an, U			Latitude:							r excav		N/A ft
			_				Longitude:			_				nours lat	ter	N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL DESC	CRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %		TEST	PENETRA DATA DWEATE ©	PL LL 60	NC)TES
Elev	å	&	Sai	ß	Rec	Curfosa Eleve &		nsce	SPT B	2				Qp Du 40		
	-0-	Ш	Н			Surface Elev.: ft SILT, with gravel, loose, dry, da	ark brown,	1		+-	0		20 (30 40		
		Ш				pinholes.		ML		1						1
			}			GRAVEL, silty, dense, dry, ligh	t brown.						i			
	_	1979						GM						T T		1
			}													
	-					SAND, silty, medium dense dry	/ light brown.	7								
																- 1
								SM		1						ı
	- 5 -									1					•)	- 1
	3															- 1
	ri	Ш	1			SILT, medium stiff, dry to mois	t, light brown.									
	L i															
	2															
		1111				}										
		1111														i
	- 10 -							ML				-				
		Ш														ı
	-															
										1						
										1						
		Ш	Н									1				
		ш	1			EOTP @ 14 feet.		-		1						
		1				Groundwater was not encounted	ered.									
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			П							1						
			П								İ					
			П							1		1				
		1							1							
			П							1						
										1						
<u> </u>		L			14.2				L	Per	orke:		1	<u> </u>		
Compk Date B					14.0 7/17/	on 1 == '		0L:" ~		ren	arks:					
Date B				i :	7/17/	m Mager		Shelby T								"
Logged	By:				B.Ga	rrett Splirt-S		Grab Sa Mod. Ca							Figure	e A-36
Dritting	Contra	actor:			•	II KOCK (~1c	mou. Va	HIVIING			10000			ı ıgul	5 A-00

2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442 Fax: (801) 954-8485

LOG OF TEST HOLE: TP-35

PSI Jo				5083				Drilling Metho							\	VATE	R LE	VELS	
Project Location					eadov			Sampling Me							₩	wie exca	vating	, N	Αft
Locato	я.			Sout Ian, L		4800 West		Hammer Typ Latitude:	e:						▼ Aft	er excav	vating	N/	Αħ
		• • •	-,,,	, .				Longitude:								hours la			Απ
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIAL Surface Elev.: ft	DESC			USCS Classification	SPT Blows per 6-Inch	Moisture %		N in bi	PENETR T DATA OWSAR 23 GTH, bsf	PL LL 50		NOTES	
	-0	TTT	П			SILT, loose, dry, dark br	own.						ľ	-	20	Qu 40	-		
	- 5			2		SILT, medium stiff, dry,	brown,			ML									
Complet	ion De	pth:		1	3.0 ft	Sam	ple Typ	es:				Rem	arks:	1			-	4,	-
Date Bo					/17/0	2 1101 A	wger Ci	72	Sh.	elby Tu	he		•						
Date Bor		mple	ted:		/17/0:	4 177 -	oger C	,	-	b Sam									
Logged I		to-		8	.Gam		lock Co			d. Cali							- :-	4 07	,
Onling C	ORDITO	w.	_	_			.555 00		3 1110	vail	-VII MG						rıgu	re A-37	



Sheet 1 of 1

WATER LEVELS Drilling Method: PSI Job No.: 710-25083 Sampling Method: ☑ While excavating Monarch Meadows N/A ft Project Hammer Type: 13400 South and 4800 West Location: After excavating N/A ft Latitude: Herriman, Utah 🛂 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA** USCS Classification N in blows/ft. • Elevation, (feet) Sample Type Recovery (%) Graphic Log Depth, (feet) Sample No. 4 X Moisture Moisture, **NOTES** LL MATERIAL DESCRIPTION STRENGTH, tsf * Qρ Surface Elev.: ft SILT, loose, dry, light brown. ML SILT, medium stiff, dry, light brown, pinholes. ML GRAVEL, silty, dense, dry, light brown to gray. GM EOTH @ 11.5 feet. Groundwater was not encountered. Sample Types: Remarks: Completion Depth: 11.5 ft 7/17/02 Date Boring Started: Shelby Tube **Auger Cutting** 7/17/02 Date Boring Completed: Split-Spoon Grab Sample Logged By: **B.Garrett** Figure A-38 Mod. California Rock Core Drilling Contractor:



Sheet 1 of 1

PSI Job No.: 710-25083 Drilling Method: WATER LEVELS **Project**: Monarch Meadows Sampling Method: ☑ While excavating N/A ft Location: 13400 South and 4800 West Hammer Type: After excavating N/A ft Latttude: Herriman, Utah 24 hours later Longitude: N/A ft STANDARD PENETRATION SPT Blows per 6-inch **TEST DATA** USCS Classification Elevation, (feet) Sample Type Depth, (feet) Graphic Log Recovery (%) N in blows/ft @ Sample No. ፠ ☑ PL X Moisture Moisture, **NOTES** MATERIAL DESCRIPTION ш STRENGTH, buf Ж Qp Surface Elev.: ft SILT, loose, dry, light brown. ML SILT, medium stiff, dry, light brown, pinholes. ML GRAVEL, silty, dense, dry, gray. GM SILT, sandy, medium stiff, dry, light brown. ML GRAVEL, silty, dense, dry, gray. GM 10 EOTH @ 10 feet. Groundwater was not encountered. Completion Depth: 10.0 ft Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: **B.Garrett Rock Core** Mod. California Drilling Contractor: Figure A-39



Sheet 1 of 1

PSI Job No .: 710-25083 **Drilling Method:** WATER LEVELS **Project**: Monarch Meadows Sampling Method: ☑ While excavating N/A ft Location: 13400 South and 4800 West Hammer Type: After excavating N/A ft Herriman, Utah Latitude: 24 hours later Longitude: N/A ft STANDARD PENETRATION SPT Blows per 6-inch TEST DATA USCS Classification Elevation, (feet) Depth, (feet) Graphic Log Sample Type Recovery (%) N in blows/ft Sample No. × ☑ PL **NOTES** MATERIAL DESCRIPTION STRENGTH, tsf Qp Surface Elev.: ft SILT, loose, moist, light brown. ML SAND, silty, medium dense, moist, brown. 1 SM 10 SILT, sandy, medium stiff, moist, brown. 2 ML EOTP @ 13 feet. Groundwater was not encountered. 13.0 ft Completion Depth: Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: **B.Garrett** Rock Core Mod. California Figure A-40 Dritting Contractor:



710-25083

PSI Job No.:

LOG OF TEST HOLE: TP-40 Sheet 1 of 1 WATER LEVELS ☑ While excavating N/A ft After excavating N/A ft 24 hours later N/A ft STANDARD PENETRATION **TEST DATA** N in blows/ft O PL X Moisture **NOTES**

Project: Monarch Meadows Sampling Method: Location: 13400 South and 4800 West Hammer Type: Latitude: Herriman, Utah Longitude: SPT Blows per 6-inch USCS Classification Elevation, (feet) Sample Type Depth, (feet) Graphic Log Recovery (%) Sample No. MATERIAL DESCRIPTION STRENGTH, tef ж Qp Surface Elev.: ft SILT, loose, dry, light brown, pinholes. ML GRAVEL, silty, with sand and cobbles, dense, dry, light brown. GM SILT, medium stiff, moist, brown, pinholes. 1 ML GRAVEL, silty, with cobbles, dense, dry, gray. GM CLAY, medium stiff, moist, brown. 2 CL EOTP @ 14 feet. Groundwater was not encountered. Completion Depth: 14.0 ft Sample Types: Remarks: Date Boring Started: 7/17/02 **Auger Cutting** Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: **B.Garrett** Mod. California **Rock Core** Figure A-42 **Drilling Contractor:**

Drilling Method:

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LOG OF TEST HOLE: TP-41

PSI Jol	No.:	71	0-25	083				Drilling Method:							٧	VATER	LE/	/ELS
Project	:	Mo			adow		1	Sampling Metho	id:						∑ Whi	le exca	vating	N/A ft
Locatio	n:					4800 West	1	Hammer Type: Latitude:							¥ Afte	r excav	ating	N/A ft
		He	mm	an, U	tan			Lautiue: Longitude:								ours lat		N/A ft
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (%)	MATERIA Surface Elev.: ft	AL DESC		10000		SPT Blows per 6-inch	Moisture, %	,× N	TEST N in blo floisture	PENETRA DATA DWINTE @ 25 25 GTH, buf			IOTES
-	-0-	TIT	H			SILT, loose to mediu	m stiff, mo	ist, light brown,		7						20 40		
	- 5			2		GRAVEL, sitty, with obrown. SILT, sandy, medium oxide stains.	n stiff, mois	ense, moist, light	G M	м								
Comple					14.01		Sample Ty	pes:				Rem	arks:					
Date Be					7/17/(7/17/(Auger C	Cutting	Shelb									
Logged		winbi	elec		B.Gai	10.1	Split-Sp		6									
Drilling		ictor:		8			Rock C	ore	Mod.	Cali	ifornia						Figu	ıre A-43



Sheet 1 of 1

PSI Job No .: WATER LEVELS 710-25083 Drilling Method: Project: Monarch Meadows Sampling Method: While excavating N/A ft Location: 13400 South and 4800 West Hammer Type: After excavating N/A ft Herriman, Utah Latitude: Longitude: 24 hours later N/A ft STANDARD PENETRATION SPT Blows per 6-Inch **TEST DATA** USCS Classification Elevation, (feet) Graphic Log Sample Type Recovery (%) N in blows/ft Depth, (feet) Sample No. * Moisture, 9 NOTES MATERIAL DESCRIPTION ш STRENGTH, tel Qр ж Surface Elev.: ft SILT, loose to medium stiff, moist, light brown, pinholes. 1 ML GRAVEL, silty, with cobbles, dense, dry, gray. GM 2 SILT, medium stiff, moist, brown, iron oxide stains. ML EOTP @ 12.5 feet. Groundwater was not encountered. Completion Depth: 12.5 ft Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: B.Garrett **Rock Core** Mod. California Driffing Contractor: Figure A-44

KEY TO SYMBOLS

Ш

USCS Sitt



USCS Low Plasticity Clay



USCS Silty Gravel



USCS Well-graded Gravel



USCS Poorly-graded Sand



USCS Silty Sand

HSA = Hollow Stem Auger

CFA = Continuous Flight Auger

SS = Split-spoon Sampler

ST = Shelby Tube Sampler

RC = Rock Core

DD = Dry Density

LL = Liquid Limit

PL = Plastic Limit

Qu = Unconfined Compressive Strength

Qp = Pocket Penetrometer

RQD = Rock Quality Designation

REC'D = Rock Core Recovery Percentage

PID = Photo Ionic Detector (ppm)

MR* = Unable to determine depth of water due to mud rotary drilling methods

The test pits were excavated to the desired depth using a trackhoe. Disturbed bag samples and relatively undisturbed tube and block samples were obtained at various intervals in each test pit. Each tube and bag sample was sealed and transported to the laboratory for testing.



2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442 Fax: (801) 954-8485 PSI Job No.: 710-25083

Project:

Monarch Meadows

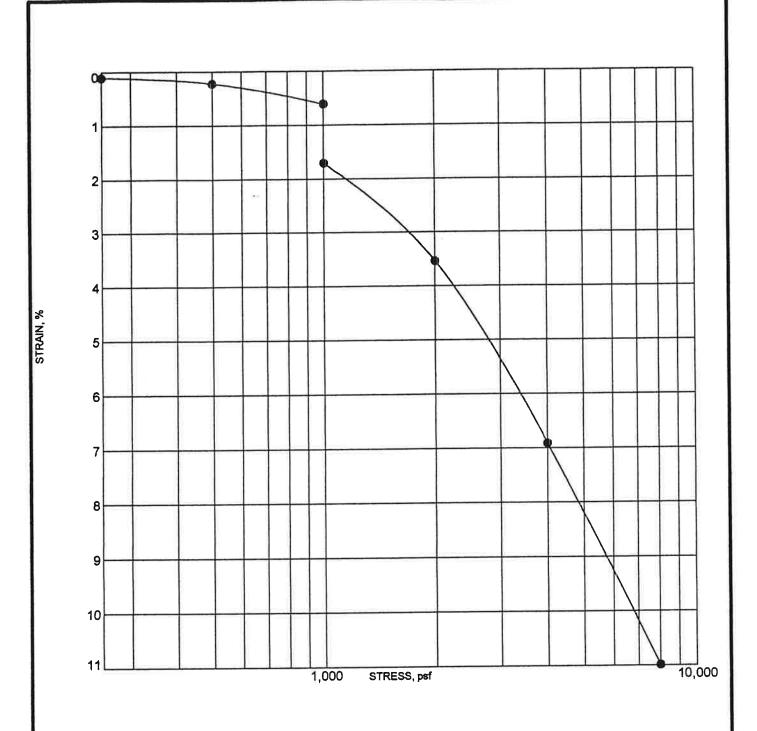
Location: 13400 South and 4800 West

Herriman, Utah

TABLE 1: SUMMARY OF LABORATORY TESTING

Sample No.	Sample Depth (ft.)		anical S Analysis		Atterber	g Limits	USCS Soil Classification
		% Gravel	% Sand	% Fines	Liquid Limit (%)	Plastic Index (%)	
TP-5	PILE	66.2	27.8	6.0			GP-GC
TP-11	4.0	0.0	61.5	38.5			SM
TP-20	2.5	-			27	13	CL
TP-25	2.5	-			32	16	CL
TP-27	8.0	0.0	7.9	92.1	28	8	CL
TP-31	12.0	0.0	14.0	86.0	26	5	ML
TP-38	4.0	0.9	57.8	41.3			SM
TP-38	11.0	0.0	33.7	66.3	NP*	NP	ML
TP-40	5.0				26	3	ML
TP-40	10.0				32	15	CL

^{*}NP = Non-Plastic as per ASTM D 4318 Section 11.4.



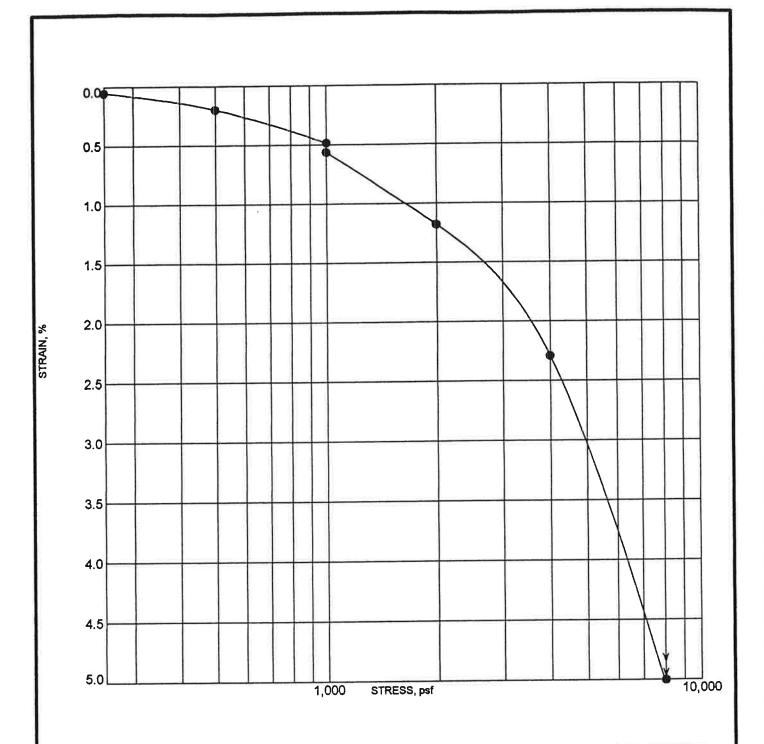
5	Specimen Ider	ntification	Classification	ų	MC%
•	TP-20	2.5			9
4					
+	4		Design Section 199		-
\dashv					



PSI Job No.: 710-25083

Project: Monarch Meadows

Location: Herriman, Utah



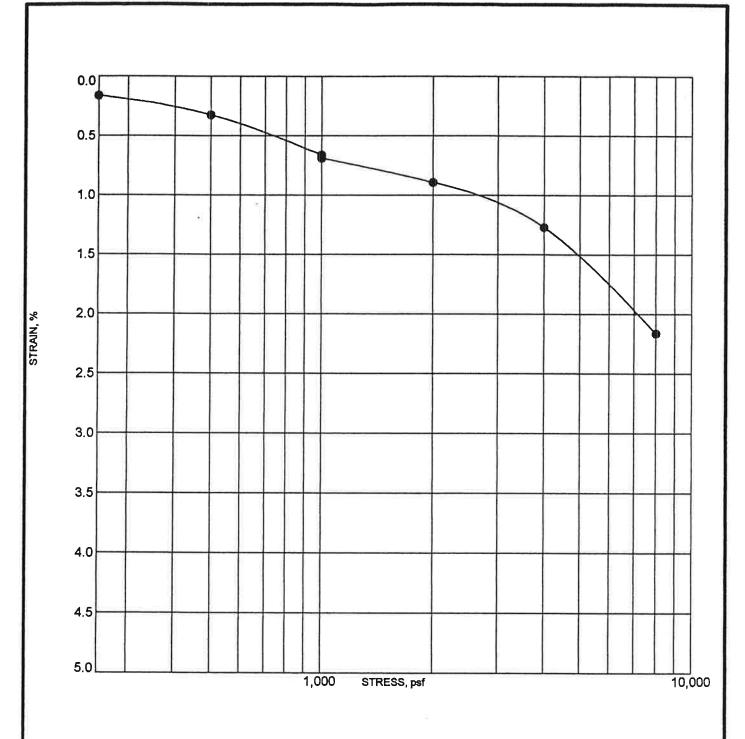
-5	Specimen Ide	ntification	Classification	γ ₄ 93	MC%
•	TP-25	2.5			
-			- Jan Er Jan III - 2 - 4 - 44		
+					
٦					



PSI Job No.: 710-25083

Project: Monarch Meadows

Location: Herriman, Utah



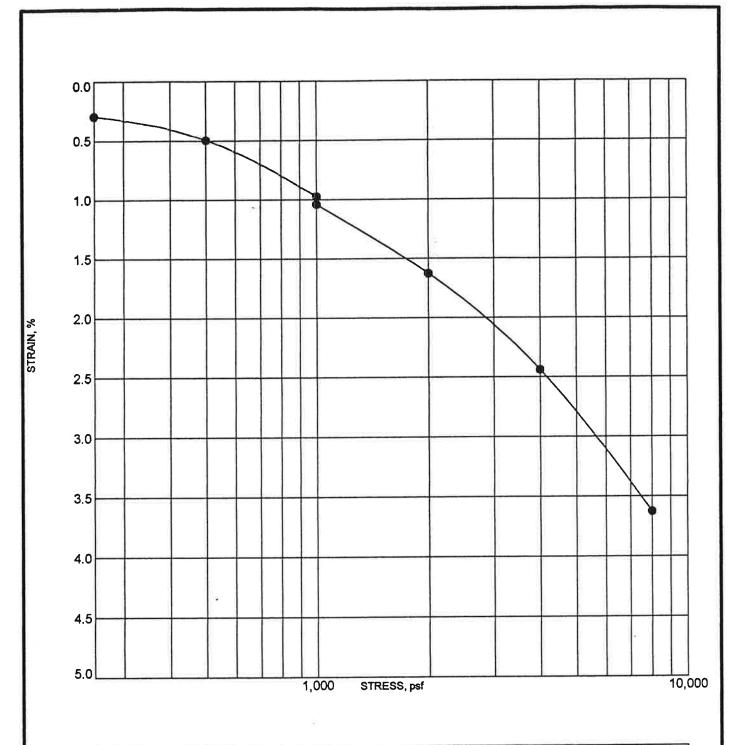
Specimen Identification			Classification	γ _a	MC%
•	TP-40	5.0		90	21
+					
+					-
1					
1			57 1		



PSI Job No.: 710-25083

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Specimen Identification			Classification	Y _a	MC%
• TI	P-40	10.0		86	34
		ı			



PSI Job No.: 710-25083

Project: Monarch Meadows

Location: Herriman, Utah

2779 South 600 West South Salt Lake, UT 84115 Telephone: (801) 954-8442

LOG OF TEST HOLE: TP-39

Fax: (801) 954-8485 Sheet 1 of 1 WATER LEVELS **Drilling Method:** 710-25083 PSI Job No .: Sampling Method: Project: Monarch Meadows N/A ft Hammer Type: Location: 13400 South and 4800 West After excavating N/A ft Latitude: Herriman, Utah 24 hours later N/A ft Longitude: STANDARD PENETRATION SPT Blows per 6-Inch **TEST DATA** USCS Classification Elevation, (feet) N in blows/ft 🔘 Graphic Log Sample Type Recovery (%) Depth, (feet) Sample No. Moisture, Moisture **NOTES** ш MATERIAL DESCRIPTION STRENGTH, tsf Qρ ж ▲ Surface Elev.: ft SILT, loose, moist, light brown, pinholes. ML 1 GRAVEL, silty, cobbles, dense, moist, gray. GM SILT, sandy, medium stiff, moist, light brown. 2 ML EOTP @ 14 feet. Groundwater was not encountered. Completion Depth: 14.0 ft Sample Types: Remarks: Date Boring Started: 7/17/02 Auger Cutting Shelby Tube Date Boring Completed: 7/17/02 Split-Spoon Grab Sample Logged By: **B.Garrett Rock Core** Mod. California Figure A-41 **Drilling Contractor:**