OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ071 SHEET 1 OF 2

PROJECT NAME: NASA	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: SPA PT050
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 12/21/00 0950	DATE AND TIME COMPLETED: 12/21/00 1430
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 31.5 ft bgs	TOTAL NO. OF SAMPLES: 0
SIZE AND TYPE OF BIT: 6" Carbide w/ bullet, shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK — SS —	DRIVE — PITCHER —
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST 27 ft bgs	AFTER 1 HOURS 21 ft bgs
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: T. Burton 12/21/00	CHECKED BY / DATE:

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: dry soils + veg. adj. to road + drainage from ABFF					
	1				Hand Augered to 3'					
	2									
	3									
					Silty alluvium, moist, dk. brown, oxidized reddish brown					
	4									
	5									
										Harder drilling Alluv/Bedrock?
		X	100	50/5	Fine sandstone; slightly cemented, moist, light olive brown, oxidized reddish brown along fracture					
	10									Harder drilling
					Cuttings: oxidized yellowish brown siltstone fragments, moist-wet					
		X	100	50/5	Medium sandstone, micaceous, saturated, oxidized yellowish brown					
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-01

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15									
					Cuttings: Dark greenish gray matrix, silty fragments, hydrocarbon odor, siltstone is dk. gray w/oxidized brown staining					Staining begins
		X	100	50/2	Fine sandstone, oxidized olive brown, moist-wet, some medium sand, slight cementation in sample, micaceous					
	20									Drilling
					Cuttings becoming gray @ 23.(?)					
				1.30/4						Drilling rate Const. 20
	25				Weathered sandstone f. of sand Bar/gray 2.5Y 6/2. fairly competent.			85	15	
										Drilling Screen 28'
										cuttings wet 27'+28(?)
										cuttings dry 29(?)
										Drilling Hammer 29'
				1.30/5						
	30				weathered sandstone vf-f- reddish. 2.5Y 4/3 - moist (H2O in spoon) more competent with depth.					
				4.00/3						HOLE ROSE TO 20.9ft @ 1245
					REFUSAL 31.5 ft					
					weathered sandstone - vf-f sand - moist-wet(?) GRAY H/G competent - fair cementation			90	10	
					NATIVE MATERIAL SLOUGHED IN TO 31.0 ft.					

UGDEN

FIELD LOG OF BORING

BORING NUMBER PZ-072 SHEET 1 OF 2

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
Rocketdyne SMOU	313150005	TBD	Silvernale PT-060

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/2/01 1400	1/2/01 1545

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	Hollow Stem Auger	20'	4

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
8" Carbide shovel (4)	8"			4		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
None	Vert.		2'	

SAMPLE HAMMER TYPE	DRIVING WT.	DROP	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
Hydraulic	140#	30"	T. Burton 1/2/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: moist alluvium, leaves, twigs, 15' from pond edge					
	1									
	2				H_2O					
	3				Hand Augered to 5'					
	4					SM				
					Silty sand (SM), wet, v.loose, fine					Soft drilling
	5	X	10	1	medium, some coarse, yellowish	SP-SM	-	90	10	
		X	100	1	brown (10YR 5/6), becomes SP-SM	↓	-	90	10	
		X	100	1	(fine), then SW-SM (fine-coarse)	SW-SM	-	90	10	
										Soft
	10	X	80	1	w/gravel					
		X	100	2	Poorly graded sand (SP), wet,	SP	20	80	-	
		X	100	4	v.loose, med.-coarse, becomes	SP-SM	-	90	10	
					siltier med. sand @ 11'					
										Soft
	15									

UGUEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ072

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	180	4						
		X	1	6						Alluv./Weathered
		X	↓	32	Weathered bedrock: Fine +					Bedrock contact(?)
					med. sandstone, wet, slightly					Harder Drilling !
					cemented, gray + oxidized					
					brown, micaceous					(Probable gray ctct)
	20	X	100	50/4	Gray sandstone, slight to moderate					
					cementation					
					Total Depth 20'					
					Backfilled w/sand, bentonite chips,					
					cement grout as piezometer placed					
					NATIVE MATERIAL SLOUGHED					
					IN TO 19'.					

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FIELD LOG OF BORING

BORING NUMBER PZ Ø73

SHEET 1 OF 3

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
NASA SMOV	313150005	TBD	RD-56 Area PT-Ø35

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/3/01 0745	1/3/01 1400

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	Hollow Stem Auger	55'	11

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
8" Carbide	8"			11		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
None	Vert.		—	

SAMPLE HAMMER	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
TYPE Hydraulic DRIVING WT. 140# DROP 30"	T. Burton 1/3/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: dry grasses					
	1				Hand augered to 3.5' bgs					
	2									
	3									Alluvium / Weathered Bedrock contact
	4				Weathered sandstone, oxidized yellowish brown (10YR 5/6), dry arkosic composition					
	5									"Not very hard" drilling
										Hard at 8'
					As above					
	10	X	100	50/4	Light yellowish brown med + coarse sandstone with varying oxidation + interbeds of lt.-dk. gray silt stone (decomposed granitics), contains decomposing wood fibers, dry					
										Same drill rate
					Cuttings: Gray sandstone, med-coarse					
	15									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ#73

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	50/2	Moderately cemented fine-med sandstone, slightly oxidized, moist, some coarse sand + ~~large~~ micas					
					increasing oxidation					
										Same drill rate
	20	X	100	50/2	Lightly oxidized medium-coarse sandstone, moist, mod. cementation					
										softer zone 23-25'
	25	X	100	50/4	As above, less (slight) cementation, more moisture, mostly fine sand, some med. (20%), grayish brown to light olive brown					Still soft to 30'
	30	X	100	50/3	Same as above, poorly cemented in sample (less than at 25')					Still soft to 35'
	35									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-73

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	100	50/3	Sandstone, vf-fine, moist, slightly cemented, light oxidation, some clayey decomposed granitics, some med. grains					
										Soft to 40'
	40	X	100	50/2	Same as above					
										Soft to 45'
	45	X	100	50/3	As above, moist vf-med. sand					
	50	X	100	50/4	Fractured siltstone, dk. gray, oxidized brown, moist, moderately cemented, friable in sample					Harder @ 51'
?		X	100	50/3	Silty sandstone, strong brown, moist-wet, vf-med., poor cementation					
		X	100	50/2	vf-fine sandstone Total Depth 55'					End of Boring

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FIELD LOG OF BORING

BORING NUMBER PZ-074 SHEET 1 OF 2

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 31315D005	ELEVATION AND DATUM: TBD	LOCATION: Drainage Happy Valley South PT-021
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/8/01 0935	DATE AND TIME COMPLETED: 1/8/01 1045
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 25'	TOTAL NO. OF SAMPLES: 4
SIZE AND TYPE OF BIT: 8" Carbide	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 4	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert.	WATER LEVEL: FIRST —	AFTER ____ HOURS
SAMPLE HAMMER TYPE: Hydraulic	DRIVING WT.: 140#	DROP: 30"	HYDROGEOLOGIST / DATE: T. Burton 1/8/01
			CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: dry drainage near outcrop					
	1									
	2									
	3									
	4									Slightly harder drilling @ 4'
	5				Cuttings: oxidized sandstone, dry					
	10	X	90	50/5	Very fine + fine sand, highly oxidized brown + dark brown, dry					
	15									

UGUEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-74

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	50/6	Fine-med. sandstone, moist, becomes siltstone/shale at 15.5 (shale) (oxidized yellowish brown sands)					
										Hard @ 19'
	20	X	50	50/1"	Siltstone + shale, gray N5, dry					
	25	X	100	50/2	Siltstone/shale, grades to vf sandstone, gray N5-6					
					Total Depth 25'					
					Backfilled w/well materials: sand, bentonite chips, cement grout					
					NATIVE MATERIAL SLOUGHED IN TO 24'					

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FIELD LOG OF BORING

BORING NUMBER PZ075

SHEET 1 OF 3

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: IEL North PT-0084
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/8/01 1330	DATE AND TIME COMPLETED: 1/9/01 0945
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem Auger	COMPLETION DEPTH: 45'	TOTAL NO. OF SAMPLES: 8
SIZE AND TYPE OF BIT: 8" Carbide	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 8	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert.	WATER LEVEL: FIRST —	AFTER _____ HOURS
SAMPLE HAMMER TYPE: Hydraulic	DRIVING WT.: 140#	DROP: 30"	HYDROGEOLOGIST / DATE: T. Burton 1/8/01
			CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: Alluvium, soils along low slope adj. to H_2O pipeline above Area II road					
	1									Alluvium/Weathered Bedrock contact
	2									
	3									
	4									Medium Hard Drilling
	5				Weathered sandstone, cuttings are yellowish brown (oxidized)					
										Same drill rate
	10	X	100	50/4	medium sandstone, moist, oxidized yellowish brown, some fine & coarse grains					
					Silty, gray cuttings NS					Cuttings are gray
										Very Hard @ 13' zone
	15	X	100	50/2	As above, vf-med sandstone, moist, oxidized					

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ075

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15				mod. well sorted sands					
										Drilling gradually harder 15-20
?										
	20	X	100	50/3	Sandstone, as above, increasing moisture + competence (vf-med, oxidized), moist, appears saturated					
										Slightly softer drilling 20-25
	25	X	100	50/3	As above, slightly less competent ("slightly cemented") in sample, less oxidation - lt. yellowish brown, Fine-med. sands, moist - maybe saturated					Same Drill rate ~~Drilling a little harder~~
	30	X	100	50/3	Fractured siltstone, lt. olive gray, dry-moist, oxidized fractures are dk. reddish brown, contact w/ sandstone visible in shoe.					Drilling: still soft to 35'
	35	X	100	100/3	Vf-med. sandstone. as above, moist, oxidized					

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ075

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35									
					grayish brown silty sand cuttings					Color, Lith. change
										Hard drilling 37'
	40	X	100	100/3	Sandstone, slight to moderate cementation, fine & medium sand, less oxidation, moist as above					
										Very hard @ 43'
	45	X	100	100/3	Moderately well cemented sandstone, moist,					
					TD = 45'					

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FIELD LOG OF BORING

BORING NUMBER PZ076

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 213150005	ELEVATION AND DATUM: TBD	LOCATION: CTL III PT-031
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/9/01 1130	DATE AND TIME COMPLETED: 1/10/01 0845
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem Auger	COMPLETION DEPTH: 60'	TOTAL NO. OF SAMPLES: 11
SIZE AND TYPE OF BIT: 8" Carbide	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK — SS 11	DRIVE — PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert.	WATER LEVEL: FIRST —	AFTER 16 HOURS: 32.5'
SAMPLE HAMMER TYPE: Hydraulic	DRIVING WT.: 140#	DROP: 30"	HYDROGEOLOGIST / DATE: T. Burton 1/9/00
			CHECKED BY / DATE:

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: Slope adj. to drainage along South perimeter of CTL III, dry grasses					Alluvium / weath. Bedrock contact
	1									
	2				yellowish brown oxidized sandstone					
	3									
	4									Medium hard drilling
	5									
					as above, darker yellowish brown from moisture ↑					
	10	X	70	50/3	As above, ~~well~~ poorly sorted sands (very fine to coarse), moderate to slight cementation, moist, oxidized yellow-brown, may be saturated					poss. concretion Harder @ 11'-11.5' 11.5'-14' is a bit harder than 0-11'
					cuttings; as above, minus coarse sand					
	15									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ076

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	50/2	Sandstone, as above, moist (saturated?), trace coarse grains, vf-med. gr.					
										Same Drill rate
					cuttings: same					
	20	X	90	30	Interbedded olive gray siltstone &					Lithology change
		X	100	42	medium sandstone (oxidized & moist),					
		X	100	50/1	siltstone oxidized reddish brown along					Soft drilling 20-25
					bedding contacts & possible fracture surfaces, sands more heavily oxidized than above					
	25	X	100	50/4	Oxidized, poorly sorted, sandstone, wet, dk. yellowish brown vf-coarse sands					Harder drilling
					DK. Olive brown sands					
					Cuttings become grayish @ 29' possible silty zone					
	30	X	100	50/3	Oxidized vf-fine sandstone, moist, slightly cemented in sample, dk. yellowish brown - olive brown					Drilling "Not too hard"
	35									

UGUEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PE-76

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	90	50/4	Fine-medium grained sandstone, moist, slightly cemented in sample, dk. yellow-brown, less oxidation					Some H_2O added to cool bit
										Harder Drilling
	40	X	100	100/2	As above, light oxidation, better competence (moderate)					H_2O added to cool bit
										very hard
					Increasing competence					
	45	X	100	100/2	As above, moist, mostly fine sand, moderately well cemented, dk. yellow - olive brown					H_2O added to cool bi
										Soft drilling
					No cuttings					
					Wet silt, gray N6 to olive gray, w/ vf sand in places					
	50	X	100	100/1	Well cemented fine-med sandstone, v. moist, olive brown					Hard drilling
										Hard 53'-54'
					Cuttings: dk. gray silt w/ sand					Soft

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ076

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	55	X	100	100/2	Fine sandstone, moist, moderately well cemented in sample, fine to medium grained					Med. Hard 55-59'
?					cuttings: dk. gray silt					
?										Very Hard 59-60
	60	X		100/3	Moderately well to well cemented sandstone, moist, olive brown, vf-med					
					Total Depth: 60' Backfilled with sandy bentonite chips, + cement grout as piezometer installed					
					EMPLACED BENTONITE FROM 47'-60'.					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ017

PROJECT NAME: Rocketdyne SMOU	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: CTL III / P.Pond PT-030
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/10/01 1015	DATE AND TIME COMPLETED: 1/10/01 1430
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 37'	TOTAL NO. OF SAMPLES: 7
SIZE AND TYPE OF BIT: 5" Carbide bullet + shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 7	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert	WATER LEVEL: FIRST ≈20'	AFTER 1 HOURS: 19.5'
SAMPLE HAMMER TYPE: Hydraulic	DRIVING WT.: 140#	DROP: 30"	HYDROGEOLOGIST / DATE: T. Burton 1/10/01

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: brush adjacent to drainage leading to Perimeter Pond					thin alluvium (1')
	1									weathered bedrock
	2				yellowish brown sandstone					3-5'
	3									Hard drilling ~~3'~~
					cuttings: grayish brown / brownish gray					
	4									
	5									Softer drilling 5-10'
										Color change + moisture ↑
					dk. yellowish brown (moist) from 7'					@
					slough: ~~soft~~ siltstone + VF sandstone (poorly cemented)					
	10	X	50	50/3	Very fine sandstone, oxidized dk. yellowish brown to brown, moist, slightly cemented, well sorted					
										Harder @ 14' "Medium Hard"
	15									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ077

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	50/2	Vf sandstone, light olive brown, moist, moderately cemented					Same drill rate 14-20
?										
					brown siltstone fragments, ~~stiff hard~~ mod. well cemented					
?										moisture increases cementation " "
	20	X	100	50/2	Vf-fine sandstone, moist, mod. to well cemented, may be wet; olive brown					
										color change (↑silt)
					dark olive gray siltstone, moist, mod. well cemented					Same drill rate to 25'
					slough: well-rounded, v. loose coarse sand, like filter pack, well-sorted (poorly cemented)					
	25	X	100	50/2						
?					Fine sandstone, w/ vf sand, as above, wet, mod. well cemented					
					dark (olive) gray siltstone-shale, wet, mod. well cemented					
										Harder @ 29' (contact)
	30	X		50/3	Vf sandstone, as above					
					Cuttings are wet & silty					Softer drilling 30-35'
?										
?	35									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ#77

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35 ↓	X	?	50/3	Fine sandstone, dk yellowish brown, wet, with fine sand					sampler stripped - shoe contents
										soft to 37'
		X	50	100/1	Competent, well-cemented sandstone, fine, moist-wet, gray N6					very hard @ 37' (refusal)
					Total Depth 37'					
					Backfilled w/ sand, cement grout, &					
	40				bentonite chips as piezometer					
					installed					
					EMPLACED BENTONITE					
					FROM 26'-37'					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ078

PROJECT NAME: Rocketdyne SMOU	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: CTL III / Perim. Pond PT-829
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/11/01 1000	DATE AND TIME COMPLETED: 1/11/01 1300
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 48	TOTAL NO. OF SAMPLES: 8
SIZE AND TYPE OF BIT: 8" Carbide bullet + shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 8	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert.	WATER LEVEL: FIRST ≈ 8' (23'?)	AFTER 3 HOURS: 19.8
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: T. Burton 1/11/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: Asphalt road over drainage area					
	1									Fill to ≈ 5'
	2				cuttings: dK brown fill					
	3									Soft drilling
	4									
	5									
					very dK. grayish brown silty sand + sandy organic silt alluvium					(Alluvium)
										Soft Drilling
					Organic odor in cuttings (methane)					
	10				sandy					
		X	20	3	Soft-m. stiff, organic silt,					
		X	100	5	black, ~~moist~~ wet, vf sand					(Alluvium)
		X	100	5		OL	-	35	65	
										Soft drilling
					Slight (fuel) odor in cuttings					~~Alluv/weath. Bedrock contact (approx)~~
	15									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PT-B78

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15				Med. stiff sandy silt w/ rootlets;					
		X	70	3	Dark greenish gray (5GY 4/1),					Alluvium / Bedrock
		X	100	5	wet, slightly cemented siltstone,					Contact
		X	100	13	grades to vf sandstone w/ silty					
					thin interbeds, slight fuel odor					
?					in silt @ 15'					Soft to 18'
					End of greenish gray staining					
										Color change to brow
										@ 18'; harder also
	20									
		X	100	50/4	Very fine to fine sand, wet, dk.					
					yellowish brown (oxidized), slightly					
					cemented					
										Same drill rate 18-25
					cuttings: dark olive gray, silty/vf sand,					Color change @ 23'
					(no rock fragments)					(?)
										water on hammer
	25									
		X	80	50/5	Fine - medium sandstone, as above,					
					wet, slight cementation, trace coarse					
					sands, yellowish brn (10YR 5/6)					Slightly harder 25-30
?					Cuttings: wet, sandy silt/silty sand,					
					olive gray mix					
	30									
		X	100	5	Olive gray to gray shale/siltstone;					
f-med.	med.	X	100	50/5	Yellowish brown - dk. yellowish brown					
					sandstone, as above, wet, fractured,					
					blwish gray (N6) along frx. surfaces (stained?)					
?					5G5/1					
										Harder @ 34'
										better cementation
	35									

UUDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ078

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	80	100/2	Sandstone, fine-med, moderately cemented, wet, oxidized dK-reddish brown where well cemented (sfc), brown (10YR 4/3) otherwise.					less oxidation
										Med.-very hard 35-40
										cementation increasin
	40	X	80	100/2	As above, yellowish brown - grayish brownish yellow, fine-med. grained					less oxidation
										Same drilling to 45'
	45	X		100/3	Medium sandstone, alternating 1/4-inch layers of oxidized brownish staining + gray coloring, wet, moderately cemented					gray to partly oxidize
					Total Depth 48' Backfilled w/sand, cement, + bentonite as piezometer installed					
					EMPLACE BENTONITE FROM 26'-48'.					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ079

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
Rocketdyne	313150005	TBD	CTL III/COCA Rd. PT-028

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/11/01 1520	1/12/01 0900

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	Hollow Stem	35'	6

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS 6	DRIVE	PITCHER
8" Carbide Bullet, Shovel	8"					

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER 16 HOURS
None	Vert.		≈ 15'	15.5'

SAMPLE HAMMER TYPE	DRIVING WT.	DROP	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
Hydraulic	140#	30"	T. Burton	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					SSC: Shallow soils 8' from road					
	1									Alluvium/Bedrock contact @ '
	2									Color change @ 2'
	3				Yellowish brown, weathered, oxidized sandstone					Soft drilling to 5'
	4									
	5									
										Soft drilling to 10'
										Color change to dk. grayish brown
	10	X	100	7	Poorly cemented sandstone, mottled					
		X	100	17	from grayish brown (2.5Y 5/2) to oxidized strong brown (7.5YR 5/8), well sorted fine sand, moist					
										Soft drilling to 15'
	15				becomes wet at 15'					

UGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-79

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	70	5	Wet, poorly cemented sandstone,					water Table (initial)
		X	100	6	as above, heavier strong brown					
		X	100	6	oxidation, medium grained, with					
					15% coarse sand & fine granitic pebble					very soft drilling to 20'
					Very wet cuttings: gray silty sand					
	20	X	90	4	As above, w/ weathered siltstone,					
		X	100	6	1" thick, oxidized at bedding contacts					
		X	100	6	above & below, gray N6, medium					
					sands & alternating thin silty beds					
										competency increases
	25	X	90	40	Wet fine to med. sand, mottled					
		X	100	50/4	dk. grayish to oxidized reddish brown,					Harder drilling @ 26'
					slightly cemented					
?					No cuttings (wet)					
?										
	30				moderately cemented					
		X	90	33	Siltstone, dk. gray, oxidized reddish					
		X	100	31	brown in places, moist, becomes dry					Dry at 31'
		X	100	50/3	at 31' and well cemented					
										softer at 32-35'

UGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-079

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	25 ↓	X	100	50/5	Very fine sand, with siltstone, massive, possible shear zone material, moist, moderately cemented					
					Total Depth 35' Backfilled w/sand, bent. chips, & cement					
					EMPLACE BENTONITE FROM 26' TO 35'					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ080

SHEET 1 OF 3

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
Rocketdyne	313150005	TBD	Area I Road/Bowl R1 PT-022

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/16/01 1100	1/16/01 1600

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	HSA	50	9

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
4" Carbide bullet, shovel	8"			9		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
None	Vertical		≈ 11'	

SAMPLE HAMMER	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
TYPE Hydraulic DRIVING WT. 140# DROP 30"	T. Burton 1/16/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: Alluvium adj. to road					
	2									
	3									Soft drilling
	4									
	5				Brown, moist sandy silt + silty sands					
										Soft drilling
					Lighter colored sands in cuttings (possible boulder)					Alluvium/Weathered Bedrock Contact
	10				Weathered sandstone, mod. cemented,					
		X	90	7	oxidized, frx. surface visible, stained					
		X	100	3	dK. greenish gray @ 11', fine-med, moist,					
		X	100	3	becomes silty sand v.f., black, with abundant organics (wood tissues), wet					H_2O level (initial)
										Soft drilling
										No H_2O on hammer at 15'
	15									

UGUEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ-88

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	0	1	~~Highly weathered bedrock~~ (to silty					
		X	80	2	sand) wet, dk. yellowish brown,	SM	–	85	15	Soft drilling
		X	100	3	oxidized dk. reddish brown & gray					to 20'
					from decaying rootlets, very loose					
					[possible former lacustrine deposits]					
	20	X	65	4	As above, silty vf sand, mottled					
		X	100	4	olive to greenish gray 10Y5/1,	SM	–	85	15	
		X	100	5	abundant decaying organics, trace	SM	–	90	10	
					fine to coarse sand in places					
										Soft as above
					downward coarsening of soils					
	25	X	100	5	Well graded sand (SW), greenish to					
		X	|	9	dk. greenish gray (5GY), wet, med.	SW	tr	95	5	
		X	↓	23	dense, poorly cemented, fine to					H_2O on hammer @ 2
					coarse sand, some small pebbles					
?					wet - no cuttings					
										Harder @ 28.5
										Alluv./weath. Bdrk. contact
					Weathered vf-coarse sandstone,					
	30	X		50/3	moist, yellowish brown, slightly					
	3				cemented					
										Harder @ 31.5
					wet - no cuttings					
	35									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ 088

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	100	50/3	As above, light yellowish brown (2.5Y 6/4), slightly cemented					Harder @ 36'
					wet - silty cuttings					
	40	X	100	50/3	Very weathered sandstone, to silty vf + medium sand (SM), poorly cemented, wet	SM		70	30	
										"Gravelly" feel 41'-44'
										Harder @ 44' Very hard drilling (cementation)
	45	X		50/2	As above, vf - coarse, with ~~small~~ fine granitic gravels (30%), slight to moderate cementation, dk. grayish brown, oxidized dk. reddish brown in places					
	50	X	100	50/2	As above, without gravels, moderate - well cementation, oxidized brown to yellowish brown					
					Total Depth 50' Backfilled w/ sand, bentonite pellets, & cement grout as piezometer installed EMPLACE BENTONITE FROM 31'-50'.					

OGDEN

FIELD LOG OF BORING

BORING NUMBER P 2081

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
SSFL Smou	313150005	TBD	PT-119

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Ruben	02-19-01	1-19-01

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME-95	Hollow stem Aug.	49'	

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
6"	6"					

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
None	Vert.			

SAMPLE HAMMER TYPE	DRIVING WT.	DROP	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
			R. SINGER	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
					Alluvium - silty sand - moist			60	40	Soft
					Brn Blk to YR 3/3 becoming					
					Rd Brn with depth - moist					
										[illegible] @ 3'
	5									
					Alluvium - silty sand			60	40	
					Rd Brn 10YR 4/4 moist					
					Alluvium / Bedrock 9'-10'					
	10									
				34/18	Weathered Sandstone - fv-f			70	30	
					sand Lt Brn 2.5Y 6/6					
					moist - little to no					
					cementation - highly					
					weathered (Sandstone bottom					Harder @ 12'
					6" - Alluvium to 12 in spoon)					

UGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER P2 0V1

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15			10/3	Weathered Sandstone - vf-f Sand Lt Brn 2.5 Y 6/4 moist little to no cementation highly weathered			80	20	
										Softer @ 17
	20			10/3	weathered Sandstone vf-f Sand Lt Brn 2.5 Y 6/4 moist Some cementation - highly weathered			80	20	
										Softer @ 22
										Harder @ 23
										Softer @ 24
	25			10/3	Weathered SANDSTONE - vf-f SAND Lt Brn 2.5 Y 6/4, moist Some cementation. highly weathered			80	20	
										Interbedded
	30			10/3	weathered Sandstone - vf-f Sand Lt Brn 2.5 Y 6/4 moist. Some cementation - highly weathered					
										Sandstone

UGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER P2081

SHEET 3 OF 3

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
	35			100/9	Weathered Sandstone Vf-f sand Lt Brn 2.5Y 6/6, moist - Some cementation - highly weathered			80	20	
										Handu @ 37
										Sorter @ 39
	40			100/3?	Weathered Sandstone Vf-f sand Lt Brn 2.5Y 6/6 moist - some cementation - highly weathered			80	20	Cons start
	45			100/3	Weathered Sandstone Vf-f sand - Lt Brn 2.5Y 6/6 - moist Some Cementation - highly weathered.			80	20	Sons start
	50				~~Sa~~ Weathered Sandstone Vf-f sand Lt Brn 2.5Y 6/6 moist some cementation - highly weathered			80	20	End of Boring 49'

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ092

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
Rocketdyne	313150005	TBD	R1 spillway PT-024

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/17/01 1000	1/17/01 1600

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	HSA	45'	8

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
8" Carbide bullet	8"			8		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER 1.5 HOURS
~~None~~ H_2O to thin GW/mud	Vertical		≈8'	8.63'

SAMPLE HAMMER TYPE	DRIVING WT.	DROP	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
Hydraulic	140#	30"	T. Burton 1/17/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Alluvium next to spillway					
	1									Very soft 0-5'
					Silty sand fill + alluvium					
	2									
										Alluvium/Fill
	3									
	4									
	5									Gravelly Fill 5-7'
										Very Hard
					(GY 4/2)					
					Olive gray silty sand, wet,					
					very loose, vf-fine, fill soils					Color change (approx.)
	10									
		X	0	26	Interbedded (1") silty vf sand					
		X	30	8	and well-graded (f-c) sand, wet,					Sediment
		X	100	10	v. loose, dark greenish gray					
					(pond sediments)					
										Soft drilling to 15
					Note: granitic aggregate material					
					in sampler at 10', with some					
					weathered sandstone - rocks, fill?					
					[possibly slough from loose 5-7'					
	15				range.]					

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ #82

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15				Slough 15-15.5' aggregate? conglomerate?					
		X	100	16	Decomposed ~~granite~~, mod. to well cemented,		60	35	5	
		X	50	8	coarse xlline, contact @ 15.5' to					
		X	10	7	wet SW, as above, dk. green-gray					Soft drilling to 20'
					cuttings: wet silty sand, as above					Sediment
	20	X	100	5	Well graded sand, as above, wet,	SW	-	95	5	
		X	|	7	f-c, becomes silty vf-fine sand	↓				
		X	↓	8	at 21', dk. greenish gray, some dk. olive staining	SM	-	75	25	
										Soft drilling to 25
										Sediment
	25	X	100	9	As above, w/ trace pebbles +					
		X	|	21	organic silt interbeds, fine					
		X	↓	36	to coarse sand, v. loose.					
					Color + lith. change to weathered sandstone					"A little harder" 27 Weath. Bdrk. contact
	30	X		3/4	Slightly cemented vf-med. sandstone, moist, oxidized brown to dk. yellowish brown, becomes mottled gray (N6), less oxidized @ 30.5'					A little softer @ 31' (= color change?)
	35									

UGWEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ 082

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	V	30	28	DK. greenish gray sandstone to gray N5, poorly					
		X	100	32	cemented fine-med. sand, wet,					Harder @ 36'
		X	100	50/6	variable olive staining (fractures?)					cementation ↑
					possible oxidation @ healed fry's					
										End oxidized upper zone
										Hard drilling 36-40'
	40	X	100	100/2	Gray sandstone, fine-med. as above, wet, moderately well cemented					
					Total Depth 45' bgs					Hard Drilling
					Backfilled w/ bentonite pellets, sand, & cement grout as piezometer					
	45	X	100	100/1	Weathered (oxidized) sandstone, mod. well cemented as above, fracture surface visible in sample, w/darker reddish staining					
					TD = 45'					
					EMPLACE BENTONITE FROM 21'-45'.					

OGDEN

FIELD LOG OF BORING

BORING NUMBER 10-183

SHEET 1 OF 3

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
SSFL SMDA	313150005	TBD	PT-618

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Ruben	1-22-01	1-22-01

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME-95	Hollow stem Auger	50	

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
6"	6"					

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
None	Vert.			

SAMPLE HAMMER TYPE	DRIVING WT.	DROP	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
			R. SINGER	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Himalayan Asphalt 1'			20	80	SOIL
					Backfill to 2'. Alluvium					
					Sandy loam RdBrn					
					10YR 4/4. moist					
										CONSTRUCT
5										
					Alluvium - Sandy Silt			20	80	
					RdBrn 10YR 4/6 moist					
										CONSTRUCTED
					Alluvium / Bedrock 9'-11'					
			30/6							
10			50/6		weathered Sandstone HF-F			80	20	Harden @ 10
					with some med sand.					
					RdBrn 10YR 5/8 moist					
					Some competent highly					
					weathered moist					
										Soften @ 13

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ083

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15			100/0	weathered Sandstone VF-F sand with some med sand LT Brn 2.5Y 4/6 moist some cementation - highly weathered			80	20	CONSISTANT
				100/6						
	20				Weathered Sandstone VF-F with some med sand LT Brn 2.5Y 6/6, moist some cementation highly weathered			80	20	CONSISTANT
				100/3						
	25				weathered Sandstone VF-F sand LT Brn 2.5Y 6/6 moist - some cementation highly weathered			80	20	CONSISTANT
				100/2						Hunter 029'
	30				NO RECOVERY					CONSISTANT
	35									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER D2083

SHEET 3 OF 3

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
	35			18/3	weathered Sandstone VF-F Sand Lt Brn with Red Brn mottleing inter Bedded with siltstone. moist some cementation, highly weathered (water??)			70	30	CONSISTENT
										Harder 38.5'
	40			10/2	weathered sandstone VF-F Sand. Lt Brn 2.5Y 6/6 moist. Some cementation highly weathered			80	20	CONSISTENT
	45			10/2	weathered Sandstone VF-F Sand Lt Brn 2.5Y 6/6 with Red Brn mottleing. Some cementation - highly weathered			80	20	CONSISTENT
	50			50/2	weathered Sandstone VF-F Sand Lt Brn 2.5Y 6/6 moist some cementation - highly weathered			85	15	End of Boring 50'
					BENTONITE EMPLACED FROM 31'-50'					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ084

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
Rocketdyne	31315 0005	TBD	Bowl PT-103

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	1/18/01 0740	1/18/01 1100

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	Hollow Stem	33'	6

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
8" Carbide bullet, shovel	8"			6		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER 2 HOURS	hrs.
None	Vertical		≈ 20'	31.14'	

SAMPLE HAMMER	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
TYPE Hydraulic DRIVING WT. 140# DROP 30"	[illegible] 1/18/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	1				Silty sand, strong brown, fill soils					Fill Material
	2									
	3									Drilling: "Not soft, not hard"
	4									
	5									
	10	✓	100	8	Alluvium/Fill soils, as above,					
		✓	↓	8	silty sand, strong brown to yellow					
		✓	↓	10	brown, loose, dry, vf-fine gr.					
					cuttings: as above					"A little harder @ 13"
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ084

DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
15	X	100	7	Silty sand as above, some med.	SM	–	70	30	
	X	↓	7	+ coarse sand, more oxidized					
	X	↓	7	staining					
				Fuel odor + staining dk. greenish gray					Color change + softer drilling 18' (moisture starts)
20	X	100	5	Silty vf - Fine sand (SM), as above,					
	X	↓	7	moist, loose, med. + coarse grains	SM	–	80	20	
	X	↓	7	in places					Softer drilling to 25'
				cuttings: wetter, siltier					
25	X	100	2	As above, wet vf - fine sand,	SM	–	80	20	PID: 115 ppm
	X	↓	2	variable silt (sandy silt in places)	ML	–	20	80	
	X	↓	4	saturated, strong fuel odor	SM	–	80	20	
				(10 GY 4/1) dark greenish gray					
									"A little harder" @ 28'
				cuttings: As above, darker (wet)					Alluvium / Weathered Bedrk. contact
				color ch. to lighter gray					
30	X		100/5	Slightly cemented vf - medium sandstone, greenish gray (10GY 6/1),					Hard Drilling 31'
				moist - wet					
									Very Hard 33'
I	X	100	100/4	Sandstone, oxidized yellowish to olive brown, wet, moderately cemented					
35									

OGDEN

FIELD LOG OF BORING

BORING NUMBER P21 85A

SHEET 1 OF 2

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
SSFL SMIU	913150005	TBD	PT117

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Baker	01-23-01	01-23-01
DRILLING EQUIPMENT	**DRILLING METHOD**	**COMPLETION DEPTH**	**TOTAL NO. OF SAMPLES**
CME-95	Hollow Stem	31	
SIZE AND TYPE OF BIT	**HOLE DIAMETER**	**NO. OF SAMPLES**	BULK / SS / DRIVE / PITCHER
6"	6"		
DRILLING FLUID	**DRILLING ANGLE**	**WATER LEVEL**	FIRST / AFTER ____ HOURS
None	Vert.		
SAMPLE HAMMER TYPE / DRIVING WT. / DROP		**HYDROGEOLOGIST / DATE**	**CHECKED BY / DATE**
		R. SINGER	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
					Hand Auger - Backfill to 1' - Alluvium(?) s. Hy sand to 3' stained Black - Refusal 3.5' turning to Rig					SA
	3				Alluvium(?)/Bedrock 3-5'					Harder at 3.5'
	5				Weathered Sandstone - VF-F Lt Brn 2.5Y 6/6 (cuttings)					Cuttings
	10				Weathered Sandstone VF-F Sand Lt Brn 2.5Y 6/6 (cuttings)					Cuttings

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER MW 85A

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Weathered Sandstone vf-f					
					Sand Lt Brn 2.5Y 6/6					
					(cuttings)					
										Cuttings
	20				Weathered Sandstone vf-f					
					Sand Lt Brn 2.5Y 6/6 (cuttings)					
					cutting gray green at 23'-25'					
										Harder @ 23
	25				Weathered Sandstone - vf - Sand					
					gray green 7.5GY 7/1 (cuttings)					
										Harder at 29'
	30				Weathered Sandstone vf-f Sand					
					Brn to Gray-green					
										End of boring 31'

OGDEN

FIELD LOG OF BORING

BORING NUMBER P2085B

PROJECT NAME: SWMU 55-6	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: PT-117
DRILLING COMPANY: Layne	DRILLER: Ruben	DATE AND TIME STARTED: 01-22-01	DATE AND TIME COMPLETED: 1-22-01
DRILLING EQUIPMENT: CME-95	DRILLING METHOD: Hollow Stem Aug.	COMPLETION DEPTH: 60'	TOTAL NO. OF SAMPLES
SIZE AND TYPE OF BIT: 6"	HOLE DIAMETER: 6"	NO. OF SAMPLES: BULK / SS	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vert.	WATER LEVEL: FIRST	AFTER ____ HOURS
SAMPLE HAMMER TYPE: DRIVING WT.: DROP:		HYDROGEOLOGIST/DATE: R. SINGER	CHECKED BY/DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Hand Auger Backfill - Brown top 1'-1.5' Stained Black @ 1.5-3' Refusal @ 3' Cuttings Brn @ 3'					Soft. Hard @ 3'
					STAINED SOIL NO odor - NO PID reading					
					Backfill (Alluvium?) / Bedrock 3-4'			75	25	
	5			100/3	weathered sandstone VF-f Sand Lt Brn 6/6 moist some cementation - very weathered					CONSTRAINT
				100/2				80	20	
	10				weathered Sandstone VF-f Sand - Lt Brn 2.5Y 6/6 moist fairly cemented - less weathered than above					Hard @ 11 CONSTRAINT

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER P2085B

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
	15			100/3	weathered Sandstone - vf-f sand Lt Brn 2.5Y 6/6 - moist fairly cemented - somewhat weathered			80	20	CONSISTENT
	20			100/3	weathered Sandstone vf-f sand Lt Brn 2.5Y 6/6 moist - some cementation - highly weathered (more than above					CONSISTENT
	25			100/3	weathered Sandstone vf-f sand Lt Brn 2.5Y 6/6 moist some cementation highly weathered		80	20		CONSISTENT
	30			100/3	weathered Sandstone vf-f sand Lt Brn 2.5Y 6/6 - moist. some cementation - highly weathered		70	20		CONSISTENT
					~~oxidized to non-oxidized (34'-?-72)~~					
										softer @ 34'

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER P2 85B

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
	35			100/5	weathered Sandstone vf-sand ~~gray~~ Blue gray 6/5BG/1 with red Brn mottling - moist. Some cementation - highly weathered (water(?))			80	20	
										Harder @ 38
	40				weathered Sandstone vf-sand Lt Brn with gray mottling. moist - Some cementation. highly weathered			80	20	CONSTANT
					Stopped drilling for day - No ~~la~~ day in A.M					
	45'		100/5		weathered Sandstone vf-f sand Rd Brown - 10YR 4/6 - moist - Little or no cementation - highly weathered - highly oxidized (wet?)			80	20	Harder @ 46' CONSTANT
										Harder @ 49'
	50		100/3		weathered Sandstone vf-f sand - Lt Brn 2.5Y 6/6 moist - Some cementation Highly weathered			80	20	CONSTANT
										Harder @ 53

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER P2085 B

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	55			100/3	Weathered Sandstone VF-Sand Lt Brn 2.5Y 6/4 - moist Some cementation - highly weathered			85	15	GOY 4:15 AM
	60			100/3	weathered Sandstone - VF-f sand Lt Brn 2.5Y 6/6 - moist Some cementation - highly weathered					End of boring
					EMPLACED BENTONITE FROM 48'-60'					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PT086

SHEET 1 OF 2

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: CTL I PT-017
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/18/01 1400	DATE AND TIME COMPLETED: 1/18/01 1715
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 35'	TOTAL NO. OF SAMPLES: 6
SIZE AND TYPE OF BIT: 9" Carbide bullet, shovel	HOLE DIAMETER: 9"	NO. OF SAMPLES: BULK / SS 6	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST —	AFTER ____ HOURS
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT. 140# DROP 30"		HYDROGEOLOGIST / DATE: T. Burton 1/18/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: Bare soil adj. to curb along Area I Road					
	1									
	2				Hand Augered to 4.5' bgs					Very Soft drilling
	3				Alluvium: silty sand, fine, black to strong brown @ 6' Wet at 3'					
	4									
	5									Alluvium
										"A little harder" 7'
	10	X	100	8	Silty vf sand (SM), brown to oxidized reddish brown, moist, loose					Alluvium
		X	1	7						
		X	↓	9						
										same drill rate
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ Ø86

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	4	Silty sand (SM), mottled gray					
		X	↓	10	to oxidized strong brown, moist,					Alluvium
		X	↓	24	m. dense, fine-med. grained	SM	–	85	15	
					Alluvium / Bedrock contact					Harder @ 18' "Hard" Drilling (contact)
	20	X	90	100/5	Slightly cemented sandstone, moist (saturated?), vf-medium, some coarse, micaceous, lightly oxidized brownish yellow					
										Harder at 23' (cementation)
	25	X	0	100/3	As above, more oxidized brown,					
		X	90	100/3	moist					Very hard 25-30'
					cuttings: lighter brownish gray					
	30	X	100	100/2	Very Fine sandstone, slight to moderately cemented, pale brown (10YR6/3), moist, slight oxidation					Very Hard 30-35
	25	X	100	100/2	As above, slight cementation, brownish yellow, vf-fine.					Total Depth 35' Backfilled w/well material

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ087A

SHEET 1 OF 2

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: Bowl Area, PTØ23 A
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/24/01 1105	DATE AND TIME COMPLETED: 1/24/01 1240
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem Auger	COMPLETION DEPTH: 22.5'	TOTAL NO. OF SAMPLES: 1
SIZE AND TYPE OF BIT: 8" Carbide Bullet, Shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK — SS 1	DRIVE — PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST 15-16'	AFTER ____ HOURS
SAMPLE HAMMER TYPE: None	DRIVING WT. — DROP —	HYDROGEOLOGIST / DATE: Thomas J. Bolk 1/24/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	5				Dark Brown, moist silty sand, loose					Alluvium Soft drilling to 10'
	10									Alluvium
					sandier cuttings, color changes to grayish/yellowish reddish brown, less silt					Soft drilling to 15'
	15									
					Hydrocarbon odor + heavy staining, wet, dark greenish gray					Very soft Drilling: Staining contact (approx) + moisture
										Harder at 19'
	20									Alluvium/Weathered Bdrk. Contact

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ Ø87A

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	20									
										Hard Drilling
					No fuel staining					
		X	100	100%	Alternating vf-fine sandstone + siltstone beds (¼"), moist, brown + gray, respectively, slightly to moderately cemented, variable oxid. in sandstone					
	25				Total Depth 22.5'					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ-087B

SHEET 1 OF 2

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: Bowl Ret. Pond, PT-023
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/23/01 1400	DATE AND TIME COMPLETED: 1/24/01 1000
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: hollow stem	COMPLETION DEPTH: 35'	TOTAL NO. OF SAMPLES: 10
SIZE AND TYPE OF BIT: 8" Carbide Bullet, Shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 10 / DRIVE / PITCHER	
DRILLING FLUID: ~~None~~ H_2O to cool bit	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST 10 & 14'	AFTER _____ HOURS
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: Thomas J. 5-10	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: North end retention pond.					
	1									
	2									Soft drilling (Alluvium)
	3				HA to 3.5' bgs					
	4				Silty sand alluvium, dk. brown, oxidized					
	5									
	10	X	100	8	Silty sand (SM), dk. brown, mottled					Alluvium
		X	1	8	oxidized yellowish + reddish brown,	SM	–	65	35	
		X	↓	8	moist, loose, vf - med. sand					
										More sand
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ087B

SHEET 2

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	3	Well graded sand w/silt (SW-SM), wet	ML				
		X	|	6	fine-coarse, greenish gray, oxidized	SW-SM				
	↓	X	↓	32	reddish brown mottling, decaying organics (roots), becomes weathered siltstone, color as above, then fine sandstone, slight to poor cementation, light greenish gray					Hard @ 16' Alluv./Weath. B contact
	20	X	100	100/4	Alternating vf sandstone & siltstone, moist, slightly to poorly cemented, light ~~brown~~ yellowish brown to pale yellow, some fine sand layers, 1/8" thick					Harder @ 22' "Very Hard"
	25	X	90	100/3	Poorly sorted sandstone, moist-saturated, oxidized vf-coarse sand, olive brown, slightly cemented in sample, portions moderately cemented					
					cementation increases					
	30	X	100	100/2	Vf-medium sandstone, yellowish brown, moist, mod. well cemented					Very Hard 31' (cementation)
	↓				As above, vf-med, with some coarse					
	35	X	100	100/3	sand, more cemented olive brn, moist					

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ 867B

SHEET 3

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	~~35~~									
										bit may be worn - drilling is harder than formation shows
	40	X	100	100/6	Vf sandstone w/ slight cementation to moderate, moist - saturated, gray, oxidized to yellowish brown in finer layers					Softer drilling to 50'
	45	X	95	100/5	Slightly cemented sandstone, vf - coarse, moist - saturated, yellowish to grayish brown					
	50	X	100	100/4	As above, less cementation ("poor") in sample					Harder to 55'
					@ 55' Very fine sandstone, yellow-brn, becomes gray variably, moist-saturated, slight to moderate cementation					
					Total Depth = 55'					
					Backfilled w/ sand, cement, bentonite as piezometer installed					
	55	X	100	100/5						

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ088

SHEET 1 OF 3

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: LETF (Road), PT-015
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/19/01 0800	DATE AND TIME COMPLETED: 1/19/01 1245
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem	COMPLETION DEPTH: 45'	TOTAL NO. OF SAMPLES: 8
SIZE AND TYPE OF BIT: 8" Carbide bullet, shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 8	DRIVE / PITCHER
DRILLING FLUID: ~~None~~ H_2O at 35'-Lubricate	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST ≈43'	AFTER _____ HOURS
SAMPLE HAMMER TYPE: Hydraulic	DRIVING WT.: 140#	DROP: 30"	HYDROGEOLOGIST / DATE: Thomas / 1/19/01
			CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	1				Alluvium: strong brown to brown silty sand, wet; v. loose					Very soft
	2									
	3									
	4									
	5									
					Alluvium / Bedrock contact					Harder "Pretty Hard Drilling @ 7'
					Poorly to					
	10				Slightly cemented sandstone,					
		X	20	47	oxidized & mottled pale brown					
		X	100	50/5	& yellowish red, moist, vf-med. grained → wet?					
										Same drill rate to 15'

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ088

SHEET 3

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	10	14	Very fine to fine sandstone,					
		X	100	44	oxidized yellowish brown, wet					Possible Fract
		X	100	50/6	& silty in places, some medium					Zone
					grains, highly weathered as @ 25'					
	40	X	?	22	As above, vf-fine, less silt,					
		X	100	47	wet, poorly cemented					
		X	100	48						
										Harder 42-43
										(concretion?)
					silty, wet cuttings					
	45				Silty clay (CL), wet, oxidized, mottled					
		X	90	8	Highly weathered fine-med. sand-					
		X	100	14	stone, olive brown, some vf, grades to					
		X	100	32	wet, very loose sand, med.-coarse					Water in Hole
					Total Depth 45'					
					Backfilled with well materials:					
					sand, bentonite chips, cement					
					BENTONITE EMPLACED					
					FROM 43'-45'.					

OGDEN

FIELD LOG OF BORING

BORING NUMBER PZ Ø89

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: APTF (GI Road) PT Ø14
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/22/01 0730	DATE AND TIME COMPLETED: 1/22/01 0930
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem Auger	COMPLETION DEPTH: 20'	TOTAL NO. OF SAMPLES: 3
SIZE AND TYPE OF BIT: 5" Carbide	HOLE DIAMETER: 5"	NO. OF SAMPLES: BULK / SS: 3	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST: 3'	AFTER _____ HOURS
SAMPLE HAMMER TYPE: Hydraulic, DH Slide DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: [signature] 1/22/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: bare soil on slope adj. to road & drainage swale					
	1									
	2									Alluvium - Very Soft Drilling
	3				Wet @ 3'					
	4									
	5									
					dark grayish brown silty sand (SM), wet, organic fines	SM	–	65	35	Very soft to 10'
	10	X	50	7	Silty Sand (SM), dk. yellowish brown,					Sampled w/ down-hole
		X	100	7	wet, loose, vf - coarse, poorly	SM	–	80	20	slidehammer
		X	50	8	graded w/ pockets of fine SP	SM	–	85	15	
					Alluvium / Weathered Bedrock Contact					Slightly harder @ 12' (Contact)
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ089

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	8	Highly weathered bedrock, very loose,	SP	tr	95	5	sampled w/
		X	|	9	oxidized vf-med. sands, some	SW	tr	100	ø	Hydraulic hamm
	↓	X	↓	16	decomposed granitic coarse sand/fine	SP	tr	100	ø	
					gravel, wet, no cementation,					
					¼" silty interbeds					
					Cementation begins					"A little harder @ 19'
	20	X	100	6"/5"	Slightly cemented sandstone,					
					vf to medium, grayish brown oxidized					Water in borehole
					to strong brown, moist (saturated)					after sampling
					Total Depth 20'					
					BENTONITE EMPLACED 18'-20'					
	25									

OGDEN

FIELD LOG OF BORING

BORING NUMBER PT-090

SHEET 1 OF 3

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: CTL II B412 PT-027
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/12/01 1100	DATE AND TIME COMPLETED: 1/15/01 0830
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 45	TOTAL NO. OF SAMPLES
SIZE AND TYPE OF BIT: 6" Carbide Bullet + Shovel	HOLE DIAMETER: 6"	NO. OF SAMPLES: BULK / SS	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST ≈ 28.5'	AFTER 65 HOURS ≈ 29'
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT. 140# DROP 30"		HYDROGEOLOGIST / DATE: T. Burton	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: Asphalt					
	1				Road base to 1': brown silt & sand					Fill material
	2				Stained soils 1'-4.5' greyish black					
	3									Soft drilling.
	4				sandy silt & silty sand alluvium (fill?)					
										Color ch. to dk. greenish gray
	5				Color change					
										Soft drilling to 10'
					cuttings: greenish gray sands (fill?)					
										Approx. alluvium/ weathered bdrk. contact
	10									
		X	60	5	Silty vf & fine sand, dk. greenish					
		X	100	5	gray (10Y 4/1), mottled (oxidized)					
		X	100	6	dk. yellowish brown, moist, loose (very weathered bedrock) poorly					Soft drilling to 15'
					cemented, slight hydrocarbon odor					0.5 ppm w/ PID
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ 090

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	35	Lt. yellowish brn. VC-fine sandstone, moist, olive,					Possible fracture
		X	100	5/5	1" fractured (healed) + stained dk.					increased cementatio
					gray + greenish gray along frx.,					(slight)
					rootlets in frx., slightly cemented,					
					some med. sand, no HC odors					Harder drilling @ 17-18
					color ch. to dk. brown in cuttings,					~~Soft~~
					hydrocarbon odors (poss. from above)					
	20	X	100	5/5	Olive sandstone, moist-wet, fine,					
					micaceous, well sorted, oxidized					
					in places, slightly cemented					Same rate to 25'
										color change approx
	25	X		6/6	Fine-med. sandstone, moist-wet,					
					oxidized strong brown 7.5YR 5/8					
					to yellowish brown, 10% coarse					cementation increases
					sand, slight cementation, some					harder 25-30'
					moderate cement.					
	30	X		5/4	As above, dk. yellowish brown,					
					fine, micaceous, more cemented (slight)					
					wet cuttings					Softer zone 33-38'
										poss. shear zone
	35				Fine sandstone w/silt massive loose					

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ090

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	60	5	Fine sandstone?, ~~silty~~, poorly					Poss. shear zone
		X	100	9	cemented, with med. + trace					material
		X	100	13	coarse sand, wet, oxidized					
					yellowish brown,					soft drilling
										Hard drilling @ 38'
										"A little hard"
	40	X	100	25	Olive brown fine-med sandstone,					
		X	100	50/6	as above					
		X	100	50/3						
										Same drill rate
	45	X		33	As above, with ~~v. large~~ very					
		X		50/5	coarse sand (10%)					
					TOTAL DEPTH = 45 ft bgs					
					H_2O LEVEL ≈ 29 ft bgs					
					SLOUGHED IN TO 42.5 ft bgs					
					BACKFILLED WITH BENTONITE CHIPS TO 28.0 ft bgs					

OGDEN

FIELD LOG OF BORING

BORING NUMBER P2091

SHEET 1 OF 4

PROJECT NAME: ROCKETDYNE	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: CTL-III NORTH / PT-025
DRILLING COMPANY: LAYNE	DRILLER: ENRIQUE	DATE AND TIME STARTED: 1/15/01 @ 1100	DATE AND TIME COMPLETED: 1/15/01 @ 1500
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA	COMPLETION DEPTH: 55.0	TOTAL NO. OF SAMPLES
SIZE AND TYPE OF BIT: 8" HSA BULLET ~~AUGER~~ CARBIDE STOVER	HOLE DIAMETER: 8"	NO. OF SAMPLES / BULK / SS / DRIVE / PITCHER	
DRILLING FLUID: NONE	DRILLING ANGLE: VERTICAL	WATER LEVEL: FIRST 18	AFTER _____ HOURS
SAMPLE HAMMER TYPE: HYDRAULIC DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: TODD HALL / 1/15/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					ALLUVIUM; SILTY SAND W/ ORGANIC (NATURAL) CONTENT. MOIST, LOOSE, SAND FINE TO MED IN SIZE. (10 YR 3/3)					HAND AUGERED TO 5'
	5				SAME AS ABOVE, VERY LITTLE ORGANIC CONTENT, COLOR CHANGE TO (2.5YR 6/4)					COLOR CHANGE @ 6' SOFT DRILLING
	10	X	70	4	ALLUVIUM: SILTY SAND, SAND					~~DRILLED~~ +
		X	100	4	V. FINE TO MED., MOIST, LOOSE					DRILLING SOFT
		X	100	4	(FINER AND ~~SILTIER~~ SANDIER THAN ABOVE) (2.5 YR 5/4)					AS ABOVE
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ091

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	80	2	SAME AS ABOVE, VERY					DRILLING SOFT
		X	100	3	MOIST TO SATURATED					AS ABOVE
		X	100	4	(2.5 YR 5/4)					
										COLOR CHANGE
										H_2O @ ± 18'
	20				ALLUVIUM:					
		X	80	2	POORLY GRADED SAND					DRILLING SOFT
		X	100	4	WITH SILT (SP), SAND IS					AS ABOVE
		X	100	5	FINE TO MED., ~~&~~ WET,					
					LOOSE, (5GY 6/1)					
	25				ALLUVIUM: SAND AND GRAVEL					DRILLING SOFT
		X	100	5	~~SAN~~ GRADES TO MED SAND					AS ABOVE
		X	100	8	@ 25.5 ft, POORLY GRADED,					
		X	100	15	WET, LOW DENSITY, DENSITY					
					INCREASES @ 26 ft (5GY 6/1)					
					ALLUVIUM / BEDROCK					DRILLING SLIGHTLY HARDER @ 28-30'
	30	X	50	16	WEATHERED BEDROCK: HIGHLY					DRILLING SAME
		X	100	27	WEATHERED, FRACTURED, AND					AS ABOVE
		X	100	50	OXIDIZED SANDSTONE, LIGHTLY					
					CEMENTED, FINE TO MED					
					SANDSTONE ~~w/~~, MOIST, MOD					
					SILTY DENSITY					
					(2.5 YR 6/6)					

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ091

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	80	20	SAME AS ABOVE, SLIGHTLY					DRILLING SAME
		X	100	34	MORE CEMENTED THAN					AS ABOVE
		X	100	50/5	ABOVE, FAULT GOUGE &					
					CARBONATE CEMENT IN					
					FRACTURES, HIGHLY					
					OXIDIZED (10 YR 5/6)					
										HARDER DRILLIN
										38 - 40'
	40									
		X	80	100/5	WEATHERED SILTY SANDSTONE					DRILLING EVEN
					V.F. TO F. SANDSTONE,					HARDER 40-45
					MODERATELY CEMENTED,					
					MOIST, DENSE, MODERATELY					
					OXIDIZED, HIGHER SILT					
					CONTENT THAN ABOVE					
					(2.5 YR 4/3)					
	45									
		X	100	45	HIGHLY FRACTURED AND					DRILLING SAME
		X	100	50	OXIDIZED SANDSTONE					HARDNESS AS
		X	100	50	WITH FAULT GOUGE AND					ABOVE
					OXIDIZED FRACTURE FACES.					
					SAND IS FINE TO MEDIUM					
					WITH OCCASIONAL 3/8"					
					GRAVEL CLASTS. (2.5YR 5/4)					
					(CLAYEY SAND CUTTINGS 45-50')					SOFTER @ 49-50
	50									
		X	80	38	CONGLOMERATE OF OXIDIZED					
		X	100	50/5	SANDSTONE FROM ABOVE &					SOFTER DRILLIN
					(2.5 YR 5/4) AND GREY CLAYEY					AS ABOVE.
					SANDSTONE (FINE TO V. FINE)					
					(5 BG 7/1). ~~FINE GL~~ DENSE,					
					SLIGHTLY MOIST. FAULT					
					GOUGE & SLIKEN SIDES					
	54				PRESENT.					

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FIELD LOG OF BORING

BORING NUMBER BS BS39 / PZ Ø92

SHEET 1 OF 2

PROJECT NAME: RocketDyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: B359 PT-Ø11
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/22/01 1130	DATE AND TIME COMPLETED: 1/22/01
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: HSA / Continuous Core	COMPLETION DEPTH: 34.5'	TOTAL NO. OF SAMPLES: 6
SIZE AND TYPE OF BIT: 8" Carbide	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS / DRIVE: 6 / PITCHER	
DRILLING FLUID: None H2O to cool bit	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST ≈28'	AFTER _____ HOURS
SAMPLE HAMMER TYPE: None DRIVING WT. — DROP —	HYDROGEOLOGIST / DATE: 1/22/01	CHECKED BY / DATE	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface: Asphalt					
	1				Road Base					
	2				HA to 3'-refusal on cobble fill					Auger slowly thru gravels to 5'
	3	X	90		Sample 3-4': silty fine to med.					
	4	X	100		sand, moist, loose, brown to					Soft to 4'
			0		dk. brown					
	5		0							
			100							
		X			Less silt, SP-SM, fine sand,					Alluvium
					moist, color as above, no					
					visible staining					
		X								
			0							
			0							
	10		0							
			40							
		X	100		Weathered Bedrock (Sandstone)					Contact
					Oxidized staining gray to strong					
					brown, moist, vf-fine, some					"A little harder" ≈ 25'
		X			medium + trace coarse sands					
			0							
	15		0							

UGUEN

BSBS39

BORING NUMBER PZ-892

FIELD LOG OF BORING (CONTINUED)

SHEET 2 OF 2

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15		0		slough					Weathered Bdrk.
		X	30							
			100							Same Drill Rate to 19'
		X			As above, mottled vf-med. sand, oxidized, moist, poorly cemented					
		X								
		X	↓							
			0		slough					
	20		0							
		X	100		V. loose med. sand lens, 2-3"; 1" silt layer					
					As above, cementation increases					
		X			at 22' ("slight" cemented)					
										Harder @ 22'
		X								Cementation contact
					More silty 22-24': vf sandstone,					
		X			dk. grayish brown, moist					
			↓							
			0		loose, moist vf-fine sand w/silt					
	25		90		(slough)					
			100							
					loose, homogeneous vf-fine sand, dk. brown					Harder "Medium" 26'
					Alternating oxidized/grayish layers,					slight to moderate
					moderately cemented					cementation
					color contact to lt. gray, lightly					Very Hard @ 28'
			↓		oxidized vf-fine sand					mod. well cemented
					10% decomposed fine granitic gravel					H_2O on core barrel @
										28-29'
	30				overdrill to 34.5'					
										Very Hard Drilling
					Bottom of Boring 34.5'					
					BENTONITE EMPLACED 31'-34.5'					
	35									

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FIELD LOG OF BORING

BORING NUMBER PZ093

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: Area I Road PT-118
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/23/01 0800	DATE AND TIME COMPLETED: 1/23/01 1330
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem	COMPLETION DEPTH: 40'	TOTAL NO. OF SAMPLES: 7
SIZE AND TYPE OF BIT: 8" Carbide Bullet, Shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 7	DRIVE / PITCHER
DRILLING FLUID: None	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST —	AFTER ____ HOURS
SAMPLE HAMMER TYPE	DRIVING WT. 140# DROP 30"	HYDROGEOLOGIST / DATE: [illegible] 1/23/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Surface:					
	1									Alluvium
	2				(Leach?) Former sanitary sewer clay pipe in small gravels 2-3'					↓
	3									Weath. Bedrock
	4				Oxidized yellowish brown sandstone, dry, vf-fine (cuttings)					Hard Drilling to 10'
	5									
	10	X	100	100/3	Very fine sandstone, dry, slight cementation in sample, yellow brown (light), well sorted, no oxidation					
					cuttings are lighter brownish yellow					Very Hard @ 12' color change + cementation
	15									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ #93

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15	X	100	100/3	Sandstone, moderate cementation, heavy oxidized staining, strong to reddish brown, Vf to medium grained, moist					Very hard
	20	X	100	100/3	Mod. well cemented sandstone, Vf to med. as above, moist, yellowish to olive brown, some coarse sand + micas					
										Softer @ 24-25'
	25	X	100	18	Vf fine sandstone, slight cementation,					
		X	100	100/3	moist to saturated, oxidized olive + yellow brown, becomes moderately cemented + less moist vf sandstone + less oxidized in shoe					Hard to 30'
	30	X	100	100/2	Vf-fine sandstone, oxidized strong to reddish brown, moist, micaceous, resembles 15' sample, 30% med. sand, yellowish brown					Very Hard 32-33'
	35									

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ093

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35	X	100	10 1/2	Dark yellowish brown, vf-fine, moist, mod. well cemented sandstone, → saturated, oxidized mafics, 10% med. sand + micas					
										Very Hard to 4
	40				Total Depth 40' Backfilled w/sand, bentonite chips, + cement grout as piezometer installed					
					NATIVE MATERIALS SLOUGHED IN TO 35'.					

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FIELD LOG OF BORING

BORING NUMBER PZ094

PROJECT NAME: RocketDyne	PROJECT NUMBER: 313150005	ELEVATION AND DATUM: TBD	LOCATION: Sage Ranch PT001
DRILLING COMPANY: Layne	DRILLER: Enrique	DATE AND TIME STARTED: 1/25/01	DATE AND TIME COMPLETED: 1/25/01
DRILLING EQUIPMENT: CME 750	DRILLING METHOD: Hollow Stem Auger	COMPLETION DEPTH: 34'	TOTAL NO. OF SAMPLES: 6
SIZE AND TYPE OF BIT: 8" Carbide bullet, shovel	HOLE DIAMETER: 8"	NO. OF SAMPLES: BULK / SS: 6	DRIVE / PITCHER
DRILLING FLUID: ~~None~~ H_2O to cool bit	DRILLING ANGLE: Vertical	WATER LEVEL: FIRST ≈17'	AFTER _____ HOURS
SAMPLE HAMMER TYPE: Hydraulic DRIVING WT.: 140# DROP: 30"		HYDROGEOLOGIST / DATE: T. Burton 1/25/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Sfc: Topsoil w/ leaves + brush					
	1									Alluvium
	2				HA to 4'					
	3									
	4									darker cuttings
	5									
					cuttings: yellowish brown sandstone					Becomes hard @ 6'
										Alluvium/Bedrock cont.
	↓	X	100	100/4	Sandstone, lightly oxidized yellow-brown, moist, vf-med. gr, very thin silty interbeds					
	10									
										"Medium Hard" 6-17'
	↓	X	100	100/4	As above, trace coarse sand					
	15									

OGDEN

FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PZ094

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	15									
										Soft 17-19'
		X	95	16	Fractured mudstone, moist - wet,					
		X	100	23	olive, black oxidation along frx.,					
	20	X	100	50/5	reddish brown ox. various places, becomes sandstone, very fine,					Soft to 22' ↓
					med. cemented, some fine sands, moist, brownish yellow					Very Hard Drilling 22-34'
		X	100	100/1	Sandstone, vf-med. grained, mod.					
	25				well cemented, moist, light ox., moist					
					H_2O added to cool bit					
		X	100	100/1	As above, broken up in sample,					
	30				light oxidation					
					Total Depth = 34'					
					Backfilled with well materials					
	34	X	100	100/1	As above, vf-med, lt. ox, moist					TD = 34'
					BENTONITE EMPLACED 24'-34'					

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FIELD LOG OF BORING

BORING NUMBER LXBS13' PZ095

SHEET 1 OF 3

PROJECT NAME	PROJECT NUMBER	ELEVATION AND DATUM	LOCATION
NASA	313150005	TBD	LOX PT-125

DRILLING COMPANY	DRILLER	DATE AND TIME STARTED	DATE AND TIME COMPLETED
Layne	Enrique	2/14/01 0920	2/14/01 1530

DRILLING EQUIPMENT	DRILLING METHOD	COMPLETION DEPTH	TOTAL NO. OF SAMPLES
CME 750	Hollow Stem	37.5'	4 cc, 4 split spoon

SIZE AND TYPE OF BIT	HOLE DIAMETER	NO. OF SAMPLES	BULK	SS	DRIVE	PITCHER
8" Carbide	8"		4	4		

DRILLING FLUID	DRILLING ANGLE	WATER LEVEL	FIRST	AFTER ____ HOURS
H_2O to cool bit	Vert.		—	

SAMPLE HAMMER	HYDROGEOLOGIST / DATE	CHECKED BY / DATE
TYPE Non-Hydraulic DRIVING WT. 140# DROP 30"	[illegible] / BK 2/14/01	

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	0933									Continuous Core
	1	X			Wet soils to 8", metal debris					LXBS13 S01 D1.5'
										@0945 R
	2				Weathered Bedrock to silty sand (SM)					
					alluvium, dk. brown, moist,	SM	tr	60	40	PID: 0.5 ppm
	3				med. dense, with bedrock frags					
					(Fill soils)					
	4				Shale fragments					
	5	X	100							LXBS13 S02 D5.0
	0941 0955									@0955
					reddish brown					PID: 0 ppm
					Color, lith. change	SW	-	95	5	
					yellowish to olive brown sands	SP	-	95	5	Alluv./Fill / ~~Weath. Bdrk. contact~~
					Silty sand, as above, moist, with sandstone + siltstone fragments					
										LXBS13 S03 D10'
	10 0958 1017	X	100		Staining: greyish from 9.6-9.9', with oxidized mottling reddish brown					PID: 200-600 ppm
					Reddish to yellowish brown SM, as above becomes v. dk gray to black, w/					color change
		X			greenish gray staining, decaying roots in places, sandy ● lenses are discolored GY					LXBS13 S04 D12.5' PID: 75-350 ppm
		X			Strong solvent odor @ 14.5'					Lith. change 14.75'
	15 1020		100		Siltstone, brown					LXBS13 S05 D14.5

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FIELD LOG OF BORING (CONTINUED)

LXBS13

BORING NUMBER PZØ95

SHEET 2 OF 3

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	GR	SA	FI	COMMENTS
					Bedrock begins @ 14.75'					
	15 1116				Siltstone, brown, weathered & fractured					Continuous Core to '
					roots decaying in frx., gray, clayey					
										Harder @ 17'-17.5'
		X			sandy, oxidized red along frx., SP, fine,					
					olive sand & gray frx. sfc.					PID: 22-180 ppm
					High-angle fractures, subparallel					
										Hard Drilling 19'
	20 1121									
										End continuous core
	25	X	100	26 50/2	Frx. siltstone, as above, gray to olive brown; variable oxidation, reddish frx. sfc's, partial cement. in sample					
	30	X	100	50/5	Siltstone, as above, less oxid., olive gray to gray, mod. cemented					
										Bottom of weathered ~~[illegible]~~ upper Chats. Fm
					Cementation contact					Harder @ 33'
					As above, little to no oxidation,					
	35	X	100	100/2	gray to dk. gray, well cemented					

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LXBS 13

BORING NUMBER PZ095

FIELD LOG OF BORING (CONTINUED)

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	~~35~~									
										Very Hard Drilling
	I	X	90	100/1	Very well cemented ($CaCO_3$) conglomeratic sandstone, vf-fine matrix, coarse qtz. + feldspar sands, subround, gray					
					Total Depth 37.5'					
					NATIVE MATERIAL SLOUGHED TO	37'				
					BENTONITE EMPLACED 26' - 37'					

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FIELD LOG OF BORING

BORING NUMBER PT126/PZ96

PROJECT NAME: Rocketdyne	PROJECT NUMBER: 3;3150007	ELEVATION AND DATUM:	LOCATION: PIF/COCA Area
DRILLING COMPANY: Layne Christensen	DRILLER: Enrique & Jose	DATE AND TIME STARTED: 4/12/01 0740	DATE AND TIME COMPLETED: 4/21/01 1100
DRILLING EQUIPMENT: CME-75	DRILLING METHOD: HSA	COMPLETION DEPTH: 45' Bgs	TOTAL NO. OF SAMPLES: 9
SIZE AND TYPE OF BIT: 6" Dry bit	HOLE DIAMETER: 6"	NO. OF SAMPLES: BULK / SS	DRIVE / PITCHER
DRILLING FLUID: —	DRILLING ANGLE: 90°	WATER LEVEL: FIRST	AFTER ____ HOURS
SAMPLE HAMMER TYPE: DRIVING WT. 140 DROP		HYDROGEOLOGIST / DATE: E.Cathcart / 4/12/01	CHECKED BY / DATE

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
					Hand Auger to 5'; Clayey Sand, Brown	SC	10	20	70	BZ:0.0
	1				(7.5yr 3/3); moist, medium dense, fine					BH:0.0
					Sand & Coarse Gravel; no odor					S:0.0
	5		100%	2/3/3	Silty Sand; Dark Brown (7.5yr 3/3)	SM		20	80	0740
					moist; Loose; fine Sand & Silt; no odor					Sample from: 4-5.5 bgs
										BZ:0.0
										BH:0.0
										S:0.0
▽ GW										
	8				Groundwater					
	10		100%	1/3/3	Silty Sand; Medium Brown (2.5y 5/4)	SM		40	20	0750
					wet; Loose; med-fine Sand, no odor					Sample from: 9-10.5 bgs
										BZ:0.0
										BH:0.0
										S:0.0

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER PT 126/P296

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
Alluvium	15		100	3/5/9	Silty Sand; Light Brown (7.5yr 6/3); Wet medium dense; Medium Sand; no odor	SM		80	20	0755 Sample = 14-15.5 BGS BZ: 0.0 BH: 0.0 S: 0.0
	17				Sandstone Encountered					Hard drilling @ 17' Consistant
Arkosic Sandstone	20		20%	50 for 1"	Weathered Arkosic Sandstone; Reddish Yellow (7.5 yr 6/6); Moderately Weathered; Dry; Weak; Fine - Medium Sand grains; unable to determine fracture			80	20	0807 19-20.5' (bgs) BZ: 0.0 BH: 0.0 S: 0.0 Consistant Drilling Pressure
	25		10%	50 for 1"	Weathered Arkosic Sandstone; Reddish yellow (7.5yr 6/6) w/ Some Gray Lenses; moderately weathered; Dry; Weak; Medium Sand Grains; Low Sample recovery - unable to determine fracture			90	10	0815 24-25.5 (bgs) BZ: 1.9 BH: 1.0 S: NA Harder Drilling @ 27' Increasing Competency
	30		0%	50 for 1"	NO Recovery Based on cuttings & Drilling behavior; Weathered Arkosic Sandstone; Dry; Moderately Strong; Increasing Competency w/ Depth					0825 BZ: 4.6 BH: 0.1 S: NA

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FIELD LOG OF BORING (CONTINUED)

BORING NUMBER BT126/B296

LITHOLOGY	DEPTH (FEET)	SAMPLES	RECOVERY	BLOW COUNT	DESCRIPTION	USCS SYMBOL	ESTIMATED PERCENT OF GR	SA	FI	COMMENTS
	35		1%	50 for 1"	Weathered Arkosic Sandstone; Brown (2.5Y 5/4); moderately Strong; moist; Slight-moderate weathering			85	15	0835 BZ:0.0 BH:0.0 S:NA 34-35.5 (bgs)
										Increasing Competency
	40		1%	100 for 1"	Same As Above			85	15	0950 BZ:0.0 BH:0.0 S:NA
										Consistent Competency
										Harder Drilling
	43									Increasing Competency
	45			100 for 1"	Same As Above; Slightly more Silty w/some Gray Lenses			80	20	1000 BZ:0.0 BH:0.0 S:NA
					Boring terminated @ 45'					

MONTGOMERY WATSON

Boring #: PT-111 MW#: PZ097 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: FSDF/SSFL

Logged By: T. Burton Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 All-Terrain/HSA

Drillers Name: Enrique Perez

Borehole Diam./Drill Bit Type: 8 in/Carbide

Total Depth: 44.5'

Ref. Elev.: GROUND SURFACE

Site Sketch Map

Sampler Type: 1.5" split spoon

Depth to 1st Water (▽): NONE Time/Date:

Drill Start Time/Date: 1400 10/15/01 Drill Finish Time/Date: 0855 10/16/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date:

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: NOT APPLICABLE

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						CONCRETE	1		Alluvium: Silty sand (SM), dry, loose, vf-fine, dk. yellowish brown 10YR4/6	—	—	tr	65	35
						CEMENT GROUT	2							
							3		3.5' Alluv./Weathered bdrk. contact "Medium hard" drilling					
							4							
	5"	5"	100/5"				5		Weathered fine sandstone, oxidized brownish yellow (10YR), moist, some med. grains, slightly cemented	—	—	10	90	tr
							6							
							7		Softer drilling @ 6.5' - 9.5'					
							8							
							9							
	6"	6"	93/6"				10		Weathered very fine sandstone, oxidized yellowish brown, moisture increasing	—	—	5	95	tr
							11		drilling rate same as 6.5-9.5'					
							12							

QA/QC

Boring #: PT-111 MW#: PZ-097 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							12							
							13							
							14							
	↓	4"	100/4"				15		WEATHERED SANDSTONE: SAME AS ABOVE. THIN DARK GREY SILTSTONE INTERBEDS. SLIGHTLY MORE CEMENTED THAN ABOVE HARDER DRILLING @ 15'	-	-	5	95	TR
							16							
							17							
							18							
							19							
	↓	2"	100/3"				20		WEATHERED FINE SANDSTONE WITH OCCASSIONAL MED GRAINS, OXIDIZED, MOIST, BROWNISH YELLOW	-	-	10	90	TR
							21							
							22		SOFTER (SLIGHTLY) DRILLING @ 18.5'					
							23							
							24							
	↓	4"	100/5"				25		Fine-very fine sandstone, red-brn., heavily oxidized & mod. cemented in upper 1.5", possible frx. zone; becomes unweathered & gray, slightly cemented & increased moistore	-	-	10	90	-
							26							
							27							
							28							
							29							
	↓	5"	100/5"				30		FINE-V. FINE SANDSTONE AS ABOVE WITH THIN SILTSTONE INTERBEDS, OXIDIZED, YELLOWISH-BROWN, MOIST, SLIGHTLY TO MODERATE CEMENTATION	-	-	-	90	10
							31							
							32		SOFTER DRILLING @ 31'-33.5'					

2" DIAM. SCHEDULE 40 PVC BLANK CASING FLUSH & THREADED TO THE SURFACE

1/4" TABLETS ENVIROPLUG MEDIUM CHIPS TO 12 FT BGS

QA/QC

Boring #: PT-111 MW#: PZ-097 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							32							
							33		HARDER DRILLING 33.5'-34.5'					
							34		FINE SANDSTONE, MOIST,					
	↧	1"	100/2"		2" DIAM SCHEDULE 40 PVC WITH 0.020" SLOT OPENINGS	RMC PACIFIC MATERIALS #3 NATURAL MONTEREY BEACH SAND			OXIDIZED, BROWNISH-	-	-	5	95	TR
							35		YELLOW, SLIGHTLY TO					
									MODERATELY CEMENTED					
							36							
									DRILLING RATE SAME AS					
							37		33.5-34.5' THROUGHOUT 37.5'					
									ENTIRE 3' SECTION (34.5-37.5)					
							38		COLOR CHANGE TO OLIVE					
									IN CUTTINGS @ 38'. HARDER					
							39		DRILLING 37.5'-40'.					
	↧	2"	100/2"				40		FINE SANDSTONE WITH	-	-	15	85	-
									SOME MEDIUM GRAINS					
							41		(COARSER THAN ABOVE),					
									MOIST, BROWNISH-YELLOW,					
							42		~~SL~~ MODERATELY CEMENTED					
							43		DRILLING BECOMING INCREA-					
									SINGLY HARDER. VERY HARD					
							44		FROM 43-44.5'.					
	↧	1"	100/1"			TD			SAME AS ABOVE WITH	-	-	15	85	-
							45		INCREASED CEMENTATION.					
									WELL CEMENTED					
							46							
									TOTAL DEPTH = 44.5' bgs					
							47							
									4 BAGS OF SAND RMC #3					
							48		1 BUCKET OF 1/4" TABLETS WYOBEN ENVIRO-					
									PLUG					
							49		BAGS OF WYOBEN ENVIROPLUG MED-					
									IUM BENTONITE CHIPS. HYDRATED					
							50		IN 1.5' LIFTS.					
							51							
							52							

QA/QC

MONTGOMERY WATSON

Boring #: PT-110 MW#: PZ 098 Sheet 1 of 3

Project: DOE Shallow GW Investigation

Job #: Site: FSDF/SSF

Logged By: T. Burton Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 All-Terrain / HSA

Drillers Name: Enrique Perez

Borehole Diam./Drill Bit Type: 9" Carbide w/ Bullets

Total Depth: 37.5'

Ref. Elev.: GROUND SURF.

Site Sketch Map

Sampler Type: 1.5" Split spoon

Depth to 1st Water (▽): NONE Time/Date: 10/16/01

Drill Start Time/Date: 10/16/01 1300 Drill Finish Time/Date: 10/16/01 1445

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1640 ON 10/16/01

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
					4" DIAM SCHEDULE 40 PVC BLANK CASING TO SURFACE	CONCRETE	0		Surface: dry grasses adjacent to rock outcrops					
							1							
							2	SM	Silty sand, dry	—	tr	5	65	30
							3		@ 3.5' Alluvium/Weathered Bdrk. contact - hard drilling					
	↓	3	100/4"				4							
							5		Moderately sorted sandstone, moist, moderately well cemented, yellowish brown to oxidized brown	—	5	30	65	—
							6							
							7							
							8							
							9							
	↓		100/5"		2" DIAM SCHEDULE 40 PVC	CEMENT GROUT	10		As above, w/granitic fragments, heavy oxidation, strong brown	10	5	20	65	—
							11		Harder drilling @ 10.5'					
							12		Very Hard drilling 11.5-12.5'					

QA/QC

Boring #: PT-110 MW#: PZ 098 Project: DOE Shallow GW Investigation Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							12							
							3							
							4							
	↓	2	100/4"				15		Fine sandstone, with ½" thick siltstone interbed (dark gray, well cemented), moist, moderately cemented, oxidized	—	—	30	70	—
							6							
							7		Drill rate same as above (hard)					
							8							
							9		Drilling					
	↓	3	100/3"				20		Mod. to well cemented sandstone, thin (⅛") interbed of siltstone; oxidized, micaceous	—	—	45	55	—
							1							
							2		Drilling "a little softer" in 5' run					
							3							
							4							
	↓	4	100/4"				25		Sandstone, mod. cemented, increasing moisture, bands of heavy, reddish oxidation	—	tr	20	80	—
							6							
							7		Harder Drilling; cuttings are dk. gray - fragments of gray, unweathered sandstone					
							8							
							9		Very Hard 27.5-29.5'					
	↓	2	100/4"				30		Dark reddish brown, mod. well cemented, well sorted sandstone, very highly oxidized	—	tr	5	95	—
							1							
							2		Softer Drilling 30-33'					

Casing Type & Size: 2" DIAMETER SCH 40 PVC 0.020" SLOTS; 2" DIAM SCHEDULE 40 PVC BLANK CASING TO SURFACE

Annulus Filler: RMC #3 MONTEREY SAND; BENTONITE CEMENT GROUT

QA/QC

Boring #: PT-110 MW#: PZ 098 Project: DOE Shallow GW Investigation Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
					SLOTTED	RMC #3 MONTEREY SAND	32							
									Harder again @ 33'					
							3							
							4							
							35							
	↓	3"	100/3						FINE SANDSTONE, GREY,	–	–	5	95	–
							6		UNOXIDIZED, MOIST, MICACEOUS, WITH SOME MEDIUM GRAINS, WELL CEMENTED					
							7							
							TD		VERY HARD @ 37.5 ft					
							8		REFUSAL @ 37.5 ft					
									TD = 37.5 ft					
							9							
							40		4.5 BAGS OF RMC #3 NATURAL MONTEREY BEACH SAND					
							1		1 BAG WYOBEN ENVIROPLUG MEDIUM BENTONITE CHIPS. HYDRATED IN 1.5 FOOT LIFTS.					
							2							
							3		4 BAGS OF COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 22 GALS OF WATER TO CREATE CEMENT GROUT SEAL					
							4							
							45							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-112 MW#: PZ 099 Sheet 1 of 23

Project: DOE Shallow GW Investigation

Job #: Site: SSFL Area IV

Logged By: T. Burton Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 All-Terrain / HSA

Drillers Name: Enrique Perez

Borehole Diam./Drill Bit Type: 8" Carbide bit w/ bullets

Total Depth: 33' (28')

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5" Split Spoon

Depth to 1st Water (▽): Time/Date:

Depth to Water After Drilling (▼): Time/Date:

Depth to other Water Bearing Zones:

Drill Start Time/Date: 10/17/01 0920 Drill Finish Time/Date: 10/17/01 1050

Well Completion Time/Date: 10/17/01 1150

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
									Surface: dry grass + soils					
							1							
								SM	Alluvium: silty sand, vf-med. grained, dry, loose					
							2							
									@ 3' Alluvium / Bedrock contact					
							3							
							4							
									"Medium Hard" Drilling 3-9.5'					
							5							
							6							
							7							
							8							
							9							
	↓	4	100/4"						Poorly sorted sandstone, brown,		5	20	75	
							10		moist, moderately cemented, light					
									oxidation banding, loose in sample					
							11		Same drill rate to 14.5'					
							12							

QA/QC

Boring #: PT-112 MW#: PZ-099 Project: DOE Shallow GW Investigation Sheet 2 of ~~2~~ 3

PID/OVA ppm	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						Grout	2							
							3		Same drill rate ("Medium Hard")					
							4							
10.5	↓	4	100/4"		SCHEDULE 40 2" BLANK PVC CASING	Bentonite Chips	15		Sandstone, brown, moderately cemented, moist, mod. well sorted - mostly fine grains			15	85	
							6							
							7		Cuttings appear olive-colored (grayish-olive)					
						SAND			Hard zone 17.5 - 18'					
							8							
							9							
24	↓	3	100/3"			RMC LONESTAR #3	20		Fine sandstone, well cemented, moist, brownish gray, slight oxidation of (mafic) micas			10	90	
							1							
							2		Hard Drilling 20 - 25'					
							3							
							4							
20.5	↓	2	100/2"		2" DIAM. PVC CASING w/ .020" SLOTTED PERFORATIONS		25		As above; gray, unweathered fine sandstone, well cemented, moist - appears saturated			5	95	
							6							
							7		@ 27.5' Very Hard drilling					
						SAND								
							8							
							9							
2.5	↓	2	100/2"			RMC LONESTAR #3	30		As above, very fine ss				100	
							1		Same Drill rate					
							2		Total Depth = 33' bgs					

QA/QC

Boring #: PT-112 MW#: P2-099 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						SAND	2		4.5 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							3		1 BG WYOBEN ENVIROPLUG MEDIUM BENTONITE CHIPS.					
							4		2 BGS COLTON PORTLAND CEMENT II/V MIXED WITH 11 GALS WATER TO FORM CEMENT GROUT					
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-113 MW#: PZ-100 Sheet 1 of 2

Project: DOE SHALLOW GROUNDWATER

Job #: Site: FSDF/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE [ENRIQUE]

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE

Borehole Diam./Drill Bit Type: 8" / CARBIDE BIT

Total Depth: 16.5

Ref. Elev.: GROUND SURF.

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): NONE Time/Date: 10/17/01

Drill Start Time/Date: 1255 10/17/01 Drill Finish Time/Date: 1405 10/17/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1440 ON 10/17/01

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: N/A

PID/OVA (PPm)	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
0.0	X					CONCRETE		SM	0-0.5 (SM) SILTY SAND WITH OCCASSIONAL GRAVEL, DRY, LOOSE, YELLOWISH-BROWN, FILL, STRONG BROWN	5	–	10	80	5
					2" SCHED 40 PVC BLANK	BENTONITE	1	FILL						
							2		GRAVEL (GP) FROM 0.5'-2'	75	15	5	5	–
							3							
							4		FIRST 4" SAME AS ABOVE	5	TR	10	80	5
0.0		6"	10				4'8"	SM	LAST 14" SILTY SANDSTONE, FINE,					
0.0		6"	15				5		MOIST, LOOSE, OXIDIZED, BROWN-	–	–	5	85	10
0.1		6"	72				5'8"	BEDROCK	ISH-YELLOW, VERY LITTLE TO NO					
							6		CEMENTATION, SLIGHTLY CEM- ENTED LAST 4".					
							7		DRILLING HARDER @ 7'					
					2" DIA. SCHED 40 PVC (0.020" SLOTS)	RMC #3 MONTEREY SAND	8							
									DRILLING HARDER @ 10'					
							9		SILTY SAND, FINE, OXIDIZED,					
0.0		6"	100/6"						MOIST, MODERATELY CEMENTED,					
							10		YELLOWIS-BROWN, INCREASED					
									MICA CONTENT					
							11							
							12							

QA/QC

Boring #: PT-113 MW#: PZ-100 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							12		DRILLING HARDER @ 12.5					
									WITH COLOR CHANGE IN					
							13		CUTTINGS TO OLIVE-GREY.					
									DRILLING VERY HARD @ 13					
							14							
26.5	↓	4"	100/4"		2" DIAM SCREEN	#3 SAND			SANDSTONE, FINE WITH	–	–	5	95	TR
							15		OCCASSIONAL MEDIUM					
					Sump	RMC	15'8"		GRAINS, MOIST, WELL					
							16		CEMENTED, GRAY					
								TD	SLIGHTLY EASIER DRILLING					
							17		@ 16 FEET, BUT STILL					
									VERY HARD					
							18							
									TD = 16.5 FT (REFUSAL)					
							19							
									SCREEN 5.8' - 15.8' BGS					
							20		3.7 BGS RMC #3 NATURAL	MONTEREY				
									BEACH SAND					
							1		1 BG WYOBEN ENVIROPLUG MEDIUM					
									BENTONITE CHIPS. HYDRATED IN 1.5					
							2		FT LIFTS					
							3		@ 1350 TALK W/ MCGINNIS					
									109, 101, 88, 87, 70 DONE					
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-114 MW#: PZ-101 Sheet 1 of 2

Project: DOE SHALLOW GROUNDWATER

Job #: Site: FSDF / SSFL

Logged By: T. HALL Reviewed By: T. Burton

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth

Ref. Elev.

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): Time/Date:

Depth to Water After Drilling (▼): Time/Date:

Depth to other Water Bearing Zones:

Drill Start Time/Date: 10/17/01 1515 Drill Finish Time/Date: 10/18/01

Well Completion Time/Date:

Soil Boring Backfill Time/Date:

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						CONCRETE								
0.0	X						1	Sm	SILTY SAND, FINE - MED, WITH	5	10	30	45	10
									OCCASSIONAL GRAVEL, MOIST,					
							2		LOOSE, ROOTLETS, LIKELY FILL,					
									YELLOWISH-BROWN.					
						GROUT	3							
							4							
							5							
0.0		6"	9		2" SCH 40 BLANK PVC	BENTONITE		Sm	SILTY SAND, FINE-MED GRAINS,	—	5	10	55	30
0.0		6"	9					Sm	MOIST, STRONG BROWN, MORE					
0.0		6"	8				6	Sm	FINES THAN ABOVE (SILT/CLAY)					
									LIKELY NATIVE ALLUVIUM.					
							7							
							8		DRILLING HARDER @ 8 FT					
									FOLLOWED BY COLOR CHANGE					
									(POSSIBLE ALLUV/B.R. CONTACT)					
							9							
0.0		3"	100/3"		SCREEN	SAND	10		SILTY SAND, V. FINE - MED GRAINS,	—	—	10	80	10
									MOIST, BROWNISH-YELLOW, MOD-					
							11		ERATELY CEMENTED					
									DRILLING SLIGHTLY HARDER @ 10.5'					
							12							

QA/QC

Boring #: PT-114 MW#: PZ 101 Project: DOE Shallow GW Investigation Sheet 2 of 2

PID/OVA (PPM)	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" DIAM SCH 40 PVC WITH 0.020" SLOTS	RMC #3 NATURAL MONTEREY BEACH SAND	12							
							13							
							14		HAMMER CHANGE BROKE AFTER 3 BLOWS.					
Resume 10/18/01 0.3	↓	3	100/3"				15		Fine sandstone, moist, mod. well cemented, mod well sorted, brownish gray, oxidized yellowish to strong brown in places (fracture?), micaceous		5	20	75	
							16							
							17							
							18		"Medium Hard" Drilling					
							19							
20	↓	2	100/2"				20		Well cemented Fine sandstone, moist, micaceous, oxidized yellowish brown, well sorted			tr	100	
							21							
							22		Very Hard Drilling @ 21'					
							23							
							24							
22	↓	2	100/2"				25		As above, w/some granitic fragments as coarse sand/fine gravel, vf-fine sands, moist, olive ~~brown~~ gray-tan, less oxidation	5	5	10	80	
							26							
							27							
NA	↓	1	100/1"									tr	20	80
							28		Refusal @ 27' w/auger					
									Sample: well cemented, gray, unweathered fine sandstone					
							29							
							30		10-20' Screen; 27-7' #3 sand					
									5-7' Bent. chips (medium)					
							31		2-5' Cement grout					
							32							

QA/QC

MONTGOMERY WATSON

Boring #: PT-109 MW#: PZ 102 Sheet 1 of 3 4

Project: DOE Shallow GW Investigation

Job #: Site:

Logged By: T. Burton Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 All-Terrain / HSA

Drillers Name: Enrique Perez

Borehole Diam./Drill Bit Type: 8" Carbide Shovel & Bullets

Total Depth 59'

Ref. Elev.

Site Sketch Map

Sampler Type:

Depth to 1st Water (▽): Time/Date:

Drill Start Time/Date: 10/18/01 1340 Drill Finish Time/Date: 10/19/01 0920

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date:

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date:

PID/OVA (ppm)	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
						CONCRETE	1		Silt & silty sand alluvium					
						GROUT	2		@ 2.5' Alluvium / weathered Bdrk. contact					
							3							
							4							
							5							
							6		soft drilling					
							7							
							8							
							9							
ø	↓	3	15				10		Poorly cemented, moist vf-fine sand grayish brown; grades to 1-2" bed of poorly				100	
ø		6	16						cemented, olive yellow siltstone, moist; then					10
ø		6	30				11		to highly oxidized, strong brown sands, moist & poorly cemented			tr	90	10
							12		@ 10.5' slightly harder (still soft)					

QA/QC

Boring #: PT-109 MW#: PZ102 Project: DOE Shallow GW Investigation Sheet 2 of 34

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2		"Medium hard" 5					
							3		Soft drilling - weathered bedrock					
							4							
5	↓	5	100/5"				15		Poorly cemented vf sand + silt interbeds, moist, with variable oxidation to olive, yellow, + olive gray; med. plasticity silt; some strong brown oxidized layers				75	25
							6							
							7							
							8		Same drill rate 5					
							9							
4.5	↓	4	100/5"				20		Poorly cemented fine sandstone, moist, w/ thin, moderately cemented siltstone bed; olive to yellowish brown			10	75	15
							1							
						Grout	2		Softer at 23.5' 2					
							3	▽?						
							4							
ϕ	↓	6	100/6"				25		Interbeds of partially to mod. cemented vf sandstone + siltstone; saturated, soft clayey silt in possible frx., oxidized yellow brn. in places, gray to olive				40	60
							6							
							7							
							8		Soft to 28.5', becomes medium hard 5					
							9							
ϕ	↓	2	100/2"				30		Oxidized fine sandstone, mod. well cemented, well sorted, vf-fine grains, olive to yellowish brown				100	
							1							
							2							

QA/QC

Boring #: PT-109 MW#: PZ-102 Project: DOE Shallow GW Investigation Sheet 3 of 34

PID/OVA ppm	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2		Soft to medium hard 3-4 drilling					
							3							
							4							
NA	↓	1"	100/1"				35		well cemented fine sand-stone, moist (saturated?), micaceous, oxidized dk. yellowish brown			10	10 80	
							6							
							7		Medium Hard drilling 4-5					
							8							
							9							
ø	↓	3	100/3"				40		As above, mod. well cemented, oxidized dk. yellowish brn., moist			10	10 80	
							1							
							2		Becomes harder @ 42' 6-7					
							3							
							4							
NA	↓	2	100/2"				45		As above, moist, dk. yellow-brown, well cemented				10 90	
							6		Harder still @ 46' 7-8					
							7							
							8		Very Hard @ 48.5 9					
							9							
ø	↓	6	27				50		Saturated silt & sand, highly Oxidized, possible fault gouge				20	80
ø	↓	6	100/6"										20	8
							1							
							2							

Casing: 2" SCH 40 BLANK PVC TO SURFACE; 2" 0.02" SCREEN

Annulus Filler: CEMENT GROUT TO 2 FT BGS; BENTONITE; RMC #3 SAND

QA/QC

Boring #: PT-109 MW#: PZ-102 Project: DOE Shallow GW Investigation Sheet 4 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts /6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
10/19/01							2							
							3		Hard Drilling 49-54' & Hole is tight. H_2O added to cool bit.					
							4							
Ø	↓	4	100/4"				55		As above, wet clayey silt (d K. gray) and oxidized fine sands, dry-moist; possible fault gouge along frx. zone; some shalestone fragments mod. well cemented			tr	40	60
					Cal 2" DIAM Screen (0.020" SLOTS)	RMC #3 SAND	6							
							7							
							8							
							9		Very Hard Drilling @ 58' 9-10					
NA	↓	Ø	100/1"				60		Sample contained slough + a small piece of oxidized fine sandstone - well cemented (2 attempts)					
							1							
							2		Total Depth 59.2'					
							3		Materials: RMC Lonestar #3 Sand					
							4		Enviroplug Medium Bentonite Chips					
							5		Portland cement Type ~~II~~/V					
							6		Sch-40 PVC 2" diam, 0.020" slot					
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-101 MW#: PZ-103 Sheet 1 of 3

Project: DOE Shallow GW Investigation

Job #: Site: Bldg. 20

Logged By: T. Burton Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 All-Terrain / HSA

Drillers Name: Enrique Perez

Borehole Diam./Drill Bit Type: 8" Carbide

Total Depth: 39.0'

Ref. Elev.: GROUND SURFACE

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): 21.3' bgs Time/Date: 0920 10/22/01

Drill Start Time/Date: Drill Finish Time/Date: 1030 10/22/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1420 ON 10/22/01

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: N/A

PID/OVA (ppm)	Sample Interval	Recovered (In.)	Blow Counts / 6 In.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						CONCRETE 2.0	0		Sfc: Asphalt					
							1							
							2		Alluvium: Sandy silt, dark brown, moist, soft				35	65
							3		Soft drilling					
							4							
							5		@ 5' Color change to dk. yellowish brown, weathered sandstone					
							6							
							7		Soft drilling					
							8							
∅			7			CEMENT GROUT	9	ML	Sandy silt (ML), weathered & partially oxidized dk. gray siltstone & shale;				20	80
∅			30				10	SM				5	80	15
∅	▼		22						moist; grades to oxidized silty sand, SM, moist, dk. yellowish brn, dense					
							11							
							12							

QA/QC

Boring #: PT-101	MW#: PZ-103	Project: DOE Shallow GW Investigation	Sheet 2 of 3

PID/OVA (ppm)	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Coarse	Med.	Fine	Silt/Clay
					2" DIAM SCH 40 FLUSH THREADED PVC CASING TO SURFACE	CEMENT GROUT	12		@ 12' Becomes soft-med. hard drilling 3-4					
							13							
∅	↓	6	60/6"				14		Very fine sandstone, moist, slightly cemented (poorly), thin interbeds, yellowish brown oxidation, silty in places				95	5
							15							
							16							
							17		@ 14' drilling is med. hard s					
							18							
∅	↓	5	100/5"				19		Sandstone, oxidized yellowish brown, moist, moderately cemented (loose in sample), mod. sorted		tr	30	70	
							20							
							21							
						BENTONITE	22		@ 22' Becomes Hard - cuttings are dk. gray					
							23 (23.5)							
∅	↓	1.5	100/3"				24		Poorly sorted sandstone, mod. well cemented, loose in sample, dk. yellowish brown		40	15	45	
							25							
					BLANK	RMC #3 SAND	26 (26.0)							
							27							
							28 (28.5)							
0.0	↓	4"	100/4"		2" PVC SCREEN		29		SAND STONE & SILTSTONE INTERBEDS: S.S. IS V. FINE, SILTY, OLIVE GREY, MOIST, MOD-WELL CEMENTED.	—	—	—	60	40
							30		SILTSTONE IS SANDY (V. FINE), OLIVE GREY, MOIST, WELL CEMENTED, OXIDIZED	—	—	—	20	80
							31							
							32							

QA/QC

Boring #: PT-101 MW#: PZ-103 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							32		HARDER DRILLING @ 30'					
							3							
							4							
33.9	↓	3"	100/3"		2" DIAM SCH 40 PVC w/ 0.020" SLOTS	RMC #3 SAND			SILTY SANDSTONE, MOIST, MOD CEMENTATION, BROWNISH-YELLOW, FINE TO MEDIUM GRAINS, MICACEOUS, OXIDIZED	—	—	35	60	5
							35							
							6							
									SOFTER @ 36'					
							7							
							8		HARDER @ 38'					
							38.5							
					SUMP		9							
18.4	↓	4"	100/4"						UPPER 2": FINE SANDSTONE, MOIST, MOD CEMENTATION, BROWNISH-YELLOW WITH THIN (1/8"-1/4") SILTSTONE INTERBEDS, S.S. OXIDIZED.	—	—	—	90	10
							40							
							1							
							2		LOWER 2": SANDY SILTSTONE, MOIST, OLIVE-GREY, DENSE, WELL CEMENTED, MOSTLY SILT (V.S. CLAY)	—	—	—	20	80
							3							
							4		~~TD = 40' bgs~~ TD = 39' bgs					
							5		4 BGS OF SAND RMC #3 NATURAL MONTEREY BEACH SAND. SAND SETTLED 1¾" AFTER SURGING. ADDED 3" OF SAND.					
							6		3/4 BUCKET WYOBEN ENVIROPLUG COATED 1/4" TABLETS. HYDRATED IN PLACE BY GROUNDWATER					
							7		6 BAGS OF CEMENT MIXED WITH 33 GALONS OF WATER.					
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-087 MW#: PZ-104 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: SHEA / SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 38.5'

Ref. Elev.: GROUND SURFACE

Sampler Type: 1.5' SPLIT SPOON

H_2O LEVEL 20.3' bgs @ 1055 ON 10/23/01

Site Sketch Map

Depth to 1st Water (▽): ≈ 36' Time/Date: 0935 10/23/01

Depth to Water After Drilling (▼): 27.3' Time/Date: 0950 10/23/01

Depth to other Water Bearing Zones: N/A

Drill Start Time/Date: 1455 10/22/01 Drill Finish Time/Date: 0940 10/23/01

Well Completion Time/Date: 1150 ON 10/23/01

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
						CONCRETE			SFC: SILTY SAND WITH GRAVEL,	10	10	20	40	20
0.0									DRY, LOOSE, FILL.					
							1		HAND AUGER REFUSAL @ 1'					
							2							
							3							
							4							
									FILL:					
0.0		6"	6			GROUT MIXTURE	5	SC	CLAYEY SAND, MOIST, DENSE,	—	—	10	60	30
0.0		6"	6						YELLOWISH-BROWN,					
0.0		6"	7				6							
							7							
							8							
									SOFTER DRILLING @ 7'					
		SLOUGH					9							
						PORTLAND CEMENT			ALLUVIUM:					
0.0		4	6"				10	SM	SILTY SAND, MOIST, YELLOWISH-	—	—	10	60	30
		7	6"						BROWN, M-F GRAINS, LESS CLAY					
0.0		7	6"				11	SP	THAN ABOVE,	—	—	40	50	10
									POORLY SORTED SAND: MED-FINE					
							12		GRAINS, WITH ORGANIC TRACES					

QA/QC

Boring #: PT-087 MW#: PZ-104 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2		MOIST, LOOSE, HIGHLY WEATHERED ~~SANDSTONE~~?					
					3		HARDER DRILLING @ 13'					
							FOLLOWED BY A COLOR CHANGE					
					4		IN THE CUTTINGS.					
					15							
0.0	↓	3"	100/4"				SILTY SANDSTONE: FINE TO	—	—	30	60	10
					6		MEDIUM GRAINS, MOIST,					
							LOOSE, SLIGHTLY CEMENT-					
					7		ED, BROWNISH-YELLOW,					
							OXIDIZED					
					8		HARDER @ 17'					
					9							
0.0	↓	1.5"	100/2"		20		SAME AS ABOVE, BUT	—	—	30	60	10
					1		SLIGHTLY MORE CEMENT-					
							ED (SLIGHTLY - MOD. LY					
					2		CEMENTED).					
							HARDER @ 21'-22', SOFTER					
					3		@ 22'-23', HARDER 23'-25'					
					4		CUTTINGS @ 25.2 ppm (PID) IN BUCKET					
0.0	↓	0.5'	100/2"		25		SILTY SANDSTONE: FINE TO	—	—	20	70	10
					6		MED GRAINS, MICACEOUS,					
							MOIST, MOD CEMENTATION,					
					7		BROWNISH YELLOW, OXIDIZED					
							HARDER @ 28', CUTTINGS					
					8		CHANGED TO OLIVE GREY.					
					9							
							TAH					
25.6	↓	3"	100/3"		30		~~SILTY~~ SANDSTONE: FINE TO	—	20	40	40	TR
					1		COARSE GRAINS, MICACEOUS,					
							MOIST, MOD TO WELL CEMEN-					
					2		TED, OXIDIZED					

Annulus Filler: GROUT; BENTONITE; RMC #3 MONTEREY BEACH SAND; BENTONITE

Casing Type & Size: 2" DIAM SCH 40 BLANK PVC; 2" DIAM SCH 40 PVC SCREEN WITH 0.020" SLOTS

QA/QC

Boring #: PT-087 MW#: P2-104 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts /6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						BENTONITE CHIPS	2		DRILLING SLIGHTLY					
							3		SOFTER @ 32'-35'					
							4							
							35							
–	↓	0"	100/1"						NO SAMPLE RECOVERED.	–	10	40	40	10
									BASED ON CUTTINGS:					
						SLOUGH	6		SILTY SANDSTONE, MOIST,					
									MOD CEMENTATION, FINE					
							7		TO COARSE GRAINS, BROWN-					
									ISH YELLOW, OXIDIZED?					
							8		HARDER DRILLING @ 35'					
						ED			VERY HARD @ 37.5'					
25.6	↓	3"	100/3				9		REFUSAL @ 38.5.	–	–	–	90	10
									H_2O ON HAMMER.					
							40		SANDSTONE: FINE SANDSTONE,					
									FINE TO V. FINE GRAINS, WELL					
							1		CEMENTED, MOIST, GREY					
							2		TD = 38.5					
							3		BAILED MUDDY H_2O FROM THE AUGERS					
									PRIOR TO PIEZOMETER INSTALLATION.					
							4							
							45		5.5 BGS RMC #3 NATURAL MONTEREY					
									BEACH SAND. SURGED TO SETTLE					
							6		FILTER PACK AROUND SCREEN					
									3.2 BGS WYOBEN ENVIROPLUGS MEDIUM					
							7		CHIPS. HYDRATED IN PLACE BY GROUND-					
									WATER OR IN 1.5 FT LIFTS ABOVE					
							8		GROUNDWATER					
									2 BGS COLTON PORTLAND CEMENT					
							9		TYPE II/V MIXED WITH 11 GALS					
									OF H_2O.					
							50							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-088 MW#: P2-105	Sheet 1 of 2
Project: DOE SHALLOW GROUNDWATER	
Job #:	Site: AREA IV / SSFL
Logged By: T. HALL	Reviewed By:
Drilling Contractor: LAYNE	
Drill Rig Type/Method: CME 850 / HSA	
Drillers Name: ENRIQUE PEREZ	
Borehole Diam./Drill Bit Type: 8" / CARBIDE	Total Depth: 28.0'
	Ref. Elev.: GROUND SURFACE
Sampler Type: 1.5' SPLIT SPOON	

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date:	Drill Start Time/Date: 1250 10/23/01 Drill Finish Time/Date: 1420 10/23/01
Depth to Water After Drilling (▼): Time/Date:	Well Completion Time/Date: 1515 ON 10/23/01
Depth to other Water Bearing Zones: N/A	Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓		~~100/5"~~ TAN			CONCRETE	0–2	SM	SRFC: SILTY SAND, DRY, YELLOWISH BROWN WITH OCCASSIONAL GRAVEL, SAND FINE TO COARSE. COLOR CHANGE TO BROWNISH YELLOW @ 3'. NO CHANGE IN DRILLING HARDNESS.	TR	~~20~~ 10	~~40~~ 30	40	2
0.0	↓	5"	100/5"			CEMENT GROUT MIXTURE	5		SILTY SANDSTONE: MOIST, V. FINE-MED GRAINED, OXIDIZED, SLIGHTLY CEMENTED, MICACEOUS, YELLOWISH BROWN. HARDER @ 7'. VERY HARD @ 8.5'. AUGER STUCK @ 9 FEET. REFUSAL? ADDED H_2O & FREED AUGERS.	—	—	20	60	20
0.0	↓	5"	100/6"			CEMENT GROUT MIXTURE	10		SANDSTONE: COARSE TO FINE, MOIST, SLIGHTLY-MOD CEMENTATION, YELLOWISH-BROWN, MICACEOUS,	—	10	30	60	

Depth (Feet): 1 2 3 4 5 6 7 8 9 10 11 12

Boring #: PT-088 MW#: PT-105 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
					2" DIAM SCH 40 BLANK PVC	BENTONITE	2							
							3							
							4							
							5							
0.0	↓	2"	100/3"						SAME AS ABOVE					
							6		HARDER @ 17, FOLLOWED BY OLIVE GREY CUTTINGS					
							7							
					2" DIAM SCH 40 PVC SCREEN WITH 0.020 SLOTS		8							
							9							
0.0	↓	2"	100/2"				10		SANDSTONE: COARSE TO FINE, GRAINED, MICACEOUS, MOD TO WELL CEMENTED, MOIST, INTERMIXED ZONES OF GREY AND BROWNISH-YELLOW.	—	10	30	60	—
							1							
							2							
							3		HARDER @ 22', FOLLOWED ~~BRO~~ WITH CUTTINGS GREY					
							4		SOFTER @ 25 WITH BROWNISH-YELLOW CUTTINGS					
0.0	↓	3"	100/3"				25		SANDSTONE: FINE - COARSE GRAINED, MICACEOUS, MOD CEMENTED, BROWNISH-YELLOW, MOIST.	—	5	60	35	—
							6							
							7		HARDER @ 27 WITH GREY CUTTINGS.					
					SUMP	RMC #3 MONTEREY BEACH SAND	8							
0.0	↓	3"	100/3"					TD	SANDSTONE: FINE - V. FINE GRAINS, MICACEOUS, WELL CEMENTED, GREY, MOIST. REFUSAL @ 28 FT BGS	—	—	—	100	—
							9							
							30							

4 BGS RMC #3 NATURAL MONTEREY BEACH SAND

1 BG WYOBEN ENVIROPLUG MEDIUM CHIPS. HYDRATED IN 1.5' LIFTS

2 BGS COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 11 GALS H_2O.

QA/QC

MONTGOMERY WATSON

Boring #: PT-070MW#: P2-106 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: EEL/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850/ HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 35.0

Ref. Elev.: GROUND SURFACE

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): ≈ 17' ? Time/Date: 0900 10/24/01

Drill Start Time/Date: 1540 10/23/01 Drill Finish Time/Date: 1000 10/24/01

Depth to Water After Drilling (▼): 26.3 Time/Date: 1005 10/24/01

Well Completion Time/Date: 1135 ON 10/24/01

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
0.0						CONCRETE		SP	FILL: POORLY GRADED SAND WITH GRAVEL, MOIST, STRONG BROWN, LOOSE, NO PLASTICITY MED DENSE	35	5	30	20	10
							1	SM	SILTYSAND: ALLUVIUM, MOIST, LOOSE STRONG BROWN, M.-F. GRAINS	—	—	10	60	30
							2							
0.0							3	SM	SAME AS ABOVE					
							4	SC	CLAYEY SAND: C-F. GRAINS, MED DENSE, ~~LOOSE~~ MOD PLASTICITY, ~~STRONG BROWN, ALLUVIUM~~	—	5	10	55	30
0.0							5	SC	SAME AS ABOVE					
		6"	6					SC	SAME AS ABOVE, EXCEPT COLOR IS YELLOWISH BROWN.	—	5	10	55	30
		6"	10				6		CARBONATE CEMENT CRYSTALS NOTICED WITHIN THE MATRIX					
		6"	13			MIXTURE OF	7							
									BEDROCK/ALLUVIUM CONTACT SOMEWHERE BETWEEN 6.5' & 10' BGS					
							8							
							9							
						CEMENT GROUT	10		SILTY SANDSTONE: F-V. FINE GRAINS, MICACEOUS, SLIGHTLY CEMENTED, YELLOWISH BROWN, MOIST, OXIDIZED	—	—	TR	80	
0.0		6"	100/6"				11							
							12							

QA/QC

Boring #: PT-070 MW#: PZ-106 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts /6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						GROUT	2		HARDER @ 12'					
							12'9"							
							3							
					2" DIAM SCH 40 BLANK PVC				HARDER (MORE) @ 14'					
							4							
0.0	↓	1"	100/3"			BENTONITE CHIPS	15		SAME AS ABOVE WITH	—	—	TR	80	20
									INCREASED CEMENTATION					
							6		TO SLIGHTLY-MODERATE					
									CEMENTATION					
							7		H_2O @ ≈ 17' BASED ON					
									WET CUTTINGS & WATER					
							8		ON HAMMER					
									HARDER @ 18.5'					
							9							
15.2	↓	1"	100/2"		2" DIAM SCH 40 PVC 0.020" SLOTS		20		SANDSTONE: MED TO FINE	—	—	10	70	20
									GRAINS, MICACEOUS,					
							1		SLIGHTLY TO MOD.Y CEMEN					
									TED, OXIDIZED, BROWNISH					
							2		YELL, MOIST					
							3		HARDER DRILLING @ 22.5'					
									CUTTINGS CLAYEY SANDSTONE	—	—	10	15	40
							4		VERY HARD @ 24'					
0.0	↓	2"	100/2"				25		SANDSTONE: FINE-COARSE	—	10	20	70	TR
									GRAINS, MICACEOUS, MOD-					
							6		ERATELY CEMENTED,					
									OXIDIZED, YELLOWISH-					
							7		BROWN, MOIST.					
					SUMP		8		CUTTINGS ARE WET.					
									ALTERNATING SANDSTONE					
							9		& CLAYEY SANDSTONE CUTTINGS					
									(ALTERNATING HARD & SOFT ZONES					
0.0	↓	2"	100/2"				30		SAME AS ABOVE WITH					
									MOTTLED ZONES OF (THIN-			1/8")		
							1		GREY THAT ARE WELL					
									CEMENTED					
							2							

QA/QC

Boring #: PT-070 MW#: PZ-106 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						TABLETS	2		VERY LITTLE CUTTINGS RETURNED TO SURFACE					
							3							
							4							
							35							
0.0	1	2"	100/2"					TD	SANDSTONE: FINE TO MED GRAINS, MICACEOUS, UN-OXIDIZED, GREY, MOD-ERATE TO WELL CEMEN-TED, MOIST	-	-	40	60	TR
							6							
							7							
							8		TD = 35' BGS					
							9		1 BUCKET WYOBEN ENVIROPLUG 1/4" TABLETS (NOT COATED)					
							40		1 BAG WYOBEN ENVIROPLUG MEDIUM ~~PELLETS~~ CHIPS					
							1		4 BAGS RMC #3 NATURAL MONTEREY BEACH SAND. SURGED TO SETTLE.					
							2		1 BAG WYOBEN ENVIROPLUG MEDIUM CHIPS. HYDRATED IN PLACE, AND WATER ADDED ABOVE H_2O TABLE.					
							3		3 BAGS COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 16.5 GALLONS OF WATER.					
							4							
							45							
							6							
							7							
							8							
							9							
							50							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-069 MW#: P2-107 Sheet 1 of 1

Project: DOE SHALLOW GROUNDWATER

Job #: Site: 17TH ST POND/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850/ HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 11.0

Ref. Elev.: GROUND SURF

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): NONE Time/Date: 10/24/01

Drill Start Time/Date: 1300 10/24/01 Drill Finish Time/Date: 1350 10/24/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1420 10/24/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓				2" SCH 40 PVC BLANK	BENTONITE CONCRETE	0	SM	FILL: SILTY SAND, FINE-MED GRAINS, MICACEOUS, LOOSE, MOIST	—	—	20	60	20
							1		LOW PLASTICITY, MED DENSE, STRONG BROWN					
							2							
							3							
							4							
0.0		6"	5		2" SCH 40 PVC SCREEN (0.020")	RMC #3 MONTEREY SAND	5	SM	ALLUVIUM: SAME AS ABOVE					
		6"	7											
0.0		6"	10				6	SM	HARDER DRILLING @ 7'					
							7	SC						
0.0		6"	6				8		ALLUVIUM: CLAYEY SAND, FINE	—	—	20	50	30
		6"	6					SC	TO MED GRAINS, MICACEOUS, MOIST					
0.0		6"	7				9		MOD PLASTICITY, MED. DENSE,					
0.0		6"	7					SC	STRONG BROWN					
		6"	15		2" SCH 40 PVC SUMP		10	B.R.	SANDSTONE: FINE TO V. FINE	—	—	—	80	20
0.0		6"	100/5"						GRAINS, OXIDIZED, MICACEOUS, SLIGHTLY CEMENTED, MOIST					
							11		BROWNISH-YELLOW					

2 BGS RMC #3 MONTEREY SAND: 1 BG ENVIROPLUG MED CHIPS

QA/QC

MONTGOMERY WATSON

Boring #: PT-104 MW#: PZ-108 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: PDU / SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 30.0

Ref. Elev.: GROUND

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): Time/Date:

Drill Start Time/Date: 1445 10/24/01 Drill Finish Time/Date: 1625 10/24/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1720 10/24/01

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						CONCRETE		ASPH.	ASPHALT (4")					
0.0	↓						1	SM	FILL: SILTY SAND, LOOSE, LOW DENSITY, LOW PLASTICITY, MOIST, STRONG BROWN	—	—	10	70	20
							2	B.R.	HARDER DRILLING @ 2'					
							3							
							4							
0.0	↓	7"	100/7"			CEMENT GROUT MIXTURE	5		SANDSTONE: MED-FINE GRAINED, MICACEOUS, SLIGHTLY CEMENTED	—	—	30	60	10
							6		MOIST, BROWNISH-YELLOW, OXIDIZED					
							7		HARDER DRILLING 6'-8.5'					
							8		SOFTER DRILLING 8.5-11'					
							9							
0.0	↓	3"	100/6"			BENT	10		SAME AS ABOVE					
							11		SLIGHTLY HARDER 11'-11.5'					
							12		SOFTER DRILLING 11.5-15'					

QA/QC

Boring #: PT-104 MW#: P2-108 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" DIAM SCH 40 PVC SCREEN (0.020" SLOTS) 12" BLANK PVC	BENT	1 2							
							3							
							4							
							5							
0.0	↓	3"	100/5.5"						SANDSTONE: FINE-MED GRAINS, MICACEOUS, MODERATELY CEMENTED, OXIDIZED, MOIST, BROWNISH-YELLOW, WITH THIN (1/16" - 1/4") LAYERS OF WELL CEMENTED ZONES	—	—	20	80	—
							6							
							7							
							8							
							9		HARDER 15'-16' & 19-22.5'					
							10							
0.0	↓	2"	100/2"						SANDSTONE: FINE-MED GRAINS, MICACEOUS, MODERATELY WELL CEMENTED, MOIST OXIDIZED, BROWNISH-YELLOW	—	—	10	80	10
							1							
							2							
							3		SOFTER 22.5'-25'					
							4							
							5							
0.0	↓	2"	100/2"						SANDSTONE: FINE-MED GRAINS, MICACEOUS, WELL CEMENTED, UNOXIDIZED, GREY, MOIST	—	—	10	80	10
							6							
							7							
							8		HARDER 25-27.5' SOFTER 27.5-29' VERY HARD 29-30'					
							9							
							10							
0.0	↓	2"	100/2"					TD	SANDSTONE: FINE-V. FINE, GRAINS, MICACEOUS, WELL CEMENTED, UNOXIDIZED, GREY, MOIST, FINER & MORE CEMENTED THAN ABOVE	—	—	—	80	20
							1							
							2							

2" DIAM SCH 40 PVC SCREEN (0.020" SLOTS) 12" BLANK PVC
BENT
#3 SAND
RMC MONTEREY BEACH SAND (0.020" SLOTS)
2" DIAM SCH 40 PVC SCREEN (0.020" SLOTS)
SUMP
BENT

QA/QC

Boring #: PT-104 MW#: P2-108 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2		0.5 BAGS WYOBEN ENVIROPLUG MED					
							3		CHIPS HYDRATED BY ADDING H_2O					
									4.5 BAGS RMC #3 MONTEREY BEACH					
							4		SAND					
									1.5 BAGS WYOBEN ENVIROPLUG MED					
							5		CHIPS. HYDRATED IN 1.5 FT LIFTS					
									BY ADDING H_2O.					
							6		2 BAGS COLTON PORTLAND CEMENT					
									TYPE II/V MIXED WITH 11 GALS					
							7		OF H_2O					
							8							
							9							
							0							
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-103 MW#: PZ-109 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: BLD 38/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 36.5'

Ref. Elev.: GROUND SURFACE

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date: 10/25/01

Drill Start Time/Date: 0930 10/25/01 Drill Finish Time/Date: 1155 10/25/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1430 ON 10/25/01

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
						A.B.A. CONCRETE		A.B.A.	4" ASPHALT. HAND AUGER 0-5'	10	TR	30	40	20
0.0	X						1	SM	FILL: SILTY SAND W/ GRAVEL, LOOSE, MOIST, LOW PLASTICITY, MED DENSE, BROWNISH-YELLOW					
	X						2							
							3	SM	SAME AS ABOVE, BUT GREENISH GREY					
0.0	X							SM	ALLUVIUM: SILTY SAND, MED-	–	TR	20	50	30
0.0	X						4		FINE GRAINS, MOIST, MOD PLASTICITY, MED DENSE, LOOSE, STRONG BROWN					
0.0		6"	4				5	SM	SAME AS ABOVE					
0.0		6"	6											
0.0		6"	6			CEMENT GROUT MIXTURE	6							
							7							
							8							
							9							
		3"	7				10		SAME AS ABOVE WITH SLIGHTLY LESS CLAY AND LOW PLASTICITY	–	TR	20	60	20
		3"	9											
		3"	10				11							
							12							

QA/QC

Boring #: PT-103 MW#: PZ-109 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

BREATHING	PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand All Coarse Med. Fine	Silt/Clay
								2		HARDER DRILLING FROM			
										13-13.5 & 14-15. CUTTINGS			
								3		B.R. BROWNISH-YELLOW			
								4					
												50	
	3.8		6"	55				15		SANDSTONE: MED-FINE	—	TR ~~60~~ 40	10
0.0	26.6		3"	100/3"						GRAINED, MICACEOUS,			
								6		SLIGHTLY CEMENTED, OXI-			
										DIZED, BROWNISH-YELLOW,			
								7		MOIST.			
										HARDER @ 18.0'-21'			
								8					
								9		CUTTINGS HAVE PID @ 29.2 @ THE HOLE,			
			SOFTER							BUT 0.0 IN BREATHING ZONE			
0.0	16.9		77	6"				20		SANDSTONE: FINER &	—	— 30 50	20
										MORE CEMENTED THAN			
								1		ABOVE. MED-FINE GRAINS,			
										MICACEOUS, MOD-WELL			
								2		CEMENTED, OXIDIZED,			
										BROWNISH-YELLOW, MOIST			
								3					
										HARDER 24-25			
								4		FOLLOWED BY LIGHTER COLORED CUTTINGS			
			SWITCH										
4.5													
0.0	0.0		100/4"	4"				25		SAME AS ABOVE, BUT			
										LESS CEMENTED (MOD-			
								6		ERATE)			
								7		SOFTER 25'-28'			
										HARDER 28'-34'			
								8					
								9		WELL CEMENTED (OX.D) PIECES IN CUTTINGS			
0	18.2		12"	100/3				30		SAME AS ABOVE WITH	—	— 30 50	20
										INCREASED MOISTURE &			
								1		CEMENTATION (MOD -			
										WELL CEMENTED)			
								2					

Casing/Annulus: 2" DIAM SCH 40 PVC SCREEN (0.020") | 2" DIAM SCH 40 BLANK PVC TO SURFACE | RMC #3 NATURAL MONTEREY SAND | BENTONITE CHIPS | CEMENT GROUT MIXTURE

QA/QC

1130
RAY

Boring #: PT-103 MW#: PZ-109 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						RMC #3 SAND	2							
							3		INCREASED HARDNESS 34-35 (VERY HARD)					
							4		CUTTINGS OLIVE-GREY					
0.0	0.0	↓	2"	100/2"		SUMP	35		SANDSTONE: MED-FINE GRAINS, MICACEOUS, WELL CEMENTED, UNOXIDIZED, MOIST	—	—	30	60	10
							6							
								TD						
							7		INCREASED HARDNESS @ 36'					
							8		TD @ 36.5'					
							9		4 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							40		1.2 BGS WYOBEN ENVIROPLUG MEDIUM CHIPS, HYDRATED IN 1'-1.5' FT LIFTS BY ADDING H_2O.					
							1							
							2		4 BAGS COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 23 GALS OF H_2O.					
							3							
							4							
							45							
							6							
							7							
							8							
							9							
							50							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-059 MW#: P2-110 Sheet 1 of 2

Project: DOE SHALLOW GROUNDWATER

Job #: Site: LOT A / SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 17.5

Ref. Elev.: GROUND SURFACE

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): NONE Time/Date: 10/25/01

Drill Start Time/Date: 1515 10/25/01 Drill Finish Time/Date: 1620 10/25/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1705 ON 10/25/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						CONCRETE	0	sm	SFC: FILL: SILTY SAND WITH ASPHALT & CONCRETE PIECES, YELLOWISH BROWN, DRY, LOOSE HAND AUGER REFUSAL ON FILL @ 0.5 FT.	–	–	20	60	20
						BENTONITE	4	sm	BEDROCK: WEATHERED IN PLACE TO SILTY SAND, NO CEMENTATION, FINE-MED GRAINS, MICACEOUS,	–	–	10	80	10
0.0	▼	6"	13		2" SCH 40 PVC BLANK		5	sm	MOIST, BROWNISH YELLOW, OXIDIZED)					
0.0	▼	5"	100/5					B.R.	SAME AS ABOVE, WITH SLIGHT-MODERATE CEMENTATION.					
					2" SCH 40 PVC SCREEN (0.020)	#3 MONTEREY SAND	9		HARDER DRILLING 9'-13'					
0.0	▼	4"	100/6"				10		SANDSTONE: FINE-V.FINE GRAINED, MICACEOUS, OXIDIZED, WELL CEMENTED, MOIST, BROWNISH YELLOW WITH STAINED FRACTURE FACES & A 1/2" CLAY FILLED FRACTURE	–	–	–	80	20
							12							

QA/QC

Boring #: PT-059 MW#: PZ-110 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" SCH 40 PVC SCREEN(0.02)	RMC #3 SAND	2		SOFTER 13-14' (SHALE/SILTSTONE ??)					
							3		HARDER 14'-17'					
							4							
0.0	↓	4"	100/4"				5		SAME AS ABOVE WITH					
							6		THIN ('/8"-1/4") SILTSTONE					
									INTERBEDS, G					
							7		SILTSTONE IS MOD-WELL					
									CEMENTED, GREY					
0.0	↓	0.2"	100/05"		SUMP		8	TD						
									INCREASED HARDNESS@ 17					
							9		TO VERY HARD					
									17-17.5:					
							20		VERY WELL CEMENTED					
									SANDSTONE (SAME AS ABOVE)					
							1		REFUSAL @ 17.5'					
							2		TD = 17.5					
							3		3 BGS RMC #3 MONTEREY BEACH SAND					
									1 BG WYOBEN ENVIROPLUG MEDIUM					
							4		BENTONITE CHIPS					
							25							
							6							
							7							
							8							
							9							
							30							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-068 MW#: PZ-111 Sheet 1 of 2

Project: DOE SHALLOW GROUNDWATER

Job #: Site: ECL/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LANE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 20.0

Ref. Elev.: GROUND SURFACE

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date: 0945 10/26/01

Drill Start Time/Date: 0850 10/26/01 Drill Finish Time/Date: 0940 10/26/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1030 ON 10/26/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0			HAND AUGER		4" PVC CASING		1	SM	ALLUVIUM: SILTY SAND, MED - FINE GRAINS, MICACEOUS, MOIST, LOOSE, LOW PLASTICITY, LOW DENSITY, STRONG BROWN	-	-	20	60	20
0.0														
0.0							2	SM	SLIGHTLY HARDER DRILLING @ 2.5'					
								SM	SAME AS ABOVE, WITH COLOR CHANGE TO ~~BROWNISH YELLOW~~ YELLOWISH - BROWN					
							3							
							4							
0.0		4"	7	BLANK	2" SCH 40 PVC BLANK		5	SM	SAME AS ABOVE WITH SLIGHT INCREASE IN CLAY CONTENT & PLASTICTY, COLOR SAME	-	-	20	50	30
		6"	4											
0.0		6"	5				6							
							7							
					2" PVC SCREEN	RMC #3 NATURAL MONTEREY SAND	8	B.R	HARDER @ ~~8'~~ 8'-14'					
							9							
0.0		6"	83/6"				10		SANDSTONE: FINE - MED GRAINS, MICACEOUS, SLIGHTLY CEMENTED, OXIDIZED, BROWNISH-YELLOW, MOIST	-	-	30	60	10
							11							
							12							

QA/QC

Boring #: PT-068 MW#: PZ-111 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2							
									HARDER DRILLING 14-16					
							3		HARDER DRILLING 16					
							4							
							15							
6.0	↓	3"	100/3"		2" SCH 40 PVC SCREEN (0.020") SLOT	RMC #3 NATURAL MONTEREY SAND			SANDSTONE: COARSE-FINE, MICACEOUS, MODERATE CEMENTATION, OXIDIZED, BROWNISH-YELLOW, MOIST (MOISTER THAN ABOVE)	—	10	30	50	10
							6							
							7							
							8		(VERY HARD)					
									HARDER 17-20 WITH GREY CUTTINGS					
							9							
							20							
0.0	↓	3"	100/3"					TD	SANDSTONE: FINE-MED GRAINS, MICACEOUS, WELL CEMENTED, UNOXIDIZED GREY, MOIST	—	—	20	70	10
							1							
							2							
									TD = 20'					
							3							
							4		4 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							25		1.5 BGS WYOBEN ENVIROPLUG MEDIUM BENTONITE CHIPS, HYDRATED IN 1'-1.5' LIFTS BY ADDING H_2O.					
							6							
							7							
							8							
							9							
							30							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-058 MW#: PZ-112 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: SE DRUM / SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" DIAM / CARBIDE

Total Depth: 35.0'

Ref. Elev.: GROUND SURFACE

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): ≈ 25' bgs Time/Date: 0835 10/29/01

Drill Start Time/Date: 1110 10/26/01 Drill Finish Time/Date: 1420 10/26/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1025 10/29/01

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay	
		6"				CONCRETE			HAND AUGER REFUSAL @ 2 FT						
0.0		6"	HAND AUGER				1	SM	ALLUVIUM: SILTY SAND WITH	5	5	30	40	20	
		6"							OCCASSIONAL GRAVEL (1/4"),						
0.0		6"					2	SM	LOOSE, MOIST, LOW PLASTICITY,						
									MED DENSE, YELLOWISH-						
							3		BROWN (SLIGHTLY)						
									HARDER DRILLING @ 4' WITH						
							4		COLOR CHANGE TO BROWNISH-YELLOW						
0.0		6"	14				5	SM	SAME AS ABOVE (ALLUVIUM)						
		6"	13												
0.0		3"	9			GROUT MIX	6	SM	~~HIGH~~ ALLUVIUM: FINE SILTY	—	TR	10	80	10	
									SAND, LOW PLASTICITY, LOW						
							7		DENSITY, FAIRLY WELL SORTED,						
									LESS CLAY THAN ABOVE, MOIST,						
							8		LOOSE, MICACEOUS, LIGHT BROWNISH-YELLOW						
									SOFTED DRILLING ~~@ 8'~~ 6'-8'						
							9	B.R.	HARDER @ ~~8~~ 9' WITH COLOR CHANGE (DARKER)						
									10'-10.4':						
0.0		6"	22				10		~~SILTSTONE~~ INTERBEDDED SILTSTONE & FINE-V. FINE	—	—	—	60	40	SAND. & T.S.
0.0		5"	100/5"			PORTLAND CEMENT			SILTY SANDSTONE, GREENISH-GREY	—	—	—	30	70	
							11		MODERATELY CEMENTED, OXIDIZED,						
									MOIST, BROKEN W/ OX'D FACES						
									10.4-10.9: SANDSTONE, FINE-MED	—	—	10	70	20	
							12		GRAIN, OXIDIZED, BROWNISH-YELLOW,						
									MICACEOUS, MOIST, SLIGHTLY-MOD CEMENTED						

QA/QC

Boring #: PT-058 MW#: PZ-112 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts /6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	All: Coarse	Med.	Fine	Silt/Clay
							2							
									HARDER DRILLING 9'-14'					
							3		HARDER @ 14					
							4							
0.0		3"	100/3"				15		SANDSTONE & CLAY: ALTERN					
									ATING LAYERS OF SAND-					
							6		STONE (FINE-MED GRAIN,	—	—	20	70	10
									MOD CEMENTATION OXIDI-					
							7		ZED, MOIST, BROWNISH-YELLOW					
									& CLAY (CL-GREENISH GREY)	—	—	—	—	100
							8							
									THIN ALTERNATING ZONES					
							9		OF HARDE & SOFTER DRILLING					
									VERY HARD @ 19.5-21					
							20							
0.0		2"	100/3"						SANDSTONE: MED-FINE	—	—	40	50	10
							1		GRAINS, MICACEOUS, WELL					
									CEMENTED, OXIDIZED, LIGHT					
							2		BROWNISH-YELLOW, COARSER					
									THAN ABOVE, MOIST					
							3							
									SOFTER 21-23					
							4		VERY HARD 23-25					
									SOFTER 25-32					
							25							
0.0		4"	100/6"						SAME AS ABOVE, MODERATE					
							6		CEMENTATION					
							7		SMALL HARD PIECES IN					
									CUTTINGS ARE SILTSTONE					
							8		AND VERY FINE, WELL					
									CEMENTE SILTY SANDSTONE.					
							9		THESE MAY COMPRISE THE					
									ALTERNATING HARD ZONES.					
							30							
0.0		4"	100/6"						SANDSTONE: FINE-MED GRAIN	—	—	30	60	10
							1		MICACEOUS, MOD CEMENTA-					
									TION, BROWNISH-YELLOW, MOIST					
							2							

Casing/Annulus: 2" DIAM SCH 40 BLANK PVC CASING TO SURFACE; PORTLAND CEMENT GROUT MIX; BENTONITE; 2" SCH 40 PVC SCREEN (0.020" SLOTS); RMC #3 NATURAL MONTEREY BEACH SAND

QA/QC

Boring #: PT-058 MW#: P2-112 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					SCREEN	RMC #3 SAND	2		SOFTER 32-35 (MORE)					
							3		(BIT MAY BE BURNT-UP)					
							4							
					SUMP				2"-6" THICK					
0.0		6"	100/5"	31			5		ALTERNATING LAYERS OF					
		6"	25						SILTY SANDSTONE AND	—	—	20	70	10
0.0		6"	56				6		SANDY SHALE/SILTSTONE.	—	—	—	30	70
									BOTH ARE OXIDIZED, MOIST,					
							7		SLIGHTLY CEMENTED					
							8							
							9							
							40		4 BGS RMC #3 SAND (NATURAL MONTE-					
									REY BEACH SAND).					
							1		1/2 BUCKET WYOBEN ENVIROPLUG COATED					
									1/4" TABLETS. HYDRATED IN PLACE					
							2		1/2 BG WYOBEN ENVIROPLUG MEDIUM					
									BENTONITE CHIPS. HYDRATED IN					
							3		PLACE & BY ADDING WATER.					
									4 SACKS COLTON PORTLAND CEMENT					
							4		TYPE II/V MIXED WITH 22 GALS					
									OF WATER					
							45							
							6							
							7							
							8							
							9							
							50							
							1							
							2							

QA/QC

RAY 7/5

MONTGOMERY WATSON

Boring #: PT-056 MW#: PZ-113 Sheet 1 of 2

Project: DOE SHALLOW GROUNDWATER

Job #: Site: NEW CON/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 15.0

Ref. Elev.: GROUND SURF.

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date:

Depth to Water After Drilling (▼): Time/Date:

Depth to other Water Bearing Zones: N/A

Drill Start Time/Date: 1235 10/29/01 Drill Finish Time/Date: 1302 10/29/01

Well Completion Time/Date: ~~1530~~ 10/29/01 1320

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
0.0	↓				2" SCH 40 PVC CASING	CONCRETE	0	SM	SILTY SAND: MED TO FINE GRAINS, LOOSE, LOW DENSITY, LOW PLASTICITY, DRY, YELLOW-ISH-BROWN	—	—	20	60	20
							1							
							2	B.R.	HARD DRILLING @ 2'					
							3							
0.0	↓	2"	100/3"		2" SCH 40 PVC (0.020" SLOTS)	BENTONITE	4		SANDSTONE: FINE TO MED GRAINS, MICACEOUS, MODERATE CEMENTATION, OXIDIZED, MOIST, BROWNISH-YELLOW	—	—	30	60	10
							5							
							6							
							7		HARDER DRILLING 9.5-10.5					
							8		SOFTER DRILLING 10.5-13					
							9							
0.0	↓	2"	100/3"		2" SCH 40 PVC	RMC #3 MONTEREY SAND	10		SAME AS ABOVE EXCEPT INCREASED CEMENTATION (MOD-WELL) AND YELLOWISH-BROWN COLOR AND INCREASED MOISTURE CONTENT					
							11							
							12							

QA/QC

Boring #: PT-056 MW#: PZ-113 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							1 2							
							3							
							4							
0.0	↓	0.5"	100/5"		SCREEN	RMC #3 SAND	5		SANDSTONE: FINE - MED GRAINS, MICACEOUS, WELL CEMENTED, SLIGHTLY OXIDIZED, MOIST, YELLOWISH-GREY	—	—	40	50	10
							6							
							7		15' TD = ~~50~~ FT (REFUSAL)					
							8							
							9		3 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							0		1 BG WYOBEN ENVIROPLUG MEDIUM BENTONITE CHIPS HYDRATED IN 1.5' LIFTS.					
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-054 MW#: PZ-114 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: OLD CON/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 48.2'

Ref. Elev.: GROUND SURF.

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date: 11/1/01

Drill Start Time/Date: 10/30/01 0855 Drill Finish Time/Date: 11/1/01 0940

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1114 ON 11/1/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	1					CONCRETE	1	SM	SILTY SAND: FINE - MED GRAIN, LOOSE, LOW PLASTICITY, LOW DENSITY, MOIST, REDDISH-BROWN, ALLUVIUM, ROOTLETS	—	—	20	60	20
0.0	2						3	SM	SAME AS ABOVE HAND AUGER REFUSAL @ 3' HARDER (SLIGHTLY) @ 4. COLOR CHANGE TO YELLOWISH-BROWN					
0.0	3	4"	22			GROUT MIXTURE	5	SM	ALLUVIUM: SILTY SAND, FINE TO MEDIUM WITH OCCASIONAL COARSE GRAIN, LOW PLASTICITY, DENSE, DRY, YELLOWISH-BROWN.	—	5	15	60	20
		6"	22											
0.0	4	6"	20				8		HARDER @ 9' WITH COLOR CHANGE TO BROWNISH-YELLOW					
							9	B.R						
0.0	5	4"	100%			CEMENT	10		SANDSTONE: FINE - V. FINE, SLIGHT TO MOD CEMENTATION, OXIDIZED, MOIST, BROWNISH-YELLOW	—	—	—	60	40
							12							

RESUME @ 1515 10/31/01

QA/QC

Boring #: PT-054 MW#: P2-114 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2							
							3							
							4							
		SWITCH												
0.0	↓	100/5.5	4"				15		SILTSTONE/SHALE: MOD-	—	—	—	—	100
									WELL CEMENTED, OXIDIZED					
							6		FRACTURE FACES, OLIVE			"		
									GREY, MOIST					
							7							
									SLIGHTLY HARDER @ 17.5					
							8		WITH LIGHT GREY CUTTINGS					
							9							
		0.1"												
0.0	↓	~~100/3~~	100/3"				20		SANDY SILTSTONE/SHALE:	—	—	—	20	80
									~~MOD~~ WELL CEMENTED,					
							1		LIGHT GREY, MOIST,					
									SAND GRAINS ARE FINE					
							2							
									SLIGHTLY HARDER @ 22.5 - ~~35~~ 29					
							3		WITH COLOR CHANGE TO					
									YELLOWISH-BROWN					
							4							
0.0	↓	2"	100/3"				25		SANDSTONE: FINE TO MED	—	—	30	60	10
									GRAINS, MICACEOUS,					
							6		UNOXIDIZED, MOD TO					
									WELL CEMENTED,					
							7		MOIST					
NO H_2O IN HOLE ON 11/1/01														
PT-			DRY @ 27' BGS				8		SOFTER 29-31					
WS-7		H_2O @ ≈ 60' BGS							HARDER 31-39					
							9							
									FIRST 6": SANDSTONE: FINE	—	—	30	50	20
6.0		6"	20				30		TO MED, MOD CEMENTATION,					
6.0	↓	5"	100/5"						OXIDIZED, BROWNISH-YELLOW					
							1		MOIST. LAST 6": SILTSTONE/					
									SHALE AS ABOVE @ 15'	—	—	—	—	100
							2							

CEMENT GROUT MIXTURE

QA/QC

Boring #: PT-055 MW#: P2-114 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" SCH 40 PVC BLANK	BENTONITE	2							
							3							
							4							
							5							
0.0	↓	6"	100/6"						FIRST 4": SAME AS ABOVE	—	—	—	60	40
							6		LAST 2": SANDSTONE:					
									FINE-V. FINE GRAINS,					
							7		MOD CEMENTATION, OXIDI-					
									ZED, MICACEOUS, MOIST,					
							8		BROWNISH-YELLOW					
									HARDER 39-48'					
							9							
							40							
0.0	↓	3"	100/3"						SANDSTONE: FINE TO	—	—	20	60	20
							1		MED GRAINS, MICACEOUS					
									MOD-TO WELL CEMENT-					
							2		ED, BROWNISH-YELLOW					
									MOIST					
							3							
							4							
							45							
0.0	↓	3"	100/3"						SAME AS ABOVE					
							6							
							7							
					SUMP	RMC #3 NATURAL MONTEREY BEACH SAND								
N/A	↓	0"	100/0"		2" SCH 40 PVC SCREEN (0.020" SLOTS)		8	TD	VERY HARD @ 48'	HOLE DRY DURING				
									REFUSAL @ 48.2'	INSTALLATION				
							9							
									5 BGS RMC #3 NAT'L MONTEREY SAND					
							50		1 BG BOYOBEN ENVIROPLUG MEDIUM					
									CHIPS. HYDRATED IN 1.5' LIFTS.					
							1		8 BGS COLTON PORTLAND CEMENT MIXED					
									WITH 45 GALLONS H_2O.					
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-055 MW#: P2-115 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: NEW CON/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE Total Depth: 40.0

Ref. Elev.: GROUND SURF.

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): NONE Time/Date:

Drill Start Time/Date: 1355 10/30/01 Drill Finish Time/Date: 1550 10/30/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: ~~1651~~ 1645 10/30/01

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓					CONCRETE	0	SM	ALLUVIUM: SILTY SAND, MOIST, LOW PLASTICITY, LOW DENSITY, LOOSE, SAND FINE-MED, STRONG BROWN	—	—	30	50	20
							1							
							2		POSSIBLE BEDROCK					
0.0	↓							SM	SAME AS ABOVE WITH COLOR CHANGE TO YELLOWISH-BROWN					
							3		HAND AUGR REFUSAL @ 3'					
							4		HARDER DRILLING 3'-22'					
0.0	↓	4"	100/6"			CEMENT GROUT MIXTURE	5		SAME AS ABOVE, SLIGHTLY CEMENTED, OXIDIZED	—	—	30	50	20
							6							
							7							
							8							
							9							
0.0	↓	6"	100/6"				10		SAME AS ABOVE, COLOR CHANGE TO BROWNISH-YELLOW OXIDIZED					
							11							
							12							

QA/QC

1405 RAY

Boring #: PT-055 MW#: PZ-115 Project: DOE SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Coarse	Med.	Fine	Silt/Clay
							2							
							3							
							4							
15.6	↓	4"	100/4"				15		SAME AS ABOVE, MOD-SLIGHT CEMENTATION, OXIDIZED					
							6							
					2" SCH 40 BLANK PVC CASING TO SURFACE	CEMENT GROUT MIXTURE	7							
							8							
							9							
6.6	↓	1"	100/3"				20		SAME AS ABOVE, SLIGHT CEMENTATION, OXIDIZED,	—	—	30	50	20
							1							
							2		SLIGHTLY HARDER ~~DRI~~ DRILLING 22'-38.5'					
						BENTONITE	3							
							4							
14.1	↓	5"	100/5"				25		SANDSTONE: FINE - COARSE GRAINS, MICACEOUS, SLIGHTLY CEMENTED, OXIDIZED, YELLOWISH-BROWN, MOIST	—	10	40	40	10
						MONTEREY SAND	6							
							7							
					2" SCH 40 SCREEN		8		~~#~~ INCREASED HARDNESS 38.5 -					
							9							
16.4	↓	3"	100/3"			RMC #3	30		SAME AS ABOVE, SLIGHT - MOD CEMENTATION, OX.D					
							1							
							2							

Estimated % Of Sand

QA/QC

Boring #: PT-055 MW#: P2-115 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Coarse	Med.	Fine	Silt/Clay
					2" SCH 40 PVC SCREEN (0.020)	RMC #3 SAND	2		HARDER DRILLING 32.5-33.5 INCREASED HARDNESS 33.5-35.5					
							3		VERY HARD 37.5- HARDER 35.5-37.5					
							4							
14.1	↓	3"	[illegible]				35		SANDSTONE: FINE-~~HARD~~ GRAINS, MICACEOUS,	–	–	20	60	20
							6		MOD-WELL CEMENTED, OXIDIZED, MOIST,					
					Sump		7		BROWNISH-YELLOW					
							8							
							9							
D.D	↓	2"	100/2"				40		SANDSTONE: SAME AS ABOVE, WELL CEMENTED,					
							1		GREY					
							2		TD = 40 FT BGS					
							3							
							4		4 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							45		1 BG WYOBEN ENVIROPLUG MEDIUM CHIPS. HYDRATED IN 1-1.5'					
							6		LIFTS BY ADDING H_2O. 5 BGS COLTON PORTLAND CEMENT					
							7		TYPE II/V. MIXED WITH 27.5 GALS H_2O.					
							8							
							9							
							50							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-106 MW#: P2-116 Sheet 1 of 3

Project: DOE SHALLOW GROUNDWATER

Job #: Site: RMHF / SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth:

Ref. Elev.:

Sampler Type: 1.5' SPLIT SPOON

Site Sketch Map

Depth to 1st Water (▽): Time/Date:

Depth to Water After Drilling (▼): Time/Date:

Depth to other Water Bearing Zones:

Drill Start Time/Date: 10/31/01 1030 Drill Finish Time/Date: 1350

Well Completion Time/Date: 1500

Soil Boring Backfill Time/Date:

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
0.0						CONCRETE	0	SM	FILL: SILTY SAND, WITH OCCASIONAL GRAVEL, LOW PLASTICITY, MED DENSE, MOIST, STRONG BROWN, FINE-COARSE SAND GRAINS	NL 5	10	20	45	20
							1							
							2							
							3		COLOR CHANGE @ 4 TO YELLOWISH-BROWN (NO CHANGE IN DRILLING HARNESS)					
							4	B.2						
0.0		6"	100			CEMENT GROUT MIXTURE	5		SANDSTONE: FINE-MED GRAINS, MICACEOUS, SLIGHTLY CEMENTED, MOIST, BROWNISH-YELLOW, OXIDIZED	-	-	30	50	20
							6							
							7							
							8							
							9							
0.0		4"	49				10		SAME AS ABOVE WITH MODERATE CEMENTATION IN SHOE. ALSO THIN (1/8") ZONES OF GREY THROUGHOUT					
0.0		6"	65				11							
							12							

QA/QC

Boring #: PT-106 MW#: PZ-116 Project: DOE SHALLOW GROUNDH2O Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 In.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" DIAM SCH 40 BLANK PVC CASING	CEMENT GROUT MIX	2		HARDER DRILLING @ 13-16 WITH COLOR CHANGE TO YELLOWISH-BROWN					
							3							
							4							
							5							
0.0		5"	100/5"						SANDSTONE: FINE-VERY FINE GRAINS, MICACEOUS, MODERATELY CEMENTED, OXIDIZED, YELLOWISH-BROWN, MOIST (MORE THAN ABOVE)	—	—	—	80	20
							6							
							7							
						BENTONITE	8							
							9		INCREASED HARDNESS 16-21.5'					
							10							
0.0		4"	100/4"						SAME AS ABOVE WITH INCREASED CEMENTATION (MODERATE TO WELL)					
							1							
							2		INCREASED HARDNESS 21.5-27.5					
					2" DIAM SCH 40 PVC SCREEN (0.020" SLOTS)		3							
							4							
							5							
0.0		3"	100/3"			MONTEREY BEACH SAND			SAME AS ABOVE					
							6		VERY HARD @ 27.5 WITH COLOR CHANGE TO					
							7		OLIVE. PIECES ARE GREY LIGHT GREY @ 29-30'					
							8							
							9							
							30							
0.0		1"	100/3"		2" DIAM SCH 40 PVC #3 RMC				SANDSTONE: FINE TO MED GRAINS, MICACEOUS, WELL CEMENTED, OXIDIZED, MOIST YELLOWISH-BROWN	—	—	20	60	20
							1							
							2							

QA/QC

Boring #: PT-106 MW#: PZ-116 Project: DOE SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					SUMP	#3 SAND	2		VERY HARD 32'-33', 33.5-34					
							3		REFUSAL @ 34'					
							4							
0.0	↓	1"	100/1"					TD	SAME AS ABOVE. WELL CEMENTED.					
							35							
							6		3.5 BAGS RMC #3 NATURAL MONTEREY BEACH SAND					
							7		1 BAG WYOBEN ENVIROPLUG MED CHIPS. HYDRATED IN 1.5' LIFTS					
							8		BY ADDING H_2O.					
							9		4 BGS COLTON PORTLAND CEMENT					
							40		TYPE II/I MIXED WITH 22 GALS					
							1		OF H_2O.					
							2							
							3							
							4							
							45							
							6							
							7							
							8							
							9							
							50							
							1							
							2							

QA/QC

PT-128

MONTGOMERY WATSON

Boring #: ~~PT-127~~ MW#: PZ-117 Sheet 1 of 2

Project: ~~DOE~~, SHALLOW GROUNDWATER

Job #: BOEING Site: HAPPY VALLEY/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" / CARBIDE

Total Depth: 25.5'

Ref. Elev.: GROUND SURF.

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): NONE Time/Date:

Drill Start Time/Date: 1325 11/1/01 Drill Finish Time/Date: 1510 11/1/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1358 ON 11/1/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: NONE

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓				2" SCH 40 BLANK PVC CASING TO SURFACE	CONCRETE	0		FILL: SILTY SAND WITH GRVEL, LOOSE, LOW PLASTICITY, MED DENSE, MOIST, YELLOWISH-BROWN.	30	—	20	30	20
							1							
							2							
							3		CHANGE @ 3.5 TO STRONG BROWN, ~~POSSIBLE ALLUVIUM/FILL CONTACT~~					
							4							
0.0		6"	7			CEMENT GROUT MIXTURE	5		FILL AS ABOVE. STRONG BROWN.					
		6"	26											
0.0	↓	5"	100/5"				6	BR	SANDSTONE: FINE TO MED GRAINED, MICACEOUS,	—	—	20	50	30
							7		SLIGHTLY CEMENTED, MOIST BROWNISH-YELLOW, OXIDIZED					
							8		SOFTER DRILLING 6'-9.5'					
							9		HARDER DRILLING 9.5'-13.5'					
0.0	↓	5"	100/5"			BENTONITE	10		SAME AS ABOVE					
							11							
							12							

QA/QC

PT-128

Boring #: ~~PT-127~~ MW#: PZ-117 Project: ~~BOE~~ SHALLOW GROUNDWATER Sheet 2 of 2

BOEING

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" BLANK PVC		2							
							3		SLIGHTLY HARDER 13.5-16					
							4							
0.0	↓	3"	100/5"				15		SAME AS ABOVE					
							6		SLIGHTLY HARDER 16-17					
					2" SCH 40 PVC SCREEN (0.020" SLOTS)		7		SLIGHTLY SOFTER 17-					
							8		~~APPEARS TO~~					
							9							
0.0	↓	3"	100/3"			RMC #3 MONTEREY BEACH SAND	20		SANDSTONE: FINE TO MED GRAINED, MICACEOUS, SLIGHTLY CEMENTED, MOIST, OXIDIZED, BROWNISH-YELLOW	—	—	20	60	20
							1							
							2							
							3		VERY HARD 24'-25.5'					
							4							
0.0	↓	0.25"	100/1"		SUMP		25		SANDSTONE: FINE TO MEDIUM, MICACEOUS, OXIDIZED, WELL CEMENTED, MOIST. POSSIBLE CONCRETION? 25.5' SAMPLE SAME AS 24.5' SAMPLE REFUSAL @ ~~25.5~~ 25.5'	—	—	20	60	20
0.0	↓	0.25	100/1"				TD							
							6							
							7							
							8							
							9							
							30							
							1							
							2							

3.5 BGS RMC #3 NATURAL MONTEREY BEACH SAND.

1 BG WYOBEN ENVIROPLUG MEDIUM CHIPS. HYDRATED IN 1.5' LIFTS.

2 BG COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 11 GALS OF H_2O.

QA/QC

PT-127

MONTGOMERY WATSON

Site Sketch Map

Boring #: ~~PT-126~~ MW#: PZ-118	Sheet 1 of 2
Project: ~~DOE~~ BOEING SHALLOW GROUNDWATER	
Job #:	Site: B-1 /SSFL
Logged By: T. HALL	Reviewed By:
Drilling Contractor: LAYNE	
Drill Rig Type/Method: CME 850 / HSA	
Drillers Name: ENRIQUE PEREZ	
Borehole Diam./Drill Bit Type: 8" CARBIDE	Total Depth: 30.0
	Ref. Elev.: GROUND SURF.
Sampler Type: 1.5' SPLIT SPOON	
Drill Start Time/Date: 0700 11/2/01	Drill Finish Time/Date: 0820 11/2/01
Well Completion Time/Date: 0935 11/2/01	
Soil Boring Backfill Time/Date: N/A	

Depth to 1st Water (▽): NONE Time/Date:

Depth to Water After Drilling (▼): Time/Date:

Depth to other Water Bearing Zones: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓					CONCRETE	0	SM	FILL: SILTY SAND, LOOSE, MEDIUM PLASTICITY, LOW DENSITY, MOIST, MICACEOUS, ~~STRONG BROWN~~ REDDISH-BROWN, OCCASIONAL GRAVEL	—	—	20	40	40
						CEMENT GROUT MIXTURE	2–12							
0.0	↓	6"	6				5	SM	FILL AS ABOVE					
		6"	6				5.5	SM	ALLUVIUM: FINE-MED GRAINS, MICACEOUS, LOOSE, MOIST, LOW DENSITY, LOW PLASTICITY, YELLOWISH-BROWN	—	—	10	60	30
0.0		6"	8				6							
0.0	↓	6"	8				10	SM	SAME AS ABOVE WITH MOTTLED ZONES OXIDIZED (* IRON MOST LIKELY)					
0.0		6"	11				10.5							
0.0		6"	11				11							

QA/QC

PT-127

Boring #: ~~PT-126~~ MW#: PZ-118 Project: ~~BOE~~ SHALLOW GROUNDWATER BOEING Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (In.)	Blow Counts /6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
						GROUT	2							
							3							
							4							
							5							
0.0		6"	7		2" SCH 40 BLANK PVC CASING	BENTONITE		SM	SAME AS ABOVE WITH					
		6"	8						OCCASIONAL PEA SIZED					
0.0		6"	9				6		GRAVEL					
							7							
							8							
							9							
							10							
0.0		6"	4					SM	SAME AS ABOVE					
		6"	7											
0.0		6'	11		(0.020" SLOTS)		1	SM	LAST 4": ALLUVIUM OR	—	5	20	45	30
									HIGHLY WEATHERED					
							2		SANDSTONE: FINE-					
									COARSE GRAINS, LOOSE, MOIST, MED PLASTICITY					
							3		NO CEMENTATION, BLUEISH					
								SM	GREY, OBVIOUS DISCOLORATION WITH					
							4	B.R	SLIGHT FUEL ODOR. PID ~~=~~ 57.2 @ GROUND SURFACE					
									HARDER @ 24' 29' COLOR CHANGE BROWNISH-YELLOW					
0.0		3"	100/5"		2" SCH 40 PVC SCREEN	RMC #3 NATURAL MONTEREY BEACH SAND	25		SANDSTONE: FINE TO	—	—	20	60	20
									MEDIUM GRAINS, MICACEOUS,					
							6		OXIDIZED, MOIST, SLIGHT					
									CEMENTATION, BROWNISH-					
							7		YELLOW					
							8							
									HARDER DRILLING 29'					
							9							
0.0		0.25"	100/4"		SUMP		30	TD	SAME AS ABOVE WITH MODERATE CEMENTATION					
							1		3 BGS RMC #3 MONTEREY SAND					
									1 BG ENVIROPLUG MED CHIPS.					
							2		2 BGS PORTLAND CEMENT @ 11 GALS H_2O					

QA/QC

MONTGOMERY WATSON

Boring #: PT-001B MW#: P2-119 Sheet 1 of 3

Project: BOEING SHALLOW GROUNDWATER

Job #: Site: SAGE RNCH/SSFL

Logged By: T. HALL Reviewed By:

Drilling Contractor: LAYNE

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: ENRIQUE PEREZ

Borehole Diam./Drill Bit Type: 8" CARBIDE

Total Depth: 44.0

Ref. Elev.: GROUND SURF.

Site Sketch Map

Sampler Type: 1.5' SPLIT SPOON

Depth to 1st Water (▽): NONE Time/Date: 11/5/01

Drill Start Time/Date: 1120 11/2/01 Drill Finish Time/Date: 1110 11/5/01

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: 1310 11/5/01

Depth to other Water Bearing Zones: NONE

Soil Boring Backfill Time/Date: NONE

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	↓					CONCRETE	0	SM	ALLUVIUM: SILTY SAND, LOOSE, LOW DENSITY, LOW PLASTICITY MOIST, MICACEOUS, YELLOWISH BROWN, ROOTLET TRACES	—	—	20	60	20
							1							
							2							
									COLOR CHANGE TO BROWNISH-	—				
							3	B.R	YELLOW @ 3' (POSSIBLE BEDROCK/ALLUVIUM CONTACT					
							4							
							5							
0.0		6"	41			CEMENT GROUT MIXTURE			SANDSTONE: FINE TO MEDIUM GRAINS, MICACEOUS, SLIGHTLY	—	—	30	~~40~~ 50	20
		6"	30				6							
0.0	↓	4"	100/5"						CEMENTED (MORE CEMENTED IN SHOE), OXIDIZED, BROWN-					
							7		ISH YELLOW, MOIST					
							8		HARDER DRILLING @ ~~5~~ 7.5 -14'					
							9							
0.6	↓	6"	100/6"			PORTLAND	10		SAME AS ABOVE					
							11							✓
							12							

QA/QC

Boring #: PT-001B MW#: PZ-119 Project: BOEING SHALLOW GROUNDWATER Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts /6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							2							
									HARDER DRILLING 14-18'					
							3							
							4							
							5							
0.0	↧	4"	100/4"						SANDSTONE: FINE TO MED	—	—	20	50	30
							6		GRAINED, MICACEOUS,					
									SLIGHT TO MODERATE					
							7		CEMENTATION, MOIST,					
									OXIDIZED, BROWNISH-					
							8		YELLOW					
									HARDER @ 18'-23'					
							9							
										RESUME @ 0930				
										ON 11/5/01				
0.0	↧	0.5"	100/1"				20		SAME AS ABOVE WITH					
									INCREASED CEMENTA-					
							1		TON TO MODERATE					
							2		HARDER 23'-27'					
							3							
							4							
							25							
0.0	↧	0.25"	100/1"						SAME AS ABOVE WITH					
									VER THIN (< 1/4") SHALE/					
							6		SILTSTONE INTERBEDS,					
									BROWNISH-GREY. MIXTURE					
							7		IS YELLOWISH-BROWN.					
									SOFTER 27-29'					
							8		HARDER 29-34					
							9							
							30							
0.0	↧	1"	100/2"						SANDSTONE: FINE-MED	—	—	20	50	30
							1		GRAINS, OXIDIZED, MOD TO					
									WELL CEMENTED, MOIST,					
							2		MICACEOUS, BROWNISH-YELLOW					

Annulus Filler: SAND | BENTONITE | PORTLAND CEMENT GROUT MIXTURE

Casing: 2" SCH 40 PVC BLANK CASING TO SURFACE

QA/QC

Boring #: PT-001B MW#: PZ-119 Project: BOEING SHALLOW GROUNDWATER Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					BLANK		2							
							3		HARDER DRILLING 34'-36'					
									SOFTER 36'-38'					
									HARDER 38'-40.5'					
							4							
0.0	↧	1"	100/3"				35		SANDSTONE: COARSE TO FINE GRAINS, MODERATELY CEMENTED, MICACEOUS MOIST, OXIDIZED, BROWNISH-YELLOW	—	20	40	30	10
							6							
							7							
							8							
							9							
N/A	↧	0"	100/3"		2" SCH 40 PVC SCREEN (0.020" SLOTS)	RMC #3 NATURAL MONTEREY BEACH SAND	40		CUTTINGS SAME AS ABOVE					
							1		SOFTER 40.5-43'					
									HARDER 43'-44'					
							2							
							3							
	↧		100/3"		SUMP		4	TD	SANDSTONE: FINE TO MED GRAINS, MICACEOUS, MODERATELY CEMENTED, OXIDIZED, BROWNISH-YELLOW, MOIST	—	—	20	50	30
							45							
							6							
							7		TD = 44'					
							8							
									4 BGS RMC #3 NATURAL MONTEREY BEACH SAND					
							9		1 BG WYOBEN ENVIROPLUG MEDIUM BENTONITE CHIPS. HYDRATED IN					
							50		1.5' LIFTS BY ADDING WATER.					
							1		6 BGS COLTON PORTLAND CEMENT TYPE II/V MIXED WITH 34					
							2		GALLONS OF H_2O.					

QA/QC

MONTGOMERY WATSON

Boring #: PT-129 MW#: PZ-120 Sheet 1 of 3

Project: DOE Shallow GW

Job #: — Site: SCTI/MMSA

Logged By: B. Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750/H.S.A.

Drillers Name: Jose Alvarado

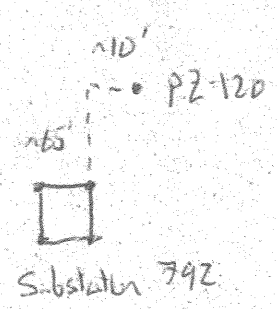
Borehole Diam./Drill Bit Type: 8-in/Carbide

Total Depth: 26.0 ft

Ref. Elev.:

Sampler Type: 1.5 ft Split Spoon

Site Sketch Map



Depth to 1st Water (▽): None Time/Date: N/A

Depth to Water After Drilling (▼): N/A Time/Date: N/A

Depth to other Water Bearing Zones: N/A

Drill Start Time/Date: 3/18/03 0955 Drill Finish Time/Date: 3/18/03 1145

Well Completion Time/Date: 3/18/03 1400

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						Concrete	0		Surface: Fill; silty sand, loose, low plasticity, low density, dry, dk brown	—	—	10	70	20
							1							
							2							
							3							
							4							
							5							
			5		2-in Sch 40 Blank PVC Casing	Cement Grout Mixture			As above except mod cement, nonplastic	—	—	10	70	20
			7				6							
			8				7							
							8		slightly harder drilling @ 8'					
							9							
			20			Bentonite	10		Silty sand w/ trace sandstone gravel, low cement, brown, nonplastic, dry					
			26				11							
			29				12							

QA/QC

Boring #: PT-129 MW#: PZ-120 Project: DOE Shallow GW Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
					2-in Blank PVC	Native Sand	2							
							3							
							4							
							5							
	T	6	19		2-in Diam. Sched 40 PVC Screen (0.020" Slots)	RMC #3 Pacific Materials Sand			Sandstone: med-fine gr, micaceous, mod. cement, ~~moist~~ brownish-yellow, oxidized	–	–	30	60	10
		6	38				6							
		2	50/2				7		Hard drilling @ 16' + below					
							8							
							9							
	↓	2	50/2				20		Sandstone; as above	–	–	10	80	10
							1							
							2							
							3							
							4							
	T	3	50/2		Sump		25		Sandstone; fine gr., ~~dry~~, micaceous, oxidized, mod. cement., yellow-brown, moist	–	–	–	90	10
							6	TD	@ 26 ft: refusal					
							7		TD @ 26 ft					
							8		- competant sandstone					
							9		very hard					
							30		4 Bags RMC #3 Pacific Materials Sand					
							1		5 ~~Bags~~ Gal Wyo-Ben ~~Medium~~ 1/4-in Encapsing Tablets					
							2							

QA/QC

Boring #: PT-124 MW#: PZ-120 Project: DOE NSGW Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand Coarse	Med.	Fine	Silt/Clay
							2		1 Bag Portland Cement					
									½ Bag Aquagel Gold Seal					
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-130 MW#: PZ-121 Sheet 1 of 3

Project: DOE Near-Surface GW

Job #: — Site: SLTI/HMSA

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750/HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in / Carbide

Total Depth: 33.0

Ref. Elev.: Ground Surface

Site Sketch Map

Sampler Type: 1.5 ft Split Spoone

Depth to 1st Water (▽): None Time/Date: N/A

Drill Start Time/Date: 3/18/03 1745 Drill Finish Time/Date: 3/19/03 0725

Depth to Water After Drilling (▼): N/A Time/Date: N/A

Well Completion Time/Date: 3/19/03 0900

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						Concrete	0	—	Surface: asphalt (4-in)	—	—	10	70	20
							1		Fill: silty sand, loose, nonplastic, dry, ~~dk~~ brown					
							2							
							3							
						Cement Grout/ Mixture	4							
							5							
	↓	6"	50/5"				5		Sandstone; highly weathered, oxidized, dry, mod. cement, nonplastic, yellow brown	—	—	30	60	10
							6		Hard drilling @ 6'					
							7							
							8							
							8.4							
							9							
							10							
	↓	2"	50/2"			Bentonite	10		Sandstone; weathered, oxidized, ~~lighter~~ cementation, dry, yellow brown, nonplastic	—	—	10	80	10
							11							
							12							

QA/QC

Boring #: PT-130 MW#: PZ-121 Project: DOE NSGW Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand Coarse	Med.	Fine	Silt/Clay
	↓	1"	50/2"		2-in. Blnk PVC (0.020" slots) 2-in. Diam. Sched. 40 PVC Screen	Bentonite Pack #3 Morie Sand	15		Sandstone: brownish yellow, dry, micaceous, mod. cement., nonplastic., oxidized	-	-	-	90	10
	↓	2"	50/2"				20		As above	-	-	-	90	10
	↓	1"	50/1"				25		As above	-	-	-	90	10
0.1	↓	1"	50/1				30		As above	-	-	-	90	10

QA/QC

Boring #: PT-13D MW#: P2-12J Project: DOE NSGW Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
						Bent	2							
							3							
1		ø	50/1				3 3	TD	Refusal @ 33'					
									TD=33'					
							4		Terminated boring - sandstone					
							5							
							6		2 Bags Wyo-Ben Enviroplug Medium					
							7		5 Bags RMC Pacific Materials #3 Sand					
							8		7 Gal Wyo-Ben Enviroplug ¼-in Tablets					
							9		1 Bag Portland Cement					
							0		½ Bag Aquagel Gold Seal					
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT131 MW#: PZ-122 Sheet 1 of 2

Project: DOE Near-Surface GW

Job #: — Site: SCII/HMSA

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750 / HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in / Carbide

Total Depth: 27.5 ft

Ref. Elev.: Ground Surface

Site Sketch Map

Sampler Type: 1.5 ft Split Spoon

Depth to 1st Water (▽): None Time/Date: N/A

Drill Start Time/Date: 3/19/03 0940 Drill Finish Time/Date: 3/19/03 1100

Depth to Water After Drilling (▼): N/A Time/Date: N/A

Well Completion Time/Date: 3/19/03 1300

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						Cement	0		Surface: Fill					
							1		Silty Sand (SM); dk brown, loose, dry, non plastic, weak cementation	—	—	20	70	10
							2							
							3							
							4							
							5							
0.1		6	8			Cement-Grout Mixture			Clayey Sand ( ); dry, oxidized, low plasticity, mod cementation, red brown, micaceous	—	—	10	~~70~~ 80	20
		6	23				6							
		6	41											
					2" SCH 40 PVC Blank Casing		7							
							8							
							9							
0.1		3	50/3			Bentonite Cement-Grout Mixture	10		Silty Sand (SM); dry, oxidized, non plastic, weak cementation, brown, micaceous, loose	—	—	10	80	10
							11							
							12							

QA/QC

Boring #: PT-131 MW#: PZ-122 Project: DOE NSGW Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2-in PVC Blank		12		Harder drilling @ 12'					
							13							
							14							
0.0	↓	6	50/5				15		Sandstone; brown, moist, micaceous, mod cement., nonplastic, oxidized	–	–	–	90	10
							16							
							17							
					0.020" Slot Screen		18							
							19							
0.1	↓	3	50/3				20		As above	–	–	–	90	10
					40 PVC Sched.		21							
							22							
					2-in Dia.	Pacific Materials #3 Sand	23							
							24							
0.1	↓	6	50/6			RMC	25		Interbedded layers of shale/Sandstone; dry, mod. cement., nonplastic, micaceous, oxidized	–	–	–	90	10
					Sump		26							
							27							
–		0	50/0				27.5	TD	Ref. @ 27.5' TD=27.5'					
							8							
							9		4½ Bags RMC #3 Pacific Materials Sand					
							0		3 Gal Wyo-Ben Enviroplug ¼-in Tablets					
							1		1 Bag Portland Cement ½ Bag Aquagel Gold Seal					
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PZ-132 MW#: PZ-123 Sheet 1 of 2

Project: Rocketdyne Near-Surface GW

Job #: — Site: Happy Valley

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750 / HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in. / Carbide

Total Depth: 28.5'

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5 ft Split Spoon

Depth to 1st Water (▽): None Time/Date: N/A

Drill Start Time/Date: 3/20/03 0830 Drill Finish Time/Date: 3/20/03 1000

Depth to Water After Drilling (▼): N/A Time/Date: N/A

Well Completion Time/Date: 1100 3/20/03

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						Concrete			Surface: Grass + Top Soil					
						Cement Grout Mixture	1							
							2							
							3		Weathered Sandstone @ 3 ft; ~~LT Brown~~ yellow brown,	–	–	–	90	10
							4							
0.0	T	6	50		2" PVC Blank Casing - Sched 40		5		Sandstone: dry, oxidized, moderate cement., nonplastic, fine gr., micaceous, brown yellow	–	–	–	90	10
	↓	2	50/2			Bentonite	5.7							
							6							
							7							
							8							
							8.7							
							9							
0.1	T	3	50/3			#3 Sand	10		As above except fine-med gr.	–	–	10	80	10
							11							
						RMC	12							

QA/QC

Boring #: PT-132 MW#: PZ-123 Project: RD NSGW Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2" Dia. Schedule 40 PVC Screen (0.020 Slot)	RMC Pacific Materials #3 Sand	12							
							13							
							14							
		Ø	50/2				15							
							16							
							17							
							18							
							19							
0.1	↓	3	50/3				20		Sandstone: fine grained, dry, mod-well cemented, oxid, micaceous, brown yellow, non plastic	-	-	-	90	10
							21							
				221	Slug?		22							
									Harder drilling @ 22.5'					
							23							
		Ø	50/Ø					TD	Ref. @ 23.5'					
							4		Terminated boring @ 23.5'					
							5		4-1/2 Bags RMC Pacific Materials #3 Sand					
							6		5 Gal Enviroplug (Wyo-Ben) 1/4-in Tablets					
							7		1/2 Bag Wyo-Ben Enviroplug Medium Chips					
							8		1 Bag Portland Cement					
							9		1/4 Bag Aquagel Gold Seal					
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-133 MW#: PZ-124 Sheet 1 of 2

Project: DOE Near-Surface GW

Job #: — Site: BOSB Landfill

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750 / HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in. / Carbide

Total Depth: 31 ft

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5 Foot Split Spoon

Depth to 1st Water (▽): None Time/Date: —

Drill Start Time/Date: 3/20/03 1440 Drill Finish Time/Date: 3/21/03 1215

Depth to Water After Drilling (▼): — Time/Date: —

Well Completion Time/Date: 3/21/03 1400

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0-2.5 ft: Concrete			Surface: Fill					
						Portland Type II/V Cement - Aquagel Grout	1							
							2							
							3		Concrete debris encountered					
							4							
0.1		Ø	12				5		No return in sample					
		Ø	8											
		Ø	5		2" Schedule 40 PVC Blank		6							
							7							
							8		Sandstone: dry, mod. cement., fine-med. gr., yellow brown, non plastic, micaceous, oxidized	—	—	10	80	10
							9							
0.1		Ø	50/1			Bentonite	10		No return in sample					
							11							
							12							

QA/QC

Boring #: MW#: PZ 124 Project: Boeing SSFL / DOE NSGW Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
					2							
					3		Harder drilling @ 13' -cuttings become grey					
					4							
0.0	↓	2	50/2		5		Sandstone: moist, moderate cement., micaceous, oxidized, non-plastic, gray brown, fine-med gr.	-	-	10	80	10
					6							
					7							
					8							
					9							
0.1	↓	3	50/3		20		Sandstone: moist, moderate cement., micaceous, oxidized, non-plastic, olive brown, fine-med gr.	-	-	10	80	10
					1							
					2							
					3							
					4							
3/21/03 1145 0.0	↓	4	50/4		25		Sandstone: moist, moderately cemented, no oxidation, grey, mostly fine grained	-	-	5	90	5
					6							
					7							
					8							
					9							
0.0	↓	2	50/2		30		Sandstone, as above, moist, mod-well cemented, no oxid.	-	-	5	90	5
					1		Drilling Refused at 31' TD = 31'					
					2							

Casing Type & Size: (Blank) 2" Diam Schedule 40 PVC Screen (0.020 Slot)

Annulus Filler: (Natural) Monterey Beach Sand #3 Sand RMC

QA/QC

MONTGOMERY WATSON

Boring #: PT-134 MW#: PZ-125 Sheet 1 of 3

Project: NASA Near-Surface GW

Job #: – Site: RD-9 Area

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 750/HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in./Carbide

Total Depth: 41 ft

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5-foot Split Spoon

Depth to 1st Water (▽): None Time/Date: –

Drill Start Time/Date: 3/24/03 1345 Drill Finish Time/Date: 3/24/03 1535

Depth to Water After Drilling (▼): – Time/Date: –

Well Completion Time/Date: 3/25/03 1000

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0'-2': Concrete			Surface: Fill					
					Casing		1							
							2							
							3							
							4							
0.0		6	2		PVC		5		Silty Sand (SM): fine gr., dry, oxidized micaceous, weak cementation, non-plastic, brown	–	–	–	80	20
		6	7		40									
	↓	6	10		Slot		6							
					Blank		7							
					2-in	Bentonite Grout Mixture	8							
							9							
0.2		6	6				10		Silty Sand (SM): fine-med. gr., dry, mod. cementation, oxidized, micaceous, non-plastic, yellow brown	–	–	10	80	10
		6	10			Cement								
	↓	6	10				11							
							12							

QA/QC

Boring #: PT-134 MW#: PZ-125 Project: NASA NSGW Sheet 2 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med	Fine	Silt/Clay
						Cement Grout Mixture	2							
							3							
							4		[Still soft drilling]					
0.1	T	6	8				15		Silty Sand (SM): fine grained,	-	-	-	80	20
		6	8						weak cement., oxidized,					
	↓	6	8			Bentonite	6		micaceous, nonplastic,					
					4" PVC Blank Casing				yellow brown					
							7							
							8							
							9							
0.1	T	6	7				20		Sandstone: highly weathered,	-	-	-	90	10
		6	6						fine grained, oxidized,					
	↓	6	9				1		mod. cement., nonplastic,					
					2" Sched. 40 PVC Slotted (0.020" Slots)				brown yellow, dry					
							2							
							3							
							4							
0.0	T	6	11			RMC #3 Pacific Materials Sand	25		Sandstone: moist, highly	~	-	-	90	10
		6	12						weathered, fine gr., mod.					
	↓	6	12				6		cement, nonplastic, brown					
									yellow					
							7							
							8							
							9							
0.0	T	6	8				30		As above	-	-	-	90	10
		6	9											
	↓	6	10				1							
							2							

QA/QC

Boring #: PT-134 MW#: P2-125 Project: NASA & Near-Surface (FW) Sheet 3 of 3

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
					2" PVC Screen	RMC #3 Sand	2							
							3							
					Sump		4		Hard drilling @ 34'					
0.0	↓	2	50/2				35	BR	Sandstone: olive grey, med. cement., fine gr., nonplastic, moist, oxidized, micaceous	-	-	-	90	10
						Bentonite	6							
							7							
							8							
							9							
0.0	↓	6	39			Backfill	40		Interbedded layers of shale & sandstone: blue grey, wet, med. cement, fine gr., oxidized, nonplastic, micaceous	-	-	-	80	20
		2	50/2				1	TD						
							2		TD @ 41'					
							3		Refusal @ 41'					
							4		Terminated boring					
							5		1 Bag Wyo-Ben Enviroplug Medium					
							6		4 Gal Wyo-Ben Enviroplug ¼-in Tablets					
							7		5 Gal Sinclair Bentonite Pellets					
							8		4-½ Bags RMC #3 Pacific Materials Sand					
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-135 MW#: PZ-126 Sheet 1 of 4

Project: NASA NSGW

Job #: — Site: Cocoa

Logged By: Ben Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 95

Drillers Name: Ruben

Borehole Diam./Drill Bit Type: 8-in / Carbide

Total Depth: 50.0 ft

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5-ft Split Spoon

Depth to 1st Water (▽): N/A Time/Date: —

Drill Start Time/Date: 4/30/03 1330 Drill Finish Time/Date: 4/30/03 1600

Depth to Water After Drilling (▼): — Time/Date: —

Well Completion Time/Date: 5/1/03 1000

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0'-4' Concrete			Surface: concrete spillway (7-ft)					
							1							
							2							
							3		Cuttings stained olive grey					
							4							
1.4	T	4	3		4" Sch 40 PVC Blank		5	H2O	Silty Sand (SM), fine-grained, wet dk olive grey (stained), oxidized, nonplastic, no weak cementation	—	—	—	85	15
	↓	4	7				6							
		4	8		2-in Sch 40 PVC Screen	Bentonite	7							
							8		Harder drilling @ 7' (cuttings are grounded up sandstone) - no staining					
							9							
0.1	↓	4	120/4		2-in Screen	RMC #3 Sand	10		CF Sandstone, fine-med gr, moist, lt brown, oxidized, micaceous, nonplastic, weak cementation	—	—	5	85	10
							11							
							12							

QA/QC

Boring #: PT-135 MW#: PZ-126 Project: NASA NSGW Sheet 2 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med	Fine	Silt/Clay
					2 in Sch-40 PVC Screen (.020" Slot)	RMC #3 Pacific Materials Sand	2							
							3							
							4							
							5							
0.2	I	4	130/4				15		As above: Sandstone, highly oxidized, weak cementation, moist	-	-	5	85	10
							6							
							7							
							8							
							9							
0.1	I	4	120/4		Slough		20		As above; weathered sandstone, moist	-	-	5	85	10
							1							
							2							
							3							
							4							
							5							
0.1	I	4	120/4			Bentonite	25		C.F. Sandstone: fine gr., moist, lt grey, oxidized, micaceous, weak cementation, argillistic	-	-	5	85	10
							6							
							7							
							8							
							9							
							30							
			100/6						Sandstone: fine gr, moist, brownish grey, oxidized, micaceous, weak cementation, argillistic	-	-	-	90	10
							1							
							2							

QA/QC

Boring #: PT-135 MW#: PZ-126 Project: NASA NSGW Sheet 3 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
0.0	↧	4	120/4			Bentonite	35		Sandstone; gray, oxidized, moist, micaceous, fine-gr., nonplastic, weak cementation,	-	-	-	90	10
0.1	↧	3	120/3				40		Sandstone: brown-gray, oxidized, micaceous, fine-gr., nonplastic, weak cementation, moist	-	-	-	90	10
0.1	↧	6 2	35 100/2				45		As above: gray, fine-med grained, oxidized, micaceous, weak cementation, moist, nonplastic	-	-	5	85	10
0.1	↧	3	120/3				50		TD @ 50 ft Terminated boring; no refusal Sandstone: gray, as above					

QA/QC

Boring #: PT-135 MW#: PZ-126 Project: NASA GWSGW Sheet 4 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med	Fine	Silt/Clay
							2		8 Bags Puregold Medium Bentonite Chips					
							3		20 Gal Buried Bentonite 1/4-in Pellets					
							4		4-1/2 Bags ~~BC~~ RMC Pacific Materials #3 Sand					
							5		10 Gal Pel-Plug 1/4-in Bentonite Pellets					
							6							
							7							
							8							
							9							
							0							
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MONTGOMERY WATSON

Boring #: PT-136 MW#: PZ-127 Sheet 1 of 4

Project: Rocketdyne NSGW

Job #: — Site: Canyon

Logged By: B. Stewart Reviewed By:

Drilling Contractor: Layne

Drill Rig Type/Method: CME 850 / HSA

Drillers Name: Jose Alvarado

Borehole Diam./Drill Bit Type: 8-in / Carbide

Total Depth: 66.0 ft

Ref. Elev.:

Site Sketch Map

Sampler Type: 1.5-ft Split Spoon

Depth to 1st Water (▽): N/A Time/Date: —

Drill Start Time/Date: 4/24/03 0845 Drill Finish Time/Date: 4/24/03 1515

Depth to Water After Drilling (▼): — Time/Date: —

Well Completion Time/Date:

Depth to other Water Bearing Zones: N/A

Soil Boring Backfill Time/Date: N/A

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						8-in. Cuttings	0		Surface: Silty Sand (SM), fine-med grained, dry, non plastic, weak cementation, red brown					
							1							
							2							
							3							
							4							
							5							
D.0	↓	6	2		2-in. Sch-40 PVC Blank Casing	Cement/Bent. Mixture		∇ 20'	Silty Sand (SM), fine-med gr., wet, dk ~~gray~~ red brown, nonplastic, weak cementation	—	—	20	60	20
		6					6							
		6					7							
							8							
							9							
							10							
D.0	↓	3	50/3						CF Sandstone, weathered, micaceous, dry, nonplastic, med cementation, light brown	—	—	10	80	10
							11							
							12							

QA/QC

Boring #: PT-136 MW#: PZ-127 Project: RD NSGW Sheet 2 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
							2							
							3							
							4							
							5							
0.0		2-in	50/2						As above, moist, fine gr	-	-	-	90	10
							6							
							7							
							8							
							9							
-		Ø	50/2				20		No recovery in spoon					
							1							
							2							
							3							
							4							
0.0		2-in	50/2				25		CF Sandstone, fine gr., moist, micaceous, oxidized, lt brown, nonplastic, ~~firm~~ cemented	-	-	-	90	10
							6							
							7							
							8							
							9							
0.1		1-in	50/1				30		As above	-	-	-	90	10
							1							
							2							

Casing: 2-in SCH 40 PVC Blank Casing
Annulus Filler: Cement Grout / Native

QA/QC

Boring #: PT-136 MW#: PZ-127 Project: RD NS6W Sheet 3 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med	Fine	Silt/Clay
							2							
							3							
							4							
0.2	S	1	50/1				35		CF Sandstone, moist, fine gr., oxidized, milaceous, non-plastic, mod. cementation, H brown	-	-	-	90	10
						Cement Grout Mixture	6							
							7							
							8							
							9							
0.1	S	1	50/1			PVC Blank Casing	40		As above	-	-	-	90	10
							1							
							2							
						2-in. Sch. 40	3							
							4							
0.1	S	1	50/1				45		As above	-	-	-	90	10
							6							
							7							
							8							
							9							
0.	S	1	50/2			Bentonite	50		As above, stronger cementation but still moderate, moist	-	-	-	90	10
						RMC #3 Sand	1							
							2							

QA/QC

Boring #: PT-136 MW#: PZ-127 Project: RD NSGW Sheet 4 of 4

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med	Fine	Silt/Clay
					2-in Sch. 40 PVC Riser		2							
							3							
							4							
0.1	‡	1-in	50/1				5 55.25		As above	1	-	-	90	10
							6							
							7							
							8							
							9							
2.3	‡	2	50/2		2-in Sch. 40 PVC 10-slot Screen	#3 Sand RMC Pacific Materials	60		As above, dry	1	-	-	90	10
							1							
							2							
							3							
							4							
		Ø	50/0				65 65.25		No return in split spoon					
							6		Ref. @ 66 ft TD @ 66 ft					
							7							
							8		5 Bags RMC Pacific Materials #3 Sand					
							9		10 gal Pel-Plug 1/4-in Bentonite Pellets					
							0		8 Bags Type II/~~III~~ V Portland Cement					
							1		2/3 Bag Quik-Gel High Viscosity Bentonite					
							2							

QA/QC