ART

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART_1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
3	0-3 GRAVEL, sdy lt brn, 60% 1/8"-1", A grav w/ 10-20% silt & 20-30% vf-vc sd		GM							
	3-10 SAND, gravelly, lt. brn, 60% vf-vc, A-5A sd, 10-20% silt, 20-30% fine pea gravel 2/10"-3/4"		SW							
10	10-15 GRAVEL, sdy, lt. brn 60-70% pea gravel to 3/4"-1", A. 20-30% vf-vc sd w/ 10-20% silt		GM							DAMP @ 15'
15	15-17 SAND, dk yell brn, SA-SR m-vc w/minor granules to 3/8"		SP							
17	17-30 GRAVEL, sdy, yell brn. Locally well calichified, 70% mod-crse gravel to 2" 30% vf-vc, A-5A sd. very calcareous, locally 10-20% silt		GP							WET @ 17'
25	22-24 v. hard									
	26-30, v. hard									
30	30-32 SAND. dk yell brn, SR-SA, f-c sd w/ 10-20% silt		SP							
32	and 10-20% SR-SA vole gran. to 1/4" Com caliche nodules		GP							
34	32-34 GRAVEL, yell brn, 5% silt, 10% vf-vc sd. Volc + caliche grav. to 1"		SW							
	34-40 SAND, gravelly, yell brn. vf-vc w/ 20-30%									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
10-31-01	1 of 2
DRILLING METHOD: HAMMER	
DRILLED BY: LAYNE	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	volc + caliche granules to 3/8". Locally silty to 20% calcareous.									
	40-53 GRAVEL, dk yell brn, 70-80% volc + chert + ls gravel, SA-SR.		GP							
	40-50 - fine pea grav to 1"									
	50-53 - crse to 3"									
50	10-20% f-vc SA-SR sand little silt									abn water
	Locally caliche cemented									
53	53-58 SILT & SAND, slty, pale yell brn and grn gry.		ML/SM							TOP MC @ 53'
	Interbedded silt and vf-fg sand w/10-20% caliche + volc/ls granules to 3/8"									
58	53-54 semi-hard calichified clayey-silt green gry									
TD	54-56 pale yell brn silt+vfsd									TD @ 58'
	56-57 grn gry silt+vfsd									
	57-58 pale yell brn silt									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

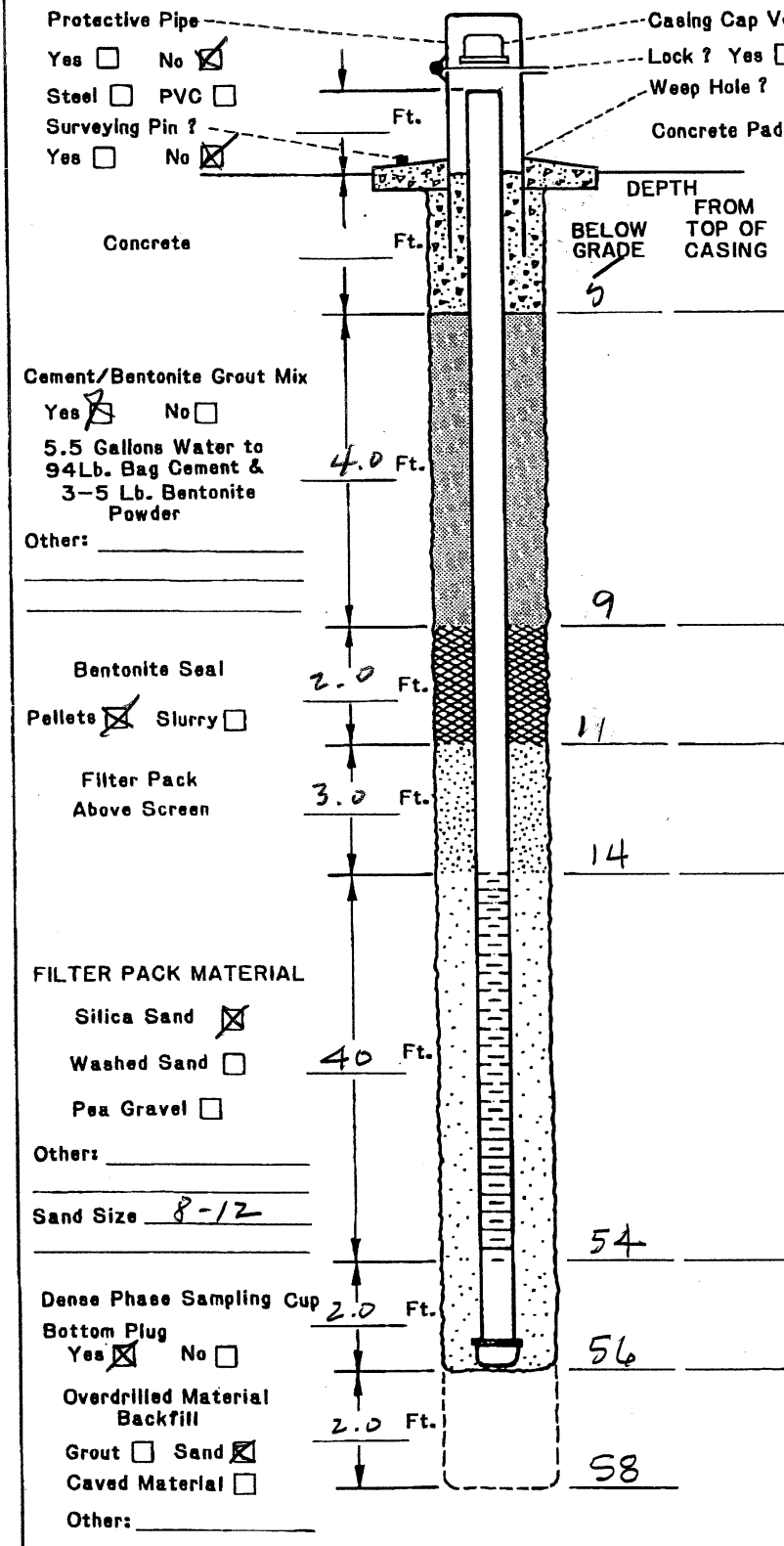
GRAPHIC LOG LEGEND

CLAY | SILT | SAND | GRAVEL | SILTY CLAY | CLAYEY SILT | DEBRIS FILL | HIGHLY ORGANIC (PEAT) | SANDY CLAY | CLAYEY SAND | ☐ _____ | ☐ _____

DATE DRILLED	PAGE
10-30-01	2 of 2

DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other VEE-WIRE
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.040"
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   _____ / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? _____ Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 10-30-01
Before Development _____ Ft. Date 10-31-01
After Development _____ Ft. Date _____

Driller/Firm HORMAN / LAYNE Drill Rig Type AP-1000 Date Installed 10-31-01
Drill Crew JOSH & MARK Well No. ART-1 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART 1A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 1A LOC. 5 FT WEST OF ART 1. SEE ART 1 LITH LOG FOR LITHOLOGY MC @ 54 TD @ 58 WTR @ 23									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

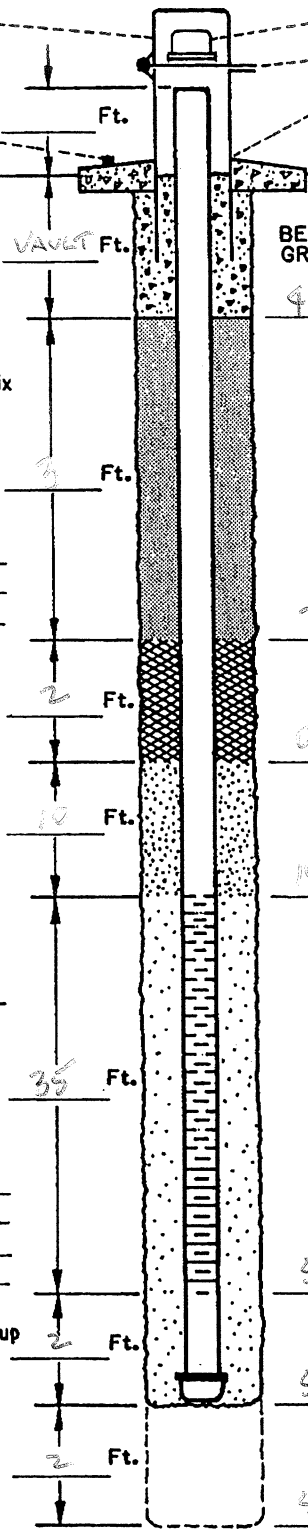
DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND · _____ · _____

DATE DRILLED: 3-31-03 | PAGE: 1 of 1
DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13.25 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☑ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 8 Inches, Screen 8 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☑

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☐
   Air Surging (Air or Nitrogen) ☑ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☑ Opaque ☐
5. Water Clarity After Development ? Clear ☑
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☑
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 23 Ft. Date 3-31-03
Before Development _____ Ft. Date 4-1-03
After Development 22.59 Ft. Date 4-2-03

Driller/Firm HARMAN / LAYNE Drill Rig Type AP-1000 Date Installed 3-31-03
Drill Crew BO / MARK Well No. ART 1A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-2

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-10 SAND, gravelly, lt brn, vf-vc, A-SA sd w/ 15-20% silt. 20-25 % pea gravel 2/10"-1/2", A, volc sl. calcareous		SW							
10										
12	10-12 GRAVEL, sdy, lt brn, pea gravel w/ 40% vf-vc sd		GW							
	12-19 SAND, gravelly, lt brn, vf-vc sd w/ 10-20% silt. 30% pea gravel to 1/2"		SW							
19										
	19-26 GRAVEL, sdy, yell brn (10YR 6/4). Fine pea gravel 3/10"-3/4" w/ minor 1-2". 30% f-vc, A sd & 5% silt. Com soft calcareous cement		GW							wet @ 19'
26										
	26-29 SAND, silty & gravelly. 20-30% silt in vf-m w/ minor vc sd. 10-20% fine pea gravel		SW/SM							
29										
	29-35 GRAVEL, sdy & silty. 25% silt w/ 30% vf-m w/ minor cg sd. fine pea-gravel 50-60 %		GW/SM							
35										
	35-37 SAND, silty + grav, yell brn vf-m w/ cg, 25% silt		SW/SM							
37										
	37-41 GRAVEL, sdy + silty. yell brn. 25% silt, 30% vf-cg sd		GW/SM							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-29-01	1 of 2
DRILLING METHOD	HAMMER
DRILLED BY	LAYNE
LOGGED BY	ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-2

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
41										
	41-50 GRAVEL, sdy pale brn, fine pea grav. size to 3/4". Com hard caliche. 30-40% vf-vc sd. fractured, abn water		GW							
45										
50										
	50-55 SAND, silty + gravelly. 65% vf-vc sd w/ 25% silt and 20% fine pea gravel to 3/8" Scattered caliche nodules		SW/SM							
55										
	55-57 CLAY, silty, mod yell grn (5GY 6/2)		CL							MC @ 55
57										
TD								TD	57'	

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	PAGE
10-29-01	2 of 2

DRILLING METHOD: HAMMER

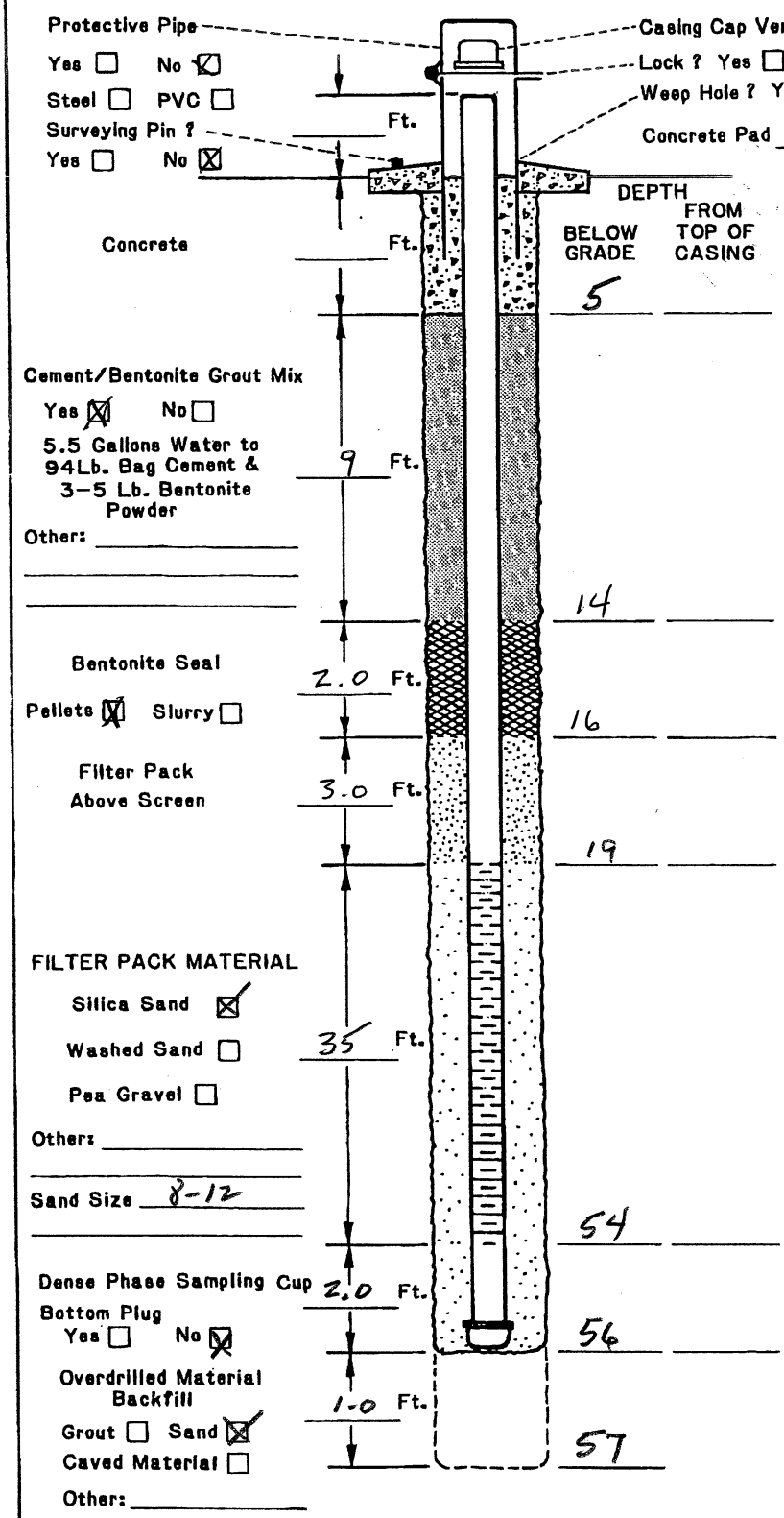
DRILLED BY: LAYNE

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other VEE-WIRE
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   3 1/2 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 2000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 10-29-01
Before Development 17.00 Ft. Date 10-30-01
After Development _____ Ft. Date _____

Driller/Firm HOFMAN / LAYNE Drill Rig Type AP-1000 Date Installed 10-30-01
Drill Crew JOSH & MARK Well No. ART-2 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART 2A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 2A LOC 5FT WEST OF ART 2. SEE ART 2 LITH LOG FOR LITHOLOGY MC @ 57' TD @ 58' WTR @ 54'-57' hard calichified gravel									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

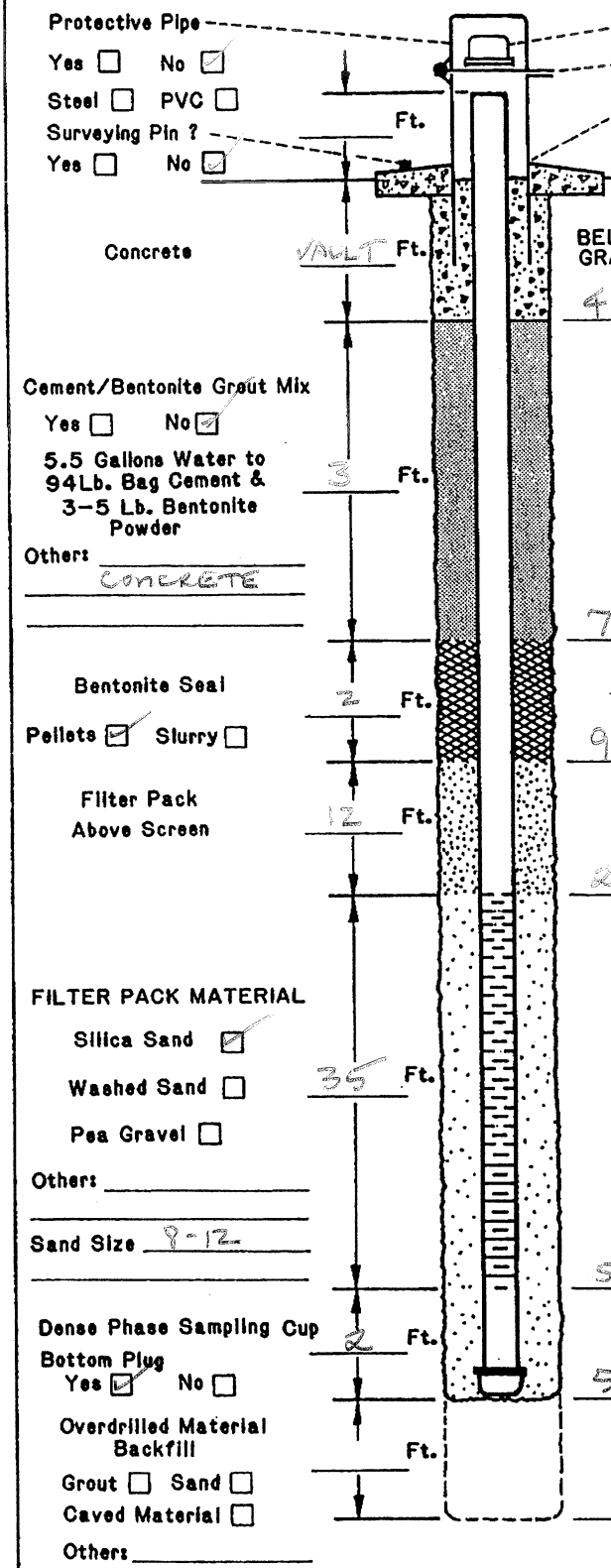
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	3-30-03
PAGE	1 of 1
DRILLING METHOD	HAMMER
DRILLED BY	LAYNE
LOGGED BY	ED KRICH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT IN VAULT



DRILLING INFORMATION:

1. Borehole Diameter= 13.25 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= ____ to ____ Feet.
4. Borehole Diameter for Outer Casing ____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other ____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other ____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☑ Teflon ☐ Other ____
4. Diameter of Casing and Well Screen:
   Casing 8 Inches, Screen 8 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other ____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☑

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☑
   Air Surging (Air or Nitrogen) ☑ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / ____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☑ Opaque ☐
5. Water Clarity After Development ? Clear ☑
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe ____
7. Did Water have any Color ? Yes ☐ No ☑
   If Yes , Describe ____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 26 Ft. Date 3-30-03
Before Development ____ Ft. Date 3-31-03
After Development 26.09 Ft. Date 4-1-03

Driller/Firm Norman / LAYNE Drill Rig Type AP 1000 Date Installed 3-31-03
Drill Crew BO / MARCO Well No. ART 2A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-12 SAND, gravelly, lt brn, w/ 10-20% silt. 60-75% vf-vc, A-SA sd w/ thin beds of pea gravel 1/8"-1/2" w/ minor 1/2"-2".		SW							
12	12-16 GRAVEL, sdy lt brn. 60-75% pea-grav to 1/2". 10% silt. 25-30% vf-vc, A-SA sand		GW							DAMP @ 16'
16	16-20 SAND, gravelly lt brn w/ 20% silt. and 20% pea gravel		SW/SM							WET @ 20'
20	20-30 GRAVEL, sdy, pale orange, com calc. 70% gravel, A-SA, vol to 3/4" w/ minor 1"-3" 10-20% silt & 10-20% vf-vc sand 25'-28' gravel to 5"		GW/GM							
30	30-37 SAND, silty and gravelly, pale orange vf-m/c sd w/ 20-30% pea gravel & 20-30% silt.		SW/SM							
37	37-40 Gravel, sdy, pale orange 10-20% silt & 20-30% vf-vc sd, Grav 1/8"-1/2"		GM							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-28-01	1 of 2
DRILLING METHOD: HAMMER	
DRILLED BY: LAYNE	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	40-45 SAND, silty & gravelly; pale orange. vf-m/c, A-SA sd w/ 30% silt and 20-30% pea gravel to ½"		SW/SM							mc @ 45??
45	45-48.5 SAND, silty, pale orange, vf-f w/minor vc + sm. pea-grav. Com vc-sd size caliche nodules. 30% silt in matrix below 48' calichified (abu. soft calc. cement)		SM							dry below 45'
48.5	TD 48.5'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
10-28-01	2 of 2

DRILLING METHOD: HAMMER

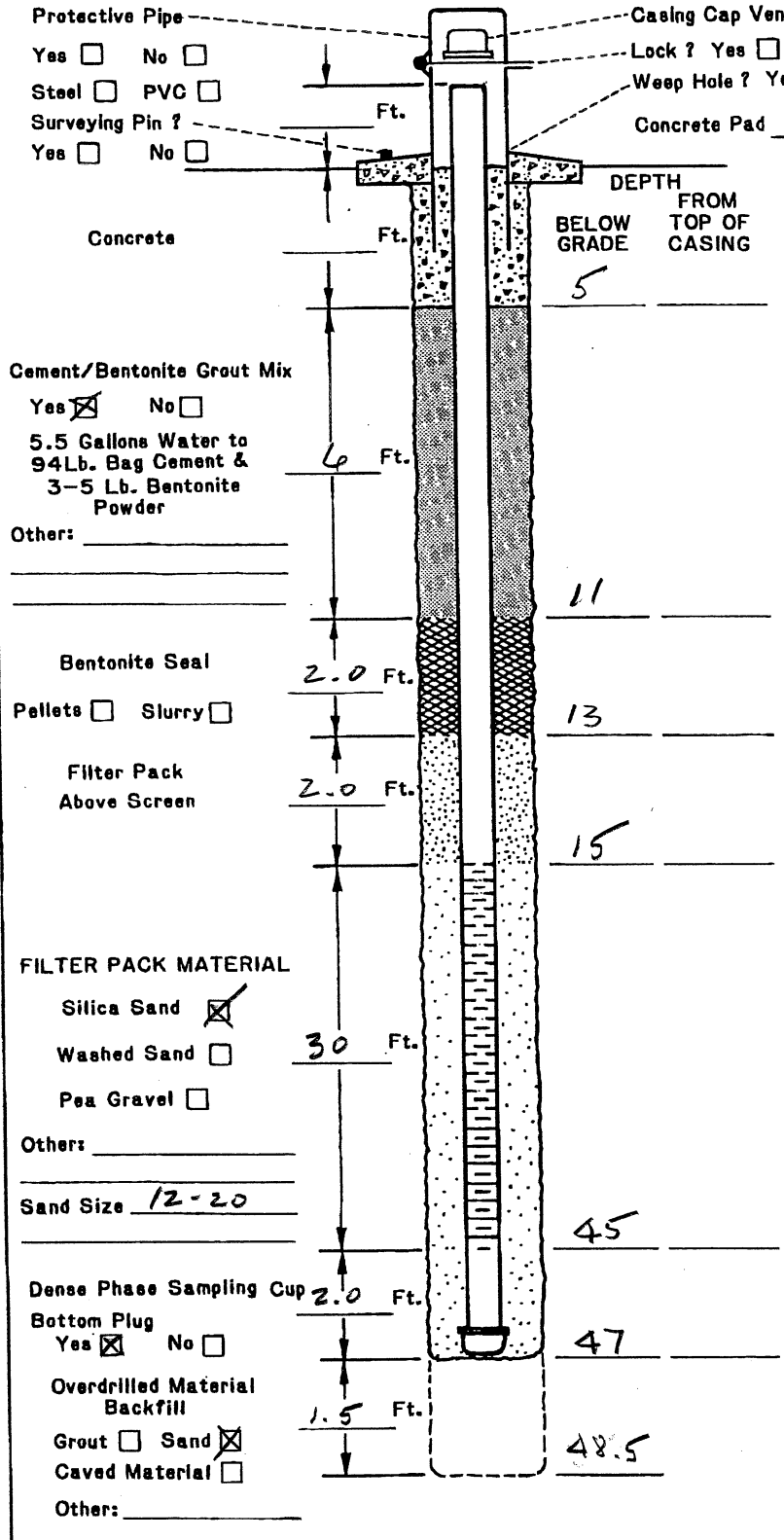
DRILLED BY: LAYNE

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other VEE-WIRE
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK 2 HRS
2. Time Spent on Well Development ?
   _____/_____ Minutes/Hours
3. Approximate Water Volume Removed ? _____ Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☒ No ☐
   If Yes, Describe V. pale green

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 19' Ft. Date 10-28-01
Before Development — Ft. Date —
After Development 18.52 Ft. Date 10-30-01

Driller/Firm HORMAN / LAYNE Drill Rig Type AP 1000 Date Installed 10-29-01
Drill Crew JOSH / MARK Well No. ART-3 Kerr-McGee Hydrologist Ed Krish

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART 3A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 3A Loc. 5FT WEST OF ART 3. SEE LITH LOG FOR ART 3 FOR LITHOLOGY NL @ 53' TD @ 58' WTR @ 27' hard cultichited gravel 51'-53'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
3-28-03	1 of 1

DRILLING METHOD: HAMMER

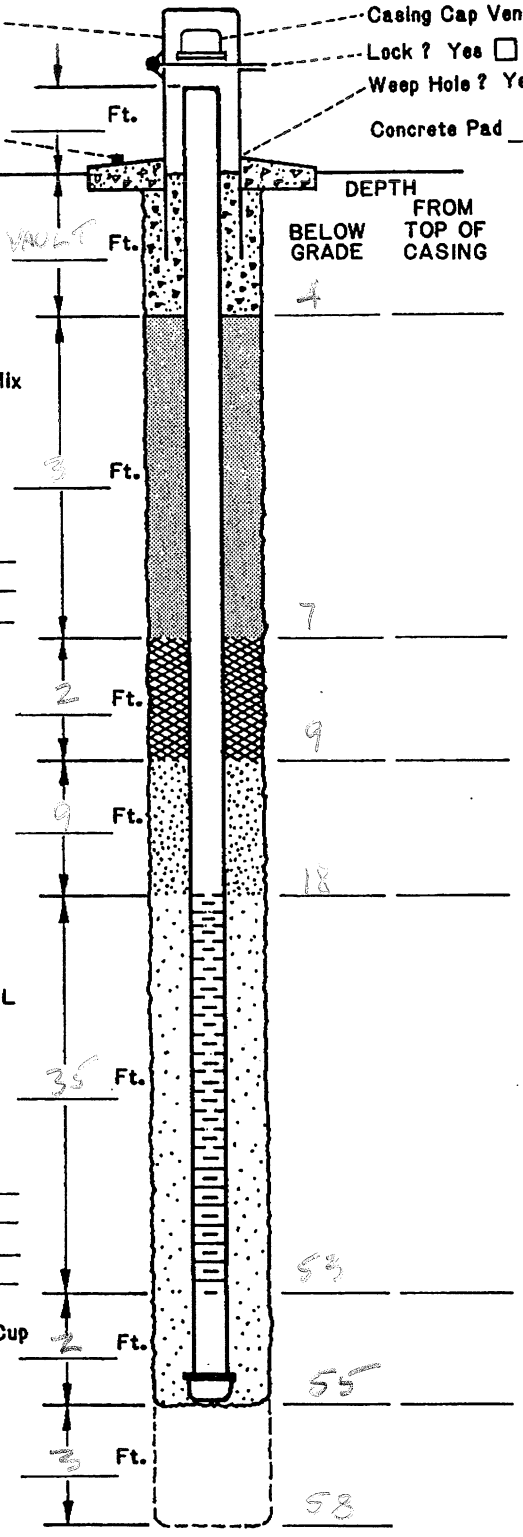
DRILLED BY: LAYNE

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13.25 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☑ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 8 Inches, Screen 8 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☑

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☑
   Air Surging (Air or Nitrogen) ☑ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / _____ Minutes/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☑ Opaque ☐
5. Water Clarity After Development ? Clear ☑
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☑
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 27 Ft. Date 3-26-03
Before Development 27.38 Ft. Date 3-29-03
After Development _____ Ft. Date _____

Driller/Firm HOFFMAN / LAYNE Drill Rig Type AP 1000 Date Installed 3-29-03
Drill Crew B. / MARCO Well No. ART 3A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-4

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-8 GRAVEL, sdy lt brn, w/ 10-20% silt, 60-70% 1/8"-1½", A, volc gravel w/ 20-30% vf-vc, A-SA		GM							
8										
10	8-22 SAND, gravelly, lt brn, 60-70% vf-vc, A-SA sd w/ 10-20% silt in matrix		SW							
15	20-30% pea gravel (1/8"-1/2" w/ minor 1-2"), A, volc, mod calcareous.									
20										damp @ 18'
22										
25	22-40 GRAVEL, sdy and silty, v. pale orange (10YR 8/2). 50-60% 1/8"-1", A, gravel, volc.		GM							wet @ 22'
30	20-30% silt 20-30% vf-vc sand									
35										
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL | SILT | HIGHLY ORGANIC (PEAT) | SAND | SANDY CLAY | GRAVEL | CLAYEY SAND | SILTY CLAY | _____ | CLAYEY SILT | _____

DATE DRILLED	PAGE
10-27-01	1 of 2

DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: Ed Krish
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON NV	BORING NUMBER ART-4

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
~~40~~	40-44 SAND, silty, v. pale orange vf-c, A-SA sand w/ 30% silt in matrix. mod calcareous. 10% ⅛"-½" gravel		SM							
44										
45			CL							
48'										
50	44-48 CLAY, silty lt grn gray (5G 8/1)									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

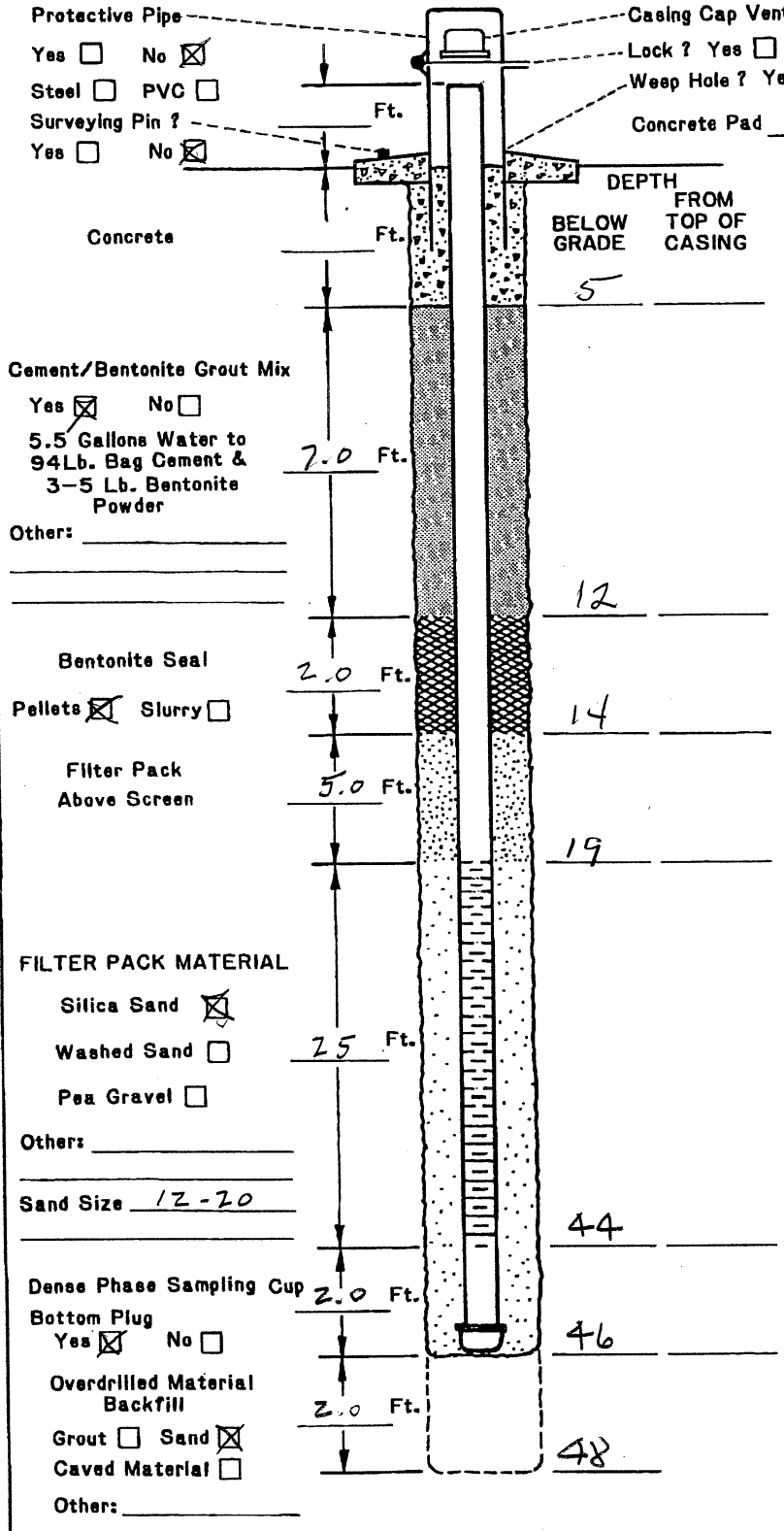
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
10-27-01	2 of 2

DRILLING METHOD: Hammer
DRILLED BY: Layne
LOGGED BY: Ed Kush
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other VEE-WIRE
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK (2 HR)
2. Time Spent on Well Development ?
   2 / _____ Minutes/Hours
3. Approximate Water Volume Removed ? 1000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 19' Ft. Date 10-26-01
Before Development — Ft. Date —
After Development 18.83' Ft. Date 10-30-01

Driller/Firm HERMAN / LAYNE Drill Rig Type AP-1000 Date Installed 10-27-01
Drill Crew JOSH & MARK Well No. ART-4 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMG LLC	LOCATION HENDERSON NV	BORING NUMBER ART 4A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 4A LOC. 5 FT WEST OF ART 4. SEE ART 4 SOIL LOG FOR LITHOLOGY									
	MC @ 44' TD 48' WS @ 29'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
2-14-03	1 of 1

DRILLING METHOD: Hammer

DRILLED BY: Layne

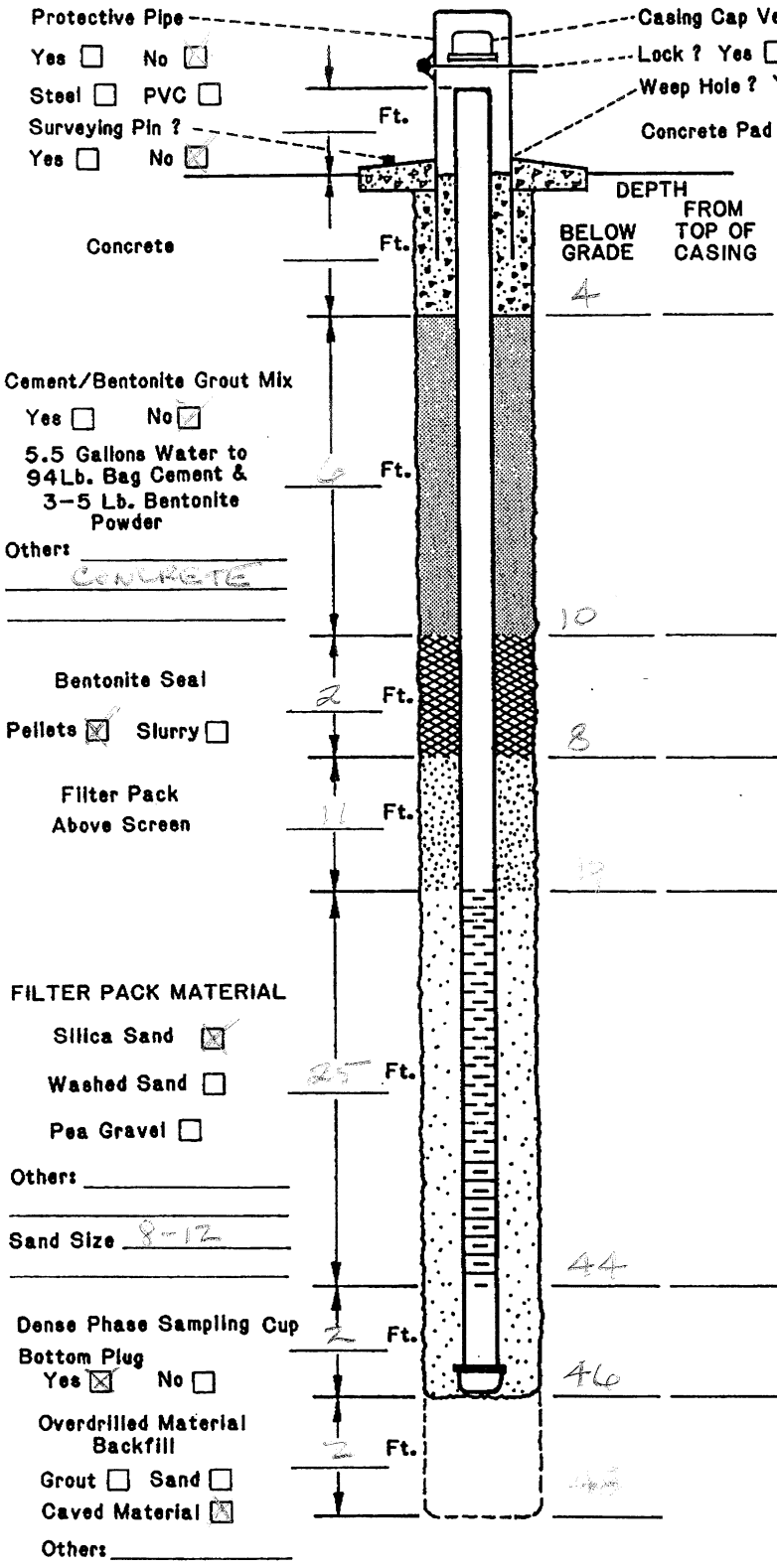
LOGGED BY: ED KRUTH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT IN VAULT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.040"
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other JET
2. Time Spent on Well Development ?
   3 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 2000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 25 Ft. Date 2-14-03
Before Development 26.5 Ft. Date 2-15-03
After Development 26.90 Ft. Date 2-16-03

Driller/Firm HORMANN / LAYNE Drill Rig Type AP-1000 Date Installed 2-15-03
Drill Crew BO / MARCO Well No. ART 6A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON, NV	BORING NUMBER ART-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-16 SAND, gravelly lt. brn. 60-70% vf-vc, A-5A w/ 10-20% silt in matrix. 20-40% pea gravel-volc, A. 1/8"-1/2" w/ minor 1-2"		SM/SW							
10										
16										damp @ 16'
20	16-25 GRAVEL, sdy, lt brn. 70-80% pea gravel 1/8-3/4" w/ minor 1-2". 20-30% vf-vc sd w/ 10-20% silt calcareous		GM/GW							wet @ 18'
25										
28	25-28 CLAY, silty lt grn gry 5GY 8/1		CL							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

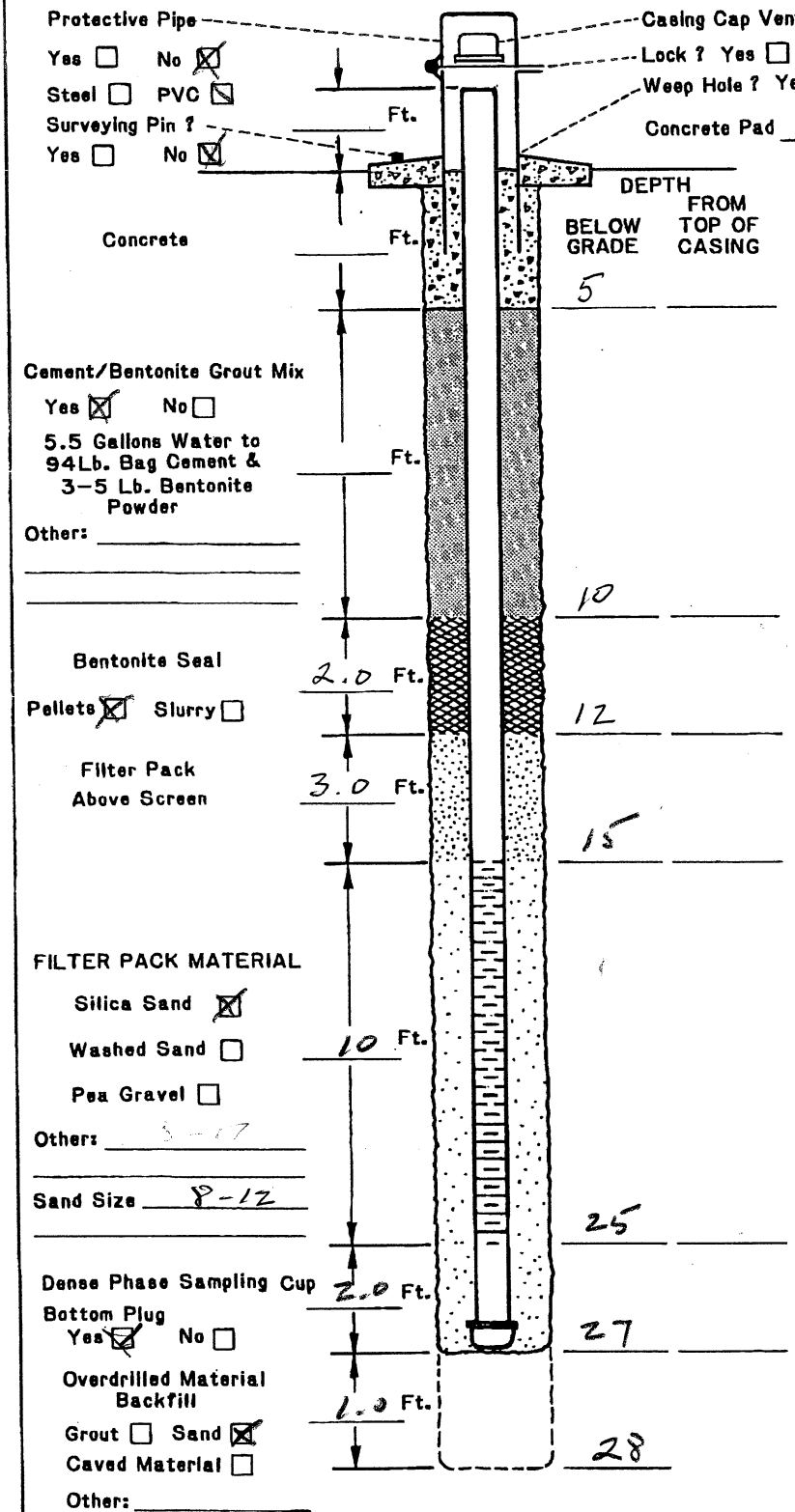
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
10-26-01	1 of 1

DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other VEE-WIRE
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK (45 min)
2. Time Spent on Well Development ?
   3 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 900 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 16' Ft. Date 10-26-01
Before Development 16.08' Ft. Date 10-27-01
After Development 16.01 Ft. Date 10-30-01

Driller/Firm HORMAN / LAYNE Drill Rig Type AP 1000 Date Installed 10-26-01
Drill Crew JOSH / MARK Well No. ART 5 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-6

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-18 SAND, gravelly, lt brn (5YR 6/4) 60-70% vf-vc sd, A-5A, sl. calc. 20-30% gravel 1/8"-1/2" w/ minor up to 2", A-5A, volc. 10-20% silt in matrix locally		SM/SW							Sequence of fining upward units (gravel to silty sd)
5										
10										
15										damp @ 17'
18	18-34 GRAVEL, sdy, pale yell brn (10YR 6/2) 60-70% A-5A volc 1/8"-3/4" w/ minor 1-2" 20-30% vf-vc, A-5A sd 10-20% silt locally mod-com calcareous		GW/GM							wet @ 19'
20										
25										
30	33-34 Gravel to 5". Semi hard, calichified									
35	34-38 CLAY, silty, lt grn gry (5G 8/1) w/ minor clayey SILT Jones. damp.		CL							MC @ 34'
38								TD	38'	

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

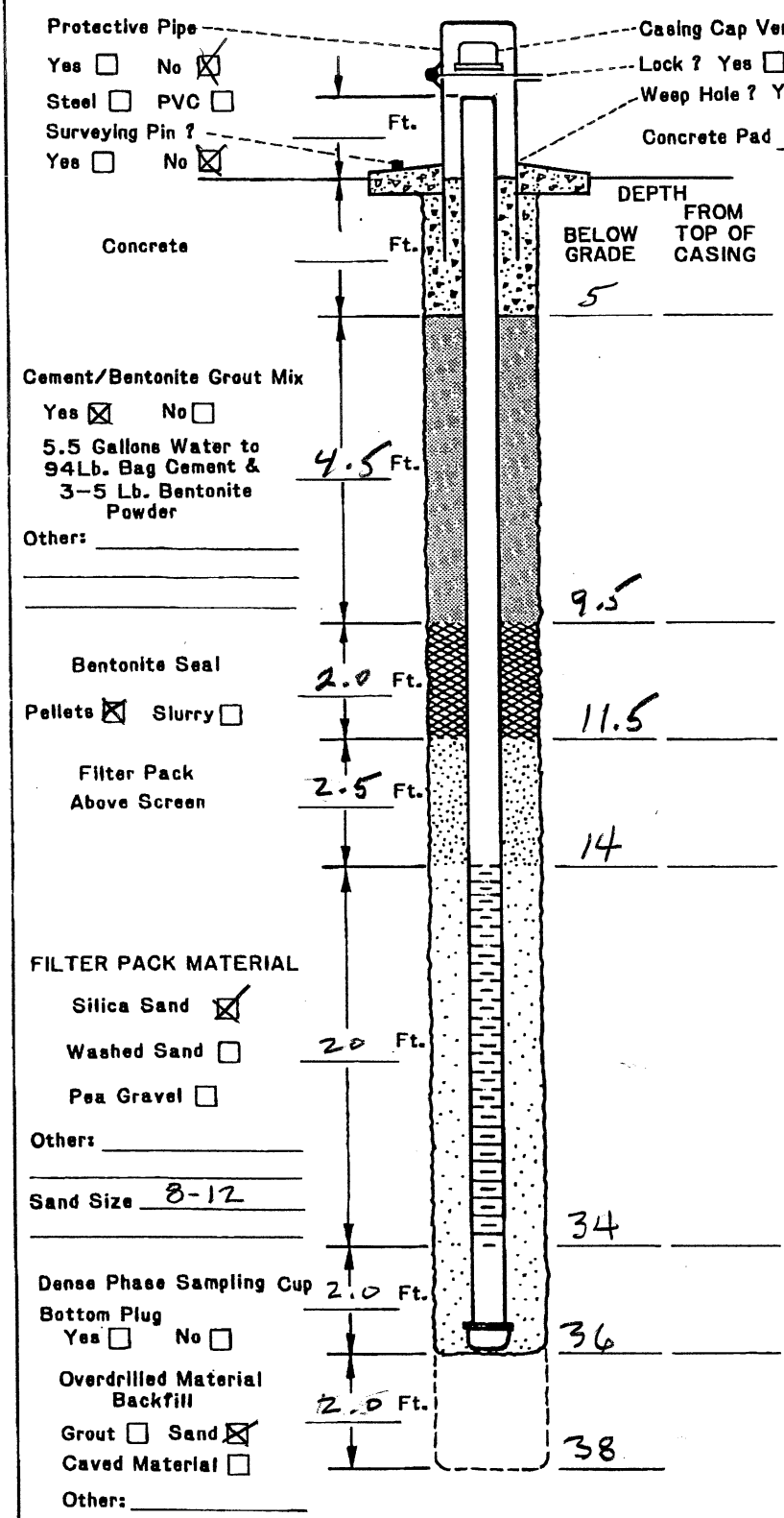
GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
10-25-01	1 of 1

DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.040 in
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other VEE-WIRE
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK (1½ hr)
2. Time Spent on Well Development ?
   3 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 900 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☐
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☐
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☐
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 10-25-01
Before Development 18.36 Ft. Date 10-26-01
After Development 18.21 Ft. Date 10-30-01

Driller/Firm HOKMAN / LAYNE Drill Rig Type AP-1000 Date Installed 10-25-01
Drill Crew MARK & JOSH Well No. ART-6 Kerr-McGee Hydrologist EJ KY 15 14

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART-6A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 6A LOC 5FT WEST OF ART 6. SEE LITH LOG OF ART 6 FOR LITHOLOGY									
	MC @ 34'									
	TD @ 38									
	WTR @ 26									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

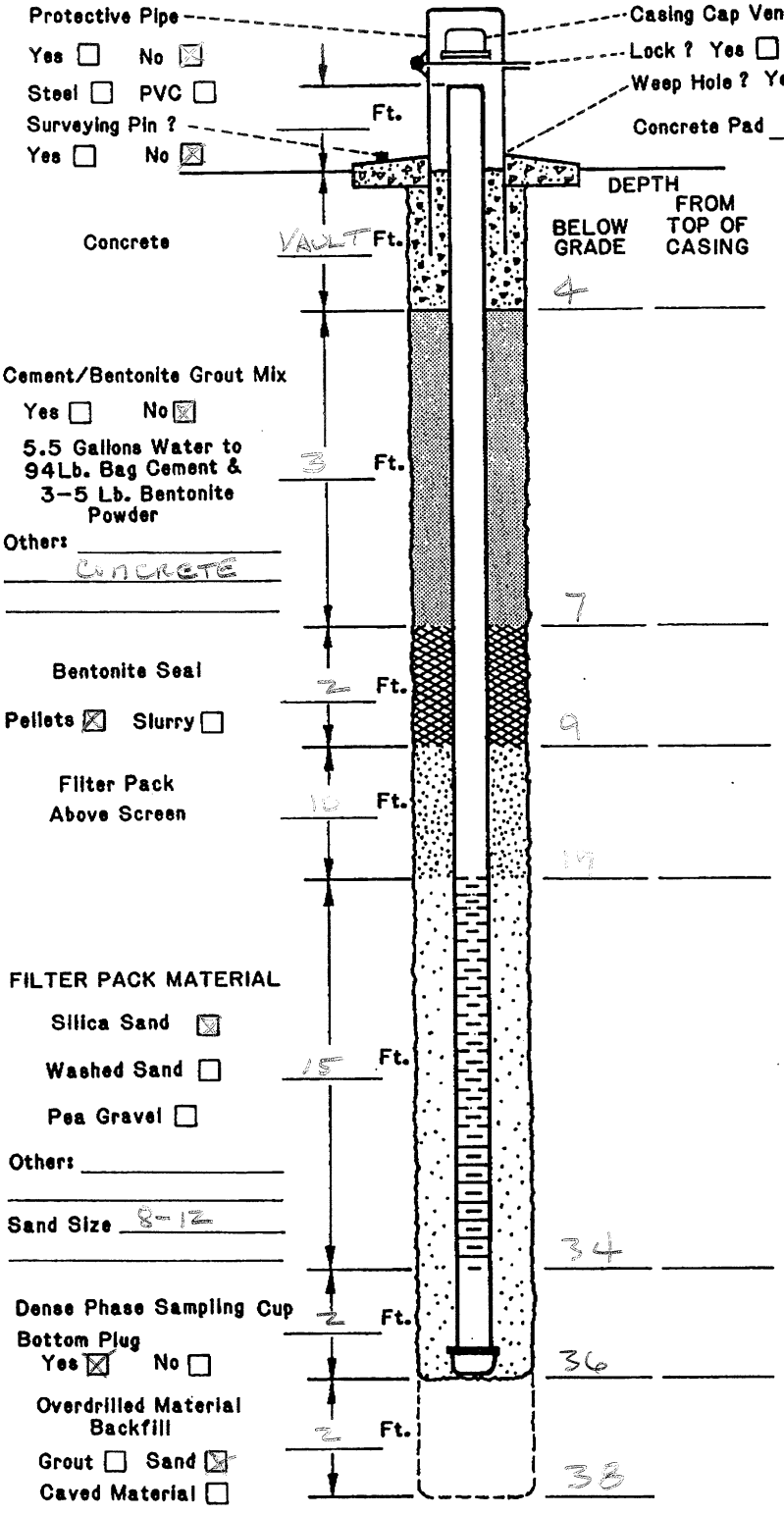
GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL
SILT | HIGHLY ORGANIC (PEAT)
SAND | SANDY CLAY
GRAVEL | CLAYEY SAND
SILTY CLAY | _____
CLAYEY SILT | _____

DATE DRILLED: 3-26-03 | PAGE: 1 of 1
DRILLING METHOD: HAMMER
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)
LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT IN VAULT



DRILLING INFORMATION:

1. Borehole Diameter= 13¼ Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 26 Ft. Date 3-26-03
Before Development 26.47 Ft. Date 3-27-03
After Development 25.57 Ft. Date 3-28-03

Driller/Firm HORMANN/LAYNE Drill Rig Type AP 1000 Date Installed _____
Drill Crew BO / MARK Well No. ART-6A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER ART-7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-18 SAND, gravelly w/minor thin beds of sdy gravel., lt brn (5YR 6/4) to pale yellow brn (10YR 6/2). Sand 50-70% vf-vc, SA w/ 10-20% silt in matrix Dom. pea-gravel 20-30%, 1/8"-1/2" w/ local up to 3", A-SA, volc.		SP/SM							Series of fining-up sequences. Gravel (sdy) at bottom Sand (silty) at top.
5										
10										
15	5-7 gravel layer to 3" diam. Sl. calcareous									
18	18-39 GRAVEL, sdy, pale yell brn (10YR 6/2) 60-70% pea-gravel to 1/2" w/ local 2-3". SA, volc. 10% silt, 20-30% f-vc, SA sand. Calcareous		GP							▽ wet @ 18
25										
30										
	35-36 Gravel zone up to 5" diam									
36	36'-39' CALICHE, hard calichified sdy pea-gravel		GP							
38.5	fract w/ wtr.				TD			39'		

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-23-01	1 of 1

DRILLING METHOD: HAMMER

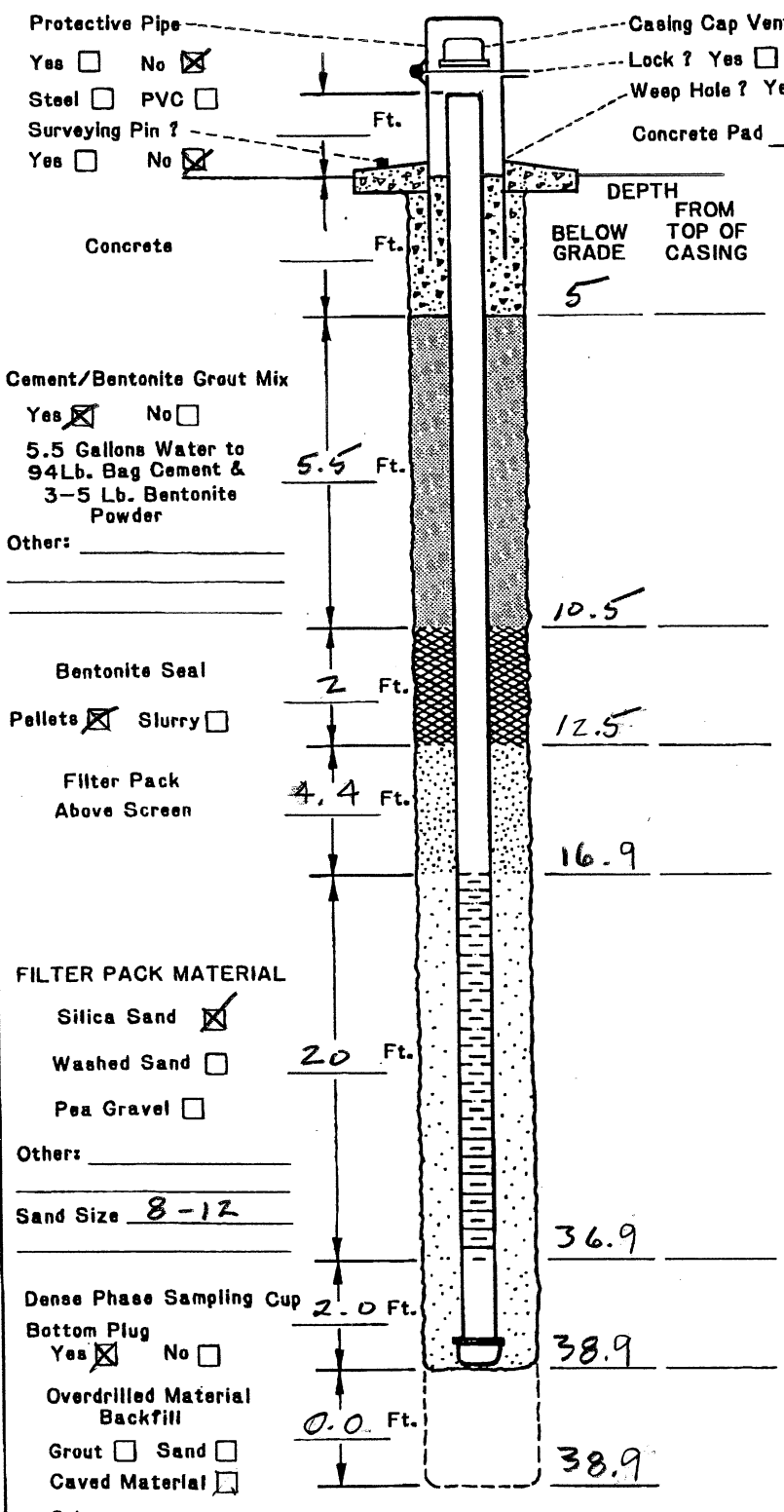
DRILLED BY: LAYNE

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 13 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other VEE-WIRE
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: .040"
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other VEE-WIRE
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK (1.5 hr)
2. Time Spent on Well Development ?
   3 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 1400 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 10-23-01 Ft. Date 18'
Before Development 10-25-01 Ft. Date 18.58'
After Development 10-26-01 Ft. Date 18.50'

Driller/Firm HORMAN / LAYNE Drill Rig Type AP-1000 Date Installed 10-24-01

Drill Crew JOSH / MARK Well No. ART-7 Kerr-McGee Hydrologist Ed Krish

180 60
8
1440

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART 7A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 7A LOC. 5FT EAST OF ART 7. SEE ART 7 LITH LOG FOR LITHOLOGY KMC @ NOT REACHED TD @ 41' WTR @ 26' 36-41' V. hard caliche/tufa gravel. Refusal @ 41'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
3-27-03	1 of 1

DRILLING METHOD: HAMMER

DRILLED BY: LAYNE

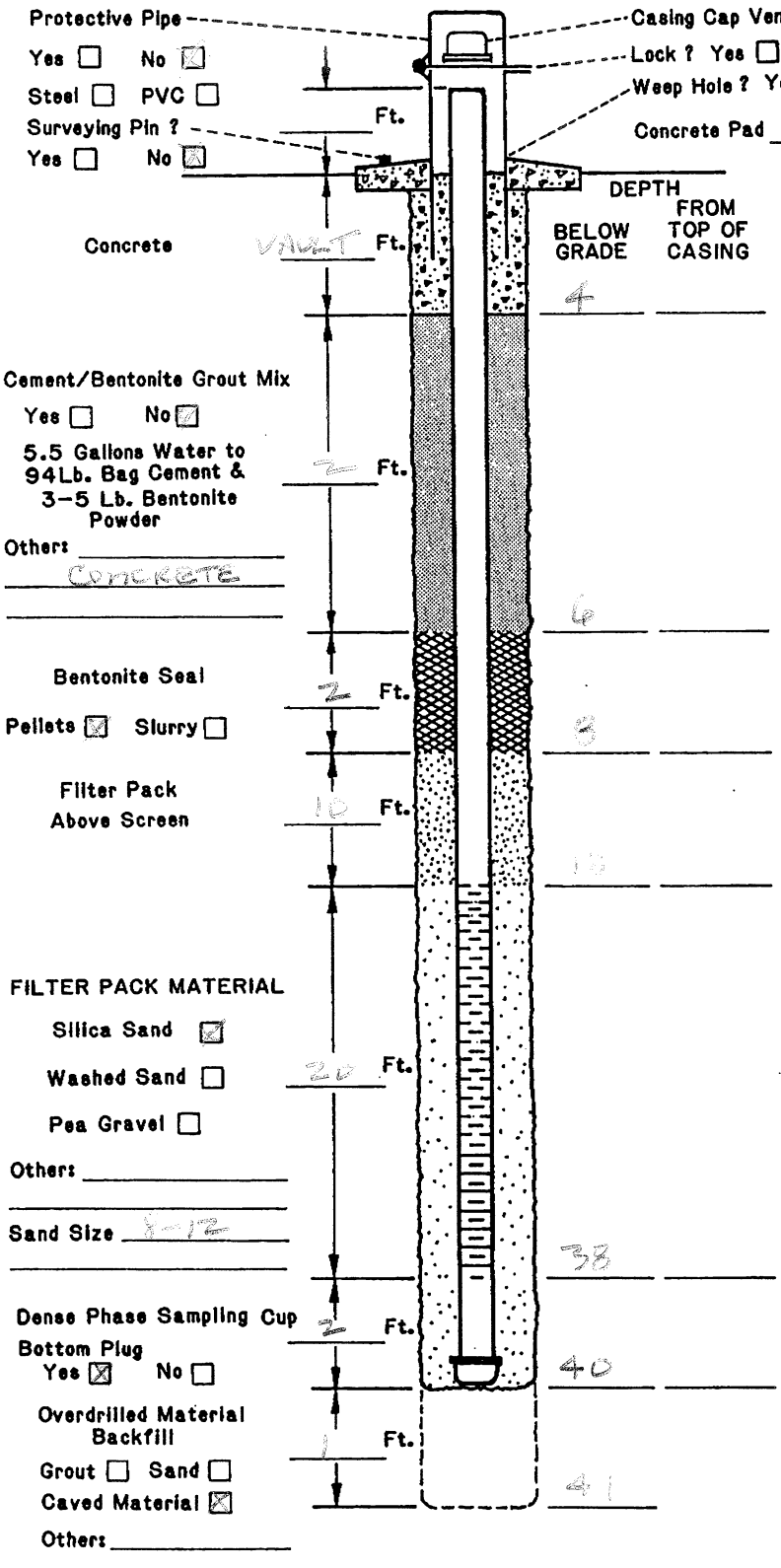
LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT IN VAULT



DRILLING INFORMATION:

1. Borehole Diameter= 12.25 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 26 Ft. Date 3-27-03
Before Development 26.4 Ft. Date 3-28-03
After Development _____ Ft. Date _____

Driller/Firm HUMMANN / LAYNE Drill Rig Type AP 1000 Date Installed 3-24-03
Drill Crew BO / MARCO Well No. AR-7A Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ART-8

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART-8 IS LOCATED 275 FEET WEST OF PC-70. SEE LOG OF PC-70 FOR LITHOLOGY									WATER @ 18'
	MUDDY CK CLAY @ 51'									
	TD 54'									

EXPLANATION

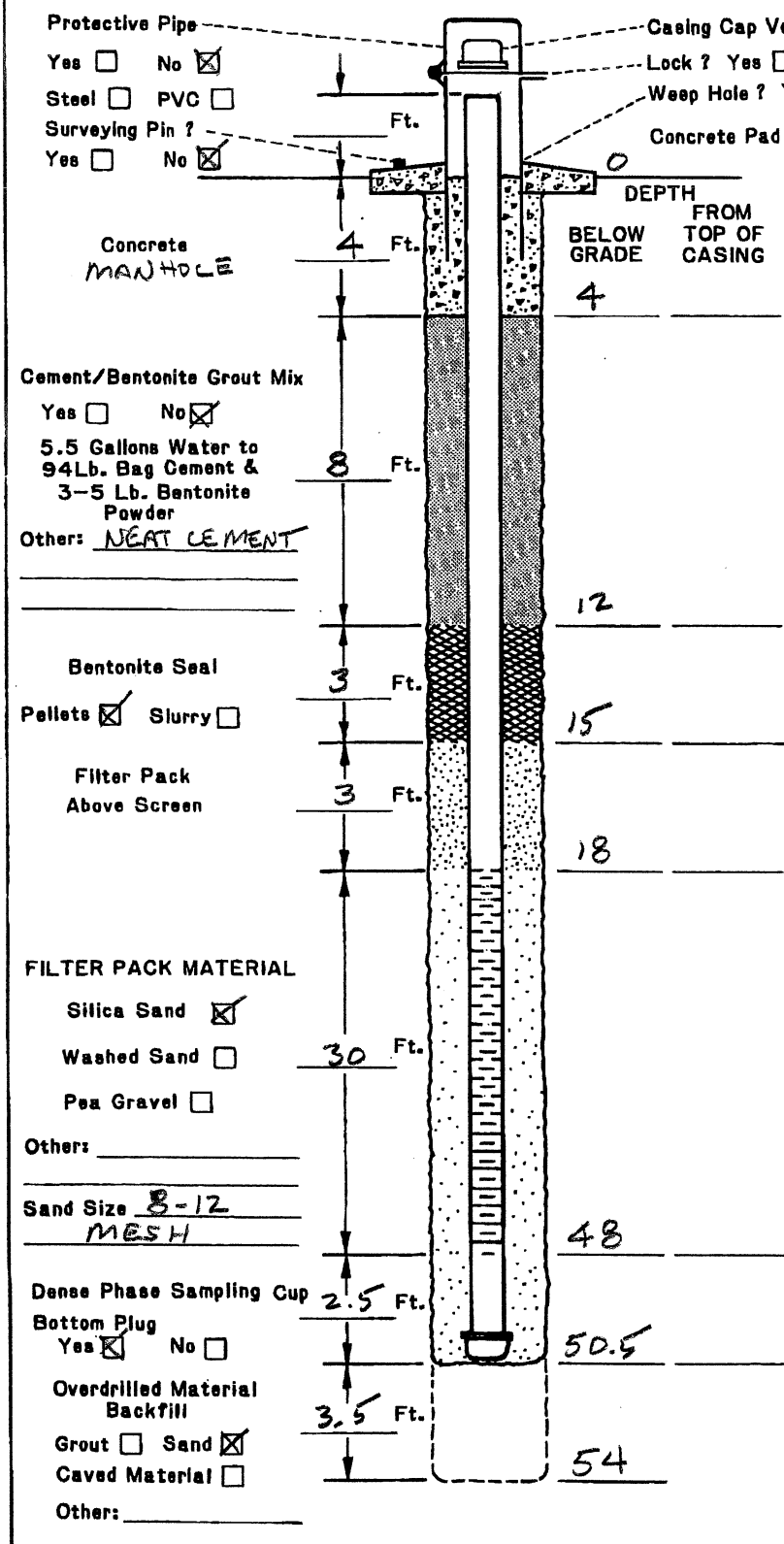
- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	1-21-02
PAGE	1 of 1
DRILLING METHOD	PERCUSSION
DRILLED BY	LAYNE
LOGGED BY	ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 10 3/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☒ Teflon ☐ Other 316
4. Diameter of Casing and Well Screen:
   Casing 6 Inches, Screen 6 Inches.
5. Slot Size of Screen: 0.02 "
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 1-22-02

Before Development _____ Ft. Date _____

After Development 18.79 Ft. Date 1-24-02

Driller/Firm LAYNE / PERRY HORMAN Drill Rig Type AP 1000 Date Installed 1-22-02

Drill Crew JOSH Well No. ART-8 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ART 8A

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	ART 8A LOG 5 FT WEST OF ART 8. SEE ART 8 LITH LOG FOR LITHOLOGY MC @ 52' TD @ 58' WTR @ 28' 49'-52' V. hard streaks of caliche-fried gravel									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

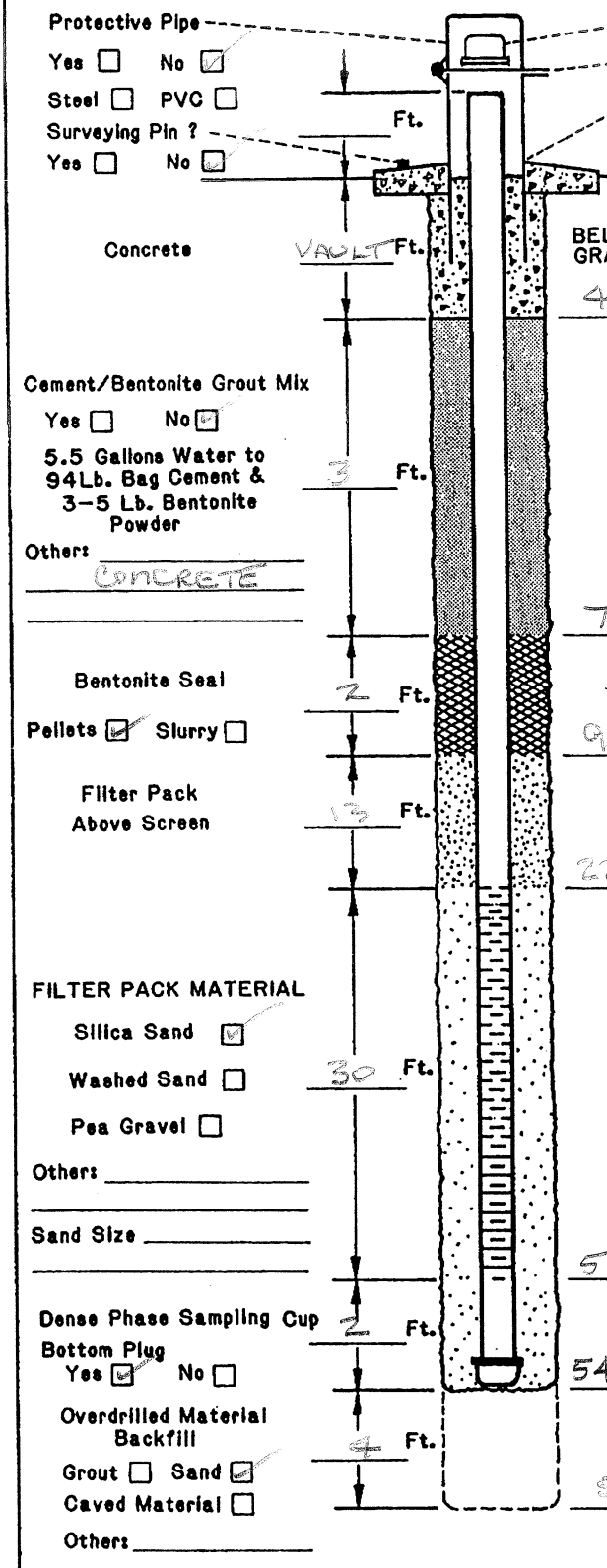
GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND · _____ · _____

DATE DRILLED	PAGE
3-29-03	1 of 1

DRILLING METHOD: Hammer
DRILLED BY: LAYNE
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)
LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 15.25 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☐ Galvanized ☐
   Stainless ☑ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 8 Inches, Screen 8 Inches.
5. Slot Size of Screen: 0.040
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☑

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☑
   Air Surging (Air or Nitrogen) ☑ Other SURGE BLOCK
2. Time Spent on Well Development ?
   4 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 3000 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☑ Opaque ☐
5. Water Clarity After Development ? Clear ☑
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☑
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 24' Ft. Date 3-29-03
Before Development 28.00 Ft. Date 3-30-03
After Development 28.15 Ft. Date 3-31-03

Driller/Firm HORMANN / LAYNE Drill Rig Type AP 1000 Date Installed 3-29-03
Drill Crew BO / MARCO Well No. ART 3A Kerr-McGee Hydrologist ED KRIH

ARP

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-14 SAND, gravelly brn, 60-70 % vf-vc, SA-SR sand w/ 10 % silt contains 20-30 % granules + pea gravel to 3/4-1". 1½-2' lg cobbles to 6" numerous v. thin caliche stringers		SW							
10										
14	14-20 GRAVEL, sdy, brn, 60-70 vol% granules + fine gravel to 1", 10 % silt, 20% vf-vc sd		GW							WTR @ 17
20										
21	20-21 SAND, silty, brn 20-30% silt in vf-vc sd		SM							
25	21-31 GRAVEL, sdy, brn. 70-80 % granules + pea gravel to 3/8-½", A-SA vol%. 5% silt, 20 % vf-vc sand		GW							
31										
35	31-40 SAND, silty + gravelly, brn. f-vc, SA, w/ 20-25% silt and 10-15 % granules + fine pea gravel. numerous v. thin caliche stringers		SW/ SM							
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
12-14-01	1 of 2

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY	LOCATION	BORING NUMBER ARP-1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
40	40-45 CLAY, sdy + silty. ltgrn gry. 15-20% f-c sd w/ 10-15% silt		CL							MC @ 40
45	TD 45'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
12-14-01	2 of 2

DRILLING METHOD: HSA

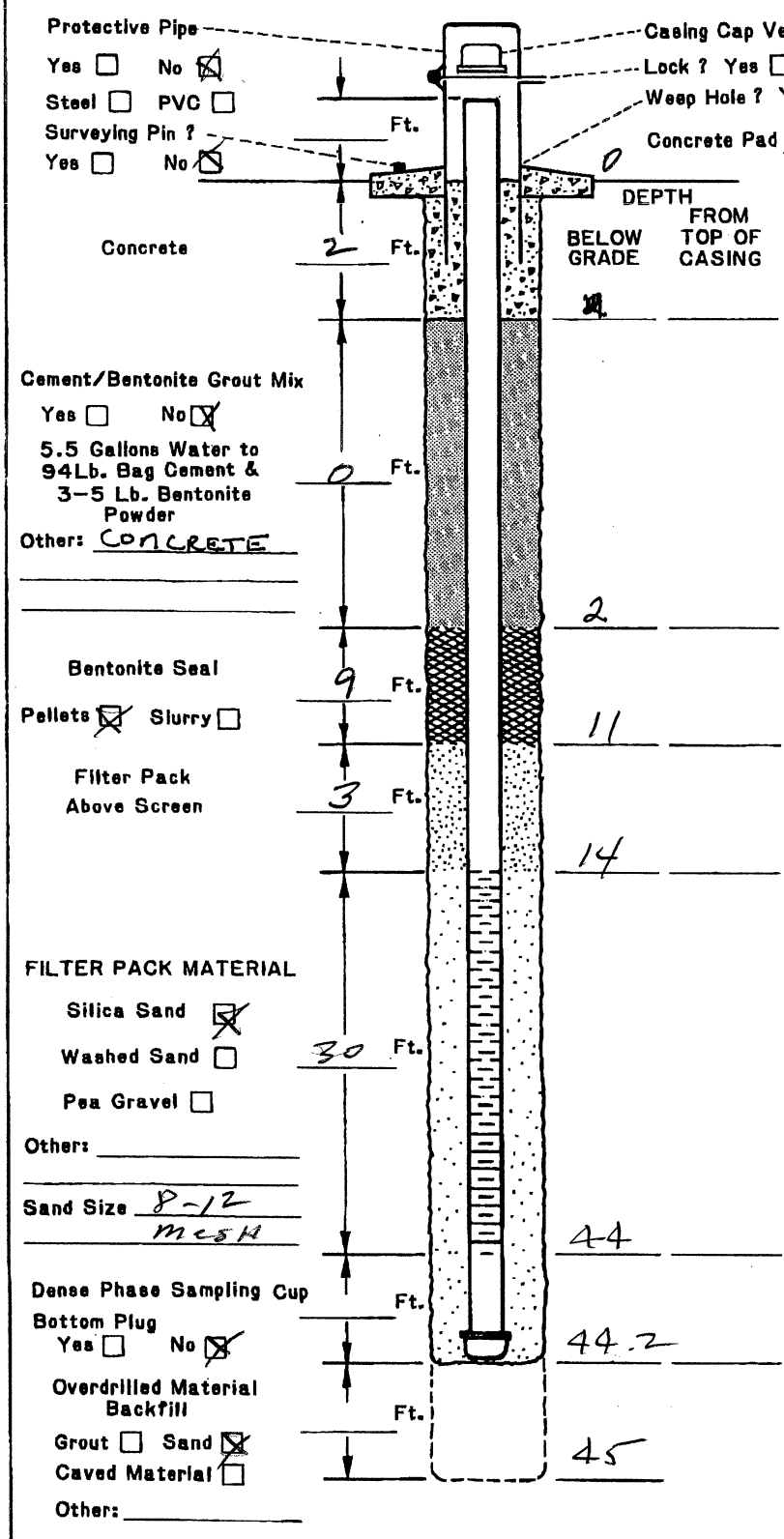
DRILLED BY: KLEINFELDER

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / _____ Minutes/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Oder ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 17 Ft. Date 12-14-01

Before Development 14.19 Ft. Date 12-17-01

After Development _____ Ft. Date _____

Driller/Firm KLEINFELDER Drill Rig Type MOBILE B-61 Date Installed 12-14-01

Drill Crew LEON / SHIM Well No. ARP-1 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ARP-2

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-9 SAND, gravelly, brn 60-70% vf-vc A-SR sd w/ 10% silt. 20-30% granules to fine gravel, volc, SA-SR to 3/4"		SW							
5	4-5' gravel zone (75% grav)									
9	9-18 GRAVEL, sdy, brn. 70% gravel to 1" except from 14'-16' where up to 3". 10% silt.		GW							
15	20% vf-vc sand, SA-SR									
	com v. thin caliche stringers									WATER @ 17'
18	18-44 SAND, silty, brn, 80% vf-vc, SA-SR sand w/ 20% silt.		SM							
	locally 5-10% fine volc granules.									
25	locally v. thin caliche stringers									
	locally v. thin sandy silt layers									
30										
35										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
12-13-01	1 of 2
DRILLING METHOD: HSA	
DRILLED BY: KLEINFELDER	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-2

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
44			SM							
44 / 47	44-47 SILT, sdy brn w/ 20-30% vf-vc sd & 10% fine granules		ML							
47 / 51	47-51 SAND, silty + gravelly, brn. Calichified, harder. 20-30% silt, 10% grav		SM							
51 / 52	51-52 TD CLAY, sdy lt grn gry. 20-30%, SR, m-vc sd.		CL							MC @ 51'
	52' TD									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
12-13-01	2 of 2

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

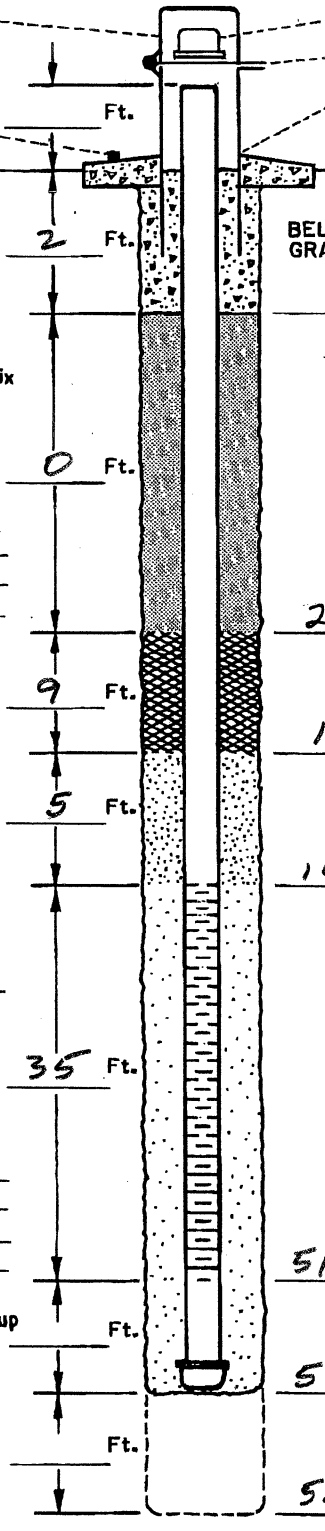
LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= ____ to ____ Feet.
4. Borehole Diameter for Outer Casing ____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other ____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other ____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other ____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other ____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other ____
   SURGE BLOCK
2. Time Spent on Well Development ?
   ____ / ____ Minutes/Hours
3. Approximate Water Volume Removed ? ____ Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe ____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe ____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 17 Ft. Date 12-13-01

Before Development ____ Ft. Date ____

After Development 14.39 Ft. Date 12-17-01

Driller/Firm KEEINFELDER Drill Rig Type MOBILE B-61 Date Installed 12-14-01

Drill Crew SHIM / LEON Well No. ARP-2 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-7 SAND, gravelly, brn, 80% vf-vc SA sd w/ 10% silt 10-20% vol/c gravel to 1/2"		SW							
7										
10	7-17 GRAVEL, sdy, brn, 80% vol/c, SA-SR, gravel to 3/4-1". 10% silt. 10% vf-vc sand locally v. thin calichified stringers		GP							
15										
17										▽ @ 17'
20	17-42 SAND, silty, brn 70% vf-vc, SR-SA, sd. w/ 20% silt. 10% fine granules to 1/4"		SW/ SM							
25	locally v. thin caliche stringers									
30										
35	31-32.5 hard, calichified									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
12-13-01	1 of 2

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
42			SW/ SM							
	42-45TD CLAY, silty lt grn gry		CL							MC @ 42'
45	TD 45									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
12-13-01	2 of 2

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

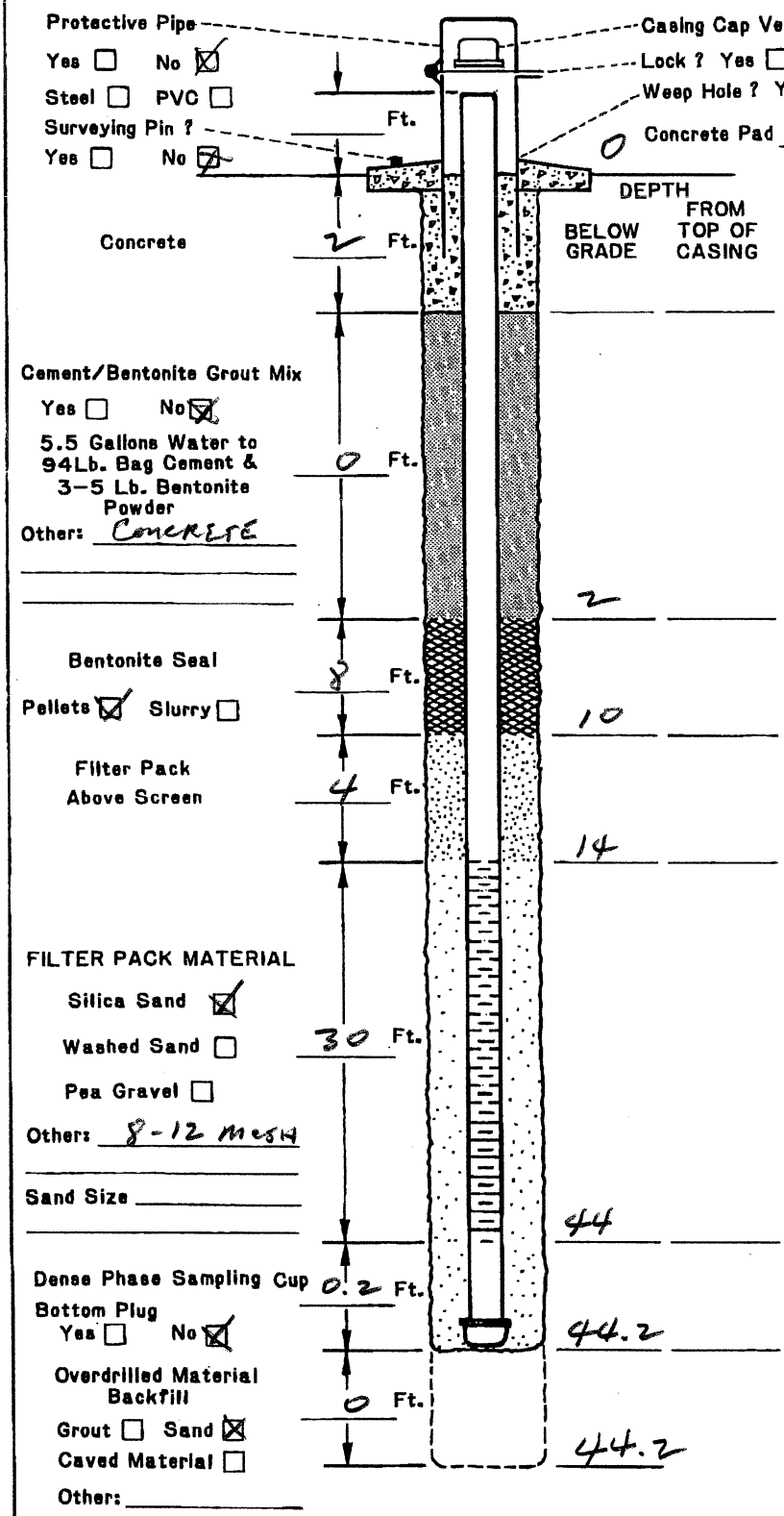
LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / _____ [redacted]/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 17 Ft. Date 12-13-01
Before Development _____ Ft. Date _____
After Development 14.39 Ft. Date 12-17-01

Driller/Firm KLEINFELDER Drill Rig Type MOBILE B-61 Date Installed 12-13-01
Drill Crew SHIM / LEON Well No. ARP-3 Kerr-McGee Hydrologist ED KRUH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER ARP-4

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
5	0-10 SAND, gravelly, brn. 60-70% vf-vc SA-SR sand w/ 10% silt. 20-30% granules + fine volc gravel to 1". Locally v. thin soft caliche layers.		SW/SP							
10	10-16 Gravel, brn. 70-80% pea gravel to 1" 20% vf-vc sd & 10% silt		GP							
16	16-19 SAND, gravelly, brn. 70% vf-vc SA sand w/ 10% silt, 20% grav to 1"		SW							WATER @ 18'
19	19-30 GRAVEL, sdy brn, 70% volc gravel to 1-1½". 10-20% silt 10-20% vf-vc sand 23-23.5 hard, caliche-fied 25-26 " " 27-29.5 " "		GW							
30	30-37 SAND, silty, gry oran pink 60% vf-vc sand w/ 40% silt		SM							
35										
37	37-45 CLAY, silty lt grn gry		CL							MC @ 37'
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
12-12-01	1 of 2
DRILLING METHOD: HSA	
DRILLED BY: KLEINFELDER	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-4

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45	45' TD		CL							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH. Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

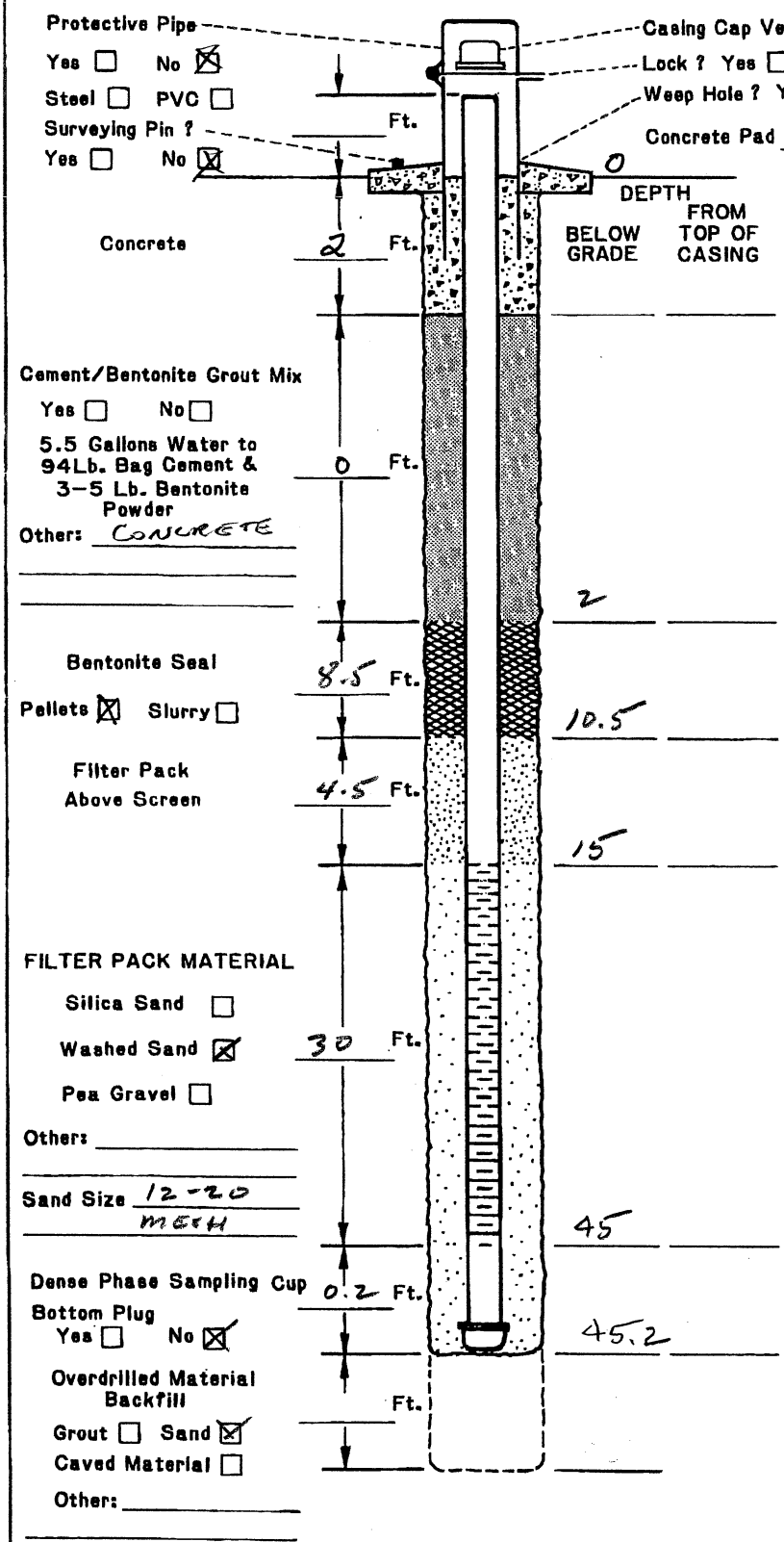
GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL
SILT | HIGHLY ORGANIC (PEAT)
SAND | SANDY CLAY
GRAVEL | CLAYEY SAND
SILTY CLAY | _____
CLAYEY SILT | _____

DATE DRILLED: 12-12-01
PAGE: 2 of 2
DRILLING METHOD: HSA
DRILLED BY: KLEINFELDER
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☒
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= ____ to ____ Feet.
4. Borehole Diameter for Outer Casing ____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other ____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other ____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other ____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other ____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / ____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe ____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe ____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 12-12-01
Before Development 15.87 Ft. Date 12-12-01
After Development 15.70 Ft. Date 12-17-01

Driller/Firm KLEINFELDER Drill Rig Type MOBILE B61 Date Installed 12-12-01

Drill Crew LEON Well No. ARP-4 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	0-7 SAND, gravelly, brn, 70% vf-vc SA sd. 10% silt and 20-30% volc gravel, SA-SR up to 1"		SW							
7										
	7-15 GRAVEL, sdy, brn 70% volc, A-SR gravel to 1", 20% vf-vc sd & 10% silt local v. thin caliche stringers		GP							
10										
15										
	15-17 SAND, gravelly brn. 75% sand, vf-vc w/ 10% silt. 15% gravl"		SW							
17										WATER @ 17'
20	17-27 GRAVEL, sdy brn, 60% SR, volc gravel to 2". 20% vf-vc sd + 20% silt locally v. thin caliche stringers		GP/GM							
25										
27										
	27-29 SAND, silty, brn, vf-vc SA-SR, 20-30% silt		SM							
29										
	29' TD									NO MC

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH. Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | SILT | SAND | GRAVEL | SILTY CLAY | CLAYEY SILT | DEBRIS FILL | HIGHLY ORGANIC (PEAT) | SANDY CLAY | CLAYEY SAND

DATE DRILLED	PAGE
12-12-01	1 of 1

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

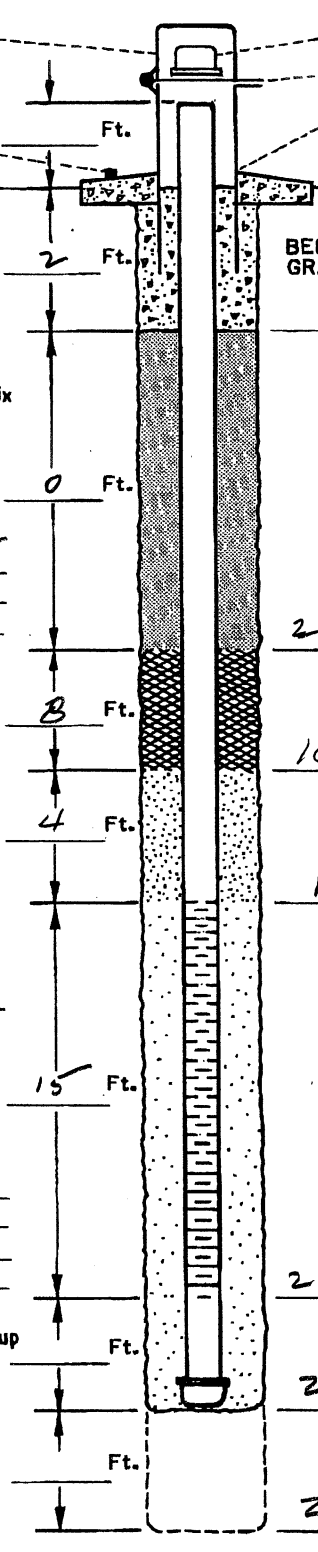
LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH MOUNT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☒
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / _____ ~~Minutes~~ Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Oder ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 17 Ft. Date 12-12-01
Before Development 17.72 Ft. Date 12-12-01
After Development 18.57 Ft. Date 12-17-01

Driller/Firm Kleinfelder Drill Rig Type MOBILE B-61 Date Installed 12-12-01

Drill Crew LEON, SHIM Well No. ARP-5 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP - 6

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	0-6 Gravel, sdy, brn 60-70% f-m volc, A-SA up to 2". 10% silt. 20-30% vf-vc SA-SR sd		GW							
6										
	6-25 SAND, gravelly, brn, 60% vf-vc, SA, sd w/ 10-20% silt. 20-40% pea gravel size volc, A-SR, up to 3/4-1" Locally thin calichified layers.		SW							
10										
15										
20										
25										
	25-29 Gravel, sdy, brn volc gravel up to 3"; locally hard. w/ 10-20% silt + 20-30% vf-vc sd		GM							
29										
	29-35 GRAVEL, brn, 80-90% granules + f. gravel to 3/4-1". Minor silt. 10-20% vf-vc sd		GW/GP							
35										
	35-40 TD Gravel, sdy, w/ common calichification locally hard. Gravel to 2". w/ 10% silt & 20-30% vf-vc sd		GP							NO MC. TD 40

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | SILT | SAND | GRAVEL | SILTY CLAY | CLAYEY SILT | DEBRIS FILL | HIGHLY ORGANIC (PEAT) | SANDY CLAY | CLAYEY SAND

DATE DRILLED	PAGE
12-11-01	1 of 1

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

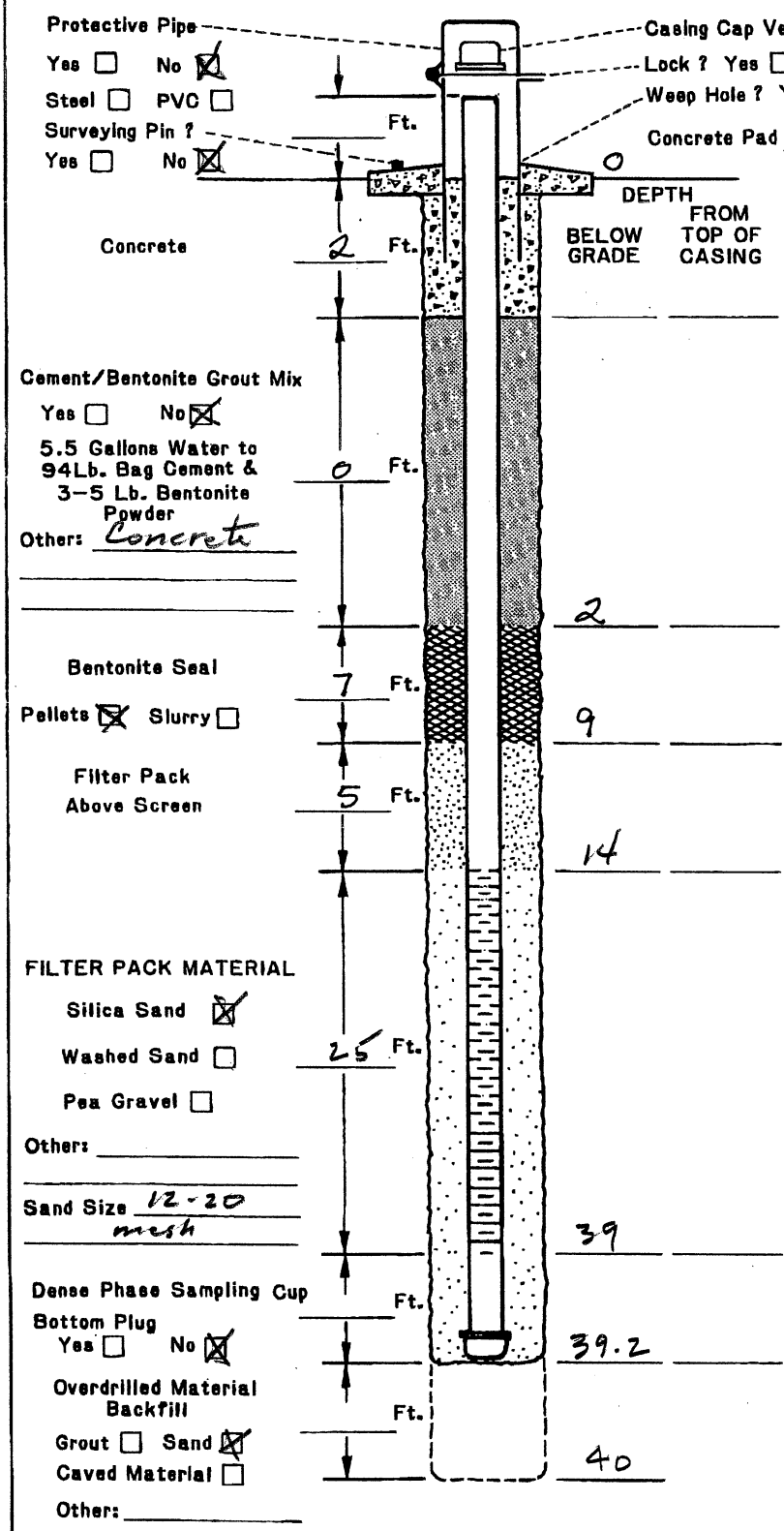
LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

FLUSH mount



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☒
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= ____ to ____ Feet.
4. Borehole Diameter for Outer Casing ____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other ____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other ____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other ____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other ____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☒

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other block SURGE
2. Time Spent on Well Development ?
   2 / ____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Oder ? Yes ☐ No ☒
   If Yes, Describe ____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe ____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 12-11-01
Before Development 18.94 Ft. Date 12-12-01
After Development ____ Ft. Date ____

Driller/Firm GARRETT/Kleinfelder Drill Rig Type Mobile B-61 Date Installed 12-11-01
Drill Crew Leon Well No. APR-6 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER APR-7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
42			SW							
	42-45 CLAY, sdy, brn, 10-20% vfg sd w/ minor vc sd & vf granules		CL							MC @ 42
45										TD 45

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
12-10-01	2 of 2

DRILLING METHOD: HSA

DRILLED BY: KLEINFELDER

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM—5655-A

KERR-McGEE CORPORATION Hydrology Dept. Engineering Services	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER ARP-7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER FOOT	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
2	0-2 GRAVEL, sdy, brn, 70% fine, SA-SR gravel to 2". 30% vf-vcsd		GP		—					
	2-10 SAND, gravelly brn, 70% vf-vc, SA-SR sd w/ 10% silt. 30% SA volc gravels to 2"		SW		—					
10	2-3 v. silty - 40-50% silt				—					
11	10-11 GRAVEL, sdy		GP		—					
	11-18 SAND, gravelly, brn, 60-70% vf-vc sd, w/ 10% silt. 30% volc granules to 3/8" w/ minor fine gravel to 3/4-1"		SW		—					▽ @ 18'
18					—					
	18-31 Gravel, sdy, brn 50-60% mod-lg volc SA gravel to 3-4". 10-20% silt in vf-vc sd matrix (20-40% sd)		GM		—					
25					—					
31					—					
	31-42 SAND, gravelly, brn. 70-75% f-vc, SA. sd w/ 10% silt. 20% fine granules to 3/8"		SW		—					

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

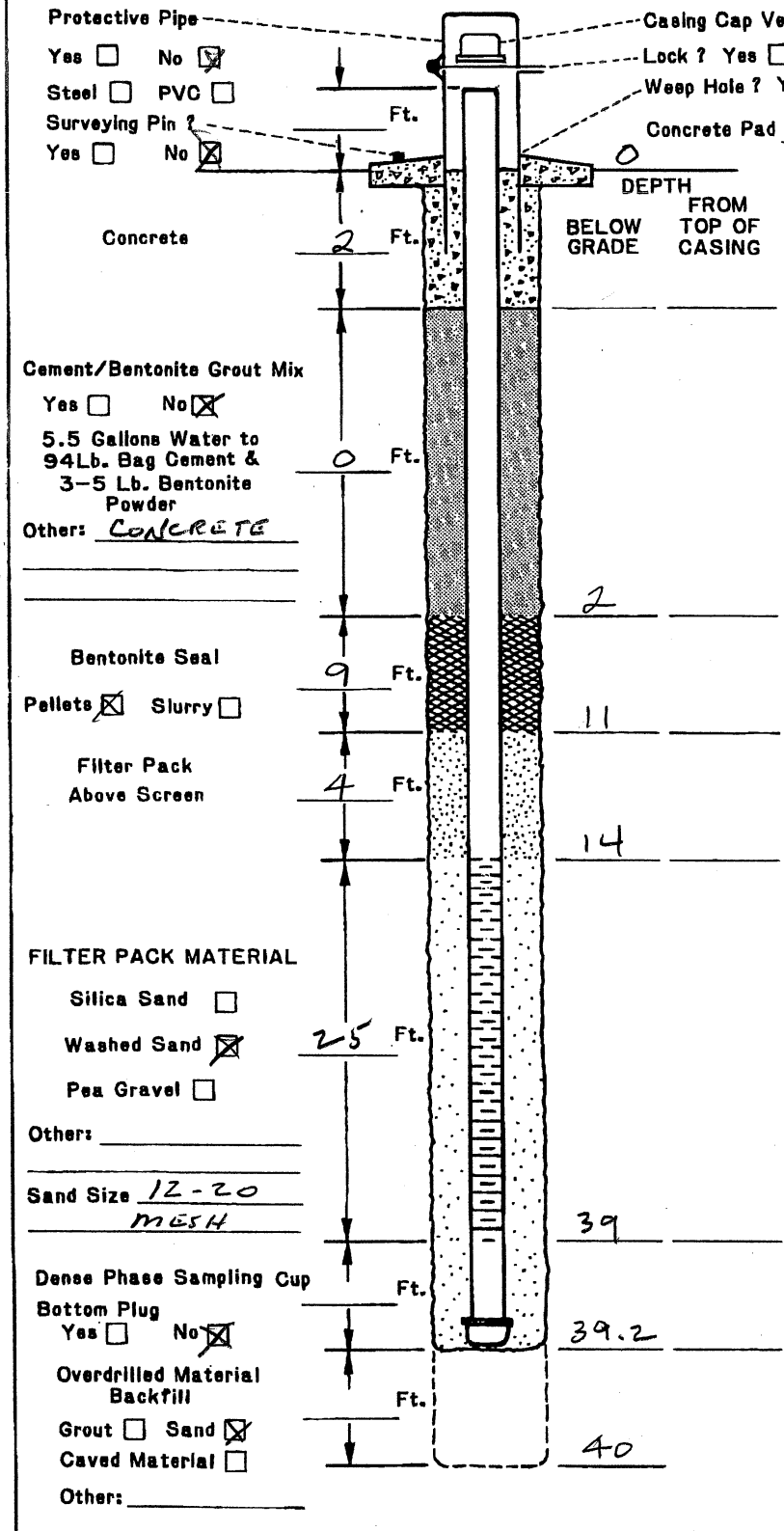
GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	12-10-01
PAGE	1 of 2
DRILLING METHOD	HSA
DRILLED BY	KLEINFELDER
LOGGED BY	ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM

1=LUSH MOUNT



DRILLING INFORMATION:

1. Borehole Diameter= 8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☒
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 2 Inches, Screen 2 Inches.
5. Slot Size of Screen: 0.020"
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☒ Other SURGE BLOCK
2. Time Spent on Well Development ?
   2 / _____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 500 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Oder ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From Top of Casing)

During Drilling 18 Ft. Date 12-10-01
Before Development 17.45 Ft. Date 12-11-01
After Development 17.07 Ft. Date 12-17-01

Driller/Firm GARRETT / KLEINFELDER Drill Rig Type MOBILE B-61 Date Installed 12-11-01

Drill Crew LEON Well No. ARP-7 Kerr-McGee Hydrologist ED KRISH