WHITE—DIVISION OF WATER RESOURCES
CANARY—CLIENT'S COPY
PINK—WELL DRILLER'S COPY

STATE OF NEVADA
DIVISION OF WATER RESOURCES

WELL DRILLER'S REPORT

Please complete this form in its entirety

OFFICE USE ONLY
Log No. 379179
Permit No.
Basin 212

PRINT OR TYPE ONLY

NOTICE OF INTENT NO.

1. OWNER Nellis AFB - FWC-EV
MAILING ADDRESS BUILDING 899
Nellis AFB, NV 89191-5000
ADDRESS AT WELL LOCATION

2. LOCATION NW 1/4 NW 1/4 Sec. 21 T. 19S N/S R. 62 E. CLARK County
PERMIT NO. (Issued by Water Resources) Parcel No. Subdivision Name

3. TYPE OF WORK
New Well ☒ Recondition ☐
Deepen ☐ Other ☐

4. PROPOSED USE
Domestic ☐ Irrigation ☐ Test ☒
Municipal ☐ Industrial ☐ Stock ☐

5. TYPE WELL
Cable ☐ Rotary ☒
Other ☐

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
MW-56				
See Attached Log				

8. WELL CONSTRUCTION
Diameter 4.5 ID inches Total depth 237.5 feet
inches
inches
Casing record Schedule 80 PVC
Weight per foot Thickness

Diameter	From	To
4.5 ID inches	+3 feet	237.5 feet
inches	feet	feet
inches	feet	feet
inches	feet	feet
inches	feet	feet
inches	feet	feet

Surface seal: Yes ☒ No ☐ Type Bentonite/cement
Depth of seal 0-194 feet
Gravel packed: Yes ☒ No ☐
Gravel packed from 194 feet to 240 feet

Perforations:
Type perforation Factory Cut Slots
Size perforation .010"
From 207.5 feet to 237.5 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Date started April 14, 19 91
Date completed April 27, 19 91

7. WELL TEST DATA

Pump RPM	G.P.M.	Draw Down	After Hours Pump

BAILER TEST
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours
G.P.M. Draw down feet hours

9. WATER LEVEL
Static water level 242 feet below land surface
Flow G.P.M. P.S.I.
Water temperature 79 °F Quality

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name H-F DRILLING, INC. (Contractor)
Address 1456 B.S. MANHATTAN AVE. FULLERTON, CA. 92631 (Contractor)
Nevada contractor's license number issued by the State Contractor's Board FEDERAL PROPERTY EXEMPT STATUS
Nevada contractor's driller's number issued by the Division of Water Resources
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1614
Signed Kenneth R. Jones (By driller performing actual drilling on site or contractor)
Date 12-24-91

(Rev. 11-85) USE ADDITIONAL SHEETS IF NECESSARY (O)-627

'92 JAN 30 P1:31
STATE ENGINEER

James M. Montgomery
Consulting Engineers, Inc.

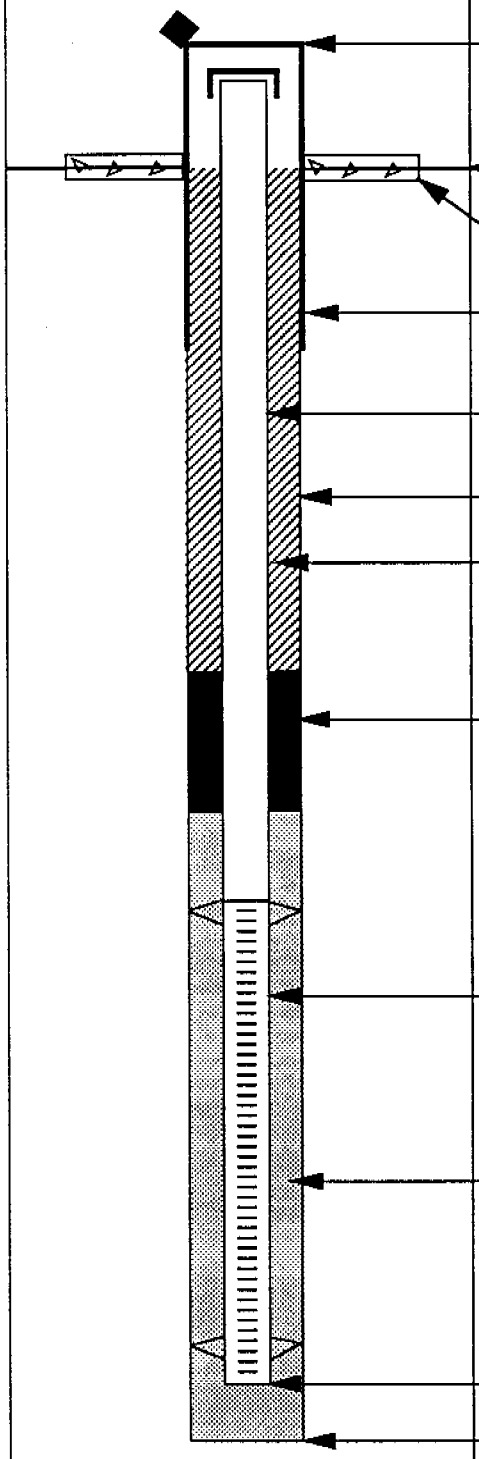
WELL ID: MW-56

MONITORING WELL SHEET

PROJECT: Nellis AFB
LOCATION: LF-36
PROJECT NO: 1868.0632
WELL ID: MW-56
SFC ELEVATION (FT AMSL): 2131.4'
DATE COMPLETED: 4-27-91
GEOLOGIST/ENGINEER: .Rich Halket

DRILLER H-F Drilling
DRILLING METHOD HSA/Air & Mud Rotary

NOT TO SCALE



TOP OF PROTECTIVE CASING ELEVATION (MSL) .... 2135.05'

SURFACE ELEVATION (AMSL) ..... 2131.4'

CONCRETE PAD

LOCKING 8" STEEL PROTECTIVE CASING

4.5" ID SCH 80 PVC CASING INTERVAL..... 3' - 207.5'

BOREHOLE DIAMETER..... 0' - 207' - 12"
207' - 240' - 10"

NEAT CEMENT GROUT INTERVAL ..... 0' - 190'

BENTONITE SEAL INTERVAL..... 190' - 194'

4.5"ID SCH 80 PVC 0.010"
SCREENED INTERVAL..... 207.5' - 237.5'

#3 SAND
FILTER PACK INTERVAL..... 194' - 240'

DEPTH OF WELL..... 237.5'

DEPTH OF BOREHOLE..... 240'

HTW DRILLING LOG

HOLE NO. MW-56

SHEET 1 OF 31 SHEETS

1. COMPANY NAME JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.	2. DRILLING SUBCONTRACTOR HF DRILLING
3. PROJECT NELLIS AFB RI/PFS AT 16 SITES	4. LOCATION SITE LF-36
5. NAME OF DRILLER RAY QUINTERO	6. MANUFACTURER'S DESIGNATION OF DRILL FAILING F-10 0 - 207 FT RT-1800 207-240 FT
7. SIZE AND TYPE OF DRILLING AND SAMPLING EQUIPMENT 12" OD ACKER CONTINUOUS 5 7/8" TRICONE BIT 4 7/8" TRICONE BIT 2.5" SPLIT SPOON (2.5" S.S.) 2.0" SPLIT SPOON (2.0" S.S.) 1.4" SPLIT SPOON (1.4" S.S.)	8. HOLE LOCATION OFF OF RANGE ROAD 9. SURFACE ELEVATION 2131.4 FT MSL 10. DATE STARTED APRIL 14, 1991 0948 11. DATE COMPLETED APRIL 27, 1991
12. OVERBURDEN THICKNESS 240.0 FT	15. DEPTH GROUNDWATER ENCOUNTERED 220.2 FT 0634 4/25/91
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 214.1 FT 0743 4/28/91
14. TOTAL DEPTH OF HOLE 240.0 FT	17. OTHER WATER LEVEL MEASURMENTS (SPECIFIY) 216.7 FT 0832 4/29/91, 1910.35 FT MSL - 6-21-91

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
2	0	2	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	12. TOTAL SAMPLE RCVY
N/A	0	0	0	0	0	100 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	N/A	X	N/A	RICH HALKET

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
							0948 begin drilling 140 lbs hammer with a 30" drop
	1.0	silty GRAVEL (GW), tan, loose, dry, 30-35% fines, fine to coarse gravel, 1-5% cobbles, high est hydralic conductivity (K), (cuttings)	1.0 (1.0)				BG PID 1.0 0948 DM 0.0
	2.0						BG=background BZ=breathing zone All PID readings in parts per million. PID values in ( ) are reading in empty plastic baggie.
	3.0						DM=dust meter mg/m^3 S.S.=split spoon Top of protective casing elevation = 2135.05 ft (msl)
	4.0						Thread Lubricant used on the RT-2800 drill rig - KING STUFF - Hydrocarbon-free Thread Compound, made by King Oil Tools, Inc.
	5.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 3 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	13.0	silty GRAVEL (GM), tan, dense, dry, 30-35% fines, 5-10% coarse sand, fine to coarse gravel, moderate to high est K					
	14.0						
	15.0						
							BG PID 1.0 1007
	16.0	? — ? — ? — ? — ? — ?					DM 0.01
	17.0						
	18.0						
	19.0						
	20.0	gravelly SILT (ML), gray, very hard, dry, fines, 30-40% fine to coarse gravel, low to moderate est K	1.6 (0.8)			100	1.4" S.S. 6"/6" at 20 ft Sampler refusal @ 20.5 ft
	21.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 4 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	21.0	gravelly SILT (ML), gray, very hard, dry, fines, 30-40% fine to coarse gravel, low to moderate est K					
	22.0						
	23.0						
	24.0						
	25.0						BG PID 1.0 DM 0.44 1020
	26.0						
	27.0						
	28.0						
	29.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 5 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	29.0	gravelly SILT (ML), gray, very hard, dry, fines, 30-40% fine to coarse gravel, low to moderate est K					
	30.0	As Above	1.4 (0.8)			50	1.4" S.S. DM 0.06 1025
						100/2"	8"/8" at 30 ft Sampler refusal @ 30.7 ft
	31.0						
	32.0						
	33.0						
	34.0						
	35.0						BG PID 1.0 1030 DM 0.03
	36.0						
	37.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 6 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	37.0						
	38.0						
	39.0						
	40.0	As Above, gravelly SILT (ML), gray, hard, dry, fines, 1-5% coarse sand, 30-35% fine to coarse gravel, moderate est K	1.4 (0.6)			100/3"	1.4" S.S. 3"/3" at 40 ft Sampler refusal @ 40.3 ft
	41.0						
	42.0						
	43.0						
	44.0						
	45.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 7 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	45.0	As Above, gravelly SILT (ML), gray, hard, damp, fines, 1-5% coarse sand, 30-35% fine to coarse gravel, moderate est K					
	46.0						
	47.0						BG PID 1.0 1045 DM 0.03
	48.0						
	49.0						
	50.0		0.8 (0.4)			70	9"/9" at 50 ft
		Caliche (Rig Behavior)				100/3"	BG PID 1.0 DM 0.08 1053 Sampler refusal @ 50.8 ft
	51.0	SILT (ML), fines, 10-15% fine gravel, low est K (cuttings)					
	52.0						
	53.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 8 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	53.0	SILT (ML), fines, 10-15% fine gravel, low est K (cuttings)					
	54.0						
	55.0						
	56.0	? ? ? ? ? ?					
	57.0						
	58.0						
	59.0	gravelly SILT (ML), tan, very hard, damp, fines, 1-5% medium to coarse sand, 10-15% fine gravel, low est K, plasticity increasing	1.2 (0.8)	MW-56(60)		60	BG PID 0.12 DM 1.0 1102 2.5" S.S. 6"/15" at 59 ft Sampler refusal @ 60.3 ft
						75	
	60.0					100/3"	
	61.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 9 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	61.0	gravelly SILT (ML), tan, very hard, damp, fines, 1-5% medium to coarse sand, 10-15% fine gravel, low est K, plasticity increasing					
	62.0						
	63.0						
	64.0						
	65.0						BG PID 0.8 DM 0.08 1118
	66.0						
	67.0						
	68.0						BG PID 1.0 1137 DM 0.10 1130
	69.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 10 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	69.0	(Rig Behavior)					
		Caliche rich layer - rig behavior					
		(Rig Behavior)					
	70.0	gravelly SILT (ML), tan, damp, very hard, fines, 1-5% medium to coarse sand, 15-20% gravel, low est K	0.6 (0.6)			16	BG PID 1.0 DM 0.03 1202
						100/4"	Plug difficult to knock out.
	71.0	SILT (ML), tan, dry, very hard, fines, 25-30% fine to coarse caliche nodules, 1-5% coarse gravel, low est K					2.5" S.S. 10"/10" at 70 ft Sampler refusal @ 70.8 ft
		(Rig Behavior)					
	72.0	SILT (ML), tan, very hard, fines, 15-20% fine to coarse gravel (limestone), 1-3% cobbles, low est K					
	73.0						
	74.0						
	75.0						BG PID 1.0 DM 0.6 1228
	76.0						
	77.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 11 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	77.0						
	78.0						
	79.0						
	80.0	SILT (ML), tan, very hard, fines, 15-20% fine to coarse gravel (limestone), 1-3% cobbles, low est K	1.0 (1.0)			100	BG PID 0.8 DM 0.08 1253 2.5" S.S. 6"/6" at 80 ft Sampler refusal @ 80.5 ft
	81.0						
	82.0						
	83.0						
	84.0						
	85.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 12 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	85.0	SILT (ML), tan, very hard, fines, 15-20% fine to coarse gravel (limestone), 1-3% cobbles, low est K					
	86.0						
	87.0						
	88.0						
	89.0						BG PID 0.8 DM 0.23 1308
	90.0	As Above, silt (ML), fines, 5-10% fine gravel, 1-3% limestone cobbles, low to moderate est K	1.1 (0.8)			100	2.5" S.S. 6"/6" at 90 ft Sampler refusal @ 90.5 ft
	91.0						
	92.0						
	93.0						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 13 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	93.0	SILT (ML), fines, 5-10% fine gravel, 1-3% limestone cobbles, low to moderate est K					
	94.0						
	95.0						
	96.0						BG PID 0.8 DM 0.02 1314
	97.0						
	98.0						
	99.0						
	100	As Above, (ML)	0.8 (0.8)	MW-56(100) Geotech		140	2.5" S.S. 6"/6" at 100 ft Sampler refusal @ 100.5 ft
	101						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 14 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	101	SILT (ML), fines, 5-10% fine gravel, 1-3% limestone cobbles, low to moderate est K					
	102						
	103						
	104						
	105						BG PID 0.8 DM 0.12 1331
	106						
	107						
	108						
	109						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 15 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	109						
	110	SILT (ML), fines, 1-3% coarse sand, 5-10% fine gravel, 1-3% limestone cobbles, lowest k	0.4 (0.8)			150	2.5" S.S. 6"/6" at 110 ft Sampler refusal @ 110.5 ft
	111						
	112						
	113						DM 0.12 1341
	114						
	115	? ? ? ? ? ?					
	116	SILT (ML), tan, very hard, moist, fines, 1-5% coarse sand, 5-10% fine gravel, low est K					
	117						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 16 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	117						
	118						BG PID 1.0 DM 0.18 1349
	119						
	120	SILT (ML), tan, very hard, moist, fines, 1-5% coarse sand, 5-10% fine gravel, low est K	0.6 (0.8)			140	Sampler refusal @ 120.5 ft
	121						At 121.5 ft. less gravel (Rig behavior/cuttings)
	122						
	123						
	124						At 124 ft. increasing gravel (Rig behavior) BG PID 0.8 DM 0.12 1405
	125						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 17 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	125	SILT (ML), tan, very hard, moist, fines, 1-5% coarse sand, 5-10% fine gravel, low est K					
	126						Cobbly area (rig behavior)
							BG PID 0.6 DM 0.12 1415
	127						
	128						
	129						
	130	As Above, silt (ML), fines, 1-5% coarse sand, 1-5% fine gravel, 1-3% limestone cobbles	0.8 (0.8)			100/3"	3"/3" at 130 ft Sampler refusal @ 130.3 ft
	131						
	132						BG PID 1.0 DM 0.14 1436
	133						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 18 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	133	SILT (ML), tan, very hard, moist, fines, 1-5% coarse sand, 5-10% fine gravel, low est K					
	134						
	135						
	136						
	137						
	138						
	139						BG PID 1.0 1445 DM 0.16
		(Rig Behavior)					
	140	GRAVEL (GW), gray, dense, dry, fine to coarse limestone gravel, 1-3% limestone cobbles, high est K	0.8 (0.8)			50	8"/9" at 140 ft
						100/3"	Sampler refusal @ 140.7 ft
		(Rig Behavior)					
	141						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 19 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	141	gravelly SILT (ML), (Rig Behavior/cuttings)					
	142						
	143						
	144						
	145						BG PID 0.4 DM 0.16 1501
	146						
	147	? — ? — ? — ? — ? — ? Caliche or rocky area (Rig Behavior - hard drilling)					Enter caliche or rocky zone - 1505 BG PID 0.4 DM 0.16 1512 Add 5 gallons water - 1517
	148						BG PID 0.8 DM 0.14 1531 Through rock - tripped out to check bit - 1557
	149						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR:

SHEET 20 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	149						DM 0.29 - 1612 DM 0.33 BG PID 0.6 1632
	150	No Sample - gravel and large cobbles by rig behavior					After replacing cutter head and tripping in resume drilling at 1644 and 120 ft
	151						
	152						
	153						
	154						
	155	Very rocky (Rig Behavior)					
	156						
	157						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 21 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	157						
	158						
	159						
	160	No sample - gravel or cobbles by rig behavior					BG PID 0.4 DM 0.03 1717
	161						
	162						
	163						
	164						Stopped for the day 1734
	165						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 22 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	165						
	166						BG PID 0.6 DM 0.00
		(Rig Behavior)					
	167	gravelly SILT (ML) ? (Rig Behavior)					At 167 ft. easier drilling
	168						
	169						
		(Rig Behavior)					
	170					150/3"	3"/3" @ 170 ft
		GRAVEL (GW), blue gray, very dense, fine to coarse gravel, 1-5% cobbles, high est K	0.4 (0.4)				Hard drilling (rocky) Sampler refusal @ 170.3 ft 2.5" S.S. gravel and cobbles are limestone, poor samples because of cobbles, fines may have escaped
	171						
	172						BG PID 0.8 DM 0.04 0825
	173						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 23 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	173						
		(Rig Behavior)					
							Easier Drilling
		gravelly SILT (ML) ?, (Rig Behavior)					
	174						
							Hard drilling
		(Rig Behavior)					
	175						
							BG PID 0.6 DM 0.02
	176	Caliche-rick layer (cuttings/rig behavior)					
	177						
	178						
							Easier Drilling
	179						
		(Rig Behavior)					
	180	SILT (ML), brown, mottled with light tan, very hard, damp, fines, 10-20% fine gravel, low est K	0.4 (0.4)				BG PID 0.6 DM 0.04 0848
						50	2.5" S.S. 7"/7" at 180 ft
						100/1"	Sampler refusal @ 180.6 ft
	181						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR:

SHEET 24 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	181	SILT (ML), brown, mottled with light tan, very hard, damp, fines, 10-20% fine gravel, low est K					BG PID 0.6 DM 0.06 0913
	182						
	183						
		(Rig Behavior)					
							BG PID 0.4 DM 0.09 0930
	184						At 184 ft. hard drilling
	185						
	186						BG PID 0.8 DM 0.20 1009
	187	gravelly SILT (ML), tan, hard, damp, fines, 20-50% fine gravel, 1-5% cobbles, low est K					
	188						BG PID 0.6 DM 030 1029
							BG PID 0.8 DM 0.30 1045
	189						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 25 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	189						
	190	gravelly SILT (ML), tan, hard, damp, fines, 20-50% fine gravel, 1-5% cobbles, low est K	0.6 (0.6)			100/5"	2.5" S.S. 5"/5" at 190 ft Sampler refusal @ 190.5 ft
	191						Hard drilling continues
	192						
							BG PID 0.6 DM 0.34 1107
	193						BG PID 0.8 DM 0.77 1112
		? ? ? ? ? ? SILT (ML), tan, very hard, moist, fines, 5-10% fine gravel/ caliche nodules, 1-5% limestone cobbles, low to moderate est K					BG PID 0.4 DM 0.32 1116
	194						
	195						BG PID 0.6 DM 0.26 1210
	196						DM 0.24 1225
	197						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 26 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	197						
	198						
	199						
	200	SILT (ML), tan, very hard, moist, fines, 5-10% fine gravel/ caliche nodules, 1-5% limestone cobbles, low to moderate est K	0.6 (0.6)			20	BG PID 0.6 DM 0.36 1238
						100/3"	9"/9" at 200 ft
	201						BG PID 1.0 DM 0.34 1302
							2.5" S.S. on a 20 ft drill rod Sampler refusal @ 200.7 ft
	202						
	203						BG PID 0.6 DM 0.62 1339
							BG PID 0.8 DM 0.43 1421
	204						BG PID 0.8 DM 0.38 1449
	205						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 27 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	205	? ? ? ? ? ?					
	206						
	207	TD 4-15-91 1530 Resume drilling with RT1800 4-24-91 1700 RT1800 is air rotary rig.				NA	BG PID 0.6 DM 0.41 1501 BG PID 0.8 DM 0.41 1514 Sampling with core barrels No blow counts
	208						
	209						
	210	clayey SILT (ML), tan, very hard, damp, fines, 1-5% fine gravel, 5-10% cobbles, low est K, cobbles and gravel are blue limestone	1.0 (0.8)				BG PID 1.1 DM 0.09 1714 6"/6" at 210 ft 2.0" S.S. DM 0.11 1817
	211						
	212						
	213						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 28 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	213	clayey SILT (ML), tan, very hard, damp, fines, 1-5% fine gravel, 5-10% cobbles, low est K, cobbles and gravel are blue limestone					
	214						Water at 214.1 FT on 4/28/91 0743 in converted well
	215						
	216						Water encountered at 216.7 FT 4/28/91 on 0743 in converted well
	217						
	218						
	219						Water first encountered at 220.2 ft 4/25/91 0637 2.0" S.S. DM 0.07 1846 DM 0.05 1906
	220	As Above, fines, 1-5% fine gravel, 10-15% cobbles					Stopped drilling 4/24/91 1912 Restart drilling 4/25/91 0645 18"/18" at 220 ft
	221	As Above, moist - wet					

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 29 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	221	clayey SILT (ML), tan, very hard, damp, fines, 1-5% fine gravel, 5-10% cobbles, low est K, cobbles and gravel are blue limestone					BG PID 1.2 DM 0.09 0649 Blowing Water
	222						
	223						
	224						
	225						BG PID 0.8 DM 0.14 0659
	226						
	227						Blowing Dry
	228						
	229						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 30 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	229						BG PID 0.8 DM 9.4 0708
		? ? ? ? ? ?					DM 0.24 0709
	230						2.5" C.B. DM 0.46 0717
		Caliche Layer, white, very hard, wet, low est K	0.8 (1.0)				BG PID 0.8 0736 DM 0.21 1033 132"/132" at 230 ft
	231						2.5" (C.B.) Core barrel
	232						
		clayey SILT (ML), brown, very hard, wet, fines, 1-5% fine gravel, 1-2% cobbles, low est K					
	233						
	234						DM 0.24 1140
	235			MW-56 (235) 1206			
	236						DM 0.46 1208
	237						

HTW DRILLING LOG

HOLE NO. MW-56

PROJECT: NELLIS AFB RI/PFS AT 16 SITES

INSPECTOR: RICH HALKET

SHEET 31 OF 31 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	237						
		Caliche layer, white, very hard, wet, low est K					2.5" C.B.
	238	clayey SILT (ML), brown, very hard, wet, fines, 1-5% coarse sand, 1-3% fine gravel, low est K					
	239						
		Caliche layer, white, very hard, wet, low est K					
	240	clayey SILT (ML), brown, very hard, wet, fines, 1-5% coarse sand, low est K					
	241	Bottom of hole at 241 ft. 1234					120"120" at 241 ft
		Well Design					
		Materials Used:					
	242	30' 4.25" ID sch. 80 PVC 0.010" -slotted screen (207.5'-237.5')					
		210' 4.25" ID sch. 80 PVC blank casing (2.5'–207.5')					
		19 100 lb. bags RML Lonestar Lapis Lustre #3 Monterey Sand (194'–240')					
		2 50 lb. buckets American Colloid Co. 1/4" bentonite tablets (190'–194')					
	243	20 Gallons water from Production Well 12					
		190' Cement Grout: 87 94 lb. bags Patio Brand type I & II Portland Cement					
		6 50 lb. bags American Colloid Co. C/S granular bentonite powder					
	244	1170 Gallons water from Production Well 12					
	245						