## GEOTECHNICAL DATA REPORT

## US 95/CC-215 INTERCHANGE and VICINITY CLARK COUNTY

**June 2016** 





**MATERIALS DIVISION** 

# STATE OF NEVADA DEPARTMENT OF TRANSPORTATION MATERIALS DIVISION GEOTECHNICAL SECTION

## GEOTECHNICAL DATA REPORT US 95/CC-215 INTERCHANGE and VICINITY CLARK COUNTY

**June 2016** 

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#### INTRODUCTION

#### General

This data report has been prepared for the proposed interchange at US 95 and CC-215 and surrounding vicinity in Las Vegas, Nevada. A site plan for the project is presented as the Project Location Area Map in Appendix A.

#### **Purpose and Scope**

The purpose of this report is to provide information regarding the subsurface soil conditions at the proposed project site. It is intended to provide a description of the project site, with emphasis placed on extensive subsurface investigation. The scope of this report consists primarily of geotechnical investigation, testing, analysis, and discussion of the geotechnical conditions of the area. The investigation included gathering information obtained from previous subsurface explorations, soil sampling, load testing two sacrificial drilled shafts, and analysis of field and laboratory testing data. This report includes boring logs and locations, test results from both the laboratory and field testing, and summaries of the test results. These may be found in appendices B, C, D and E.

This report provides no specific geotechnical design recommendations for any structures, features, or locations found in any of the future phases of this project.

#### PROJECT DESCRIPTION

The project site is located in northwest Las Vegas in Clark County. US 95 runs southeast to northwest at the location of the proposed interchange; CC-215 runs east-west. Future phases of this project will continue the design and construction of ramps, bridge structures, retaining structures, soundwalls, and other features necessary for a complete interchange at US 95 and CC-215.

#### **GEOLOGIC CONDITIONS and SEISMICITY**

The site is founded primarily in quaternary deposits of alluvium (Qal)<sup>1,2</sup>. These deposits are generally tan and light to medium brown clayey sands and sandy clays with some gravel (See Photos 1 and 2). The project site lies between approximately 2365 and 2450 feet of elevation and slopes gently downward to the southeast. The site is located approximately 6 miles southwest of the Las Vegas Valley Shear Zone and 6 miles east-northeast of the Keystone thrust fault.<sup>2</sup> These faults are no longer considered active. There are several small compaction fault scarps approximately 4 miles southeast of the site<sup>3</sup>.



Photos 1 and 2. Soil Samples from Boreholes BI-25 (Clayey Sand with Gravel) and BI-68 (Sandy Lean Clay with Gravel)

#### FIELD INVESTIGATION

#### **Subsurface Investigation**

The Geotechnical Section conducted subsurface investigations at the proposed project site starting in February of 2013, running through May of 2015. Subsurface soil conditions were explored in the investigation by drilling 89 boreholes placed throughout the project area. The approximate location of each borehole is shown on the <u>Borehole Location</u> sheets in Appendix A. The majority of the drilling was accomplished with a Diedrich D-120 drill rig equipped for soil sampling, using either 6-inch hollow stem auger or wet rotary methods with bentonite slurry (See Photo 3). Boreholes B-39 and BI-40 were drilled using CME 75 and CME 85 drill rigs using 6-inch hollow stem auger. Soil samples obtained while drilling with wet rotary methods may show higher moisture contents, as well as higher plasticity indexes (PI) due to contamination from the bentonite slurry.



Photo 3. Drill Rig Set Up on Borehole BI-29 (with Carpenter fire in background)

The predominant method of obtaining soil samples in this investigation involved driving Standard Penetration (SPT) and California Modified (CMS) samplers with a 140-lb automatic hammer. This method has a tendency to disintegrate weakly to moderately cemented soils into their constituent sand and/or gravel makeup, occasionally leaving intact cemented soil in the sampler shoe. The SPT sampler has an inside diameter of 1-3/8"; the CMS has an inside diameter of 2-7/16". These measurements limit the size of materials that comprise the sample. Attempting to drive the sampler through cobbles larger than the sampler diameter generally results in refusal with no sample recovery. Soil samples and standard penetration resistance values (N-Values) were obtained utilizing the Standard Penetration Test (SPT) procedure as set forth in AASHTO test number T206.

Approximately 25% of the boreholes were drilled using wet rotary methods with bentonite slurry. In 15 of 22 boreholes drilled using the wet method, circulation was lost during drilling (See Table 1 below). The loss of circulation varied between boreholes, occurring

gradually in some, and extremely rapid in others. In several of these rapid losses of circulation, the initial loss was quite audible.

BOREH	HOLES DF	RILLED US	SING WET ROTA	ARY METHOD		
	Loss of	No Loss	DEPTH			
BOREHOLE	Circulation	of	To Loss of	To Bottom of		
	Circulation	Circulation	Circulation	Borehole		
BI-5	X		33.5'	42.2'		
BI-6	X		59.0'	75.5'		
BI-8	X		61.5'	97.2'		
BI-9A		X		120.9'		
BI-10	X		56.5'	65.1'		
BI-10A	X		56.5'	56.5'		
BI-19	X		12.0'	12.0'		
BI-20	X		13.0'	13.0'		
BI-21	X		50.9'	54.9'		
BI-22		X		57.6'		
BI-23A	X		50.9'	122.4'		
BI-24	X		58.2'	63.8'		
BI-27	X		58.6'	64.5'		
BI-35	X		33.0'	140.9'		
BI-38	X		52.0'	64.5'		
BI-64		X		121.3'		
BI-65	X		47.5'	103.0'		
BI-67	X		47.3'	118.8'		
BI-69		X		91.6'		
BI-71		X		19.3' *		
TS-2		X		127.4'		
TS3-A		X		127.5'		

\* - Abandoned borehole.

Table 1 – Boreholes Drilled Using Wet Rotary Method

Boreholes were drilled to depths between 12.0 feet and 140.9 feet. Approximate surface elevations were obtained for the borehole locations by using an optical level with a Philadelphia rod from a known elevation point and the borehole location. Groundwater was encountered at various elevations during drilling in many of the boreholes. When conditions allowed, some of these boreholes were left open in order to return and check the water levels after the water levels had stabilized. The Las Vegas valley frequently has perched water tables comprised of a variety of differing water levels overlying impermeable layers. This is expressed around the project site with water elevations varying as much as 64 feet between different boreholes within the project limits, at depths ranging between 53.5 feet and 90 feet below the ground surface.

Some cohesive soil samples were tested in the field using either a pocket penetrometer or Torvane, or both to determine soil shear strengths. Results from these tests can be found on the boring logs.

#### Osterberg Load Cell Testing

Two five-foot diameter, 95-foot long drilled shafts were constructed with Osterberg Load Cells (See Photo 4) to a depth of 100 feet. Test shaft TS-1 was placed approximately 225 feet northeast of northbound US 95, and approximately 300 feet south of eastbound CC-215. Test shaft TS-2 was placed approximately 300 feet southwest of southbound US 95, and approximately 225 feet south of eastbound CC-215. The locations are shown in Appendix A.



Photo 4. Osterberg Load Cell

The boring logs TS-1-2 and TS-3 were compiled from two borings at each location. All test result information attributed to either TS-1 or TS-2, along with Boring Log TS-1-2,

apply to the Test Shaft TS-1. All test result information attributed to either TS-3 or TS3-A, along with Boring Log TS-3A, apply to the Test Shaft TS-2.

Each shaft was constructed with a 6000 kip Osterberg load cell (O-cell) approximately 63 feet below ground surface. The shafts were instrumented with four strain gauges at seven elevations in TS-1, and eight elevations in TS-2. Each shaft had also had additional instrumentation which included: both upper compression telltales and embedded toe telltales within each shaft, and linear vibrating wire displacement transducers located within the O-cell.

Further information may be found in the Loadtest Data Reports located in Appendix E.

#### **LABORATORY ANALYSIS**

Laboratory tests were performed on the samples collected from the boreholes. The testing program consisted of sieve analyses, moisture and unit weight, Atterberg limits, chemical analysis, consolidation tests, and direct and triaxial shear tests. The results of this testing program show that the soils consist primarily of clayey and silty sands and gravels (See Photo 5) in the upper areas of the boreholes ( $\approx$  above 50 feet in depth).



Photo 5. Soil Sample BI-7 G (Clayey Gravel with Sand)

Below the clayey and silty sands and gravels, the soils are generally lean and fat clays (See Photo 6). Dry unit weights ranged from 72.5 pounds per cubic foot (pcf) for sample BI-58 A2 (silt) to 132.5 pcf for sample BI-57 N1 (poorly graded gravel with silty clay and sand).



Photo 6. Soil Sample BI-10B C (Lean Clay)

#### **DISCUSSION**

The boring logs and sampling results represent only the areas that were explored; other soil types may be encountered during construction. The boring logs graphically separate differing soil types using two types of lines. Solid lines are used to show known elevations of material change; dashed lines indicate an unknown elevation of material change between two known samples. The uncorrected blow counts are shown on the boring logs in Appendix B. All soil samples were classified, both visually and using laboratory data, using the Unified Soil Classification System (USCS) described in ASTM test number D2487. Further information is presented in the summaries of test results in Appendix C.

During drilling of the 89 boreholes, 1582 samples were attempted. Of these 1582 attempted samples, 362 or 23% of them met with refusal, with little or no sample recovery. This indicates very hard, very dense soils, as well as the presence of cobbles and cemented soils, which are known to exist in the area. The degree of cementation occurring in the soil is highly variable, both in strength and location. Samples were obtained that showed no

cementation, weak cementation, moderate cementation and strong cementation (caliche) throughout the proposed interchange footprint. Cementation was found to occur in the area in nodules, thin lenses, or thicker layers.

Following the field investigation and laboratory testing, the soils were identified as primarily medium stiff to very hard clays and medium dense to very dense clayey sands and gravels, with some silty clays and sands.

#### **REFERENCES**

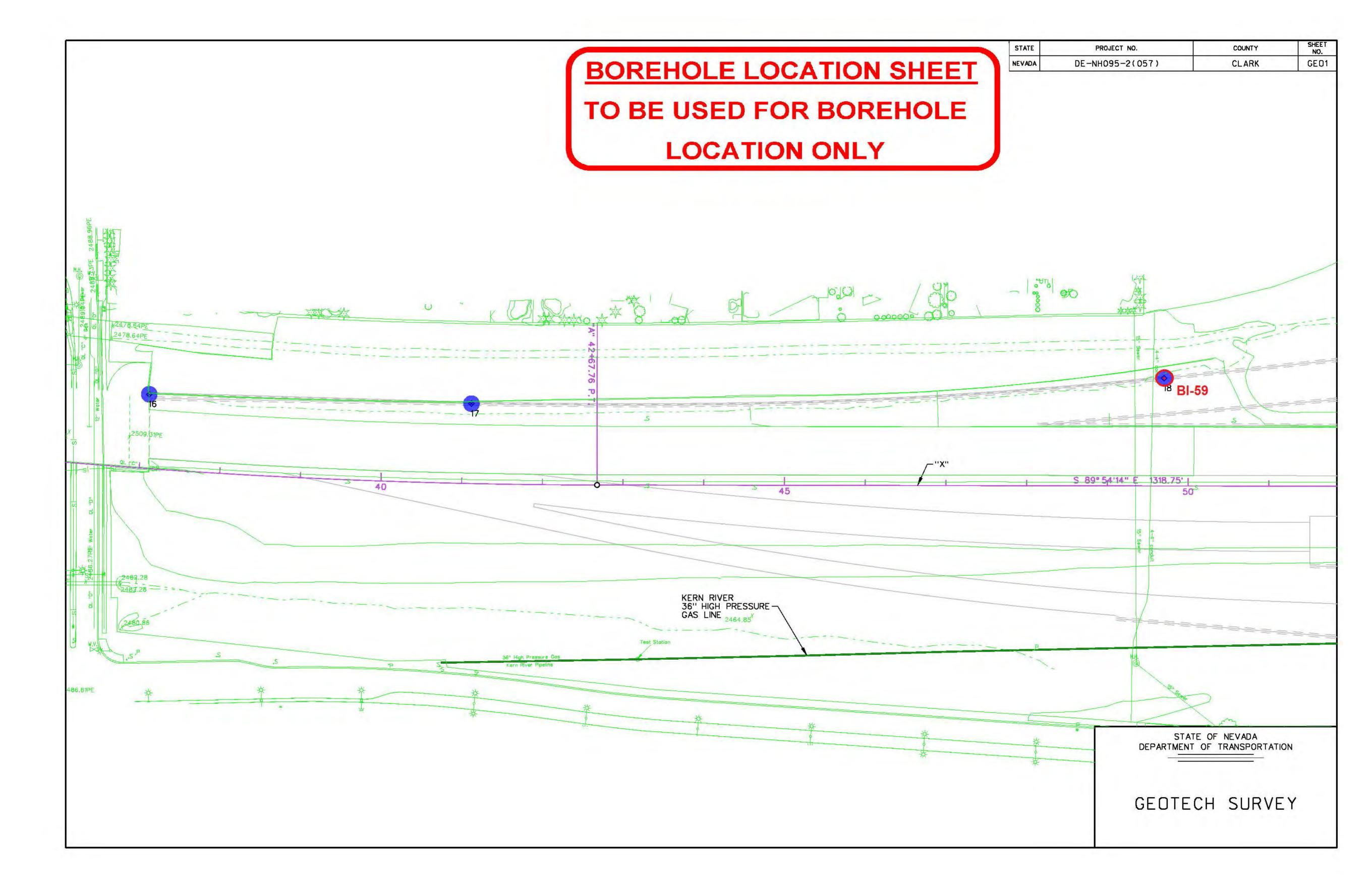
- 1. <u>Geologic Map of Clark County, Nevada</u>, Bulletin 62, Plate 1; Nevada Bureau of Mines and Geology, 1964.
- 2. <u>Tectonic Map of Clark County, Nevada</u>; Bulletin 62, Plate 5, Nevada Bureau of Mines, 1965.
- 3. Las Vegas NW Quadrangle Geologic Map; Nevada Bureau of Mines and Geology, 1987, Map 3Dg.

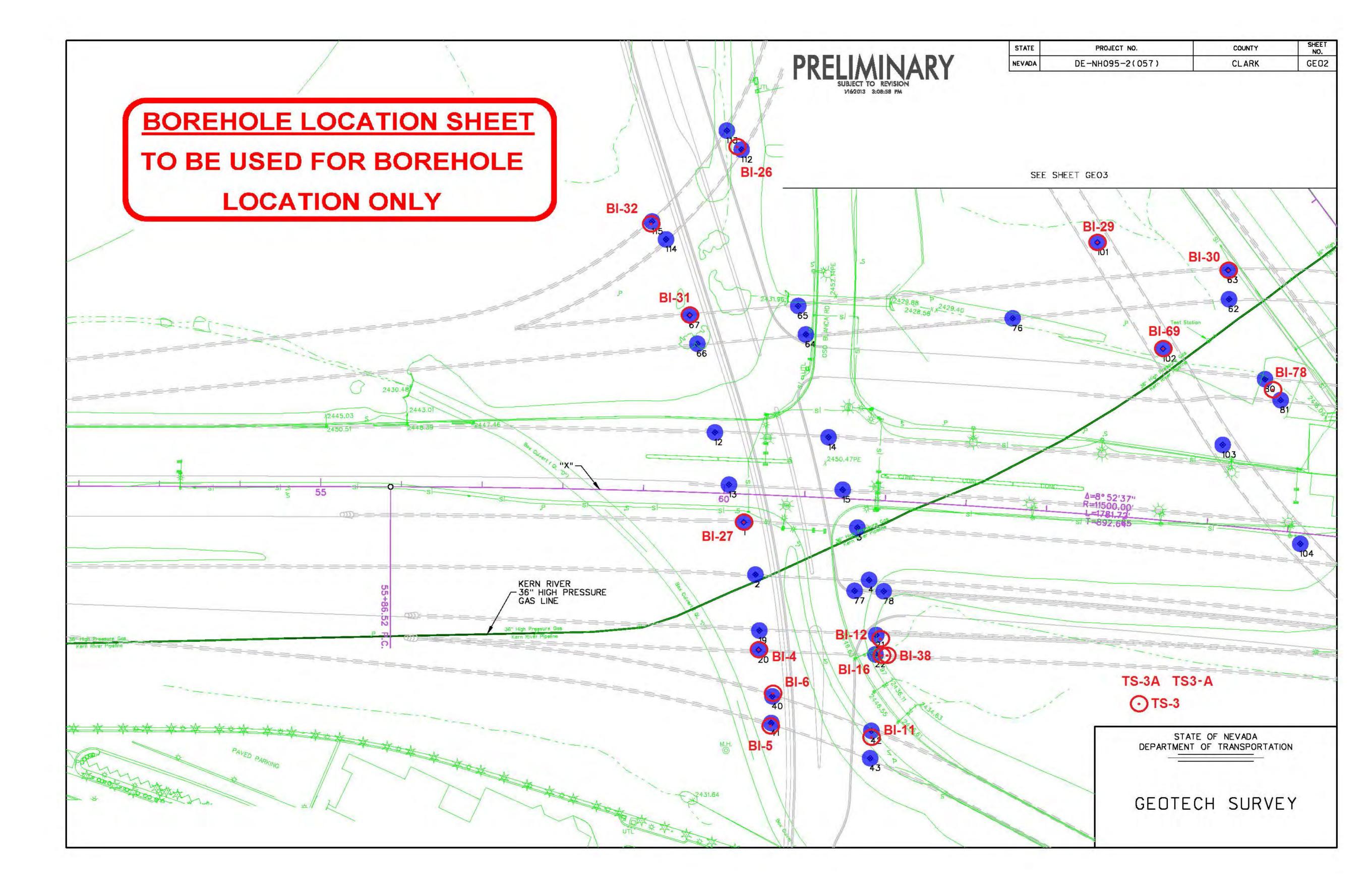
## **APPENDIX A**

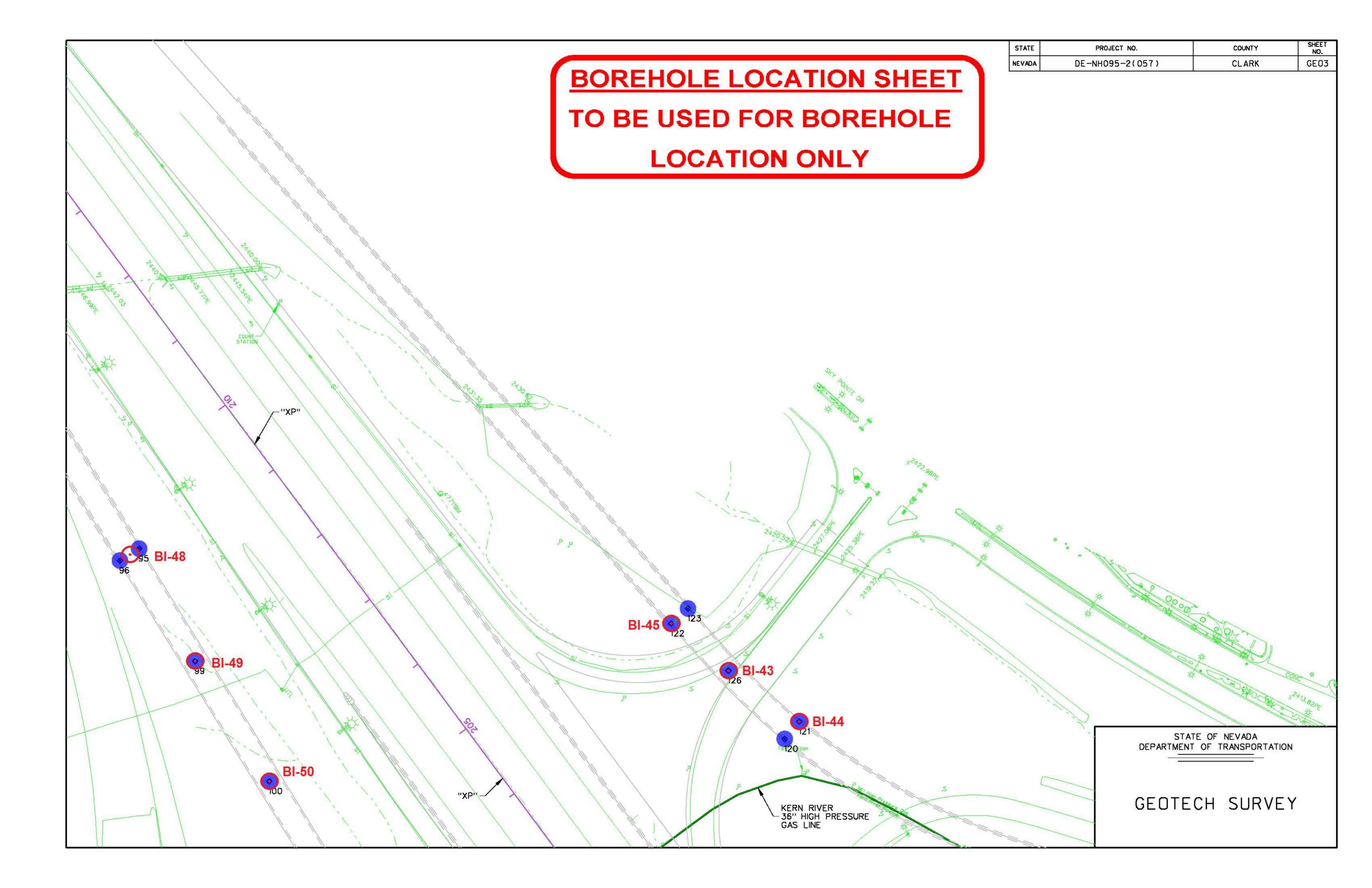
**Project Location Area Map Borehole Location Sheets** 

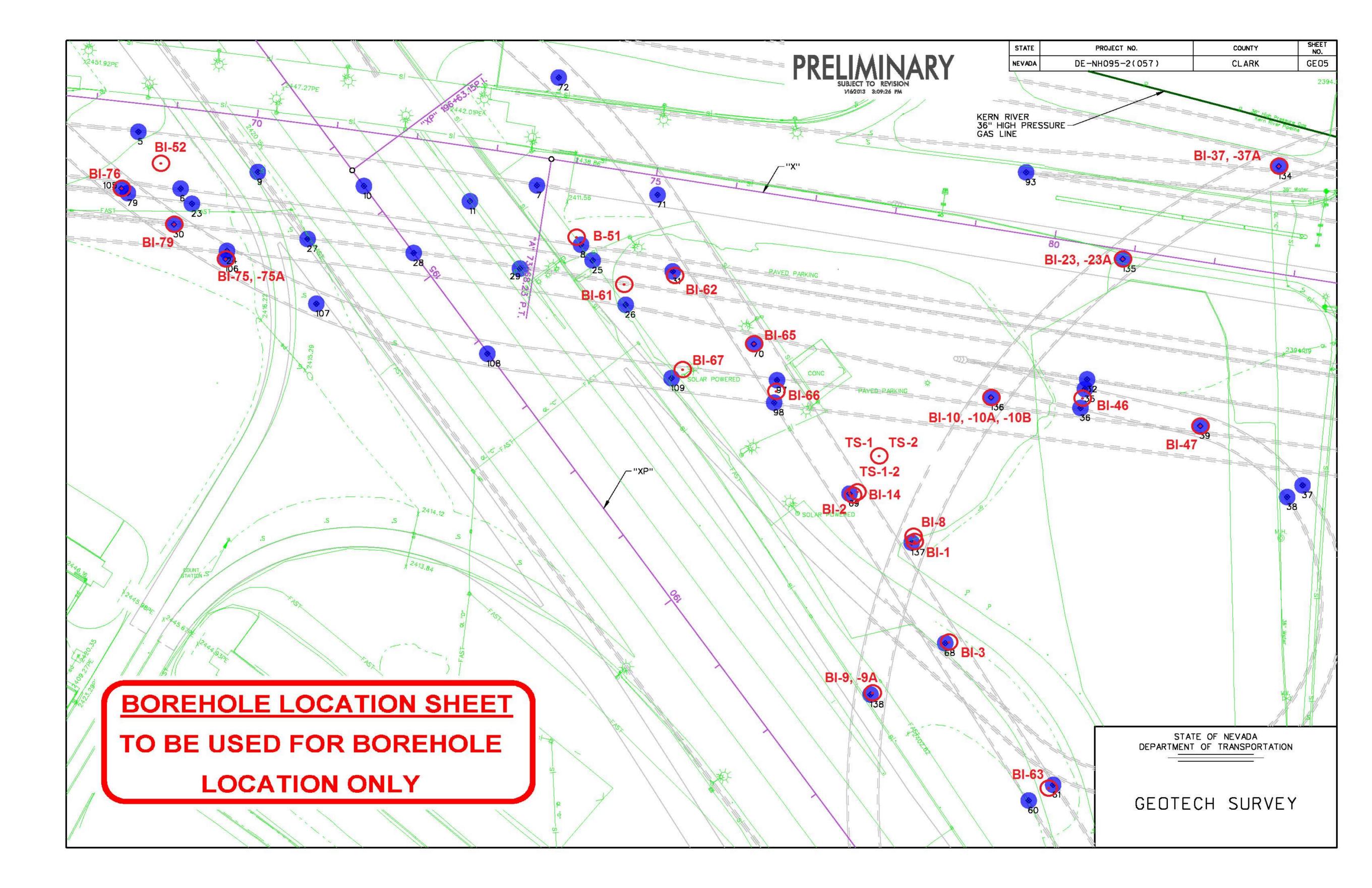


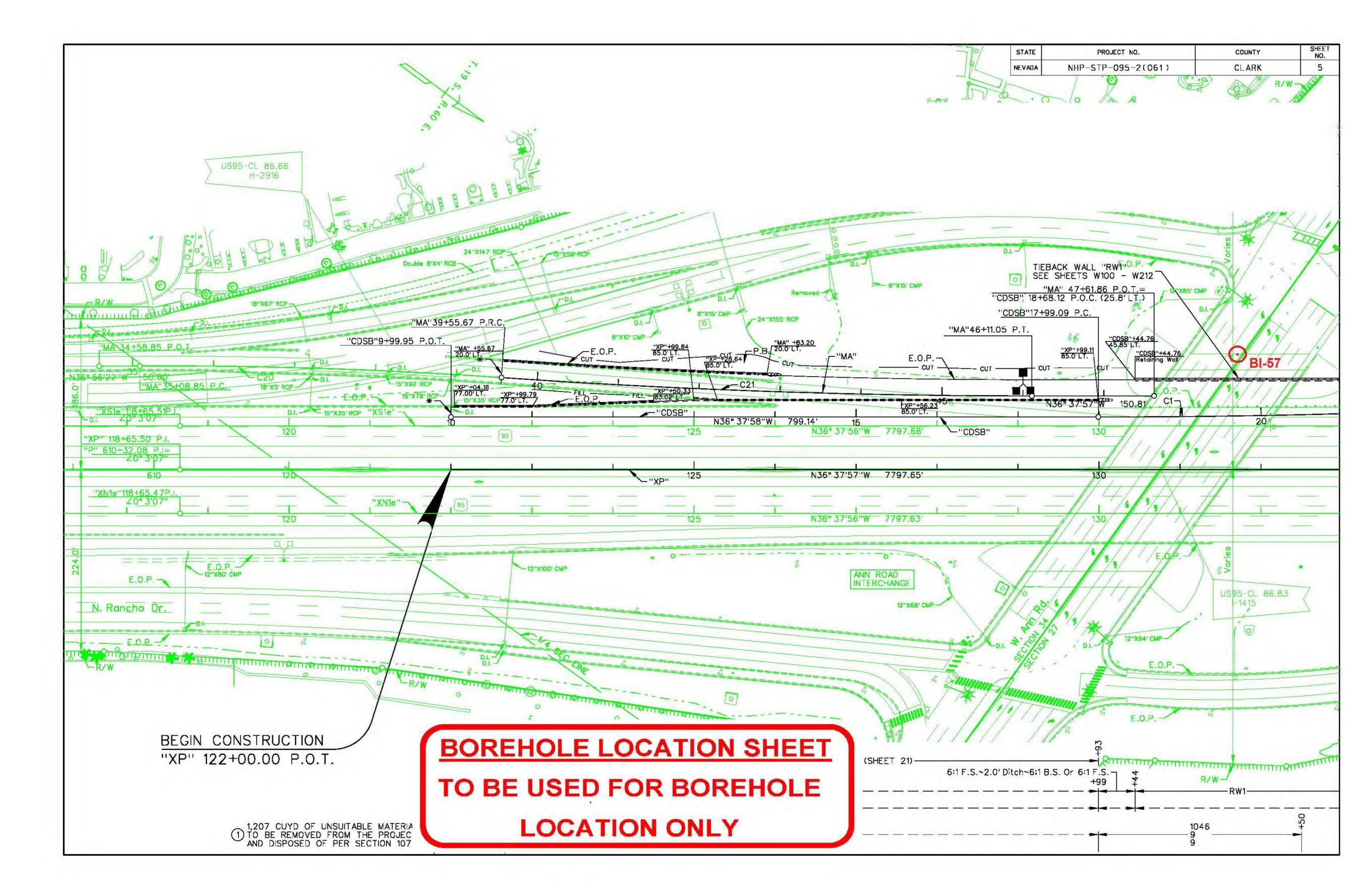
PROJECT LOCATION AREA MAP

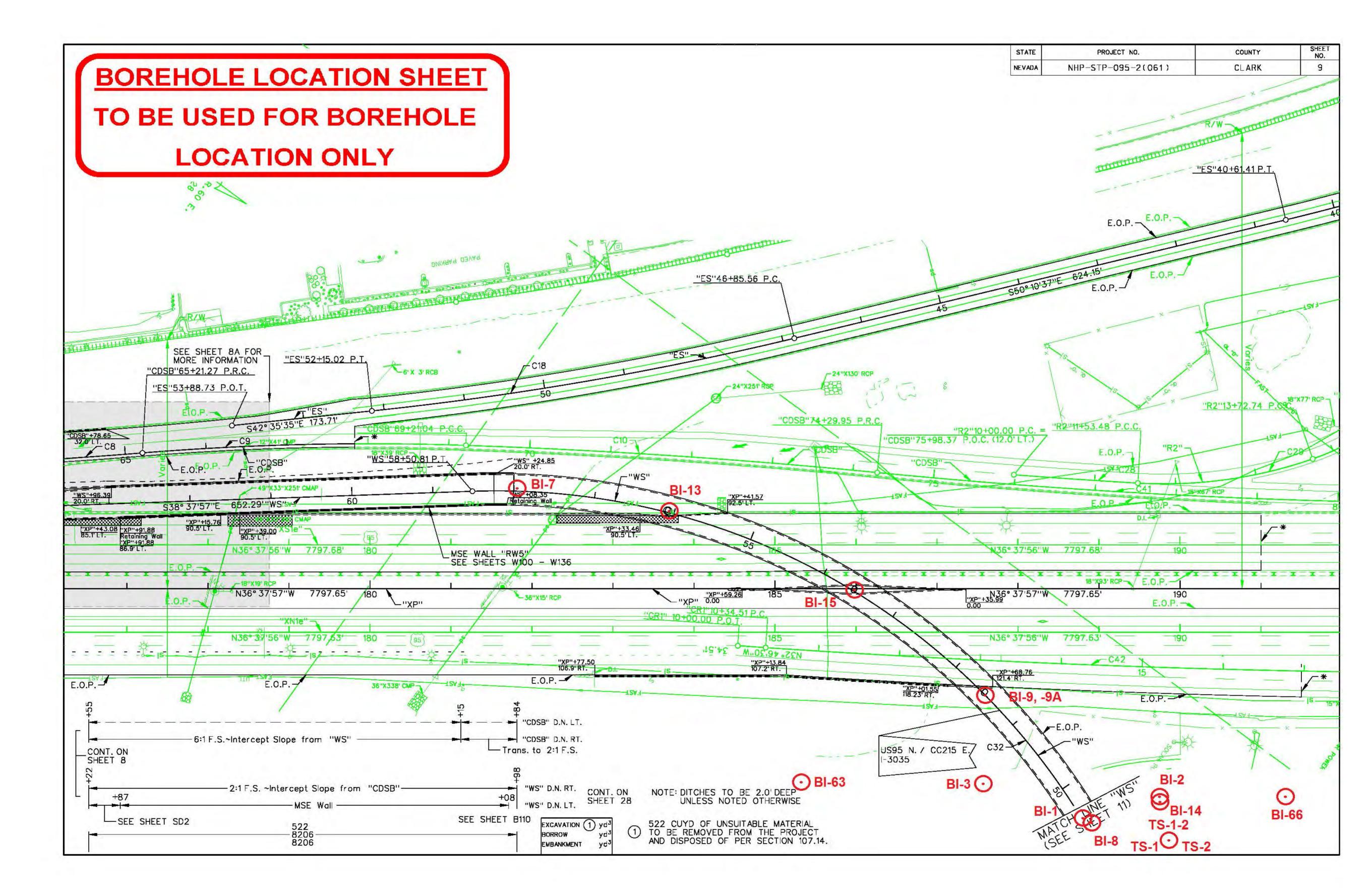


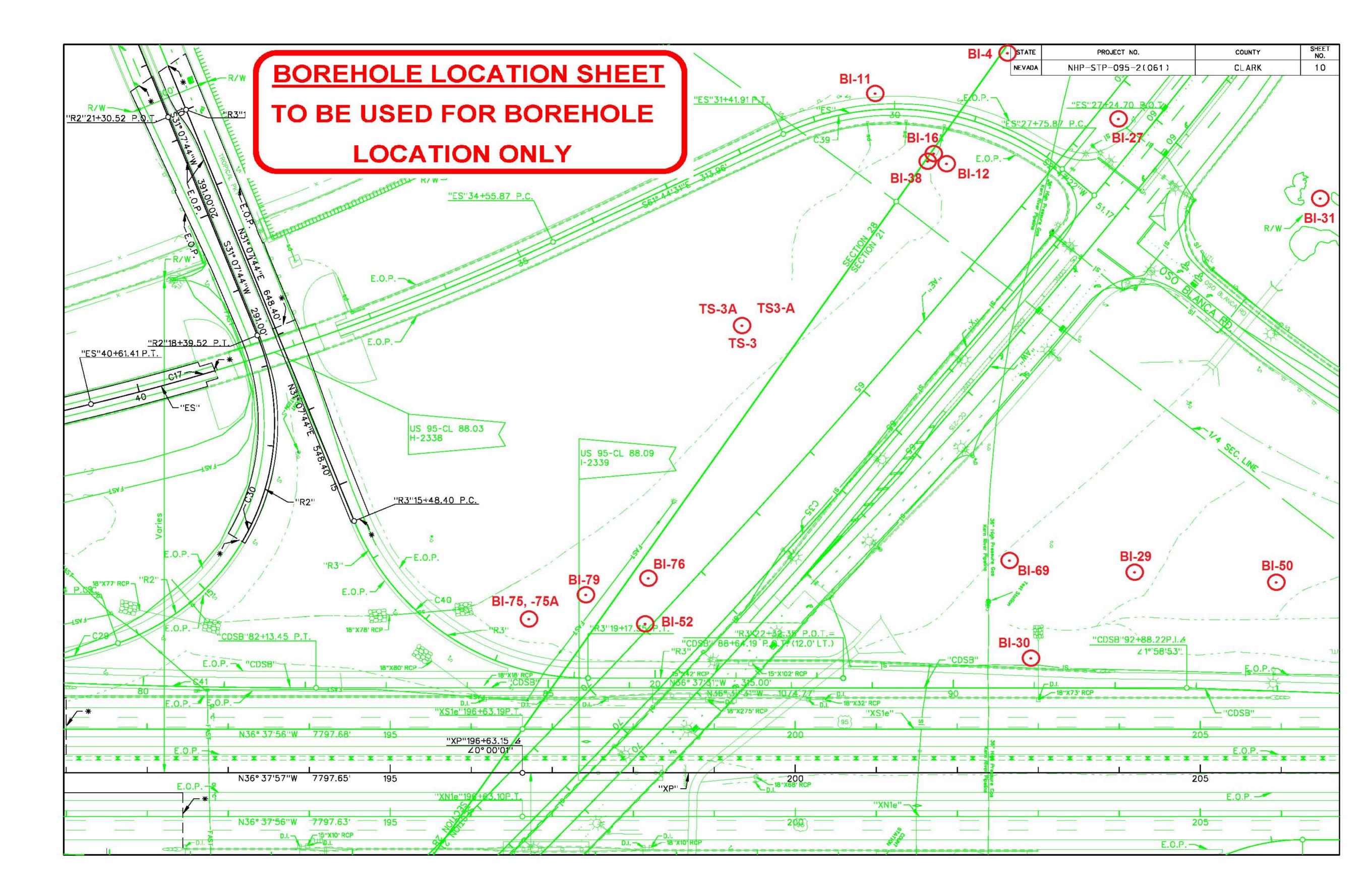


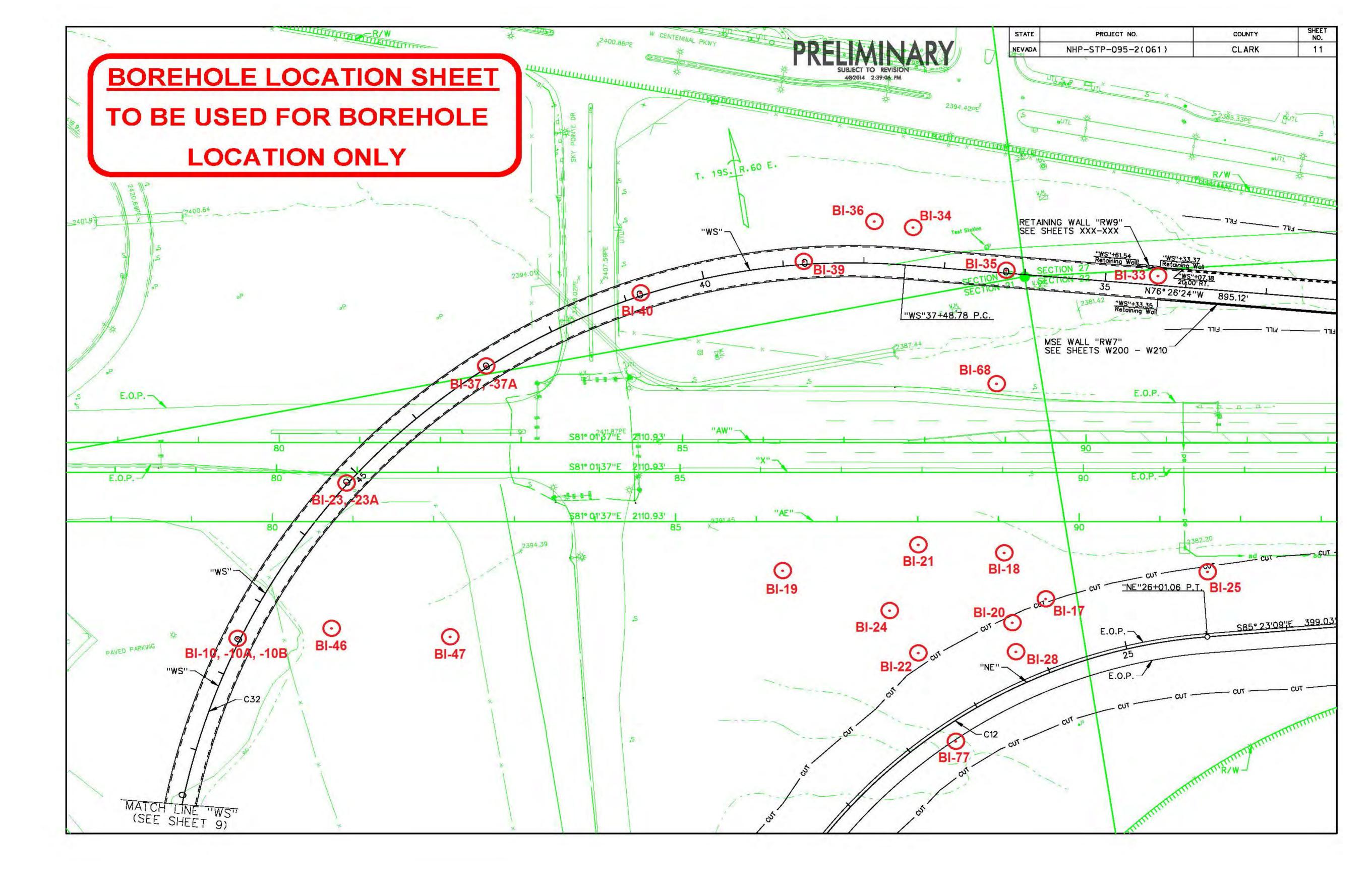


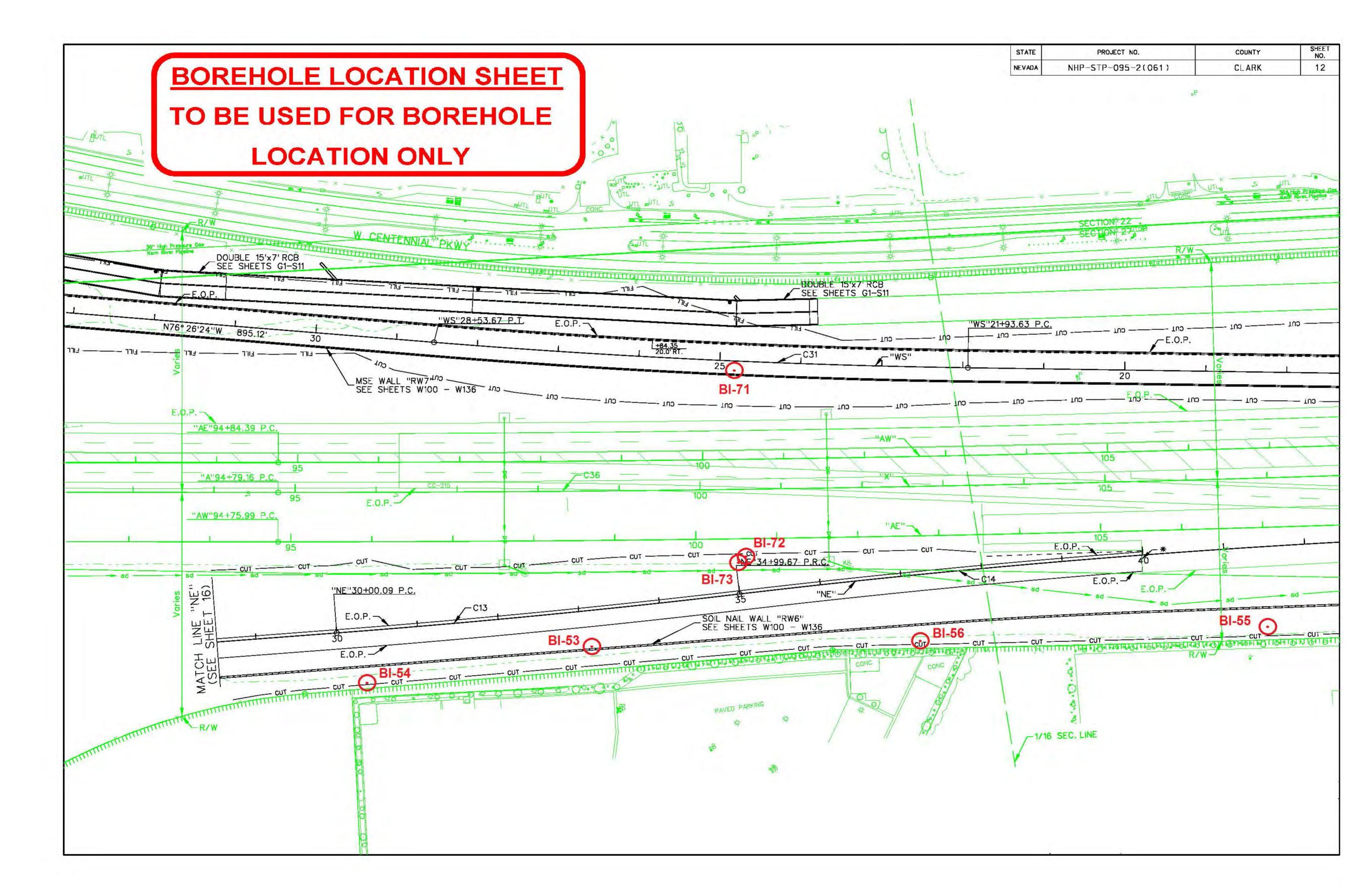


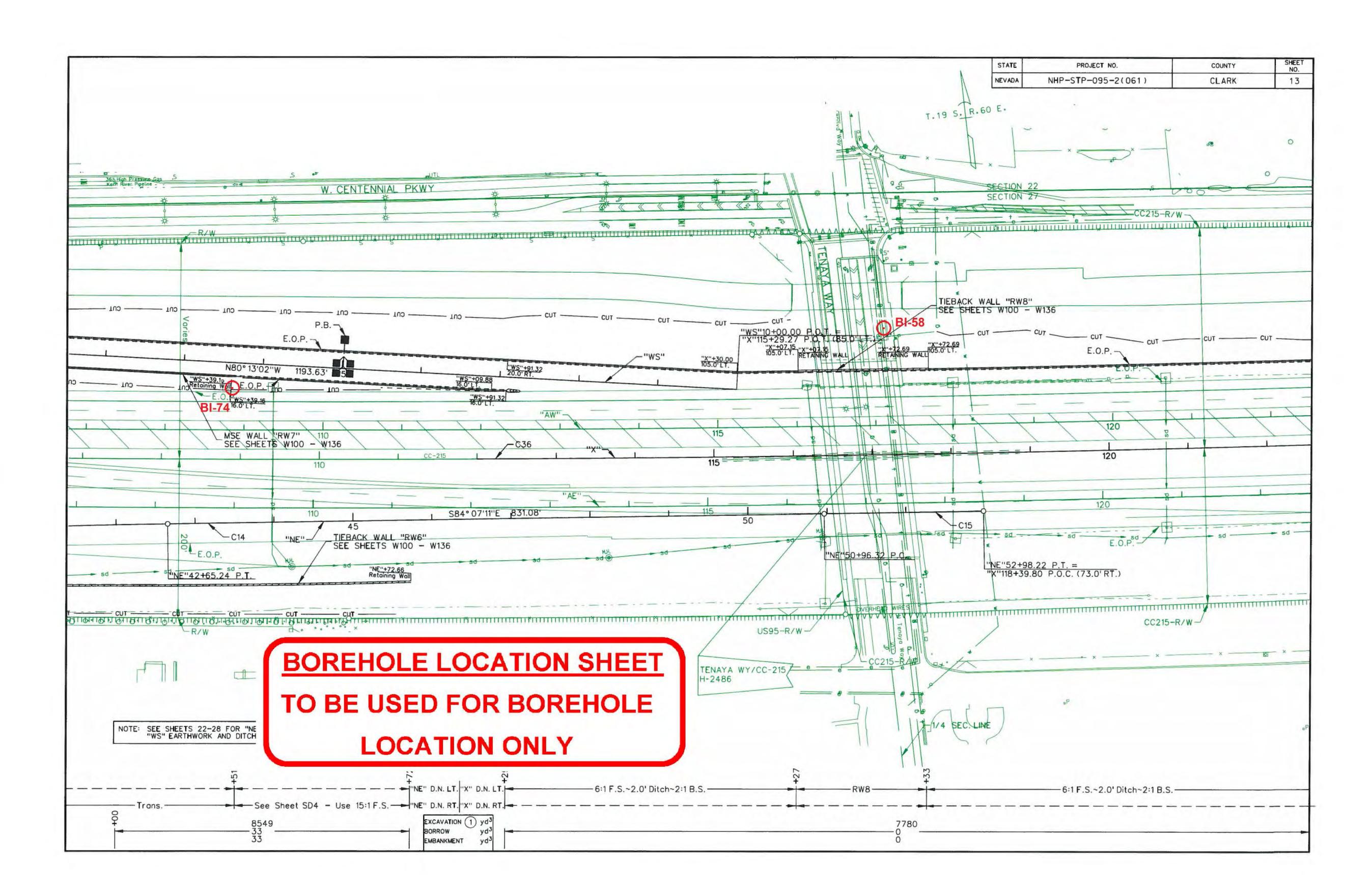


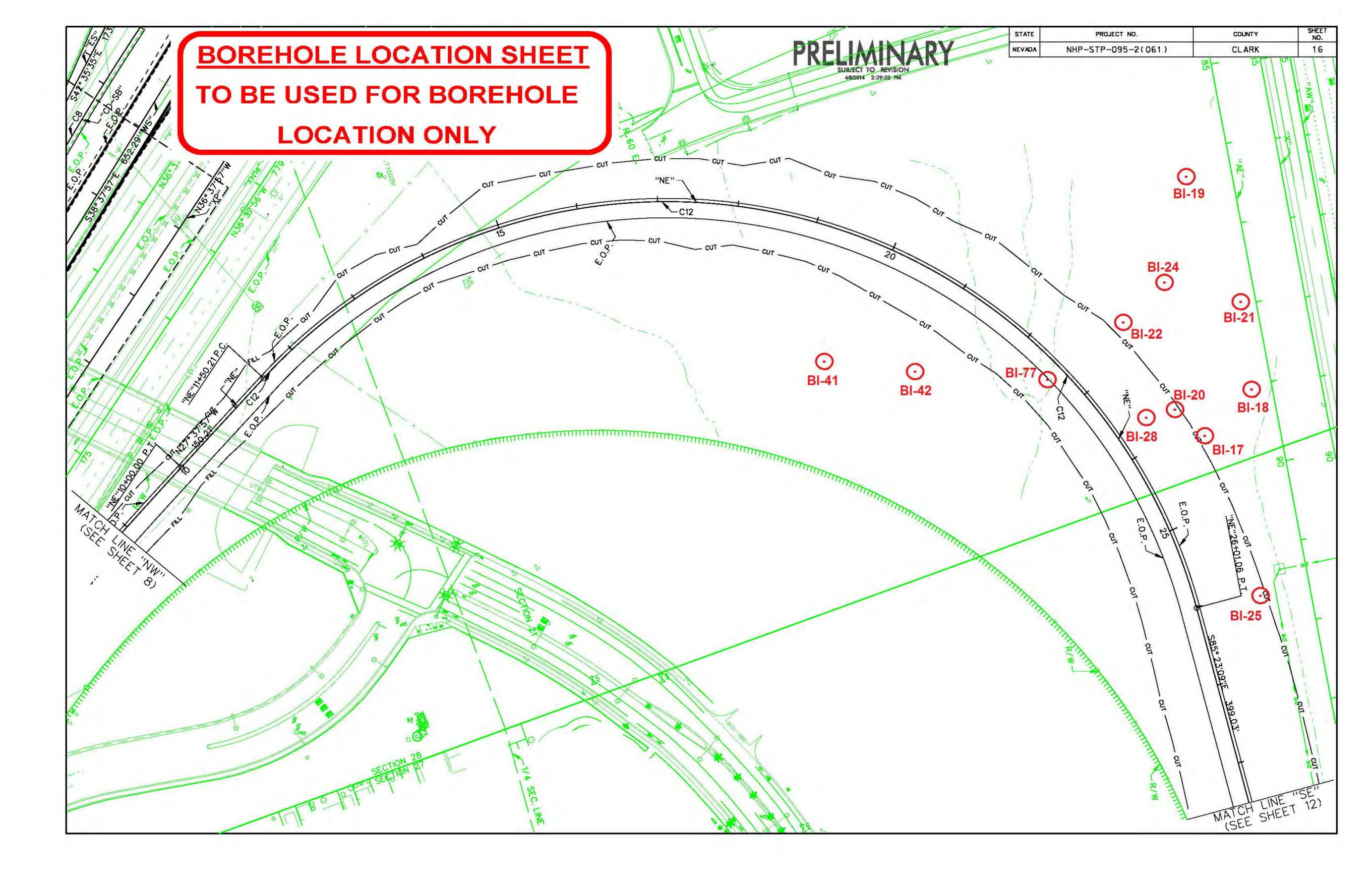


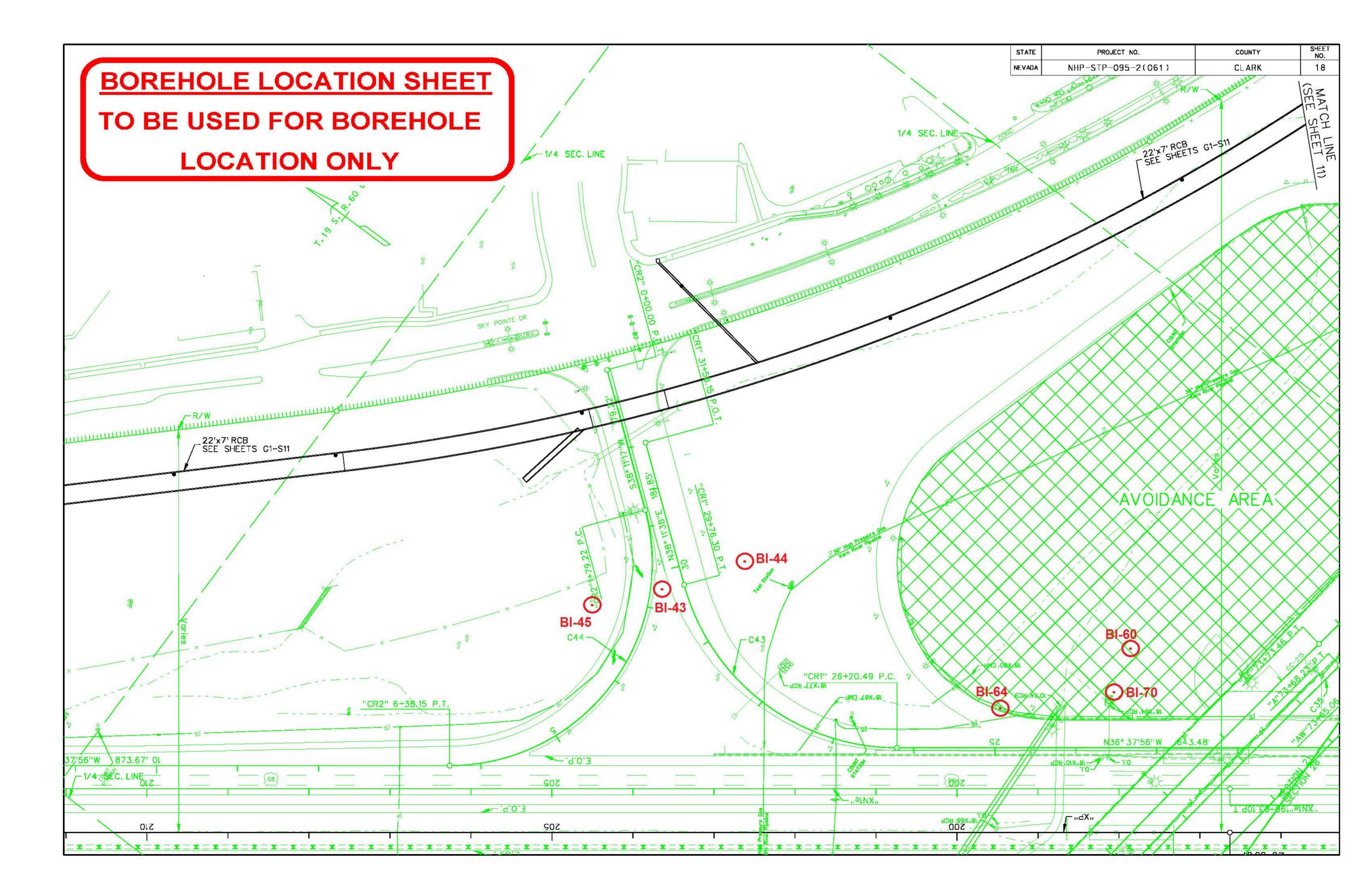












## APPENDIX B

Boring Log Key Boring Logs

#### **KEY TO EXPLORATION LOGS**

PARTICLE SIZE LIMITS											
CLAY	SILT		SAND		GR	AVEL	COBBLES	BOULDERS			
			MEDIUM	COARSE	FINE	COARSE					
.002	2 mm #	200 #	40 #1	LO #-	4 ¾ i:	nch 3 i	inch 12	inch			

USCS GROUP	TYPICAL SOIL DESCRIPTION
GW	Well graded gravels, gravel-sand mixtures, little or no fines
GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
GC	Clayey gravels, poorly graded gravel-sand-clay mixtures
SW	Well graded sands, gravelly sands, little or no fines
SP	Poorly graded sands, gravelly sands, little or no fines
SM	Silty sands, poorly graded sand-silt mixtures
SC	Clayey sands, poorly graded sand-clay mixtures
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL	Organic silts and organic silt-clays of low plasticity
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
СН	Inorganic clays of high plasticity, fat clays
OH	Organic clays of medium to high plasticity
PT	Peat and other highly organic soils

MOISTURE CONDITION CRITERIA	SOIL	CEMENTATION	CRITERIA
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<b>Description</b>	<u>Criteria</u>	<b>Description</b>	<u>Criteria</u>
Dry	Absence of moisture, dusty, dry to touch.	Weak	Crumbles or breaks with handling or little finger pressure.
Moist	Damp, no visible free water.	Moderate	Crumbles or breaks with considerable
Wet	Visible free water, usually below		finger pressure.
	groundwater table.	Strong	Won't break or crumble w/finger pressure
abla  ot	<b>Groundwater Elevation Symbols</b>		

	STANDARD PENETRATION	CLASSIFIC	ATION*		
	GRANULAR SOIL	CLAYEY SOIL			
BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY		
0 - 4	VERY LOOSE	0 - 1	VERY SOFT		
5 - 10	LOOSE	2 - 4	SOFT		
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF		
31 - 50	DENSE	9 - 15	STIFF		
OVER 50	VERY DENSE	16 - 30	VERY STIFF		
	tration Test (N) 140 lb hammer l on 2 inch O.D. x 1.4 inch I.D. sampler.	31 - 60 OVER 60	HARD VERY HARD		

Field Blow counts on California Modified Sampler (NCMS) can be converted to NSPT field by:

**Blow counts from Automatic** 

(NCMS field )(0.62) = NSPT field

Hammer can be converted to Standard SPT N<sub>60</sub> by: Rig #1627: (NSPT field)(1.2) =N<sub>60</sub> Rig #1082: (NSPT field)(1.45) =N<sub>60</sub>

TEST ABBREVIATIONS  CD CONSOLIDATED DRAINED CH CHEMICAL (CORROSIVENESS) CM COMPACTION CU CONSOLIDATED UNDRAINED	OC ORGANIC CONTENT C CONSOLIDATION PI PLASTICITY INDEX RQD ROCK QUALITY DESIGNATION	SAMPLER NOTATION  CMS CALIF. MODIFIED SAMPLER <sup>1</sup> CPT CONE PENETRATION TEST CS CONTINUOUS SAMPLER <sup>2</sup> PB PITCHER BARREL
D DISPERSIVE SOILS DS DIRECT SHEAR E EXPANSIVE SOIL G SPECIFIC GRAVITY H HYDROMETER HC HYDRO-COLLAPSE K PERMEABILITY	RV R-VALUE S SIEVE ANALYSIS SL SHRINKAGE LIMIT U UNCONFINED COMPRESSION UU UNCONSOLIDATED UNDRAINED UW UNIT WEIGHT W MOISTURE CONTENT	RC ROCK CORE <sup>3</sup> SH SHELBY TUBE <sup>4</sup> SPT STANDARD PENETRATION TEST TP TEST PIT  1-I.D.= 2.421 inch
SOIL COLOR DESIGNATIONS ARE FROC CHARTS. EXAMPLE: (7.5 YR 5/3) BROW	2- I.D.=3.228 inch with tube; 3.50 inch w/o tube 3- NXB I.D.= 1.875 inch 4- I.D.= 2.875 inch	

Revised August 2010



2/11/13 START DATE

2/12/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

2406.10 (ft) GROUND ELEV.. HAMMER DROP SYSTEM Automatic

BI-1

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3 "XP" 188+79

STATION **OFFSET** 

283' Right Boomhower **ENGINEER** 

Diedrich D-120 **EQUIPMENT** 

Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-			moromonio	11000	110007 u			SANDY GRAVEL Dry, tan  1.20	
	- 2.50 - 4.00	A	SPT	6 6 7	13	80			<b>LEAN CLAY</b> Dry, medium dense, light brownish gray (10 YR 6/2)	
2401.1 -	5.00	В	SPT	6 6 6	12	60		CL	<b>LEAN CLAY</b> Dry, medium dense, brown (10 YR 5/3)	
	7.50 - 9.00	С	SPT	9 10 15	25	80			<b>LEAN CLAY with GRAVEL</b> Dry, very stiff, brown (10 YR 5/3) to light brownish gray (10 YR 6/2)	
2396.1 -	10.00 10 11.50	D	CMS	11 15 19 10	34	85			LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3)  11.50	
	13.00	Е	SPT	10 10 13	23	80		CL ML	SILTY CLAY Dry, very stiff, very pale brown (10 YR 7/3)	-
2391.1 -	15.00 15 16.50	F	SPT	20 27 36	63	75		GC GM	SILTY CLAYEY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3) to white (10 YR 8/1)	
2386.1 -	20.00 20 - 21.50	G	SPT	8 8 9	17	80		CL	SANDY LEAN CLAY Dry, very stiff, light yellowish brown (2.5 Y 6/4)	
	22.50			20						-
	24.00	Н	CMS	34 48 23 23	82 50	85 75		sc	mottled white (10 YR 8/1) to light brownish gray (10 YR 6/2)  CLAYEY SAND with GRAVEL Dry, very hard, mottled white (10 YR 8/1) to light brownish gray	
2381.1 -	25.50 25.50 - 27.50	'	01 1	27		13			(10 YR 6/2)	_
	29.00	J	SPT	9 13 19	32	60		СН	SANDY FAT CLAY Dry, hard, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	(J) Moderatel to strongly cemented ler
	30.00								30.00	@ 27.8' - 27



END DATE 2/12/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION BORING Northwest Las Vegas - Clark County BI-1

E.A. # 73518 GROUND ELEV. 2406.10 (ft)

HAMMER DROP SYSTEM Automatic

#### **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

STATION OFFSET

**ENGINEER** 

**EQUIPMENT** 

283' Right Boomhower

6" H.S.A.

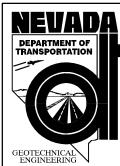
Diedrich D-120 Pypkowski

"XP" 188+79

OPERATOR DRILLING METHOD

BACKFILLED \_\_\_\_\_ DATE

ELEV.	DEPTH		MPLE	BLOW CO	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments	1 foot	Recov'd	LAD IESIS	Group		
	31.50	К	SPT	7 6 8	14	55		СН	SANDY FAT CLAY Dry, stiff, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	(K) Strongly cemented nodules in sample.
2371.1 -	35.00 35 36.50	L	SPT	13 13 16	29	60			SANDY LEAN CLAY Dry, very stiff, white (10 YR 8/1) to light brownish gray (10 YR 6/2)	
2366.1 -	40.00 40 41.50	М	SPT	11 18 40	58	80		CL	SANDY LEAN CLAY Dry, hard, light brownish gray (10 YR 6/2)	(M) Sample weakly to moderately cemented.
2361.1 -	45.00 45 46.50	N	SPT	9 17 29	46	60			SANDY LEAN CLAY Dry, hard, mottled gray (7.5 YR 6/1) to light gray (10 YR 7/1) to white (10 YR 8/1)	(N) Sample weakly to moderately cemented.
	-								48.20	Harder drillin
	-									48.0' - 50.0'.
2356.1 -	50.00									
2000. I -	51.50	0	SPT	12 14 20	34	60		GC	CLAYEY GRAVEL with SAND Dry to moist, hard, mottled very pale brown (10 YR 8/2) to brown (10 YR 5/3)	No water in h @ 50.0' - day Progress 3.0 minutes @ 5
	<u> </u>									- 53.0' @ 350
	53:90	P	SPT	20/0.1'	20/0.1'	0		<u></u>	53.10	psi down pressure.
	-									Moderately
	55.00 55									@ 50.3' - 50.
2351.1 -	56.50	Q	SPT	32 30 33	63	75		МН	ELASTIC SILT with SAND Moist, very hard, pinkish white (7.5 YR 8/2) to pinkish gray (7.5 YR 7/2)	End day 1 drilling @ 51 (P) No samp recovered. 3
- 60.00								60.00	psi down pressure; progress 0.3' minutes; 0.2' minutes; 0.6' minutes.	



2/11/13 START DATE

2/12/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** 

GROUND ELEV.

73518 E.A. # 2406.10 (ft)

HAMMER DROP SYSTEM \_ Automatic

BI-1

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3 "XP" 188+79

STATION **OFFSET** 

283' Right Boomhower **ENGINEER** 

Diedrich D-120 **EQUIPMENT** Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ENGINE	ERING			AMMER DR		TEM		L	BACKFILLED	DATE
ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co	OUNT Last 1 foot	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2341.1 -	-	R	SPT	Increments 10/0.0	10/0.0	Recov'd			61.00 END BI-1 @ 61.0'	Progress 2.0'/20 minutes @ 53.0' - 55.0' @ 350 psi down pressure. Progress 5.0'/30 minutes @ 55.0' - 60.0' @ 350 psi down pressure. (R) No sample recovered. Progress 1.0'/45 minutes @ 60.0' - 61.0' @ 350 psi down pressure; terminate
2336.1 -	- 70 -									borehole.  No groundwater encountered.
2331.1 -	- <b>75</b> -									
2326.1 -	-  80 -									
2321.1 -	- <b>85</b> - -									
	_									



END DATE 2/13/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING \_

GROUND ELEV. 2406.60 (ft)

HAMMER DROP SYSTEM Automatic

BI-2

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 "XP" 189+74

STATION OFFSET

**EQUIPMENT** 

257' Right

Pypkowski

ENGINEER

Boomhower
Diedrich D-120

OPERATOR DRILLING METHOD

6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
,				merennence	11000	110007 0			0.50 Asphaltic Concrete	
	2.50	A	SPT	5 7 5	12	60		CL ML	SILTY CLAY with SAND Dry to moist, medium dense, very pale brown (10 YR 7/3)	
2401.6 -	5 5.00 - 6.50 7.00	В	SPT	8 9 8	17	80		CL	LEAN CLAY Dry to moist, very stiff, light gray (10 YR 7/2)	
	8.50	С	CMS	9 11 14	25	100			SILTY CLAY with SAND Dry to moist, stiff to very stiff, light gray (10 YR 7/2)	
2396.6 -	10.00	D	SPT	8 8 12	20	100		CL ML	SILTY CLAY with SAND Dry to moist, stiff to very stiff, light gray (10 YR 7/2)	
	11.50 12.00	Е	SPT	8 9 9	18	80			SILTY CLAY with SAND Dry to moist, very stiff, light gray (10 YR 7/2)	-
	13.50	F	CMS	28	48	95		SM	SILTY SAND Dry, dense, light gray (10 YR 7/2)	
2391.6 -	15.00	G	SPT	10 13 17	30	65		CL	SANDY LEAN CLAY Dry, dense, light gray (10 YR 7/2)	-
	16.50	Н	SPT	16 23 33	56	65		SM	SILTY SAND Dry, very dense, light gray (10 YR 7/1)	
	_								18.20	-
2386.6 -	20.00 20 21.50	ı	CMS	18 22 27	49	95		СН	SANDY FAT CLAY Dry to moist, dense, mottled white (10 YR 8/1) to light yellowish 21.50 brown (10 YR 6/4)	(I) Strongly cemented nodules in
	23.00	J	SPT	22 28 34	62	80			CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to light gray (10 YR 7/1)	sample.
2381.6 -	25.00 25 26.50	К	SPT	23 14 13	27	60		sc	CLAYEY SAND with GRAVEL Dry to moist, very stiff, light gray (10 YR 7/1)	(K) Sample weakly to moderately cemented.
	_									



END DATE 2/13/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-2 E.A. # 73518

GROUND ELEV. 2406.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "XP" 189+74

OFFSET 257' Right
ENGINEER Boomhower

EQUIPMENT Diedrich D-120

OPERATOR Pypkowski
DRILLING
METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

ELEV.	DEPTH		MPLE	BLOW C 6 inch	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE SPT	Increments 23		Recov'd	LAB 1E313	Group	GRAVELLY LEAN CLAY with SAND Dry,	(L) Sample
	30.90		SF I	50/0.4'	30/0.4	00		CL	very hard, white (10 YR 8/1) to light gray (10 YR 7/1)	weakly to moderately cemented. End day 1 drilling @ 30.9'
2371.6 -	-35 <sup>35.00</sup>	M	CMS	18 20	48	95			35.80 FAT CLAY with SAND Dry to moist, very stiff to hard, light gray (5 Y 7/2)	
	36.50 - 38.00	N	SPT	28 9 13 16	29	65			FAT CLAY Moist, very stiff, light olive gray (5 Y 6/2) to olive gray (5 Y 5/2)	
	- 40.00							СН		
2366.6 -	41.50	0	CMS	11 18 27	45	100			FAT CLAY with SAND Moist, very stiff, light yellowish brown (10 YR 6/4) to light gray (2.5 Y	
	43.00	Р	SPT	15 14 40	54	95		CL	SANDY LEAN CLAY Dry to moist, very stiff to hard, light gray (5 Y 7/2)	(P) Strongly
	- - 45.00								44.00	cemented lens @ 42.9' - 43.0'
2361.6 -	- 45 - 46.50	Q	SPT	8 14 28	42	80		sc	CLAYEY SAND with GRAVEL Dry to moist, hard, light gray (2.5 Y 7/2) to light brownish gray (2.5 Y 6/2)	
	_								_ 48.20	
2356.6 -	50.00 50	R	SPT	45	50/0.4'	55		GC	SILTY CLAYEY GRAVEL with SAND Dry.	
	50.90	K	35 1	50/0.4'	30/0.4	33		GM	very dense, multi-colored gravel in pinkish gray sand (7.5 YR 7/2)	
	_								_ 53.00	Progress 1.01/1 minutes @ 57.
2351.6 -	- -55.00	S	SPT	24 21	36	100		GC	CLAYEY GRAVEL with SAND Moist, very stiff to hard, pink (7.5 YR 7/3) to light brown (7.5	- 58.0' @ 450 psi down pressure. Progress 1.0'/
	<u>56.50</u>			15				GC	YR 6/4)	minutes @ 58 - 59.0' @ 450 psi down pressure.
	<u>59:28</u>									<ul><li>(T) No sample recovered.</li></ul>
	59:20	T	SPT	50/0.2'	50/0.2'	0			59.20 END BI-2 @ 59.2'	No groundwate encountered.



2/13/13 START DATE

2/14/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-3 73518

GROUND ELEV. 2406.10 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

242' Right Boomhower **ENGINEER** 

Diedrich D-120 Pypkowski/Beus

"XP" 187+57

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED \_\_ \_ DATE \_

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								SANDY GRAVEL Dry, tan  1.20	
	- 2.50 - 4.00	Α	SPT	3 4 5	9	75		CL ML	SILTY CLAY with SAND Dry, loose to medium dense, very pale brown (10 YR 7/3)	
2401.1 -	5.00 - 6.30	В	SPT	8 37 50/0.3'	50/0.3'	60			LEAN CLAY with GRAVEL Dry, medium dense to very dense, very pale brown (10 YR 7/3)	(B) Sample moderately to strongly cemented @
	7.50 - 9.00	С	SPT	11 23 37	60	60		CL	LEAN CLAY with SAND Dry, very dense, very pale brown (10 YR 7/3)	6.2' - 6.3'.  (C) Sample moderately to strongly cemented @
2396.1 -	10.00 1010.40	D	SPT	50/0.4'	50/0.4'	35		sc	9.50  SILTY CLAYEY SAND Dry, very dense, very pale brown (10 YR 7/3)	8.9' - 9.0'.  (D) Sample moderately to strongly cemented @ 10.3' - 10.4'.
2391.1 -	- 15.00 - 15 - 16.50		SPT	18 32 45	77	85		SM	SILTY CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	
	17.50	F	SPT	33 35 43	78	85		GM	SILTY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/3)	
2386.1 -	20.00 20 	G	SPT	25 15 25	40	75		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3)	
	-								23.20	
2381.1 -	25.00 25 	Н	SPT	14 23 29	52	85		CL	SANDY LEAN CLAY Dry, very dense, very pale brown (10 YR 7/3)	End day 1
	-								28.20  SANDY SILT Dry, dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	drilling @ 26.
	30.00							ML	30.00	



2/13/13 START DATE

2/14/13

BI-3

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

GROUND ELEV. 2406.10 (ft) HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"XP" 187+57 STATION

242' Right **OFFSET** 

Boomhower **ENGINEER** Diedrich D-120 **EQUIPMENT** 

SHEET 2 OF 3

Pypkowski/Beus **OPERATOR** DRILLING METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

31.50  33.00  33.00  2371.1  35 <sup>35.00</sup> K  36.50  L  41.50  M  43.00  M  43.00  N  46.50  N	L CMS 17  17  17  14  15  14  14  15  14  17  18  19  19	1 foot Recovice 60 100 32 80 29 75 48 95 39 75		ML CL ML SC	30.80 SANDY SILT Dry, dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)  31.50 SANDY SILTY CLAY with GRAVEL Dry, very hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)  SANDY LEAN CLAY Dry, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  34.00  CLAYEY SAND Dry to moist, very stiff, mottled pink (7.5 YR 7/3) and light gray (10 YR 7/2)  38.20  LEAN CLAY with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to	(K) Strongly cemented nodules in sample.  (L) Strongly cemented nodules in sample.
2371.1	J SPT 15 17 17 18 19 19 19	29 75		CL	hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)  SANDY LEAN CLAY Dry, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  34.00  CLAYEY SAND Dry to moist, very stiff, mottled pink (7.5 YR 7/3) and light gray (10 YR 7/2)  38.20  LEAN CLAY with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to	cemented nodules in sample.  (L) Strongly cemented nodules in
2366.1	L CMS 17 31 12 12 19 19	48 95		sc	mottled pink (7.5 YR 7/3) and light gray (10 YR 7/2)  38.20  LEAN CLAY with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to	cemented nodules in sample.  (L) Strongly cemented nodules in
2361.1 - 45.00 - 46.50 N - 48.00 O	L CMS 17 31 12 M SPT 20 19				LEAN CLAY with SAND Dry to moist, dense, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)  LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to	cemented nodules in
2361.1 41.50 M 43.00 M 45.00 N 46.50 O 48.00	31 M SPT 20 19			-	(10 YR 8/1)  LEAN CLAY with SAND Moist, very stiff to hard, mottled light brownish gray (10 YR 6/2) to	nodules in
- 46.50 N O 48.00	10		1	1	white (10 YR 8/1)	
48.00	N CMS 28 37 12	65 95		CL	SANDY LEAN CLAY Moist, hard, mottled light yellowish brown (2.5 Y 6/3) to white (2.5 Y 8/1)  SANDY LEAN CLAY Moist, hard, mottled	(N) Strongly cemented nodules in sample.
2356.1 -50		41 80			yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	(O) Strongly cemented nodules in sample.
-					_ 51.50	
2351.1 55.00 - 56.50	27 P CMS 22 28	50 95		GC	CLAYEY GRAVEL with SAND Dry to moist, very stiff to hard, mottled light brown (7.5 YR 6/3) to brown (7.5 YR 4/3)	(P) Strongly cemented nodules in
	14	46 80		-	CLAYEY GRAVEL with SAND Dry to moist, hard, mottled pale yellow (2.5 Y 7/3) to light gray (2.5 Y 7/2) to strong brown (7.5 YR 5/6)	sample.



2/13/13 START DATE

2/14/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

E.A. #

**END DATE** 

Northwest Las Vegas - Clark County

Automatic

**BORING** 

73518

BI-3

2406.10 (ft) GROUND ELEV.

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"XP" 187+57 **STATION** 

**OFFSET** 

242' Right Boomhower Diedrich D-120

SHEET 3 OF 3

**EQUIPMENT OPERATOR** 

**ENGINEER** 

**DRILLING** 

METHOD

Pypkowski/Beus 6" H.S.A.

BACKFILLED \_

HAMMER DROP SYSTEM \_ \_ DATE BLOW COUNT 6 inch Last DEPTH ELEV. USCS Group LAB TESTS **MATERIAL DESCRIPTION** REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd **CLAYEY GRAVEL with SAND** Dry to moist, hard, mottled pale yellow (2.5 Y 7/3) to light GC 61.50 gray (2.5 Y 7/2) to strong brown (7.5 YR 5/6) CL -65.00 2341.1 16 **LEAN CLAY with SAND** Moist, very hard, SPT 105 pale brown (10 YR 6/3) R 53 90 66.50 37 66.50 END BI-3 @ 66.5' No groundwater encountered. 2336.1 <del>|</del> 70 2331.1 <del>+-75</del> 2326.1 -80 ALL FILES.GPJ NV\_DOT.GDT 6/27/16 2321.1 <del>+</del>85 DOT ≥



3/4/13

3/5/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County BI-4

**BORING** 73518 E.A. # GROUND ELEV. 2441.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

"X" 60+50 192' Right

Boomhower **ENGINEER** Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(1.1)	- ()			morements	11000	Recova			SANDY GRAVEL Dry, tan	
	2.50	Α	SPT	6 6 8	14	75		CL	SANDY LEAN CLAY Dry, stiff, light gray (10 YR 7/2) to white (7.5 YR 8/1)	(A) Fill; aspha present.
2436.4	5 5.00 - 6.50	В	SPT	8 7 9	16	80		CL ML	SILTY CLAY Dry, very stiff, pale brown (10 YR 6/3)	
	7.50	С	SPT	5 9 11	20	85		ML	SILT Dry, very stiff, pale brown (10 YR 6/3)	
2431.4	11.50	D	CMS	21 25 21	46	100		CL ML	9.50 SILTY CLAY with SAND Dry, very stiff, pale brown (10 YR 6/3)  11.50	
	13.00	Е	SPT	6 22 29	51	85		GM	SILTY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)	
2426.4 <sup>-</sup>	15.00	F	CMS	16 23	58	95		ML	SILT with SAND Dry, very stiff, pale brown (10 YR 6/3)	
	18.00	G	SPT	35 19 25 34	59	85		CL	GRAVELLY LEAN CLAY with SAND Dry, hard, light gray (10 YR 7/2)	(G) Gravel fro 17.7' - 18.0'.
2421.4 <sup>-</sup>	20.00		CMS	30 30	35/0.3'	90			CLAYEY GRAVEL with SAND Dry, very hard, light gray (10 YR 7/2)	(H) Last 10 blows; no
	21.30			35/0.3'				GC	_ <u>23.00</u>	progress.
2416.4 <sup>-</sup>	25.00 - 25 - 26.50	ı	SPT	5 8 10	18	75		СН	SANDY FAT CLAY Dry, stiff to very stiff, light gray (10 YR 7/2)	
	_								28.20  CLAYEY SAND with GRAVEL Dry, very dense to hard, light gray (10 YR 7/2) to pink	



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

3/5/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING BI-4 73518

E.A. # 73518 GROUND ELEV. 2441.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

STATION "X" 60+50

OFFSET 192' Right

**EQUIPMENT** 

**OPERATOR** 

ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

ENGINE	EERING \		HA	AMMER DR	OP SYS	SIEM	utomatic		BACKFILLED	_ DATE
ELEV. (ft)	DEPTH (ft)	SAI NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
( 7	31.50	J	CMS	30	59	95		sc	CLAYEY SAND with GRAVEL Dry, very dense to hard, light gray (10 YR 7/2) to pink 31.50 (7.5 YR 7/4)	
	33.00	K	SPT	8 9 13	22	60		СН	FAT CLAY with SAND Dry to moist, very stiff, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 5/4)	
	_								34.00	
2406.4 -	35.00 35			10				_	CLAYEY SAND with GRAVEL Dry to moist,	
	36.50	L	SPT	7 13	20	80		sc	very stiff, light gray (10 YR 7/2) to mottled whit (10 YR 8/1) to yellowish brown (10 YR 5/4)	е
	_								38.20	
	40.00									
2401.4 -	41.50	М	SPT	11 17 19	36	80		-	CLAYEY GRAVEL with SAND Dry to moist, dense, light gray (10 YR 7/1)	
	41.30			19						
	_							GC		
2396.4 -	45.00 <b>45</b>			7				_	CLAYEY GRAVEL with SAND Dry to moist,	
	46.50	N	SPT	13 16	29	95		-	very stiff, light gray (10 YR 7/2) to mottled whit (10 YR 8/1) to yellowish brown (10 YR 5/4)	Э
	-								48.20	
	- 50.00									
2391.4 -	50.00	0	SPT	9	24	85		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very stiff, light gray (10 YR 7/2) to	
	51.50			10					mottled white (10 YR 8/1) to yellowish brown (10 YR 5/4)	
	_								53.20  CLAYEY GRAVEL with SAND Moist, stiff to very stiff, yellowish brown (10 YR 5/6)	(P) Last 10 blows; no
2386.4 -	55.00 555.30	Р	SPT	20/0.3'	20/0.3'	0			very still, yellowish blown (10 1R 5/0)	progress. No sample recovered.
	_							GC		Progress 0.1'/5 minutes @ 55.5' @ 350 psi down pressure.
	_									Progress 0.1'/5 minutes @ 55.6' @ 450 psi down pressure.
	60.00								60.00	Hard drilling



3/4/13 START DATE

END DATE

3/5/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-4 **BORING** 

73518 E.A. # GROUND ELEV. 2441.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 60+50 STATION

192' Right **OFFSET** Boomhower

**ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 3 OF 3

Pypkowski **OPERATOR** 

6" H.S.A.

DRILLING METHOD BACKFILLED \_\_\_\_\_ \_\_ DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	61.50	Q	SPT	7 10 9	19	60		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, yellowish brown (10 YR 5/6)  62.00	from 55.5' - 57.0'. (Q) Strongly cemented
	62.50	В	CMS	6	50/0.4'	65			SANDY FAT CLAY Moist, stiff to very stiff.	nodules in sample.
	63.40	R	CIVIS	50/0.4'	50/0.4	65			yellowish brown (10 YR 5/6)	
2376.4 -	65 96	S	SPT	15/0.1'	<del>15/0.1'</del>	0		СН		(S) Last 10 blows; no progress. No sample recovered. End day 1 drilling @ 65.1
	_								69.30	Hard drilling
2371.4 -	70 								END BI-4 @ 69.3'	from 68.5' - 69.3'. Progress 0.4'/10 minutes @ 68.5' @ 500 psi down pressure. Progress 0.2'/7 minutes @ 68. @ 500 psi dow pressure.
2366.4 -	<b>75</b> -									No groundwate encountered.
2361.4 -	- - -									
2356.4 -	- 85									
	_									



3/5/13

3/6/13

END DATE US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-5 73518

2439.30 (ft) GROUND ELEV

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 60+71 STATION

283' Right **OFFSET** 

**EQUIPMENT** 

OPERATOR

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 2

Pypkowski

DRILLING METHOD 6" HSA/4" Rotary Wash

GEOTECH ENGINE	EERING V	CAN		MMER DR		STEM	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	_								SANDY GRAVEL Dry, tan
	_								2.50
	_								
2434.3 -	5.00								
2404.0	6.50	Α	SPT	7 11 11	22	75		CL	SANDY LEAN CLAY Dry, very stiff, light gray (10 YR 7/1) to white (10 YR 8/1)
	7.50								
	9.00	В	SPT	8 11 11	22	85			LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/1) to white (10 YR 8/1)
2429.3 -	10.00			5				CL	9.50 SANDY SILTY CLAY with GRAVEL Dry,
	11.50	С	CMS	5 9	14	85		ML	medium dense, light gray (10 YR 7/2)
	13.00	D	SPT	19 21 18	39	80			CLAYEY SAND with GRAVEL Dry, dense, pale brown (10 YR 6/3)
	_							sc	
2424.3 -	15.00 15			10				-	CLAYEY SAND with GRAVEL Dry, medium
	16.50	E	CMS	12 9 4	21	80			dense, pale brown (10 YR 6/3) 16.50 CLAYEY GRAVEL with SAND Dry, loose,
	18.00	F	SPT	3 4	7	45		GC	pale brown (10 YR 6/3)
	-								19.00
2419.3 -	20.00	G	CMS	9 20	36	85		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, medium dense, pale brown (10 YR 6/3)
	21.50		SPT	16 7 5	15	65			21.50  SILTY CLAYEY GRAVEL with SAND Dry, medium dense, pale brown (10 YR 6/3)
	23.00	Н	3F1	10	15	05		GC GM	
	25.00								24.00
2414.3 -		1	CMS	11 14 16	30	100		CL	LEAN CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)  26 50 Clause of in to
	26.50	J	SPT	7 8	22	65			26.50  FAT CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)  Sloughed in to 13.0' depth overnight.
	28.00			14				СН	Resumed drilling with 4" tri-cone bit and
									bentonite slurry 30.00

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



3/5/13

END DATE 3/6/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-5 73518

GROUND ELEV. 2439.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_"X" 60+71

OFFSET \_

**OPERATOR** 

283' Right Boomhower

EQUIPMENT Boomnower

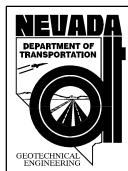
EQUIPMENT Diedrich D-120 (Unit 1627)

SHEET 2 OF 2

Pypkowski

DRILLING 6" HSA/4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2404.3 -	- - 33.50 - 35.00	К	SPT	7 12 15	27	75		CL	SANDY LEAN CLAY Moist, very stiff, mottled yellowish brown (10 YR 5/6) to yellow (10 YR 7/6) to very pale brown (10 YR 8/2)	Lost circulatior @ 33.5'. Lost 250 - 300 gallons of slurr
	_								36.70	
2399.3 -	38.50 	L	SPT	18 18 23	41	65		GC	CLAYEY GRAVEL with SAND Dry to moist, hard, multi-colored	
2399.3	40.70	М	SPT	17 22 31	53	80			CLAYEY GRAVEL with SAND Dry to moist, very dense, multi-colored 42.20	
2394.3 -	- <b>45</b> - -								END BI-5 @ 42.2'	No groundwat encountered.
2389.3 -	- 50 -									
2384.3 -	- <b>55</b> -									



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

END DATE 3/8/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-6

E.A. # 73518 GROUND ELEV. 2440.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

STATION "X" 60+71

OFFSET 247' Right

OFFSET 247' Right
ENGINEER Boomhower

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)	I	MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group		MATERIAL DESCRIPTION	REMARKS
				oromonio	1 1001	1,000,0			SA	ANDY GRAVEL Dry, tan	
	-										
	-								2.30		
	-										
	4.70										
2435.0	<del>-</del> 5	Α	SPT	8 8	15	65		CL	<u>LE</u> sti	EAN CLAY with SAND Moist, stiff to very ff, pale yellow (2.5 Y 7/3)	
	- 6.20			7							
	-										
	_								7.90		
	9.70							GM	<u>SII</u> ve	LTY GRAVEL with SAND Dry to moist, ry hard, light brown (7.5 YR 6/3) to light gray	
2430.0	<del></del> 10	В	SPT	11 21	50/0.4'	85			10.40 (2.	5 Y 7/2)	
	_ 11.10			50/0.4'					ha	EAN CLAY with SAND Dry to moist, very ard, light brown (7.5 YR 6/3) to light gray (2.5	
	-							CL	Y	7/2)	
									12.90		
	14.70										
2425.0	<del>-</del> 15	С	SPT	14 24	58	75		ML	<u>SII</u> ve	LT with SAND Dry to moist, hard, light llowish brown (10 YR 6/4) to light gray (2.5 Y	
	- 16.20		<u> </u>	34					7/2		
	-										
									<u> 17.90</u> _		
	19.70							CL ML			
2420.0	-20 20.60	D	CMS	28 50/0.4'	50/0.4'	65			20.60 de	ANDY SILTY CLAY Dry to moist, very ense, light yellowish brown (10 YR 6/4) with	
	-	Е	SPT	30 32	25/0.3'	70			∖mı	ulti colored gravel.	(E) Last 10 blows; no
	21.90		0	25/0.3'	20,0.0			GC GM	SII mo	LTY CLAYEY GRAVEL with SAND Dry to Dist, very dense, multi-colored	progress.
									23.20		
	24.70										
2415.0	-25	F	SPT	11 14	34	55			<u>SA</u>	ANDY LEAN CLAY Dry to moist, hard, light llowish brown (10 YR 6/4) to pale yellow (2.5	
	- 26.20	<u>'</u>	Ji⁻ I	20	J4	33		CL		8/2)	
	-										
									_ <u>28.40</u> CL	AYEY SAND Dry to moist, hard, light	
	-							sc	bro	ownish gray (2.5 Y 6/2) to light yellowish own (10 YR 6/4)	
									30.00 bro	JWII (10 1 K 0/4)	



3/7/13

3/8/13

END DATE US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County BI-6

**BORING** E.A. #

2440.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

"X" 60+71 STATION

**OPERATOR** 

247' Right **OFFSET** 

Boomhower **ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

Second   S		DEDTU	SAI	MPLE	BLOW C				11000		
30.70   17   17   18   33   65   SC   CLAYEY SAND. Dry to moist, hard, light brownish gray (2.5 Y 6/2) to light yellowish brown (10 YR 6/4)   33.50    34.70   35   1   SPT   11   31   55    36.20   44.70   40   40   40   40    2400.0   40   40   40   40   40    2395.0   44.70   40   40   40   40    2395.0   50   50   50   60   50    2395.0   50   50   50   50    2395.0   50   50   50   50    2395.0   50   50   50   50    2395.0   50   50   50   50    2395.0   50   50   50   50    2395.0   50   50   50    2400.0   50    2400.0   50    2400.0   50   50    2400.0   50   50    2400.0   50    2400.0   50   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0   50    2400.0		DEPTH (ft)		1	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2393.0							. 10001 u				
34.70	F				17					CLAYEY SAND Dry to moist, hard, light	
2405.0 - 35			G	SPT		33	65		ec	brownish gray (2.5 Y 6/2) to light yellowish	
2405.0	þ	32.20			18				30	brown (10 YR 6/4)	
2405.0											
2405.0										33.50	
2495.0	L										-
2495.0		34.70									
2395.0	2405.0				10					SANDY LEAN CLAY with GRAVEL Dry to	
2395.0 44.70 SPT 50/0.5' 50/0.5' 70 CLAYEY GRAVEL with SAND. Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND. Dry to moist, sampler  GC  CLAYEY GRAVEL with SAND. Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND. Moist, very hard, pale clive (5 Y 6/3) to brownish yellow (10 blows in			Н	SPT		31	55			moist, hard, strong brown (7.5 YR 5/6)	
2395.0 - 40 - 40 - 40 - 40 - 40 - 40 - 40 -	þ	36.20			20						
2395.0 - 40 - 40 - 40 - 40 - 40 - 40 - 40 -									CI.		
44.70  44.70  44.70  44.70  Agric 20 1 SPT 50/0.5' 50/0.5' 70  CLAYEY GRAVEL with SAND Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	ľ								CL		
44.70  44.70  44.70  44.70  Agric 20 1 SPT 50/0.5' 50/0.5' 70  CLAYEY GRAVEL with SAND Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	L										
2395.0 44.70											
44.70  44.70  44.70  44.70  Agric 20 1 SPT 50/0.5' 50/0.5' 70  CLAYEY GRAVEL with SAND Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	-										
2395.0 44.70											
44.70  44.70  44.70  44.70  Ag45.20 I SPT 50/0.5' 50/0.5' 70  CLAYEY GRAVEL with SAND Dry to moist, hard, strong brown (7.5 YR 5/6)  GC  CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	2400.0 +	-40								40.40	
2395.0 -4gi5.20   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Dry to moist, hard, strong brown (7.5 YR 5/6)   GC   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n											
2395.0 -495.20   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Dry to moist, hard, strong brown (7.5 YR 5/6)   GC   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	Ī										
2395.0 - 495.20   1   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10   blows; n	L										
2395.0 - 495.20   1   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10   blows; n											
2395.0 - 495.20   1   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10   blows; n	-										
2395.0 -495.20   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Dry to moist, hard, strong brown (7.5 YR 5/6)   GC   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n											
2395.0 -4gi5.20   SPT   50/0.5'   50/0.5'   70   CLAYEY GRAVEL with SAND   Dry to moist, hard, strong brown (7.5 YR 5/6)   GC   CLAYEY GRAVEL with SAND   Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	-										
Aggregation of the strong brown (7.5 YR 5/6)  Sampler  6C  CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n				CDT	F0/0 FI	E0/0 EI	70		-	OLANEN ORANGI with CAND Double resist	(I) D1- i
GC    54.70	2395.0 +	- <b>45</b> 45.20	- 1	SPT	50/0.5	50/0.5	70			bard strong brown (7.5 VP 5/6)	(I) ROCK IN
2385.0 — 55	L									riard, strong brown (7.5 TK 5/0)	Sampler Shoe
2385.0 — 55											
2385.0 — 55	-										
2385.0 — 55											
2385.0 — 55											
2385.0 — 55											
2385.0 — 55	Ī	=									
2385.0 — 55	2390 n 🚽	-50									
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	2390.0	30							GC		
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	-										
385.0 - 55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n											
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	-										
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n											
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	r										
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n	L										
2385.0 -55 J SPT 23 40/0.4' 90 CLAYEY GRAVEL with SAND Moist, very hard, pale olive (5 Y 6/3) to brownish yellow (10 blows; n		54.70									
hard, pale olive (5 Y 6/3) to brownish yellow (10   blows; n	2385.0		Л	SPT	23	40/0 4'	90			<b>CLAYEY GRAVEL with SAND</b> Moist, very	(J) Last 10
-   YR 5/6)   progres:	-	55.60	J	01 1	40/0.4'	70/0.7	50		-	hard, pale olive (5 Y 6/3) to brownish yellow (10	blows; no
	-									YK 5/6)	progress.
	r										
	Γ										Hard drilling a
_   58.0'.	L										
Lost circ 60.00 Q 59.0'											Lost circulation



3/7/13 START DATE

3/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-6 73518

GROUND ELEV. 2440.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

247' Right **ENGINEER** 

Boomhower

"X" 60+71

Diedrich D-120 (Unit 1627)

Pypkowski

4" Rotary Wash

DEPTH (ft)			6 inch	DUNT Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
65	К	SPT	12 10 9	19	65		СН	SANDY FAT CLAY Moist, very stiff, white (10 YR 8/1) to light brown (7.5 YR 6/4)	
- - 70 -								70.10	End day 1 drilling @ 70.0'. Hard drilling from 70.0' - 71.0'. Progress 1.0'/15 minutes @ 200 psi dowr
		SPT	11 14 29	43	115		CL	LEAN CLAY Moist, hard, light brown (7.5 YR 6/4) 75.50 END BI-6 @ 75.5'	pressure; up to 300 psi down pressure.  No groundwate encountered.
- <b>80</b> -									
- 85 									
	(ft)	DEPTH (ft) NO.  - 64.70  - 65 K - 66.20  - 74.00  - 75,50  - 80	- 64.70 - 65 K SPT - 66.20 - 74.00 - 75 <sub>75.50</sub> L SPT - 80	(it) No. 1112 Increments	DEPTH (fft) NO. TYPE 6 inch Increments 1 foot  64.70  64.70  66.20 K SPT 10 19  74.00  75,550 L SPT 14 43  29	(ft) NO. HTC Increments 1 foot Recovid	(ft) No. 1112 Increments 1 foot Recovid	CH  - 64.70  - 65  K SPT 10 19 65  - 74.00  - 75,5.50  L SPT 11 4 43 115  - 80  - 80  - 80  - 80  - 80  - 80  - 80  - 80  - 80 - 80	CH SANDY FAT CLAY Moist, very stiff, white (10 YR 8/1) to light brown (7.5 YR 6/4)  CH SANDY FAT CLAY Moist, very stiff, white (10 YR 8/1) to light brown (7.5 YR 6/4)  CL LEAN CLAY Moist, hard, light brown (7.5 YR 6/4)  TAUGE FINANCIAL Moist, hard, light brown (7.5 YR 6/4)  END BI-6 @ 75.5'  END BI-6 @ 75.5'



3/18/13 START DATE

3/19/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

2402.60 (ft) GROUND ELEV. Automatic HAMMER DROP SYSTEM \_

BI-7

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

**STATION OFFSET** 

**METHOD** 

125' Left **ENGINEER** 

Boomhower

6" H.S.A.

"XP" 181+80

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR DRILLING** 

BACKFILLED \_ DATE

**ELEV** DEPTH Last LAB TESTS MATERIAL DESCRIPTION **REMARKS** NO. TYPE (ft) 1 foot (ft) Increments Recov'd SANDY GRAVEL Dry, tan 1.20 2.50 8 SILT with SAND Dry, medium dense, ML 9 yellowish brown (10 YR 5/4) SPT 16 95 Α 4.00 4.50 5.00 2397.6 12 SANDY LEAN CLAY Dry, very stiff, very pale brown (10 YR 7/3) SPT 22 85 12 В 6.50 10 7.58 CMS 15/0.2' 15/0.2' (C) Last 10 blows; no CL progress. 9.00 12 **LEAN CLAY with SAND** Dry, hard, light gray (D) Moderately **CMS** 15 32 100 (7.5 Y 7/2) to white (2.5 Y 8/1) to strongly 2392.6 <sup>10</sup>10.50 cemented 17  $\frac{\textbf{LEAN CLAY with SAND}}{\text{gray } (7.5 \text{ Y } 7/2) \text{ to white } (2.5 \text{ Y } 8/1)} \text{ Dry, very stiff, light}$ nodules in 10 sample. SPT 23 12 85 (E) Moderately 12.00 11 12.20 to strongly 12.50 cemented 12 CLAYEY SAND with GRAVEL Dry, very SC nodules in CMS 21 30/0.4 80 dense, yellowish brown (10 YR 5/4) sample. 14:00 13.90 30/0.4 SILTY CLAYEY SAND with GRAVEL Dry, 50 SC SPT dense, very pale brown (10 YR 7/3) G 21 39 75 2387.6 15<sub>15.50</sub> SM 18 16.50 17.50 20 **CLAYEY SAND with GRAVEL** Dry, very SC SPT dense, very pale brown (10 YR 7/3) 30 56 80 19.00 26 19.50 <del>20</del>20.00 2382.6 14 SILTY CLAYEY SAND with GRAVEL Dry. SPT dense, very pale brown (10 YR 8/3) 16 43 95 SC 21.50 27 SM 23.30 ALL FILES.GPJ NV DOT.GDT 25.00 25 2377.6 20 SILTY SAND Dry, dense, very pale brown SPT (10 YR 8/3) 30 67 95 26.50 37 SM ≥' 30.00 30.00



END DATE 3/19/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # \_\_\_73518

GROUND ELEV. 2402.60 (ft)

HAMMER DROP SYSTEM Automatic

BI-7

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

OFFSET 125' Left

**OPERATOR** 

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	30.20 - - 32.58 -			Increments 20/0.2'		0		SM		(K) Last 10 blows; no progress. No sample recovered. (L) Last 10 blows; no progress. No sample
2367.6 -	35.00 - 36.40	М	SPT	20 25 50/0.4'	50/0.4'	100		SIVI	SILTY SAND with GRAVEL Dry, very dense, pale yellow (2.5 Y 7/3)	recovered.
	-								38.30	-
2362.6 -	40.00			8					LEAN CLAY with SAND Dry to moist,	
	41.50	N	CMS	8 16 6	24	95			medium dense, pale yellow (2.5 Y 7/4) <b>LEAN CLAY with SAND</b> Dry to moist, stiff,	
	43.00	0	SPT	5 6	11	95			pale yellow (2.5 Y 7/3)	
2357.6 -	45.00 <b>45</b>			7					LEAN CLAY with SAND. Moiet very etiff pale	
	46.50 	Р	SPT	9 13	22	85		CL	LEAN CLAY with SAND Moist, very stiff, pale olive (5 Y 6/3) to white (5 Y 8/1)	End day 1 drilling @ 46.
2352.6 -	- - 50.00									
	51.50	Q	CMS	16 23 45	68	100			GRAVELLY LEAN CLAY with SAND Moist, hard to very hard, light brownish gray (2.5 Y 6/2)	(Q) Moderate to strongly cemented
	52.90	R	SPT	17 28 50/0.4'	50/0.4'	85			<b>LEAN CLAY with SAND</b> Moist, very hard, light brownish gray (2.5 Y 6/2)	nodules in sample.
	- - 55.00								54.00	_
2347.6 -	- 55 - 56.50 -	s	SPT	38 34 23	57	75		sc	CLAYEY SAND with GRAVEL Moist, hard to very hard, light brownish gray (2.5 Y 6/2)	
	- 60.00							GC	58.30  CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	- Hard drilling a 58.0'. Progre 1.0'/10 minute @ 68.5' @ 25



3/19/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. #

BI-7 73518

GROUND ELEV. 2402.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_\_ "XP" 181+80

OFFSET

125' Left Boomhower

EQUIPMENT Boomnower

EQUIPMENT Diedrich D-120 (Unit 1627)

SHEET 3 OF 3

OPERATOR Pypkowski

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2337.6 -	60.70 - - - - - - - - - - - - - - - - - -	U	SPT	27 35/0.2'	35/0.2'	85		GC	CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)  65.10	psi down pressure. Progress 0.5'/7 minutes @ 400 psi down pressure. Easier drilling @ 59.5'. (T) Last 10 blows; no progress. (U) Last 10 blows; no progress. No sample recovered.
2332.6 -	- - <del>70</del> .00	V	CMS	11 11	27	100		CL	GRAVELLY LEAN CLAY Moist, very stiff, strong brown (7.5 YR 5/6) to pink (7.5 YR 7/4)	(V) 10 blows; n progress.
	71.50	W	SPT	16 8 9 25	34	100			<b>LEAN CLAY with SAND</b> Moist, hard, light brown (7.5 YR 6/4) to pinkish white (7.5 YR 8/2)	
2327.6 -	75.00 75 76.50	X	CMS	24 32 51 7	83	105			LEAN CLAY with SAND Moist, very hard, pink (7.5 YR 7/4)  76.50  SILTY CLAY Moist, very stiff, brown (7.5 YR	
	78.00	Y	SPT	9 21	30	105		-	5/4)	
2322.6 -	80.00 - 80 - 81.50	Z	CMS	38 56 43	99	115		CL ML	SANDY SILTY CLAY Moist, very hard, light brown (7.5 YR 6/3) to brownish yellow (10 YR 6/6)	
	83.00	AA	SPT	14 21 27	48	85			SILTY CLAY with SAND Moist, very hard, light brown (7.5 YR 6/3) to brownish yellow (10 YR 6/6)  END BI-7 @ 83.0'	No groundwate
2317.6 -	- <b>85</b> -									encountered.
	-									



3/20/13

3/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-8 **BORING** 

E.A. #

LOCATION

73518 2405.90 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/7/13

DATE DEPTH ft ELEV. ft

2342.4

63.50

"XP" 188+86 STATION

288' Right **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 4

Pypkowski

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ELEV. DEPTH NO. Type of commence 1 floor beautiful to the commence 2 floor	ENGINE	EERING \		MMER DR		I EIVI			BACKFILLED DATE
2400.9 -5  2395.9 -10  2385.9 -20	ELEV.	DEPTH	TYPF	6 inch	DUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION REMARKS
2390.9 — 15		-		inderiens	11001	Recovo			
2385.9 — 20	2395.9 -	- - - - -							
	2390.9 -	- 15 -							
2380.9 —25	2385.9 -	- 20 -							
	2380.9 -	- <b>25</b> -							



3/20/13 START DATE

3/21/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-8 73518 2405.90 (ft)

GROUND ELEV. Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

63.50

DEPTH ft | ELEV. ft

2342.4

DATE

4/7/13

SHEET 2 OF 4

**STATION OFFSET ENGINEER** 

**EQUIPMENT** 

METHOD

288' Right

Boomhower

"XP" 188+86

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR DRILLING** 

4" Rotary Wash

**BACKFILLED** DATE

HAMMER DROP SYSTEM \_ BLOW C 6 inch OUNT Last DEPTH ELEV. USCS Group LAB TESTS **MATERIAL DESCRIPTION** REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd 34:38 A SPT 50/0.2' 50/0.2' (A) No sample 2370.9 -35 recovered. 40.00 2365.9 -40 44.30 **LEAN CLAY with SAND** Moist, very stiff, 2360.9 -45 SPT 10 30 75 CL mottled pale olive (5 Y 6/3) to brown (10 YR В 5/3) to light gray (10 YR 7/2) 45.80 20 50.00 2355.9 -50 ALL FILES.GPJ NV\_DOT.GDT 6/27/16 54.30 18 SILTY GRAVEL with SAND Moist, very hard, 2350.9 28 GM mottled brown (7.5 YR 5/4) to pink (7.5 YR 8/3) SPT 66 65 С 55.80 38 DOT ≥ 60.00



START DATE \_\_\_\_\_3/20/13

END DATE 3/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2405.90 (ft)

HAMMER DROP SYSTEM Automatic

BI-8

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

63.50

4/7/13

DATE DEPTH ft ELEV. ft

2342.4

SHEET 3 OF 4

STATION OFFSET

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

288' Right

Boomhower

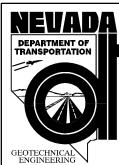
"XP" 188+86

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

1	ERING V	SAI	MPLE	BLOW CO	DUNT					
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
<u> </u>	<b>62:98</b>	Đ	SPT		<del>10/0.1'</del>	0			LEAN OLAY with OAND Maint wiff light	Lost circulatio @ 61.5'. (D) Last 10 blows; no progress. No sample
2340.9	65 65.80	Е	CMS	13 11 14 6	25	115			LEAN CLAY with SAND Moist, stiff, light brown (7.5 YR 6/4)  LEAN CLAY with SAND Moist, stiff, light	recovered.
	- 67.30 -	F	SPT	5 10	15	115		-	brown (7.5 YR 6/4)	End day 1 drilling @ 67.3
2335.9 -	- 70 									
2330.9	- 74.30 - 75 75.80	G	CMS	12 18 22	40	115		CL	LEAN CLAY Moist, very stiff, yellowish brown (10 YR 5/4)	
	- 77.30 -	Н	SPT	11 9 10	19	115		-	<b>LEAN CLAY</b> Moist, very stiff, yellowish brown (10 YR 5/4)	
2325.9 -	- 80 									
2320.9 -	- 84.30 - 85 85.80	ı	CMS	11 17 17	34	100			<b>LEAN CLAY with SAND</b> Moist, very stiff, dark yellowish brown (10 YR 4/4) to light yellowish brown (10 YR 6/4)	
	- 87.30	J	SPT	8 17 23	40	145			GRAVELLY LEAN CLAY Moist, hard, light brown (7.5 YR 6/4)	
	_								90.00	



START DATE \_\_\_\_\_3/20/13

3/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING

E.A.# \_\_73518

GROUND ELEV. 2405.90 (ft)

HAMMER DROP SYSTEM Automatic

BI-8

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

63.50

4/7/13

DATE DEPTH ft ELEV. ft

2342.4

SHEET 4 OF 4 "XP" 188+86

STATION \_ OFFSET \_

**ENGINEER** 

**OPERATOR** 

288' Right

Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

ENGINE	INICAL EERING		HA	MMER DR	OP SYS	STEM	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	OUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2310.9 -	- 94.30 - 95 95.70 - 97.20	K	CMS SPT	14 20 50/0 4 5 7 9	50/0.4	100		CL	LEAN CLAY Moist, very hard, light brown (10 YR 6/3 to 10 YR 6/4)  LEAN CLAY Moist, very hard, light brown (10 YR 6/3 to 10 YR 6/4)  97.20  END BI-8 @ 97.2'
2305.9 -	- 100 -								
2300.9 -	- 105 -								
2295.9 -	- - - - -								
2290.9 -	- 115 - -								
	_								



4/1/13

4/1/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County BI-9

**BORING** E.A. #

73518

GROUND ELEV. 2406.80 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/1/13

DATE DEPTH ft ELEV. ft

2331.8

75.00

SHEET 1 OF 3 "XP" 187+60

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

128' Right

**ENGINEER** 

Boomhower Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED \_ DATE

REMARKS	MATERIAL DESCRIPTION	USCS Group	LAB TESTS	Percent Recov'd	Last	BLOW CO 6 inch Increments	MPLE TYPE		DEPTH (ft)	ELEV. (ft)
	SANDY GRAVEL Dry, tan				550				-	. ,
	<b>LEAN CLAY</b> Dry, medium stiff, yellowish brown (10 YR 5/4)			45	5	3 2 3	SPT	A	- 2.50 - 4.00	
	<b>LEAN CLAY</b> Dry, very stiff, pale brown (10 YR 6/3)			80	24	6 9 15	SPT	В	5 5.00	2401.8 -
	<b>LEAN CLAY</b> Dry, very stiff, pale brown (10 YR 6/3) to pinkish gray (7.5 YR 7/2)	CL		80	24	5 9 15	SPT	С	7.50	
	SANDY LEAN CLAY Dry, hard, light gray (2.5 Y 7/2) to pale yellow (2.5 Y 7/3)			95	56	17 20 36	CMS	D	- 10.00 - 10 11.50	2396.8 -
	SANDY LEAN CLAY Dry, hard, light gray (2.5 Y 7/2) to pale yellow (2.5 Y 7/3)			65	28	22 14 14	SPT	E	13.00	
	SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)			100	69	16 31 38	CMS	F	15.00 15 - 16.50	2391.8 -
	SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	SM		80	76	18 30 46	SPT	G	18.00	
(H) Last 10 blows; no progress.	SILTY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)			100	35/0.3'	25 -35/0.3'	SPT	Н	20.00 20.80	2386.8 -
	LEAN CLAY Dry, medium dense, very pale brown (10 YR 7/3)			80	19	11 7	SPT	1	- - 25.00	2381.8 -
		CL				12			26.50 - -	
									- - 30.00	



4/1/13

4/1/13

END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

E.A. #

Northwest Las Vegas - Clark County

**BORING** 

BI-9 73518

GROUND ELEV

2406.80 (ft)

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/1/13

DATE DEPTH ft ELEV. ft

2331.8

75.00

SHEET 2 OF 3

STATION **OFFSET ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

128' Right

"XP" 187+60

Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

ENGINE	HNICAL EERING		HA	AMMER DR	OP SYS	STEM A	utomatic	[			BACKFILLED	_ DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group		MATERIAL DI	ESCRIPTION	REMARKS
	31.50	J	CMS	11 13 15 10 20 20	28	100		CL		brown (10 YR 6/3)	Ory, very stiff, pale ery stiff, pale brown (10	
2371.8 -	35.00 35 36.50	L	SPT	7 9 10	19	95		CL ML	34.00		AND Dry, very stiff, pale	
2366.8 -	40.00	M	CMS	6 10 18	28	95		CL	38.20	LEAN CLAY with SA brown (10 YR 6/3)	ND Dry, very stiff, pale	
	43.00	N	SPT	6 39 57	96	100		SM	42.20	SILTY SAND with Givery dense, light bro	RAVE L Dry to moist, wnish gray (2.5 Y 6/2)	
2361.8 -	45.00 - 46.50	0	SPT	5 9 13	22	85				FAT CLAY with SAN dark yellowish browr (5 Y 6/3)	ID Dry to moist, very stiff, a (10 YR 4/4) to pale olive	,
2356.8 -	50.00	Р	SPT	5 8 18	26	95		СН		<b>SANDY FAT CLAY</b> dark yellowish browr (5 Y 6/3)	Dry to moist, very stiff, n (10 YR 4/4) to pale olive	
2351.8 -	- - - - - - - - - - - - - - - - - - -	Q	CMS	12 22 35	57	100		GM	55.80 56.50	SILTY GRAVEL with	<u>n SAND</u> Dry to moist,	
2351.8 -	58.00	R	SPT	12 8 10	18	60		GC	30.30	very dense, multi-co	lored Woist, very stiff, mottled YR 5/4) to pinkish white	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



4/1/13

4/1/13 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County BI-9

**BORING** E.A. #

73518

GROUND ELEV

2406.80 (ft) Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 4/1/13 75.00 2331.8

**EXPLORATION LOG** 

"XP" 187+60 STATION

**OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

128' Right

Boomhower

Diedrich D-120 (Unit 1627)

SHEET 3 OF 3

Pypkowski

6" H.S.A.

ENGINE	INICAL EERING		HA			STEM	utomatic		BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	DUNT Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-			morements	11000	recov u		GC	61.50	
2341.8 -	- - - - 65 - 00 - - 66 - 50	s	SPT	3 4 7	11	75		CL	<b>GRAVELLY LEAN CLAY</b> Moist, medium stiff to stiff, mottled yellowish brown (10 YR 5/4) to pinkish white (7.5 YR 8/2)	
2336.8 -	<b>70</b> 								_70.70	
2331.8	7 75.00 7 75 76.50	Т	SPT	17 13 22	35	100		CL ML	SILTY CLAY with SAND Wet, hard, brown (7.5 YR 5/4) 76.50 END BI-9 @ 76.5'	(T) Free water on sampler @ 75.0'.
2326.8 -	- <b>80</b> -									
2321.8 -	- 85 -									



10/23/13 START DATE

10/23/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BI-9A **BORING** 

73518 E.A. #

2406.80 (ft) GROUND ELEV. HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 4/1/13 75.00 2331.8

**EXPLORATION LOG** 

"XP" 187+60 STATION

**OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

128' Right Lawrence

Diedrich D-120 (Unit 1627)

SHEET 1 OF 5

Pypkowski

4" Rotary Wash

ELEV.	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	NO.	1176	Increments	1 foot	Recov'd		Group	SANDY GRAVEL Dry, tan  2.50	Continue Borehole BI-9 as BI-9A from 76.5'.
2401.8 -	- - - 5									
2396.8 -	- - - 10 -									
2391.8 -	- - - 15									
2386.8 -	20									
2381.8 -	25									
	_									



START DATE \_\_\_\_10/23/13

END DATE 10/23/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-9A 73518

GROUND ELEV. 2406.80 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/1/13

DATE DEPTH ft ELEV. ft

2331.8

75.00

SHEET 2 OF 5

STATION OFFSET ENGINEER

**EQUIPMENT** 

**OPERATOR** 

128' Right Lawrence

Lawrence

Diedrich D-120 (Unit 1627)

Pypkowski

"XP" 187+60

DRILLING 4" Rotary Wash

ELEV.	DEPTH		ИPLE	BLOW CO	DUNT	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	DEPTH (ft)	NO.	TYPE	Increments	1 foot	Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REWARKS
İ	-									
	_									
-	-									
İ	_									
2371.8	-35									
+	-									
Ī	-									
	_									
}	-									
2266 0	40									
2366.8	-40									
-	-									
ŀ	_									
	_									
}	-									
2361.8	-45									
	_									
ŀ	_									
	_									
[	-									
-	=									
2356.8	-50									
	_									
}	=									
ļ	-									
	_									
2351.8	-55									
	_									
[	-									
	-									
}	-									
	_									
[										



START DATE \_\_\_\_10/23/13

END DATE 10/23/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2406.80 (ft)

HAMMER DROP SYSTEM Automatic

BI-9A

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/1/13

DATE DEPTH ft ELEV. ft

2331.8

75.00

STATION \_\_"XP" 187+60

128' Right

OFFSET \_

**ENGINEER** 

Lawrence
Diedrich D-120 (Unit 1627)

SHEET 3 OF 5

OPERATOR DIEGRICA DIE

DRILLING 4" Rotary Wash

ELEV.	DEPTH		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	NO.	TTPE	Increments	1 foot	Recov'd		Group		
2341.8 -	- - - <b>65</b>									
2336.8 -	- <b>70</b> -									
2331.8	- - - - - -									
2326.8 -	- 79.40 80 80.90	A	CMS	11 22	51	100				
	80.90	В	SPT	29 7 8 10	18	95		CL	YR 6/4)  LEAN CLAY Moist, very stiff, pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/8)	
2321.8 -	84.40 85 85.70	С	CMS	25 48 50/0.3' 41	50/0.3'	100		-	GRAVELLY LEAN CLA Y Moist, very hard, pale brown (10 YR 7/4) to light yellowish brown (10 YR 6/4)	
	- 86.60 -	D	SPT	50/0.4'	50/0.4'	80		ML	GRAVELLY SILT with SAND Moist, very hard, pale brown (10 YR 7/4) to light yellowish brown (10 YR 6/4)	
	89.40			46				CL ML	SILTY CLAY with SAND Moist, very hard, 90.00 very pale brown (10 YR 7/3 to 10 YR 8/2)	



10/23/13 START DATE

10/23/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-9A 73518 2406.80 (ft)

GROUND ELEV

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE | DEPTH ft | ELEV. ft

SHEET 4 OF 5

STATION **OFFSET** 

**OPERATOR** 

128' Right **ENGINEER** 

Lawrence

"XP" 187+60

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

DRILLING METHOD 4" Rotary Wash

	GEOTECH ENGINE	INICAL EERING			ROUND EL AMMER DF		Λ.	utomatic		4/1/13 75.00 2331.8 METHOD ATE
	ELEV.	DEPTH (ft)		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	(it)	90.70	Е	CMS	Increments 56 50/0.3'	50/0.3'	Recov'd 100		CL	SILTY CLAY with SAND Moist, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2)
		94.40			13				ML	CILTY CLAY Maint hard war vale harve
2	2311.8 -	95 95.90	F	CMS	27 55 15	82	100			SILTY CLAY Moist, hard, very pale brown (10 YR 8/2)
		97.40	G	SPT	20 23	43	105			LEAN CLAY Moist, hard, light gray (5 YR 7/2) mottled with brownish yellow (10 YR 6/8)
		99.40							CL	
2	2306.8 -	100 100.90	Н	CMS	41	65	100			SANDY LEAN CLAY Moist, very hard, light gray (5 YR 7/2) mottled with brownish yellow 100.90 (10 YR 6/8)
		102.40	1	SPT	15 25 53	78	105			SILTY CLAY with SAND Moist, very hard, light gray (5 YR 7/2) mottled with brownish yellow (10 YR 6/8)
2	2301.8 -	- 105 - -							CL ML	
2	2296.8 -	109.40 —110	J	CMS	15 37	80	95			<u>SILTY CLAY with SAND</u> Moist, very hard, light yellowish brown (10 YR 6/4)
		110.90	К	SPT	43 14 14 24	38	115			110.90  LEAN CLAY Moist, very stiff to hard, moist, light yellowish brown (10 YR 6/4)
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16	2291.8 -	- 115 - -							CL	
V_DOT_A		119.40			12				-	
z L					14					



10/23/13 START DATE

10/23/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. #

BI-9A 73518

GROUND ELEV.

2406.80 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/1/13

DATE DEPTH ft ELEV. ft

2331.8

75.00

SHEET 5 OF 5

STATION **OFFSET ENGINEER** 

128' Right

Lawrence

"XP" 187+60

Diedrich D-120 (Unit 1627) **EQUIPMENT OPERATOR** 

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV.	DEPTH	NO.	TYPF	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	L	CMS	BLOW CO 6 inch Increments 17	1 foot 47	Recov'd 20		CL	LEAN CLAY Moist, very stiff to hard, light yellowish brown (10 YR 6/4)	Very little fluid
2281.8 -	120.90			30					120.90 yellowish brown (10 YR 6/4) END BI-9A @ 120.9'	loss, maintained circulation throughout hole. This has been uncommon among boreholes drilled in the area.
	-									
2276.8 -	- - - -									
2271.8 -	- - - -									
2266.8 -	- 140  									
2261.8 -	- - - - -									



START DATE 4/2/13

END DATE 4/2/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-10 73518

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

STATION "X" 79+51

OFFSET 207' Right
ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	C : I-	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								0.50 Asphaltic Concrete	
2398.5 -	- - - 4.30 5 5.80	Α	SPT	4 5 6	11	85			<b>LEAN CLAY</b> Dry to moist, stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
	<del>-</del> -							CL		
2393.5 -	- 9.30 <b>10</b> 10.80	В	SPT	7 7 11	18	75			<b>LEAN CLAY with SAND</b> Dry to moist, very stiff, light brown (7.5 YR 6/4) to yellowish brown (10 YR 5/4)	
2388.5 -	- 14.30 - 15 15.80	С	CMS	6 16 17	33	95		SC	15.10  15.80 SILTY CLAYEY SAND Dry to moist, dense,	
	- - 17.30 -	D	SPT	10 11 16	27	60		SM	mottled light gray (2.5 Y 7/1 and 5 Y 7/2) and dark grayish brown (10 YR 4/2)  SILTY SAND Dry to moist, dense, mottled light gray (2.5 Y 7/1 and 5 Y 7/2) and dark grayish brown (10 YR 4/2)	
2383.5 -	- 19.30 20 20.80	E	SPT	13 15 16	31	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (2.5 Y 6/3) with multi colored gravel	
	-									
2378.5 -	- 24.30 25 25.80	F	SPT	14 13 14	27	65		CL	SANDY LEAN CLAY Dry to moist, very stiff, brown (7.5 YR 5/4) to yellowish brown (10 YR 5/4)	
	- 29.30			14					LEAN CLAY with SAND Dry to moist, very dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	



4/2/13

4/2/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-10 **BORING** 73518

E.A. #

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 79+51 STATION

207' Right **OFFSET** 

Boomhower **ENGINEER** 

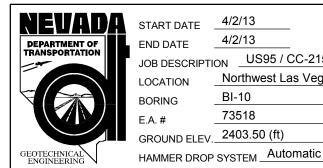
Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 2 OF 3

Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW CO 6 inch	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	30.80		CMS	Increments 21 39 11	1 foot 60	Recov'd 100		-	LEAN CLAY with SAND Dry to moist, very dense, mottled light gray (2.5 Y 7/2) to white	(H) Rock in
	- 32.30	Н	SPT	12 14	26	0		CL	(2.5 Y 8/1)	sampler shoe No sample recovered.
2368.5	- 34.30 35		OMO	17	40	100			SANDY LEAN CLAY Dry to moist, dense,	
2300.5	35.80	-	CMS	18 22 6	40	100			mottled light yellowish brown (7.5 Y 6/4) to brownish yellow (10 YR 6/6)  SANDY FAT CLAY Dry to moist, very stiff,	_
	- 37.30 -	J	SPT	7 11	18	65		-	mottled pale yellow (2.5 Y 8/2) to brown (10 YR 5/3)	
2363.5	<b>40</b> 									
2358.5 -	- 44.30 45 45.80	К	CMS	12 17 22	39	100			FAT CLAY with SAND Dry to moist, hard, mottled pale yellow (2.5 Y 8/2) to light brownish gray (2.5 Y 6/2)	(K) Lightly to moderately cemented
	- 47.30	L	SPT	11 16 24	40	75		СН	SANDY FAT CLAY Dry to moist, hard, mottled pale yellow (2.5 Y 8/2) to light brownish gray (2.5 Y 6/2)	nodules in sample.
2353.5 -	- 50 -									
	- - 54.30									40.5
2348.5	<b>55</b> 55.80	M	SPT	4 3 5	8	0		_		(M) Rock in sampler shoe No sample recovered.
	-									Lost circulation @ 56.5'.
	-									



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

EXPLORATION	LO
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4/2/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-10

73518

EXPLORATION LOG
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**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

"X" 79+51 STATION 207' Right OFFSET

**EQUIPMENT** 

**OPERATOR** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV.	DEPTH (ft)		MPLE TYPE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	- - - 64.30		CMS	Increments	1 foot 25/0.3'	Recov'd		CL ML		Hard drilling at 60.5'. Progress 0.5'/5 minutes @ 200 psi down pressure. Progress 2.5'/20 minutes @ 200 psi down pressure.
2338.5 -	-65 <sup>5.10</sup>	IN	CIVIS	13 25/0.3'	25/0.3	100			SILTY CLAY with SAND Moist, very stiff, pale brown (10 YR 6/3)  END BI-10 @ 65.1'	(N) Last 10 blows; no progress. No groundwater encountered.
2333.5 -	- - - -									
2328.5 -	- <b>75</b> - - -									
2323.5 -										
2318.5 -	- - - - -									



5/9/13

5/9/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-10A **BORING** 

E.A. # GROUND ELEV.

LOCATION

73518 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

"X" 79+51 STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

207' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	(11)	-		Increments	1 foot	Recov'd		СТОТР	0.50 Asphaltic Concrete	Continue
2398.5 -	5									Borehole BI-1 as BI-10A fror 65.1'.
2393.5 -	- - - 10									
2388.5 -	- 15 -								_ 15.00	
2383.5 -	- 19.30 20 20.80	А	SPT	12 18 22	40	65		sc	CLAYEY SAND with GRAVEL Wet, dense, multicolored	
2378.5 -	- 25								_25.00	



START DATE	5/9/13
SIARIDAIE	

5/9/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-10A **BORING** 73518 E.A. #

2403.50 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 79+51 STATION 207' Right **OFFSET** 

**EQUIPMENT** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
				ilio Gillo ilo	11000	10007				
2368.5 -										
2363.5 -	- <b>40</b> -									
2358.5 -	- <b>45</b> -								_45.00	
2353.5 -	- 49.30 - 50 50.80	В	SPT	1 14 14	28	65		мн	<b>ELASTIC SILT with SAND</b> Wet, very stiff, mottled light brown (7.5 YR 6/4) to light gray (10 YR 7/2)	
2348.5 -	- 55								56.50 END BI-10A @ 56.5'	Lost circulatio @ 56.5'. No



START DATE	11/7/13

11/7/13 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County BI-10B

**BORING** E.A. #

73518 2403.50 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

11/7/13 66.00

DATE DEPTH ft ELEV. ft

2337.5

SHEET 1 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

207' Right Boomhower **ENGINEER** 

"X" 79+51

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ENGINE	EERING		MMER DR		1 EM	<u>atomatio</u>		BACKFILLED	DATE
ELEV. (ft)	DEPTH (ft)	/IPLE TYPE	BLOW CO 6 inch Increments	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2398.5 -	-		incoment	11000	incov's			0.50 Asphaltic Concrete	Continue Borehole BI-10 as BI-10B from 65.1'.
2393.5 -	- - -10 -								
2388.5 -	- 15								
2383.5 -	_ 								
2378.5 -	- 25 -								
	_								



START DATE \_\_\_\_11/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-10B 73518

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

66.00

11/7/13

DATE DEPTH ft ELEV. ft

2337.5

SHEET 2 OF 3

STATION "X" 79+51

OFFSET 207' Right

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD 207' Right Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

6" H.S.A.

ENGINE	HNICAL EERING	Į	HA	AMMER DR	OP SYS	STEM	utomatic				BACKFILLED	DA1	TE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	DUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MAT	ERIAL D	ESCRIPTION		REMARKS
	_												
	_												
	_												
2368.5 -	-35												
	_												
	_												
	_												
2363.5 -	<del>-4</del> 0												
	_												
	-												
	_												
2358.5 -	—45 -												
	_												
	-												
2353.5 -	-50												
	_												
٥	_												
NV_DOI_ALL FILES. GFJ NV_DOI_GD1 6/2/16	-												
2348.5	55												
OR CERT NA													
	-												
- - - - - - -	_												
:													



START DATE \_\_\_\_11/7/13

END DATE 11/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-10B 73518

GROUND ELEV. 2403.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

11/7/13 66.00

DATE DEPTH ft ELEV. ft

2337.5

SHEET 3 OF 3

STATION \_ OFFSET \_

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

207' Right Boomhower

"X" 79+51

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2338.5 -	- - - - - - - - - - - - - - - - - - -	Α	SPT	48 45 32	77	100		SM	SILTY SAND with GRAVEL Moist to wet, very hard, pale brown (10 YR 6/3) to reddish yellow (7.5 YR 6/6)	Hard drilling at 60'. Progress 0.2'/5 minutes @ 250 psi dow pressure. Progress 5.0'/2 minutes @ 250 psi down pressure.  (A) Free water on sampler @ 65.0'.
2333.5 -	- - -70								_70.00	
2328.5 -	- - - - 75	В	CMS	15 29	 55	115		CL	<u>LEAN CLAY</u> Wet, hard, light yellowish brown (10 YR 6/4)	
	76.50 - 78.00	С	SPT	26 5 6 10	16	130			LEAN CLAY Wet, very stiff, light brown (7.5 YR 6/3) 78.00 END BI-10B @ 78.0'	
2323.5 -	- 80 -								END BI-10B @ 76.0	
2318.5 -	- - -85									
	_									



4/3/13

4/3/13 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

4/3/13

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

73518 2447.90 (ft) GROUND ELEV.

BI-11

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

90.00

DATE DEPTH ft ELEV. ft

2357.9

SHEET 1 OF 4

STATION **OFFSET** 

"X" 61+99 291' Right

**ENGINEER** 

Boomhower

**EQUIPMENT** 

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED DATE

ELEV.	DEPTH		MPLE .	BLOW C 6 inch	OUNT	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments	1 foot	Recov'd		Group	SANDY GRAVEL Dry, tan	KEWAKKS
	_								•	
	_									_
	_									
2442.9	- -5 5.00							sc		
2442.9	<b>5</b> - 6.50	Α	SPT	37 39 37	76	95			CLAYEY SAND with GRAVEL Dry, very dense, black (2.5 Y 2.5/1) to very dark grayish brown (2.5 Y 3/2)	(A) Probable t
	7.50							 	7.00	-
	9.00	В	SPT	15 15 31	46	85		CL	SANDY LEAN CLAY Dry, dense to very dense, brown (10 YR 5/3)	(B) Probable
	-10 <sup>10.00</sup>			<u> </u>					9.50	-
2437.9	<del>- 10</del> - 11.50	С	SPT	8 11 12	23	95			SANDY SILTY CLAY Dry , medium dense to dense, yellowish brown (10 YR 5/4)	
ŀ	12.50									
	13.40	D	SPT	17 30/0.4'	30/0.4'	90			GRAVELLY SILTY CLAY with SAND Dry, very dense, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4)	(D) Last 10 blows; no progress.
0400.0	- 15.00								· , ,	
2432.9	<b>15</b> 16.50	Е	SPT	5 5 6	11	95			SILTY CLAY Dry, very dense, pale brown (10 YR 6/3) to yellowish brown (10 YR 5/4)	
	17.50							CL ML		
	19.00	F	CMS	11 19 20	39	95			SILTY CLAY Dry, dense, very pale brown (10 YR 7/4)	
2427.9	-20 20.50	G	SPT	7 9 18	27	85			SILTY CLAY Dry, dense, very pale brown (10 YR 7/4) to white (10 YR 8/1)	
	21.50									
	23.00	Ι	CMS	14 15 15	30	100			SILTY CLAY with SAND Dry, dense, very pale brown (10 YR 7/4)	
	24.50	1	SPT	10 14 26	40	85			SILTY CLAY with SAND Dry, dense, very pale brown (10 YR 7/3) to light gray (10 YR 7/2)	
2422.9	25.00 25			11						_
	26.50	J	SPT	14 24	38	75		SM	pale brown (10 YR 7/3) to light gray (10 YR 7/2)	7/2)
	-								_28.20	-
	- 30.00							GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	



JOB DESCRIPTION

4/3/13

4/3/13 END DATE

US95 / CC-215 System-to-System Interchange

4/3/13

Northwest Las Vegas - Clark County LOCATION

BI-11

**BORING** E.A. #

73518

2447.90 (ft) GROUND ELEV..

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

90.00

DATE DEPTH ft ELEV. ft

2357.9

"X" 61+99 STATION

**OFFSET** 

291' Right Boomhower

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 2 OF 4

**OPERATOR** DRILLING METHOD

Pypkowski 6" H.S.A.

BACKEILLED DATE

ENGINE	INICAL EERING		HA	MMER DF	ROP SYS	STEM _^	utomatic	L	BACKFILLED [	OATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- 31.20 - 32.70	L	CMS	24 56 50/01.2' 16 22	50/0.2'	75 65			CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3) CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	(K) Large 2+" rock in sample
2412.9 -	- -35.00			20				GC	CLAVEY CRAVEL with SAND Dry done	(M) Large 2+"
	36.50	М	CMS	31 38	69	80			CLAYEY GRAVEL with SAND Dry, dense, very pale brown (10 YR 7/3 and 10 YR 7/4) 36.50	rock in sample
	38.00	N	SPT	17 19 24	43	75		sc	CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3 and 10 YR 7/4)	
	40.00								39.00	_
2407.9 -	40.00 40 41.50	0	CMS	20 27 29	56	95			SANDY LEAN CLAY Dry, dense, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
	43.00	Р	SPT	22 24 26	50	65			SANDY LEAN CLAY Dry, dense, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
2402.9 -	- 45 <sup>4</sup> 5.96 -	Q	CMS	15/0.1'	15/0.1	0		CL		(Q) Last 10 blows; no progress. No sample recovered.
2397.9 -	- 50 -								50.00	
2392.9 -	55.00 55.50 56.50	R	CMS	34 27 30 14	57	85		sc	CLAYEY SAND with GRAVEL Dry, very dense, mottled strong brown (7.5 YR 5/6) to pale yellow (2.5 Y 7/4) CLAYEY SAND Dry to moist, very hard,	
	- 57.30 -	S	371	30/0.3'	30/0.3	100			brown (7.5 YR 5/4) to pinkish gray (7.5 YR 7/2)	
									60.00	



4/3/13 START DATE

4/3/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-11 73518

GROUND ELEV. 2447.90 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

90.00

4/3/13

DATE DEPTH ft ELEV. ft

2357.9

SHEET 3 OF 4

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

"X" 61+99 291' Right

Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

DVCKEILLED DATE

ENGINE	INICAL EERING		HA	MMER DR	OP SYS	TEM A	utomatic	L	BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2382.9 -	- - - 65.00 - - -	Т	CMS	44 25/0.1'	25/0.1'	85		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, white (10 YR 8/1) to light gray (10 YR 7/1)	(T) Last 10 blows; no progress.
2377.9 -	- 70 -								_ 70.00	
2372.9 -	_ 	U	CMS	<del> 15/0.1'</del>	<del>15/0.1'</del>	<del></del>				(U) Last 10 blows; no progress. No sample recovered.
2367.9 -	- 86 <sup>8</sup> 9:99	V	CMS	<del>35/0</del> .1'	<del>35/0.1'</del>	0			83.00	(V) Last 10 blows; no progress. No sample recovered.
2362.9 -	85.00 85 86.40	W	CMS	7 26 50/0.4'	50/0.4'	0		CL		(W) No sample recovered.
ı <u> </u>	90.00								90.00	



JOB DESCRIPTION

4/3/13

4/3/13 END DATE

US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

BI-11

E.A. #

73518

GROUND ELEV

2447.90 (ft)

DATE | DEPTH ft | ELEV. ft 4/3/13 90.00 2357.9

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

STATION **OFFSET ENGINEER**  "X" 61+99 291' Right

Boomhower Diedrich D-120 (Unit 1627)

SHEET 4 OF 4

**EQUIPMENT OPERATOR** 

Pypkowski 6" H.S.A.

DRILLING METHOD

ELEV.	DEPTH		ЛРLE	BLOW CO 6 inch	DUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments 9	1 foot	Recov'd	LAD IESIS	USCS Group	MATERIAL DESCRIPTION  LEAN CLAY Moist, very stiff to hard, brown	(X) Free wate
	91.50		CMS	13 28	41	20		CL	(7.5 YR 5/4) 91.50	on sampler @ 90.0'.
	93.00	Y	SPT	8 25 32	57	140		CL	SILTY CLAY Moist, very stiff to hard, brown (7.5 YR 5/4)	
2352.9 -	— <b>95</b> –							ML	_96.50	
2347.9 -	- 100.00 100	z	CMS	16 16	38	115		CL	<b>LEAN CLAY</b> Moist to wet, very stiff to hard, very pale brown (10 YR 7/3)	
	101.50	AA	SPT	22 10 14	33	115			<b>LEAN CLAY</b> Moist to wet, very stiff to hard, very pale brown (10 YR 7/3)	
	103.00		- 1	19					103.00 END BI-11 @ 103.0'	
2342.9 -	105 _ _									
2337.9 -	- 110 									
2332.9 -	- 115 									
	<u>-</u>									



4/4/13 START DATE

4/4/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

BI-12 73518

GROUND ELEV. 2436.60 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

170' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

"X" 62+05

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-								SANDY GRAVEL Dry, tan 1.20	
	2.50	A	SPT	32	50/0.4'	100		GM	SILTY GRAVEL with SAND Dry, very dense,	(A) Rock in
	3.40	A	SFI	50/0.4'	50/0.4	100		<u> </u> 	light gray (10 YR 7/2) 	sampler shoe
2431.6 -	5.00			4				-	<u>SILTY CLAY with SAND</u> Dry , medium dense, pale brown (10 YR 6/3)	
	6.50	В	SPT	4 10	14	95		CL	dense, pale brown (10 YR 6/3)  SILTY CLAY with SAND Dry , medium dense, pale brown (10 YR 6/3)  9.50	
	7.50			9				ML		
	9.00	С	SPT	8 14	22	85				
2426.6 -	10.00	_	CDT	16		00		GM	SILTY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3) to white (10 YR 8/1)	
	11.50	D	SPT	32 30	62	80			pale brown (10 YR 6/3) to white (10 YR 8/1)	
2421.6 -	12:59	E	SPT	25/0.1'	<del>25/0.1</del> '	0			SILTY GRAVEL with SAND Dry, dense, light brown (7.5 YR 6/3)	(E) Last 10 blows; no progress. No sample recovered.
	_									
	15.00 15	F	SPT	33 39	85	75				
	16.50			46						
	-								18.20	
2416.6 -	20.00									
		G	SPT	36 45	78	80			SILTY SAND with GRAVEL Dry, dense, light brown (7.5 YR 6/3)	
	21.50			33						
	-									
2411.6 -	25.00 25			11				SM	SILTY SAND Dry, dense, light yellowish brown (10 YR 6/4)	
	26.50	Н	SPT	17 20	37	95				
	-									
	30.00								30.00	



4/4/13

4/4/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

GROUND ELEV.

Northwest Las Vegas - Clark County

**BORING** E.A. #

END DATE

BI-12 73518

2436.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

STATION **OFFSET** 

170' Right Boomhower

"X" 62+05

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

**OPERATOR** DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGIN	HNICAL EERING		HA	MMER DR	OP SYS	STEM _A	utomatic	L	BACKFILLED DATE
ELEV.	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	31.50	I	CMS	20 24 31	55	100			CLAYEY GRAVEL with SAND Dry, hard, light gray (2.5 Y 7/2) to pale yellow (5 Y 8/2) (I) Rock in sampler shoe
	33.00	J	SPT	17 17 19	36	80		GC	CLAYEY GRAVEL with SAND Dry, dense, light gray (10 YR 7/2) mottled with white (10 YR 8/1)
2401.6	- 35.00								
2401.6	36.50	K	CMS	20 30 28	58	95			CLAYEY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3) with multi-colored gravel
	38.00	L	SPT	6 9 15	24	100			FAT CLAY with SAND Dry to moist, very stiff, white (10 YR 8/1) to brownish yellow (10 YR 6/6)
2206.6	40								
2396.6	<del>-</del> 40							СН	
	_								
									45.00
2391.6	<del>-</del> 45								END BI-12 @ 45.0'  No groundwat encountered.
	-								
	_								
2386.6	<del>-</del> 50								
2	_								
2381.6	<del>-</del> 55								
2381.6									
	_								
								<u> </u>	



4/16/13

4/16/13

BI-13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

**BORING** 

73518

GROUND ELEV. 2404.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/16/13 75.00

DATE DEPTH ft ELEV. ft

2329.6

"XP" 183+68 STATION

**OFFSET** 

99' Left

6" H.S.A.

SHEET 1 OF 4

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** Pypkowski

**OPERATOR** DRILLING METHOD

BACKFILLED \_\_\_\_\_ \_\_ DATE

ELEV.	DEPTH		MPLE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments				Group	SANDY GRAVEL Dry, tan	
	-								<u> </u>	
	2.50	Α	SPT	13 7	11	85		GM	SILTY GRAVEL with SAND Dry, medium dense, yellowish brown (10 YR 5/4)	(A) Probable f
	4.00		0	4				<u> </u>	4.50	
2399.6	5.00 -	В	SPT	4 2	5	100		CL ML	SILTY CLAY with SAND Dry to moist, loose, yellowish brown (10 YR 5/4)	
	6.50			3					7.00	
	7.50	С	SPT	4 8 17	25	95			SANDY LEAN CLAY with GRAVEL Dry to moist, dense, yellowish brown (10 YR 5/4)	
2004.0	1018:28							CL		
2394.6	<del>- 1010.20</del> -	_D_	SPT	25/0.2'	25/0.2'	0		: 	10.80	(D) Last 10 blows; no
	- 12 50									progress. No sample recovered.
	12.50	E	SPT	5 4 6	10	95		CL ML	SANDY SILTY CLAY Dry to moist, loose to medium dense, yellowish brown (10 YR 5/4)	
2389.6	15.00							<u></u>	14.50	
2369.6	16.50	F	CMS	21 23 13	36	95			<u>CLAYEY SAND</u> Dry, medium dense, very pale brown (10 YR 7/3)	
	18.00	G	SPT	11 15 24	39	85		sc	CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3)	
	- 20.00									
2384.6	20.00 20 - 21.50	Н	CMS	18 25 46	71	85		-	CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) 21.50	
	23.00	ı	SPT	31 38 38	76	80		GC	SILTY CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/3)	
	_							GM	24.00	
2379.6	25.00 - <b>25</b>			12				_	CANDY FAT CLAY	
	26.50	J	CMS	18	28	95			SANDY FAT CLAY with GRAVEL Dry, medium dense, very pale brown (10 YR 7/3)	
	28.00	K	SPT	15 11 13	24	75		СН	SANDY FAT CLAY with GRAVEL Dry, very stiff, light gray (10 YR 7/2)	
	=									



START DATE 4/16/13

4/16/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING BI-13

E.A. # 73518 GROUND ELEV. 2404.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/16/13 75.00

DATE DEPTH ft ELEV. ft

2329.6

SHEET 2 OF 4

 STATION
 "XP" 183+68

 OFFSET
 99' Left

**OPERATOR** 

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

(ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW C 6 inch	Last	Percent Recov'd	USCS Group	MATERIAL DESCRIPTION	REMARKS
-	32.50	M	SPT			0		SANDY LEAN CLAY Dry, very dense, white (10 YR 8/1)	(L) Last 10 blows; no progress. No sample recovered.
2369.6	3535.28	N	CMS	30/0.2	30/0.2'	0			(N) Last 10 blows; no progress. No sample recovered.
2364.6	40.00	0	SPT	14 31 34	65	100	CL	LEAN CLAY with SAND Dry to moist, very hard, pale brown (10 YR 6/3) to white (10 YR 8/1)	
2359.6	45.00 45 46.50	P	CMS	14 17 14 7 7 9	31	95 85		SANDY LEAN CLAY Moist, very stiff to hard, light yellowish brown (10 YR 6/4)  LEAN CLAY with SAND Moist, very stiff, pale brown (10 YR 6/3) to light brownish gray (2.5 Y 6/2) to white (2.5 Y 8/1)	
2354.6	-50 -							<u>51.50</u>	
2349.6	55.00 55 56.50	R	CMS	19 26 22 15 14	48	85	GC	CLAYEY GRAVEL Dry to moist, dense, multi-colored  CLAYEY GRAVEL with SAND Dry to moist, dense, multi-colored	(R) Large strongly cemented nodule in sampler shoe



4/16/13

4/16/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

4/16/13

Northwest Las Vegas - Clark County LOCATION

BI-13 **BORING** 

73518 E.A. #

GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

2404.60 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

75.00

DATE DEPTH ft ELEV. ft

2329.6

SHEET 3 OF 4

"XP" 183+68 STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

99' Left

Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ELEV.	DEPTH		MPLE TYPE	BLOW C 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	IVO.	111 2	Increments	1 foot	Recov'd		Gloup		
2339.6 -	65.00 65 66.50	T	CMS	39 50 50 25 18 50/0.3'	100 50/0.3'	100			SANDY LEAN CLAY Dry to moist, very dense, pinkish gray (7.5 YR 7/2) to brown (7.5 YR 5/4)  SANDY LEAN CLAY Dry to moist, very dense, pinkish gray (7.5 YR 7/2) to brown (7.5 YR 5/4)	(T) Moderatel cemented.
2334.6 -	- 70 -									
2329.6 <sup></sup>	75.00 75.00 76.50	V	CMS	12 16 28 14	44	105		CL	LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)  LEAN CLAY with SAND Moist, very stiff, light	(V) Free wate on sampler @ 75.0'.
2324.6 -	78.00 - 80	W	SPT	18 28	46	120			yellowish brown (10 YR 6/4)	
2319.6 -	- - - 85.00 - 86.50		CMS	7 7 10	17	115			<b>LEAN CLAY</b> Moist, stiff, light yellowish brown (10 YR 6/4)	
	88.00	Υ	SPT	5 6 8	14	140			<u>LEAN CLAY</u> Moist, stiff, light yellowish brown (10 YR 6/4)	



START DATE 4/16/13

4/16/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-13 73518

GROUND ELEV. 2404.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

75.00

4/16/13

DATE DEPTH ft ELEV. ft

2329.6

"XP" 183+68

STATION "XP" 18
OFFSET 99' Left

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower

Diedrich D-120 (Unit 1627)

SHEET 4 OF 4

Pypkowski

DRILLING 6" H.S.A.

ENGINE	INICAL ERING		HA	AMMER DR	OP SYS	STEM	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2309.6 -	- - - - <u>98</u> 5.90 - -	Z	смѕ	<del></del>	<del>20/0.1'</del>	0			95.10  END BI-13 @ 95.1'  (Z) Last 10 blows; no progress. No sample recovered.
2304.6 -	- 100 - -								
2299.6 -	- - 105 - -								
2294.6 -	- 110 								
2289.6 -	- 115 - -								
	=								



4/17/13

4/17/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

BI-14 73518

**GROUND ELEV.** 

2406.60 (ft)

Automatic HAMMER DROP SYSTEM \_

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

53.50

4/18/13

DATE DEPTH ft ELEV. ft

2353.1

SHEET 1 OF 3

**STATION OFFSET** 

**OPERATOR** 

263' Right

Boomhower

"XP" 189+74

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

**DRILLING** 6" H.S.A. METHOD

BACKFILLED \_ DATE

OUNT Last DEPTH ELEV. LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd 0.50 Asphaltic Concrete 5.00 2401.6 +5 10.00 2396.6 5 **LEAN CLAY with SAND** Dry, loose, light CL SPT 3 8 85 brownish gray (10 YR 6/2) Α 11.50 5 2391.6 <del>----</del>15 15.80 <del>20</del>20.00 2386.6 <u>CLAYEY SAND with GRAVEL</u> Dry, dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1) 18 (B) Moderately SPT 20 cemented. В 43 75 21.50 23 SC ALL FILES.GPJ NV\_DOT.GDT 6/27/16 2381.6 -25 DOT ≥ 30.00 30.00



START DATE 4/17/13

END DATE 4/17/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

GROUND ELEV..

Northwest Las Vegas - Clark County

BORING BI-14

E.A. # 73518

HAMMER DROP SYSTEM Automatic

2406.60 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

53.50

4/18/13

DATE DEPTH ft ELEV. ft

2353.1

"XP" 189+74

SHEET 2 OF 3

STATION ">

263' Right

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski

OPERATOR Pypkowsi
DRILLING
METHOD 6" H.S.A.

2371.6 — 35 - 2366.6 — 46 - 41.50 - 2366.6 — 45 - 2366.6 — 56	NO.	AMPLE D. TYPE C. SPT	BLOW C 6 inch Increments 26 24 20/0.1'	Last	Percent Recov'd 90	LAB TESTS	USCS Group	MATERIAL DESCRIPTION  CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2) to white (10 YR 8/1)	REMARKS  (C) Last 10 blows; no progress. Weakly to moderately cemented.
2371.6 — 35 - 2366.6 — 4640.00 - 41.50 - 2361.6 — 45 - 2356.6 — 560.00	С		26 24				sc	dense, light gray (10 YR 7/2) to white (10 YR 8/1)	blows; no progress. Weakly to moderately
2361.6 — 45 - - 2356.6 — 56								[1	
2356.6 -5000		SPT	7 9 13	22	95		СН	FAT CLAY Moist, very stiff, yellowish brown (10 YR 5/4)	
								_45.80	
51.50	E	E SPT	10 8 8	16	60		CL	SANDY LEAN CLAY Dry to moist, medium dense, mottled very pale brown (10 YR 7/3) to brown (10 YR 4/3) to yellow (10 YR 7/6)	
2351.6 55.00	F	- CMS	31 50/0.4'	50/0.4'	100		GC		Hard drilling (59.0'. Progres
-		SPT	39 50/0.4'	50/0.4'	100		sc	multi-colored gravel  CLAYEY SAND with GRAVEL Dry to moist, very dense, yellowish brown (10 YR 5/4) with multi-colored gravel	0.11/5 minutes @ 350 psi dor pressure. 0.51/15 minute @ 400 psi dor pressure.



START DATE 4/17/13

END DATE 4/17/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-14 73518

GROUND ELEV. 2406.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/18/13 53.50

DATE DEPTH ft ELEV. ft

2353.1

"XP" 189+74

SHEET 3 OF 3

STATION "XP" 189+ 263' Right

**ENGINEER** 

Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE .	BLOW C	OUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd		USCS Group	IVIA I ERIAL DESCRIPTION	
	- 62.50 - 64.00	Н	SPT	9 9 11	20	120			<b>LEAN CLAY</b> Moist, very stiff, very pale brown (10 YR 7/4)	Hard drilling @ 60.0'. Progress 0.3'/15 minutes @ 450 psi dowr pressure. 0.1'/15 minutes @ 450 psi dowr pressure. 0.1'/15 minutes
2341.6 -	65.00 <b>65</b>		2112	18	10/0.01	400		CL	LEAN CLAY with SAND Moist band to your	@ 500 psi dowr pressure.
	65.70	I	CMS	40/0.2'	40/0.2'	120		J	<b>LEAN CLAY with SAND</b> Moist, hard to very hard, very pale brown (10 YR 7/4)	0.1'/10 minutes @ 500 psi down pressure.
	_									Softer drilling @ 62.5'. Moderately to strongly cemented soil from 59.0' -
2336.6 -									70.30	62.5'. (I) Last 10
									END BI-14 @ 70.3'	blows; no progress.
2331.6 -	- - - -75									progress. Strongly cemented nodules prese Hard drilling @ 69.5'. Progress 0.1'/10 minute @ 400 psi dov pressure. 0.4'/25 minute. @ 500 psi dov
2326.6 -	- - - - 80									pressure. 0.3/ minutes @ 500 psi down pressure.
2321.6 -	- <b>85</b>									
	_									



START DATE 4/18/13

END DATE 4/18/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-15 73518

GROUND ELEV. 2406.20 (ft)
HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/18/13 81.50

DATE DEPTH ft ELEV. ft

2324.7

STATION \_\_"XP" 185+99

OFFSET 1' Right

**ENGINEER** 

DRILLING METHOD Boomhower
Diedrich D-120 (Unit 1627)

SHEET 1 OF 4

OPERATOR DIEGRICA DIE

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(13)	-			Increments	1 1000	Recova			SANDY GRAVEL Dry, tan	
	-								2.50	
2401.2 -	5.00 5 - 6.50	A	SPT	3 3 3	6	80		ML	<u>SILT</u> Moist, medium stiff, yellowish brown (10 YR 5/4)	
	7.50	В	SPT	3 4 3	7	95			SILT with SAND Moist, medium stiff, yellowish brown (10 YR 5/4)  9.50	
2396.2 -	-10 <sup>10.00</sup>	С	CMS	5 5 6	11	100			SILTY CLAY Moist, medium stiff, yellowish brown (10 YR 5/4)	
	13.00	D	SPT	3 4 4	8	95		CL ML	SILTY CLAY Moist, medium stiff, yellowish brown (10 YR 5/4)	
2391.2 -	- - 15 <sup>15.00</sup>	E	CMS	10 8	21	100		CL	15.80  16.50 LEAN CLAY Moist, stiff, yellowish brown (10	(E) Small strongly cemented
	18.00	F	SPT	13 4 5 6	11	100		CL ML	YR 5/4)  SILTY CLAY YR 5/4)  Moist, stiff, yellowish brown (10 YR 5/4)	nodules in sample.
2386.2 -		G	CMS	5 7	25	100		CL	LEAN CLAY with SAND Moist, stiff, yellowish brown (10 YR 5/4)	
	21.50	Н	SPT	18 21 28 41	69	85		SM	SILTY SAND with GRAVEL very dense, light gray (2.5 Y 7/2) to pale yellow (2.5 Y 7/3)	
	- 									
2381.2 -	26.50	I	CMS	23 23 26	49	100			CLAYEY SAND Dry, dense, light yellowish brown (2.5 Y 6/4) to brownish yellow (10 YR 6/6)	
	28.00	J	SPT	15 16 12	28	80		sc	<b>CLAYEY SAND</b> Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to dark yellowish brown (10 YR 3/4)	
	30.00								30.00	



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

4/18/13 START DATE

4/18/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A

BI-15 73518 **EXPLORATION LOG** 

SHEET 2 OF 4

STATION **OFFSET** 

OPERATOR

1' Right

Boomhower

"XP" 185+99

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski 6" H.S.A.

DRILLING METHOD

E.A. #	73316				GROU	INDWATER	LEVEL
GROUND ELEV.	2406.20	) (1	ft)		DATE	DEPTH ft	ELEV. ft
					4/18/13	81.50	2324.7
HAMMER DROP	SYSTEM_	Α	utomatic				
LE BLOW COUN	NT			LISCS			

ELEV.	DEPTH		MPLE	BLOW CO		Percent	LAB TESTS	USCS		MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Recov'd	LAD IESIS	USCS Group		MATERIAL DESCRIPTION	KEINIAKNO
			01:5	37	7.	0-		0	-	SILTY SAND with GRAVEL Dry, very dense, pale yellow (2.5 Y 7/3) to yellowish brown (10	
	31.50	K	CMS	47 26	73	95		SM	31.50	YR 5/4)	
	31.30			10						LEAN CLAY with SAND Dry, medium dense	
		L	SPT	11	24	75			1	to dense, pale yellow (2.5 Y 7/3) to yellowish	
	33.00			13						brown (10 YR 5/4)	
	- 1							CL			
00=40	35.00 35										
2371.2 -	-35			34					:	SANDY LEAN CLAY with GRAVEL Dry, very	
		M	CMS	52	75	100				dense, pale yellow (2.5 Y 7/3) to yellowish brown (to 10 YR 5/4)	
	36.50			23 7						FAT CLAY with SAND Dry to moist, medium	
	_	N	SPT	5	14	75				dense, light yellowish brown (2.5 Y 6/4) stained	
	38.00			9				СН		with olive yellow (2.5 Y 6/6)	
	-							L	39.00		
	40.00										
2366.2 -	-40 <sup>+0.00</sup>			6				1		SANDY LEAN CLAY Moist, very stiff, mottled	
	_	0	CMS	8	27	100				light yellowish brown (2.5 Y 6/2) to light gray	
	41.50			19				CL		(2.5 Y 7/1)	
	_	Р	SPT	10 12	30	75				SANDY LEAN CLAY with GRAVEL Moist, very stiff, mottled light yellowish brown (2.5 Y	
	43.00	Г	SFI	18	30	75				6/2) to light gray (2.5 Y 7/1)	
	10.00			10						, , , , , , , , , , , , , , , , , , , ,	
									44.00		
2361.2 -	45.00 <b>45</b>			9				CL		SANDY SILTY CLAY Dry to moist done	
		Q	CMS	18	41	95		ML	;	SANDY SILTY CLAY Dry to moist, dense, very pale brown (10 YR 7/3) to yellowish brown	
	46.50	•	00	23					46.50	(10 YR 5/4)	
				7						SANDY LEAN CLAY with GRAVEL Moist,	
	40.00	R	SPT	9	32	95			]	very stiff to hard, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
	48.00			23				-		yellowish brown (10 TK 3/4)	
								01			
	_							CL			
2356.2 -	_ <sub>50</sub>										
	-								51.50		
	L								T		
	-										
								GC			
2351.2 -	55.00 55							]			
2001.2	35	_		25						CLAYEY GRAVEL with SAND Dry to moist,	
	F. E.	S	CMS	27 32	59	85			1	very dense, multi-colored	
	56.50			32 9				-	56.50	SANDY FAT CLAY Moist, very stiff to hard,	
	-	Т	SPT	11	30	80				pale yellow (2.5 Y 7/3) to light olive brown (2.5	
	58.00			19				]		Y 5/6)	
								СН			
	-										
									60.00		
-								1	00.00		



4/18/13 4/18/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

BI-15 73518

GROUND ELEV.

2406.20 (ft)

HAMMED DOOD EVETEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/18/13 81.50

DATE DEPTH ft ELEV. ft

2324.7

"XP" 185+99 STATION

1' Right **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower

Diedrich D-120 (Unit 1627)

SHEET 3 OF 4

Pypkowski

DRILLING METHOD 6" H.S.A.

GEOTECH ENGINE	EERING		HA	MMER DR	OP SYS	STEM A	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2341.2 -	- - - 65.00 - - - -	U	CMS	30/0.4'	30/0.4'	125			SANDY LEAN CLAY with GRAVEL Moist, very stiff to hard, mottled pink (7.5 YR 7/3) to blows; no light yellowish brown (10 YR 6/4) progress.
2336.2 -	70.00 70 71.50	V	CMS	10 12 29	41	115			LEAN CLAY with SAND Moist, very stiff, yellowish brown (10 YR 5/4)
	73.00	W	SPT	19 56 56	112	115			LEAN CLAY with SAND Moist, very hard, light yellowish brown (10 YR 6/4)
2331.2 -	<b>75</b> 							CL	
2326.2 -	80.00 80 81.50	x	CMS	5 5 8	13	0			(X) No sample recovered.
	83.00	Υ	SPT	5 9 21	30	135			LEAN CLAY with SAND light gray (10 YR 7/1) Moist to wet, hard, recovered sample from (Free water on
2321.2 -									sampler @ 81.5'.
	90.00								90.00



START DATE 4/18/13

4/18/13

END DATE 4/18/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-15

LOCATION

E.A. # 73518 GROUND ELEV. 2406.20 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

4/18/13 81.50

DATE DEPTH ft ELEV. ft

2324.7

SHEET 4 OF 4

STATION \_\_"XP" 185+99

OFFSET 1' Right
ENGINEER Boomhow

**EQUIPMENT** 

**OPERATOR** 

Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

	ERING V		MPLE	BLOW CO					BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	91.30	Z	CMS		50/0.3'	Recov'd 85		SC SM	SILTY CLAYEY SAND with GRAVEL Moist to wet, very dense, pale brown (10 YR 6/3)	
	92.80	AA	SPT	50/0.3' 23 15 37	52	100			SANDY SILTY CLAY with GRAVEL Wet, hard, pale brown (10 YR 6/3)	
2311.2 -	- 95 							CL ML	96.50	
2306.2	- - - 100.00							CL		
	101.50	ВВ	SPT	5 10 10	20	140			LEAN CLAY with SAND Wet, stiff to very stiff, pale brown (10 YR 6/3)  101.50  END BI-15 @ 101.5'	
2301.2 -	- 105 - -									
2296.2 -	- - 110 -									
2291.2 -	-  115 									
	-									



4/19/13 START DATE

4/19/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

2437.00 (ft) GROUND ELEV..

HAMMER DROP SYSTEM \_ Automatic

BI-16

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 "X" 62+06

STATION **OFFSET** 

**OPERATOR** 

189' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ENGINE		SAI	MPLE	MMER DR BLOW CO	DUNT			11000		OATE
ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
-	-								SANDY GRAVEL Dry, tan	
2432.0	<b>5</b> - -							GC		
2427.0	11.50	A	SPT	7 5 3	8	55		GM	SILTY CLAYEY GRAVEL with SAND Dry, loose, light yellowish brown (10 YR 6/4)	
2422.0 -	<b>15</b>  									
2417.0	20.00	В	SPT	36 40/0.3'	40/0.3'	65		GP GC	POORLY GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, white (10 YR 8/1)	(B) Last 10 blows; no progress.
2412.0 -	- <b>25</b> -							CL	_ 25.00	
	30.00								30.00	



4/19/13 START DATE

END DATE

LOCATION

4/19/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-16 **BORING** 

73518 E.A. # GROUND ELEV. 2437.00 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 62+06 STATION **OFFSET** 

189' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

6" H.S.A.

Pypkowski **OPERATOR** DRILLING METHOD

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	С	SPT	15 17 13	30	80		_	SANDY LEAN CLAY Dry, dense, pale brown (10 YR 6/3)	
2402.0 -	- - -35									
2397.0 -	40.00	D	SPT	11 8 16	24	85		CL	SANDY LEAN CLAY Dry to moist, very stiff, brown (7.5 YR 5/4) to light yellowish brown (10 YR 6/4)	
2392.0 -	- - -45								45.80	
2387.0 -	50.00	Е	SPT	11 14 22	36	80		СН	<u>FAT CLAY with SAND</u> Dry to moist, hard, yellowish brown (10 YR 5/4)	
2382.0 -	55.00 - 55 - 56.50	F	SPT	10 13 11	24	60		GC	CLAYEY GRAVEL with SAND dense,pale brown (10 YR 6/3)  56.50  END BI-16 @ 56.5'	No groundwat



5/7/13 START DATE

5/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-17 73518

GROUND ELEV. 2398.70 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

5/8/13

DATE DEPTH ft ELEV. ft

2323.7

75.00

"X" 89+47 STATION 154' Right

**OFFSET ENGINEER** 

**EQUIPMENT** 

Boomhower Diedrich D-120 (Unit 1627)

SHEET 1 OF 4

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	(11)			Increments	1 foot	Recov'd			SANDY GRAVEL Dry, tan	
	2.50	A	SPT	8 16 21	37	40		GW GM	POORLY GRADED GRAVEL with SILT and SAND Dry, dense, very pale brown (10 YR 7/3)	
2393.7 -	5 5.00	В	SPT	21 27 31	58	75				_
	7.50 - 9.00	С	SPT	8 12 20	32	85		CL	LEAN CLAY Dry, hard, light gray (10 YR 7/2)	
2388.7 -	10.00 - 11.50	D	SPT	10 32 20	52	80		sc		(D) Thin stron
	12.50	E	SPT	7 14 53	67	80		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, grayish brown (2.5 Y 5/2)	@ 10.7'.
2383.7 -	15.00 - 15 - 16.50	F	SPT	27 39 46	85	80		SM	SILTY SAND with GRAVEL very pale brown (10 YR 8/2)	
	- 20.00								18.20	_
2378.7 -	20.00 20 - 21.20		CMS	29 50 35/0.2'	35/0.2'	85		sc	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	
2373.7 -	- - 25.00			33					SANDY FAT CLAY Dry, hard, mottled light gray (2.5 Y 7/2) to white (5 Y 8/1)	
	26.50	Н	SPT	28 31	59	75		CH	gray (2.5 Y 7/2) to white (5 Y 8/1)	
	_							CL		



5/7/13

5/8/13

END DATE US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-17 73518

2398.70 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

5/8/13

DATE DEPTH ft ELEV. ft

2323.7

75.00

SHEET 2 OF 4

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

"X" 89+47 154' Right

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ELEV.	DEPTH	NO.	MPLE TYPE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(ft)	(ft) - 31.50	I	SPT	25 21 18	1 foot 39	Recov'd 85		CL	LEAN CLAY with SAND Dry, hard, mottled light gray to white (2.5 Y 7/2 to 5 Y 8/1)
2363.7 -	- - - 35.00 - 36.50	J	SPT	11 15 15	30	80		sc	CLAYEY SAND Dry, hard, mottled light gray (2.5 Y 7/2) to white (5 Y 8/1)
	-								38.20
2358.7 -	40.00 40 41.50	К	SPT	7 8 9	17	80			LEAN CLAY Dry to moist, very stiff, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)
2353.7	45.00 45 46.50	L	SPT	7 8 14	22	80		CL	<b>LEAN CLAY with SAND</b> Dry to moist, very stiff, pale brown (10 YR 6/3)
2348.7	- - 50.00 - 51.50	М	CMS	10 21 24	45	100			SANDY LEAN CLAY with GRAVEL Dry to moist, hard, pinkish gray (7.5 YR 7/2)
	53.00	N	SPT	14 18 30	48	80			LEAN CLAY with SAND Dry to moist, hard, mottled brown (7.5 YR 5/4) to pinkish white (7.5 YR 8/2)  End day 1 @
2343.7	- - 55.00 - 56.20 -	0	CMS	19 40 35/0.2'	35/0.2'	100		GC	CLAYEY GRAVEL with SAND Moist, very dense, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/3)  (O) Last 10 blows; no progress.
	-								60.00



5/7/13 START DATE

5/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-17 73518

**EXPLORATION LOG** 

SHEET 3 OF 4

STATION **OFFSET** 

"X" 89+47 154' Right

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** Pypkowski

**OPERATOR** 

**GROUNDWATER LEVEL** DRILLING METHOD DATE DEPTH ft ELEV. ft 2398.70 (ft) 6" H.S.A. GROUND ELEV. 5/8/13 75.00 2323.7 HAMMER DROP SYSTEM Automatic BACKFILLED \_\_\_\_\_ \_ DATE



5/7/13 START DATE

5/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-17 73518

2398.70 (ft) GROUND ELEV.

HAMMED DOOD EVETEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

5/8/13

DATE DEPTH ft ELEV. ft

75.00

2323.7

SHEET 4 OF 4

STATION **OFFSET** 

154' Right **ENGINEER** 

Boomhower

"X" 89+47

Diedrich D-120 (Unit 1627)

**EQUIPMENT** Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ENGIN	HNICAL EERING		HA	AMMER DF	ROP SYS	STEM _A	utomatic		BACKFILLEDD	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2303.7 - 2298.7 -	- 95.96 - 100.00 - 100.70 - 105.00	V		22 25/0.2'				CL	SANDY LEAN CLAY Wet, very dense, mottled pink (7.5 YR 7/3) to brown (7.5 YR 5/4)	(U) Last 10 blows; no progress. No sample recovered.  (V) Moderately to strongly cemented nodules in sample.
	106.50	W	CMS	11 15 22 10 13 21	37	155 155			LEAN CLAY (10 YR 6/4)  LEAN CLAY (10 YR 6/4)  Wet, hard, light yellowish brown (10 YR 6/4)	(W) Sample expanded to 2.2'. (X) Sample expanded to 2.2'.
2288.7	— 110 - -								111.50	
2283.7	115.00 115 115 116.50	Υ	CMS	38 47 41	88	125		CL ML	SILTY CLAY (10 YR 6/4)  116.50  END BI-17 @ 116.5'	



E/40/42

END DATE \_\_\_\_\_5/10/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-18 73518

GROUND ELEV. 2388.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 ON "X" 89+01

STATION \_ OFFSET \_

98' Right

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR White

OPERATOR DRILLING METHOD

6" H.S.A.

2383.4 — 5	5 5.00 6.50	A	SPT	10 14 25	39	Recov'd		SANDY GRAVEL Dry, tan	
-	6.50		SPT	14	39	95			
-	6.50		SPT	14	39	95			
2378.4 —1	10.00						CL	<u>LEAN CLAY with SAND</u> Dry, hard, light gray (10 YR 7/2)	(A) Weakly to moderately cemented.
2378.4 -1	10.00							8.20	
-	11.50	В	SPT	14 25 45	70	85	SC SM	SILTY CLAYEY SAND with GRAVEL Dry, very hard, mottled very pale brown (10 YR 8/2) to light brownish gray (10 YR 6/2)	(B) Weakly to moderately cemented.
-								13.20	
2373.4 — 1	15.00 15 16.50	С	SPT	18 20 26	46	80	sc	CLAYEY SAND with GRAVEL Dry, hard, mottled white (10 YR 8/1) to very pale brown (10 YR 7/3)	(C) Weakly to moderately cemented.
-									
2368.4 — 2	20.00	D	SPT	17 25 28	53	75	GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
-								23.20	
2363.4 — 2	25.00 25 26.50	E	SPT	6 13 18	31	80	CL	<b>LEAN CLAY with SAND</b> Dry, very stiff to hard, white (10 YR 8/1) to light gray (10 YR 7/2)	(E) Weakly cemented.
-									



5/10/13 START DATE

5/10/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

BI-18 73518

GROUND ELEV. 2388.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "X" 89+01

STATION

98' Right **OFFSET** Boomhower **ENGINEER** 

**OPERATOR** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

White

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(II)	31.50	F	SPT	8 10 18	1 foot 28	Recov'd		-	SANDY LEAN CLAY Dry to moist, very stiff, light yellowish brown (2.5 Y 6/3)	
2252.4	- - 35.00							CL		
2353.4 -	36.50	G	SPT	9 14 14	28	80			LEAN CLAY Dry to moist, very stiff, light yellowish brown (2.5 Y 6/3) 36.50 END BI-18 @ 36.5'	No groundwater encountered.
2348.4 -	- - -40									
2343.4 -	- 45 -									
2338.4 -	- - - - -									
2333.4 -	- - - - -									
	_									



5/13/13

5/13/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. # GROUND ELEV. 2394.10 (ft)

HAMMER DROP SYSTEM Automatic

BI-19

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 1

STATION **OFFSET ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

114' Right

Boomhower

"X" 86+27

Diedrich D-120 (Unit 1627)

Pypkowski

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
, ,	-								SANDY GRAVEL Dry, tan	
	_								2.50	
	_									
2389.1 -	4.30	_	ODT	23	05	75		CL	SILTY CLAY Dry to wet, very hard, very pale brown (10 YR 8/2) to pale brown (10 YR 6/3)	
2309.1	5.80	Α	SPT	28 37	65	75		ML	blowii (10 1 K 6/2) to pale blowii (10 1 K 6/3)	
	_									
	_									
2384.1 -	9.30	В	SPT	19 24	51	75		CL	LEAN CLAY Dry to moist, hard, white (2.5 Y 8/1) to light gray (2.5 Y 7/2)	
	10.80		0	27		, 0		-	5.17 to light group (210 1 1.2)	
	_								12.00 END BI-19 @ 12.0'	Lost circulation
										@ 12.0'. No groundwater encountered.
	_									onocumorou.
2379.1 -	<del></del> 15									
	_									
	_									
	_									
2374.1 -	<del>-</del> 20									
	_									
	_									
	_									
2369.1 -	-25									
	-									
	-									



START DATE \_\_5/

5/13/13 5/13/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION \_

Northwest Las Vegas - Clark County

BORING E.A. #

END DATE

BI-20 73518 2390.70 (ft)

GROUND ELEV. 2390.70 (ft)
HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 89+07

**EQUIPMENT** 

**OPERATOR** 

ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

SHEET 1 OF 1

Pypkowski

DRILLING 4" Rotary Wash

ELEV.	DEPTH		MPLE	MMER DR	OUNT			LISCS	BACKFILLED	
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								SANDY GRAVEL Dry, tan  2.50	
2385.7 -	- 4.40 5 5.90	А	SPT	6 12 60	72	95		CL	LEAN CLAY Dry to wet, very hard, light gray (10 YR 7/2) to dark grayish brown (10 YR 3/2)	Organic materia in cuttings from 0.0' - 4.4'.
2380.7 -	9.40 - 10 10.90	В	SPT	26 16 14	30	75		GC	CLAYEY GRAVEL with SAND Dry to wet, very stiff, light gray (10 YR 7/2)	(B) First 10 blows on rock.
2375.7 -	_ _ 15 _								13.00 END BI-20 @ 13.0'	Lost circulation @ 13.0'. No groundwater encountered.
2370.7 -	- 20 -									
2365.7 -	- 25 -									
	- -									



START DATE \_\_\_\_5/14/13

5/15/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING BI-21 73518

E.A. # 73518 GROUND ELEV. 2390.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

 STATION
 "X" 87+94

 OFFSET
 85' Right

**EQUIPMENT** 

**OPERATOR** 

ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

ELEV.	DEPTH		//PLE TYPE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	INU.	IIFE	Increments	1 foot	Recov'd		Group	SANDY GRAVEL Dry, tan	
	-								0.50	
	-									_
2385.1 -	- 4.30 -5 5.80	A	SPT	3 12 22	34	40		CL ML	SILTY CLAY Dry to wet, hard, light gray (10 YR 7/2) to pale brown (10 YR 6/3)	
	-								7.50	-
	- 9.30							CL		
2380.1 -	10 10.80	В	CMS	23 15 17	32	75			LEAN CLAY Dry to moist, dense, mottled brown (10 YR 4/3) with white (10 YR 8/1)  10.80	(B) Weakly to strongly cemented.
	- 12.30	С	SPT	10 18 23	41	75		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, dense, mottled brown (10 YR 4/3) with white (10 YR 8/1)	
	-								13.30	_
2375.1 -	- 14.30 15 <sub>15.50</sub>	D	CMS	41 51 35/0.2'	35/0.2'	75		GC	SILTY CLAYEY GRAVEL with SAND Dry to moist, very dense, mottled brown (10 YR 4/3) with white (10 YR 8/1)	(D) Last 10 blows; no progress.
	-			33/0.2				GM		progress.
	-								<u>  17.50                                    </u>	_
2370.1 -	19.30 -20 20.80	E	CMS	22 43 54	97	85			<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, light yellowish brown (10 YR 6/4)	
	- 22.20	F	SPT	31	50/0.4'	80		sc	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, mottled light yellowish brown (2.5 Y 6/3) to pale yellow (2.5 Y 8/2)	
	- 2420									
2365.1 -	- <u>24:38</u> 25	G	CMS	30/0.2'	30/0.2'	0			26.00	(G) Last 10 blows; no progress. No
	-									sample recovered.
	-							CL		
	29.30			11					30.00 <b>LEAN CLAY with SAND</b> Dry to moist, very	



5/14/13 START DATE

5/15/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV.

BI-21 73518 2390.10 (ft)

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 87+94 STATION **OFFSET** 

85' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** DRILLING METHOD

4" Rotary Wash

BACKFILLED DATE

		CVI	/PLE	BLOW CO	TIALIC				
ELEV. (ft)	DEPTH (ft)			6 inch	Last	Percent Pecovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(11)	30.80		CMS	Increments 15 18	1 foot 33	Recov'd 85		•	stiff, light gray (5 Y 7/2) mottled with white (5 Y
F	- 30.60			8					8/1) and reddish yellow (7.5 YR 6/6)  SANDY LEAN CLAY Moist, very stiff, olive
		ı	SPT	13	25	65			gray (5 Y 5/2) to light olive brown (2.5 Y 5/3)
F	32.30			12					
+	-								
	- 2420								
ŀ	34.30			15				-	SANDY LEAN CLAY Dry to moist, hard, (J) Weakly to
2355.1	<b>−35</b>	J	CMS	27	68	85		01	white (2.5 Y 8/1) mottled with light yellowish strongly
ļ	35.80			41 14				CL	brown (10 YR 6/4) cemented.  GRAVELLY LEAN CLAY Dry to moist, hard, (K) Weakly to
		K	SPT	14	30	75			white (2.5 Y 8/1) mottled with light yellowish strongly
-	37.30			16				-	brown (10 YR 6/4) cemented.
-	-								
	_								
2350.1	<b>-40</b>								
l									41.00
-	=								
	_								
								CH	
ļ	44.30			10				_	
2345.1	<b>45</b>	L	CMS	10 14	37	100			SANDY FAT CLAY Moist, very stiff, pale brown (10 YR 6/3) to light brownish gray (10 YR
	45.80		Oivio	23	01				45.80 6/2)
İ	-	N 4	SPT	9	18	80			SANDY LEAN CLAY with GRAVEL Moist, very stiff, mottled yellowish brown (10 YR 5/4)
-	47.30	М	SPI	9 9	10	80			to light brownish gray (10 YR 6/2)
Ī								CL	End day 1 @
Ī	_							CL	47.3'.
-	-								
2340.1	-50								50.00
2540.1	50								
-	-								Lost circulation
	- 50.40								@ 50.9'. Soft to 52.4'.
-	52.40			push				GM	SILTY GRAVEL with SAND Wet, loose, (N) Dropped ro
<u> </u>	53.60	N	CMS		push	100			multicolored and sampler 24
ļ	-	_	CDT	6	20/0.01				SILTY GRAVEL with SAND Wet, loose,
	54.90	0	SPT	30 30/0.3'	30/0.3'	55			multicolored 54.90
2335.1	55			<del>50/0.3</del>					END BI-21 @ 54.9' No groundwate
}	-								encountered.
	_								
Ī	-								
}	-								
								1	
	_								



5/15/13 START DATE

5/16/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

END DATE

BI-22 73518

GROUND ELEV. 2392.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

225' Right Boomhower

"X" 87+92

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** DRILLING METHOD

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								SANDY GRAVEL Dry, tan	
	_									_
2387.4 -	- 4.60 5 _ 6.10	А	SPT	8 15 39	54	85		CL	<b>LEAN CLAY</b> Dry to moist, hard, pale brown (10 YR 6/3)	
	9.60								8.00	_
2382.4 -	10 11.10 	В	SPT	34 35 28	63	85		GC	CLAYEY GRAVEL with SAND Dry to moist, very hard, very pale brown (10 YR 8/2)	(B) Weakly to strongly cemented.
	_								13.00	_
2377.4 -	14.60 15 15.80	С	CMS	30 50 30/0.2'	30/0.2'	75		sc	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, multicolored	(C) Last 10 blows; no progress.
	_								_ 18.00	-
2372.4 -	19.60 20 21.10	D	SPT	14 18 20	38	80			SANDY LEAN CLAY Dry to moist, dense, pale brown (10 YR 6/3)	(D) Moderatel to strongly cemented nodules in sample.
2267.4	24.60			28				CL	SANDY LEAN CLAY Dry to moist, very	
2367.4 -	-25 _ 26.10	E	SPT	39 35	74	80			dense, multicolored	End day 1 @ 26.1'.
	_									



5/15/13 START DATE

5/16/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV. 2392.40 (ft)

BI-22

73518

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 87+92 STATION 225' Right **OFFSET** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

4" Rotary Wash

**OPERATOR** DRILLING METHOD

	DEDTU	SAI	/IPLE	BLOW CO				11000		_
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2357.4 -	- - 34.60 -35 _ 36.10	F	CMS	18 27 24 10	51	85		CL	SANDY LEAN CLAY Moist, very stiff to hard, mottled white (2.5 Y 8/1) to light brownish gray 36.10 (2.5 Y 5/2)  SANDY FAT CLAY with GRAVEL Moist, very	(G) Moderately
2352.4 -	37.60 - - - -40	G	SPT	12 18	30	60		СН	stiff to hard, mottled white (2.5 Y 8/1) to light brownish gray (2.5 Y 6/2)	to strongly cemented nodules in sample.
2347.4 -	- - - -45 -46.10	ı	CMS SPT	14 17 23 8 12 15	40	95			FAT CLAY Moist to wet, very stiff, mottled white (7.5 YR 8/1) to brown (7.5 YR 5/3)  46.10  LEAN CLAY Moist to wet, very stiff, mottled white (7.5 YR 8/1) to brown (7.5 YR 5/3)	
2342.4 -	-  50							CL	_51.00	
2337.4 -	- - 54.60 55 - 56.10	J	CMS	11 14 23	37	95		СН	SANDY FAT CLAY with GRAVEL Moist, very stiff, olive (5 Y 5/3) with black and rust oxidation stains	
	- 57.60 -	К	SPT	10 17 31	48	75		GC	CLAYEY GRAVEL with SAND Moist, dense, olive (5 Y 5/3) with multicolored gravel  57.60  END BI-22 @ 57.6'	No groundwate encountered.



TART DATE	6/3/13
IARIDATE	0.00

6/4/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 2421.50 (ft) GROUND ELEV.

BI-23

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

**STATION OFFSET** 

**EQUIPMENT** 

**DRILLING** 

12' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

6" H.S.A.

"X" 80+87

**METHOD** BACKFILLED \_\_ \_ DATE

ELEV. DEPTH Last LAB TESTS MATERIAL DESCRIPTION REMARKS NO. TYPE (ft) (ft) Increments 1 foot Recov'd SANDY GRAVEL Dry, tan Approximately 25' of fill. 2.50 2416.5 + 5 5.00 18 **CLAYEY GRAVEL with SAND** Dry, dense, SPT pale brown (10 YR 6/3) 21 43 80 6.50 22 GC <del>10</del>10.00 2411.5 14 **CLAYEY GRAVEL with SAND** Dry, dense, SPT 19 41 80 pale brown (10 YR 6/3) В <u>1</u>1.50 22 13.00 15.00 2406.5 GC GM 17 SILTY CLAYEY GRAVEL with SAND Dry, dense, pale brown (10 YR 6/3) SPT 23 48 95 16.50 25 18.00 <del>20</del>20.00 2401.5 29 **POORLY GRADED SAND with CLAY and** (D) Asphalt at SP SPT SC **GRAVEL** Dry, dense, very pale brown (10 YR 20.0' and 21.5' D 14 38 95 in sample. 21.50 24 23.00 ALL FILES.GPJ NV DOT.GDT 25.00 25 GW 2396.5 GM 13 WELL GRADED GRAVEL with SILT and (E) Sample SAND Dry, dense, pale brown (10 YR 6/3) loose in CMS 14 44 80 sampler. 26.50 30 26.50 **CLAYEY SAND** Dry to moist, medium dense, 11 SPT 6 very pale brown (10 YR 7/3) 11 80 28.00 5 SC DOT ≥' 30.00 30.00



6/3/13 START DATE

6/4/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 GROUND ELEV. 2421.50 (ft)

BI-23

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

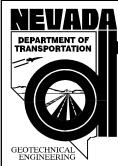
12' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

"X" 80+87

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	G	SPT	5 6 9	15	100		- CL	SANDY LEAN CLAY moist, stiff, very pale brown (10 YR 7/4) to light yellowish brown (10 YR 6/4)	
2386.5 -	- - 35.00 - - 36.50		CMS	17 18	44	95		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, light yellowish brown (10 YR 6/4)	
	38.00	ı	SPT	26 10 11 15	26	35		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4)  39.00	(I) Rock in sampler shoe
2381.5 -	40.00 40 40 41.50	J	CMS	9 11 14	25	95		СН	SANDY FAT CLAY Dry to moist, very stiff, pale brown (10 YR 6/3) to yellowish brown (10 41.50 YR 5/6)	
	43.00	К	SPT	4 7 8	15	85		sc	CLAYEY SAND. Moist, stiff, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
2376.5 -	45.00 45 46.50	L	CMS	9 12 16	28	100		CL	LEAN CLAY with SAND Moist, very stiff, mottled pale yellow (5 Y 7/3) to white (5 Y 8/1) 46.50	
	48.00	M	SPT	6 9 13	22	75		_	FAT CLAY Moist, very stiff, pale olive (5 Y 6/3)	
2371.5 -	- 50 -							СН	52.00	
2366.5 -	- - 5 <u>\$</u> \$5:90	N	CMS	<del>15/0.1'</del>	<del>15/0.1'</del>	0				(N) Last 10
	-								_ 57.00	blows; no progress. No sample recovered.
	-							CL		



START DATE	6/3/13

6/4/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV. 2421.50 (ft)

BI-23

73518

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 80+87 STATION

12' Right **OFFSET** 

Boomhower **ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 3 OF 3

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

61.50 65.00 65.70	NO. O	MPLE TYPE SPT	BLOW C 6 inch Increments 12 12 16	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION  SANDY LEAN CLAY Moist, very stiff, pale	REMARKS
61.50 65.00		SPT	12 12					SANDY LEAN CLAY Moist, very stiff, pale	
							CL	yellow (2.5 Y 7/4)	End day 1 drilling @ 61.5'.
								63.00	3011
	•	CMS	25 25/0.2'	25/0.2'	100		GC	CLAYEY GRAVEL with SAND Dry to moist, hard to very hard, pale brown (10 YR 6/3)	(P) Last 10 blows; no progress. Sample disturbed. Hard drilling from 65.7' - 67.2'. Progress 1.0'/25 minutes
70.00 70 71.50	Q	CMS	9 12 10	22	95			CLAYEY GRAVEL with SAND Moist, stiff, very pale brown (10 YR 7/3) to light yellowish 71.50 brown (10 YR 6/4)	@ 450 psi dow pressure.
73.00	R	SPT	5 4 9	13	75		СН	stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	Hard drilling
<b>75</b> .90	<del>-S</del> -	SPT	<del>20/0.1</del> '	20/0.1'	0				from 73.5' - 75.0'.  (S) Last 10 blows; no progress. No sample recovered.
78.98 30	<del>-T-</del>	SPT	<del>20/0.1</del> '	20/0.1	0			78.10 END BI-23 @ 78.1'	Very hard drilling @ 75.1 Progress 0.11/2 minutes @ 35/ psi down pressure; 0.21/25 minute @ 400 psi; 0.21/25 minute @ 400 psi; 0.11/20 minute
35									@ 400 psi. (T) Last 10 blows; no progress. No sample recovered. No groundwat encountered.
::330	73.00 73.00 75.90	71.50 R 73.00 R 75.96 S	71.50 Q CMS 73.00 R SPT 75.90 S SPT	71.50 Q CMS 12 10 5 10 73.00 R SPT 4 9 9 75.90 S SPT 20/0.1'	71.50 Q CMS 12 22 10 10 5 13 73.00 R SPT 4 13 9 13 75.90 S SPT 20/0.1' 20/0.1' 78.90 T SPT 20/0.1' 20/0.1'	71.50 Q CMS 12 22 95 10 73.00 R SPT 4 13 75 9 75.90 S SPT 20/0.1' 20/0.1' 0 78.90 T SPT 20/0.1' 20/0.1' 0	71.50 Q CMS 12 22 95 10 73.00 R SPT 4 13 75 9 75.90 S SPT 20/0.1' 20/0.1' 0 78.90 T SPT 20/0.1' 20/0.1' 0	71.50 Q CMS 12 22 95 10 73.00 R SPT 4 13 75 CH	Q CMS 12 22 95



11/18/13 START DATE

11/21/13

BI-23A

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

73518

GROUND ELEV. 2421.50 (ft)

GROU	NDWATER	LEVEL
DATE	DEPTH ft	ELEV. ft

**EXPLORATION LOG** 

"X" 81+07 **STATION** 

12' Right **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

Lawrence

Diedrich D-120

4" Rotary Wash

SHEET 1 OF 5

Pypkowski **OPERATOR** DRILLING METHOD

BACKFILLED \_ \_ DATE

HAMMER DROP SYSTEM Automatic BLOW COUNT 6 inch Last DEPTH ELEV. LAB TESTS **MATERIAL DESCRIPTION** REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd SANDY GRAVEL Dry, tan BI-23A is located 20' directly east from BI-23, @ same elevation. 2416.5 +5 2411.5 +10 2406.5 +15 2401.5 -20 ALL FILES.GPJ NV\_DOT.GDT 6/27/16 2396.5 -25 DOT ≥



11/18/13 START DATE

11/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 GROUND ELEV. 2421.50 (ft)

BI-23A

HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 81+07 STATION

12' Right **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

Lawrence Diedrich D-120

4" Rotary Wash

SHEET 2 OF 5

Pypkowski **OPERATOR** DRILLING METHOD

ELEV.	DEPTH		MPLE	BLOW Co	Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments	1 foot	Recov'd	LAB ILSIS	USCS Group	WATERIAL DESCRIPTION	REMARKS
2386.5 -	- - - 35									
2381.5 -	- - -40 -									
2376.5 -	- <b>45</b> -									
2371.5 -	49.60	Α	CMS	15 27	64	95			FAT CLAY with SAND Moist, hard, pale olive (5 YR 6/3)	(A) Torvane reading - 1.3, 1.6 tsf; Pocke
	51.10 - 52.60	В	SPT	37 7 9 14	23	100		СН	SANDY FAT CLAY Moist, very stiff, moist, pale olive (5 YR 6/3)	penetrometer reading - 4.5 t Strongly cemented nodules.
2366.5 -	- 55								_ 55.00	Lost circulatio at 53.5'.
	57.60 - 59.10	С	CMS	12 14 22	36	85		CL	SANDY LEAN CLAY with GRAVEL Moist, very stiff, moist, pale yellow (2.5 YR 7/4) to pale brown (10 YR 6/3)	(C) Torvane reading - 1.11



START DATE \_\_\_\_11/18/13

END DATE \_\_\_\_\_11/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County BI-23A

BORING E.A. #

73518

GROUND ELEV. 2421.50 (ft)
HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 5

STATION OFFSET

ET 12' Right
Lawrence

ENGINEER EQUIPMENT

Diedrich D-120 Pypkowski

"X" 81+07

OPERATOR DRILLING METHOD

4" Rotary Wash

	ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
231.5 - 70  Weakly Cemented or Hard Gravelly Materials  73.00  Moderately to Strongly Cemented Materials, with scattered and variable stiff moist zones  Run # Depth (ft) Recovery (ft) Run 1: 74.6-75.7 8/1.1 73% Type/Desc Calliche, Fractured Run 2: 75.2-76.0 0 0% Type/Desc Calliche, Fractured Run 3: 76.0-77.1 5/1.1 45% Type/Desc Ifractured calliche Run 4: 77.1-78.1 1.0/1.1 91% Type/Desc Ifractured calliche Run 4: 77.1-7	-		D	SPT	12	1 foot 24	Recov'd 85			yellow (2.5 YR 7/4) to pale brown (10 YR 6/3) 62.00	penetrometer reading - 2.0,
No RQD   Section   Secti	2356.5	<b>65</b> -									
Table   Tabl	2351.5	- 70 -									
Run 1: 74.6'-75.7' 8/11.1' 73%	2346.5									Moderately to Strongly Cemented Materials, with scattered and variable stiff moist zones	Core drilling wi
82.00   82.00   drilling.    E   SPT   5   12   0	2341.5	- - - - -80	,	CORE			40			Run 1: 74.6'-75.7' .8'/1.1' 73%  Type/Desc. : Caliche, fractured  Run 2: 75.2'-76.0' 0' 0%  Type/Desc. : clogged shoe, no recovery, cuttings  Run 3: 76.0'-77.1' .5'/1.1' 45%  Type/Desc. : fractured caliche  Run 4: 77.1'-78.1' 1.0'/1.1' 91%  Type/Desc. : fractured caliche, last .1' soft	No RQD qualifying recovery - all coring runs.
2336.5 - 85	_		E	SPT	5	12	0			82.00	drilling. (E) No sample
Sample.  G SPT 4 14 115  LEAN CLAY Moist, stiff, very pale brown (10	2336.5	84.60 - <b>85</b>	F	CMS	12 14	37	115		CI	(10 YR 7/3)	cemented
	= - -	-	G	SPT	5 4	14	115		- GL	LEAN CLAY Moist, stiff, very pale brown (10	



11/18/13 START DATE

11/21/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-23A 73518

2421.50 (ft) **GROUND ELEV.** 

Automatic HAMMER DROP SYSTEM \_

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 81+07 **STATION** 

12' Right **OFFSET** 

Lawrence **ENGINEER** 

Diedrich D-120 **EQUIPMENT** 

SHEET 4 OF 5

Pypkowski **OPERATOR DRILLING** 

BACKFILLED \_

4" Rotary Wash **METHOD** 

\_ DATE

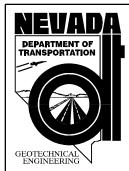
**ELEV** DEPTH LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPF (ft) (ft) ncrements 1 foot Recov'd ₽5 (H) Pocket CMS Н 54 100 SANDY LEAN CLAY with GRAVEL penetrometer very stiff to hard, very pale brown (10 YR 7/3). 39 91.10 reading - 2.0 tsf. 41 LEAN CLAY with GRAVEL Moist, very hard, (H) Strongly SPT 40 87 very pale brown (10 YR 7/3) 75 cemented 92.60 47 nodules in sample. (I) Strongly CL cemented 94.60 nodules in 8 **LEAN CLAY** Moist, very stiff, very pale brown 2326.5 -95 sample. (10 YR 7/3) with brownish yellow (10 YR 6/6) SPT 10 21 105 (J) Pocket 96.10 11 penetrometer reading - 3.5 tsf. 98.00\_ 99.60 СН 11 FAT CLAY Moist, hard, very pale brown (10 2321.5 100 (K) Torvane CMS 21 58 85 YR 7/3) with brownish yellow (10 YR 6/6) reading - 1.9 tsf; 101.10 37 101.10 Pocket **LEAN CLAY** Moist, very stiff, very pale 6 penetrometer brown (10 YR 7/3) with brownish yellow (10 YR SPT 9 22 L reading - 4.0 tsf. 102.60 13 104.60 CL 10 **LEAN CLAY with SAND** Moist, hard, light 2316.5 105 SPT 16 33 115 yellowish brown (10 YR 7/4) 106.10 17 Alternating harder and 108.00 softer layers. 109.60 SANDY SILTY CLAY Moist, very hard, light 2311.5 CI CMS 25/0.0' 80 (N) Sampler not 110 60 yellowish brown (10 YR 7/4) ML 110.80 O SPT 50/0.2 on bottom first <del>59/0:3</del> strike. No progress 25 blows. 112.50 (O) No sample recovered. 114.00 11 **GRAVELLY LEAN CLAY** Moist, very stiff, SPT 12 22 115 light yellowish brown (10 YR 6/4) 2306.5 **115** 115.50 10 CL

120.00

ALL FILES.GPJ NV DOT.GDT DOT

≥'

119.60



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

START DATE \_\_\_\_11/18/13

11/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwo

Northwest Las Vegas - Clark County

BORING \_ E.A. # \_

END DATE

GROUND ELEV. 2421.50 (ft)

HAMMER DROP SYSTEM Automatic

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 5 OF 5 "X" 81+07

STATION "X"

OFFSET 12' Right
ENGINEER Lawrence

EQUIPMENT Diedrich D-120

OPERATOR Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments 26	OUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_ 121.10	R	CMS	58 12 8	76 20	80		CL	SANDY LEAN CLAY Moist, hard, light yellowish brown (10 YR 6/4)  GRAVELLY LEAN CLAY with SAND Moist, very stiff, light yellowish brown (10 YR 6/4)	
	122.60			12					122.60 END BI-23A @ 122.6'	No groundwater encountered.
2296.5	— 125 -									
	_									
2291.5 -	—130 —									
	_									
2286.5 -	—135 —									
	_									
2281.5 -	140									
ı	_									
2276.5 -	_ 145									
	_									
l	_									



6/5/13

6/6/13 **END DATE** 

US95 / CC-215 System-to-System Interchange

JOB DESCRIPTION LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

**GROUND ELEV.** 

BI-24 73518 2393.10 (ft)

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

"X" 87+50 STATION **OFFSET** 

**ENGINEER** 

**METHOD** 

**EQUIPMENT** 

167' Right

Boomhower

Diedrich D-120 (Unit 1627) Pypkowski

4" Rotary Wash

cemented

**OPERATOR DRILLING** 

HAMMER DROP SYSTEM \_ **BACKFILLED** \_ DATE **ELEV** DEPTH Last 6 inch LAB TESTS REMARKS MATERIAL DESCRIPTION Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd SANDY GRAVEL Dry, tan 2.00 3.60 14 **LEAN CLAY** Dry, very hard, very pale brown **CMS** 28 74 95 (10 YR 7/3) 5.10 46 2388.1 19 **LEAN CLAY with SAND** Dry, very hard, very CL В SPT 20 45 65 pale brown (10 YR 7/3) 25 6.60 8.60 34 9.40 **CMS** 39 83 85 **CLAYEY GRAVEL with SAND** Dry, very GC 44 10.10 <sub>10</sub>10.10 2383.1 hard, very pale brown (10 YR 8/2) 26 SPT 50/0.3 75 D 10.90 **CLAYEY SAND with GRAVEL** Dry, very 50/0.3 SC hard, very pale brown (10 YR 8/2) 12.00 SC 13.60 24 SM SILTY CLAYEY SAND with GRAVEL Dry, (E) Weakly to **CMS** 34 91 85 hard, light gray (10 YR 7/2) moderately 57 cemented. 1515.10 15.10 2378.1 28 SILTY GRAVEL with SAND Dry, very dense, SPT 36 80 multicolored 85 GM 16.60 44 17.50 18.60 21 CLAYEY SAND with GRAVEL Dry, dense, **CMS** 27 71 85 multicolored <u>20<sup>2</sup>0.</u>10 44 2373.1 SC 21 **CLAYEY SAND with GRAVEL** Dry, dense, SPT 17 38 80 multicolored Н 21.60 21 22.50 23.60 GC 27 CLAYEY GRAVEL with SAND Dry, dense, CMS 22 42 80 multicolored 25<sup>25.10</sup> 20 25.10 2368.1 **LEAN CLAY with SAND** Dry to moist, very 5 SPT 4 19 stiff, pale yellow (2.5 Y 8/2) mottled with 75 brownish yellow (10 YR 6/8) 26.60 15 CL 28.60 21 SANDY LEAN CLAY Dry to moist, very hard, (K) Weakly to mottled white (2.5 Y 8/1) to light yellowish moderately **CMS** 32 83 85 Κ ≥'

30.00 brown (2.5 Y 6/3)

DOT.GDT ALL FILES.GPJ NV DOT

30.10



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

START DATE \_

LOCATION

6/5/13

0/0/10

END DATE 6/6/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-24

E.A. # 73518 GROUND ELEV. 2393.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_\_ "X" 87+50

OFFSET 167' Right

ENGINEER Boomhower

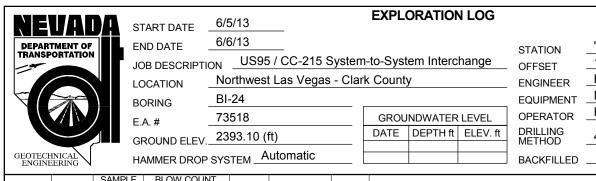
EQUIPMENT Diedrich D-120 (Unit 1627)

SHEET 2 OF 3

OPERATOR Pypkowski

DRILLING 4" Rotary Wash

	EERING V								BACKFILLED D	HIE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.60	L	SPT	24 23 24	47	75			SANDY LEAN CLAY Dry to moist, very hard, mottled white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	(L) Weakly to moderately cemented.
	33.60							CL		
2358.1 -	<sub>35</sub> 35.10	М	CMS	45	73	85			SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, mottled white (2.5 Y 8/1) to 35.10 light yellowish brown (2.5 Y 6/3)	(M) Weakly to moderately cemented.
	36.60	N	SPT	21 19 16	35	75			SANDY FAT CLAY Dry to moist, very hard, mottled white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	(N) Weakly to moderately cemented.
	_									
2353.1 -	- 40									
	_									
	43.60							СН		
2348.1 -	4545.10	0	CMS	14	27	100			FAT CLAY Moist, very stiff, yellowish brown (10 YR 5/4)	
	46.60	Р	SPT	6 6 10	16	85			FAT CLAY Moist, very stiff, yellowish brown (10 YR 5/4)	
	_									
2343.1 -	_ 50								50.00	End day 1 drilling @ 48.6'.
	_									
	- 53.60									
2338.1 -	555.10	Q	CMS	45	94	100		GC	CLAYEY GRAVEL with SAND Moist, very dense, mottled white (10 YR 8/1) to light yellowish brown (10 YR 6/4) to brown (7.5 YR	
	56.40	R	SPT	14 54 50/0.3'	50/0.3'	60			5/4)  CLAYEY GRAVEL with SAND Moist, very dense, mottled white (10 YR 8/1) to light yellowish brown (10 YR 6/4) to brown (7.5 YR	
	_								5/4)	Lost circulation
	_								60.00	@ 58.2'.



-to-System Interchange	STATION - OFFSET	"X" 87+50 167' Right
k County	ENGINEER	Boomhower
	EQUIPMENT	Diedrich D-120 (Unit 1627)
GROUNDWATER LEVEL	OPERATOR	Pypkowski
DATE DEPTH ft ELEV. ft	DRILLING METHOD	4" Rotary Wash
	BACKFILLED	DATE

SHEET 3 OF 3

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW CO 6 inch Increments	DUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_									
	_									
	- 63:80	s	SPT	50/0.2'	50/0.2'	0			63.80 END BI-24 @ 63.8'	(S) No sample
2328.1									END DI-24 @ 63.6	(S) No sample recovered. No groundwater encountered.
	_									choodingred.
	_									
	_									
2323.1	<del>-</del> 70									
	-									
	_									
2318.1	- 75									
	_									
	_									
	_									
2313.1	80									
	_									
	_									
0000.4	-									
2308.1	<del>-</del> 85									
2308.1	_									
	_									



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

6/6/13 START DATE

6/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 GROUND ELEV. 2387.80 (ft)

HAMMER DROP SYSTEM Automatic

BI-25

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

**STATION OFFSET** 

**EQUIPMENT** 

"X" 91+50 125' Right

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION REMARK	s
(ft)	(ft)	NO.	TYPE	Increments		Recov'd	LAD ILOIO	USCS Group		
									SANDY GRAVEL Dry, tan	
	-									
	_								T	
2382.8 -	5.00			3				-	LEAN CLAY Dry, loose, light gray (10 YR (A) Probable	e fill
		Α	SPT	3	9	85			7/2) to very dark gray (10 YR 3/1)	
	6.50			6				-		
	-									
	10.00							CL		
2377.8 -	10			15				-	<b>LEAN CLAY with SAND</b> Dry, dense, very	
	11.50	В	SPT	21 20	41	95			pale brown (10 YR 8/2)	
	-									
2372.8 -	15.00									
2012.0		С	CMS	12 37	50/0.4'	85			SANDY LEAN CLAY Dry, very dense, pale yellow (2.5 Y 7/3)	
	16.40		00	50/0.4'	00/011				16.40	
	-	D	SPT	30 42	50/0.4'	80			SILTY SAND with GRAVEL Dry, very dense, light gray (2.5 Y 7/2)	
	17.80			50/0.4'				SM		
									19.00	
									13.00	
2367.8	20.00			54				GC	CLAYEY GRAVEL with SAND Dry, very	
		Е	CMS	49	71	85			dense, very pale brown (10 YR 8/2) to yellow	
	21.50			22 11					21.30 (10 YR 7/6)  LEAN CLAY with SAND Dry, dense, very	
		F	SPT	14	35	85			pale brown (10 YR 7/3)	
	23.00			21					End day 1	
									drilling @ 2:	3.0'.
	25.00									
2362.8 -	25			41				<u> </u>	<u>LEAN CLAY with SAND</u> Dry, hard, very pale (G) Weakly	to
	26.50	G	CMS	28 30	58	95		CL	brown (10 YR 8/2) to yellowish brown (10 YR moderately 5/6) moderately	
	20.50			20				1	<b>LEAN CLAY with SAND</b> Dry, hard, very pale (H) Weakly	to
	28.00	Н	SPT	25 33	58	65			brown (10 YR 8/2) to yellowish brown (10 YR moderately 5/6) moderately	
	20.00			- 33				-	S. 5/	
	30.00								30.00	



6/7/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-25 **BORING** 73518 E.A. #

GROUND ELEV. 2387.80 (ft)

DATE DEPTH ft ELEV. ft HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

SHEET 2 OF 2

"X" 91+50 **STATION** 125' Right

**OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	30.80	I	CMS		50/0.3'	100		GC	CLAYEY GRAVEL with SAND Dry, hard, very pale brown (10 YR 8/2) to yellowish brown (10 YR 5/6)	(I) Weakly cemented.
	_								33.00	-
2352.8 -	35.00 -35	J	CMS	17 20	43	95		-	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, multicolored	
	36.50	К	SPT	23 11 14	29	80		SC	<u>CLAYEY SAND with GRAVEL</u> Dry, dense, multicolored	
	38.00			15	-				39.00	
2347.8 -	40.00		CMS	11 21	52	85			LEAN CLAY with SAND Dry, hard, white (10 YR 8/1)	(L) Weakly to moderately
	41.50	M	SPT	31 12 9	17	85		CL	<b>LEAN CLAY with SAND</b> Dry to moist, very stiff, mottled very pale brown (10 YR 8/2) to	cemented.
	43.00			8		-		- OL	brown (10 YR 5/3)	
2342.8 -	45.00 <b>45</b>		01:5	10	<b>.</b>	0-		-	45.80	(N) Weakly
	46.50	N 	CMS	19 35 9 12	25	85  85		GC	46.50 CLAYEY GRAVEL with SAND. Dry, hard, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	cemented nodules in sample.
	48.00		OI- I	13	20				LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
2337.8 -	-50							CL		
	_								_ 51.50	
	  -  -									
2332.8 -	-55.00 -55 -56.50	P	CMS	17 24 29	53	60		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, mottled very pale brown (10 YR 7/4) to brown (7.5 YR 5/4)	
	58.00	Q	SPT	10 13 12	25	55			CLAYEY GRAVEL with SAND Dry to moist, very stiff, light gray (10 YR 7/1 and 10 YR 7/2) 58.00	
									END BI-25 @ 58.0'	No groundwarencountered.



6/18/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-26 **BORING** 

73518 E.A. #

GROUND ELEV. 2438.90 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

6/18/13 68.00

DATE DEPTH ft ELEV. ft

2370.9

"X" 60+03 **STATION** 

429' Left **OFFSET** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 1 OF 4

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	- (11)			morements	11000	Recova			SANDY GRAVEL Dry, tan	
	- 2.50 - 4.00	Α	SPT	5 8 14	22	85		ML	SANDY SILT Dry, medium dense, pale brown (10 YR 6/3)	
2433.9 -	5.00 5.60	В	SPT	35 20/0.1'	20/0.1'	100			CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	(B) Last 10 blows; no progress.
	- <u>7:58</u> -	С	SPT	20/0.2'	20/0.2'	0				Hard drilling (6.0'. Progress 0.1'/5 minute Broke throug @ 6.3'.
2428.9 -	10.00 10	D	SPT	13 32 26	58	65		sc	CLAYEY SAND Dry to moist, hard, light gray (10 YR 7/2)	(C) Last 10 blows; no progress. No sample recovered.
	- 12.50 - 14.00	E	SPT	12 11 11	22	55			<u>CLAYEY SAND</u> Dry to moist, very stiff, pinkish gray (7.5 YR 7/2) to brown (7.5 YR 4/4)	
2423.9 -	15.00 - 15 - 16.50	F	SPT	8 9 10	19	85		CL ML	SANDY SILTY CLAY Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	
	17.50 - 19.00	G	CMS	11	21	95		sc	CLAYEY SAND with GRAVEL Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	
2418.9 -	-20, 20.50	Н	SPT	5 6 21	27	80		CL	SANDY LEAN CLAY Dry to moist, medium dense to hard, light gray (10 YR 7/2) to brown (10 YR 5/3)	(H) Lightly cemented fro 20.4' - 20.5'.
	_								23.00	-
2413.9 -	25.00 25 26.50	1	CMS	14 22 30	52	95		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4) with multicolored gravel	
	28.00	J	SPT	9 7 11	18	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4) with multicolored gravel	
	-								30.00	



6/18/13 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-26 73518

GROUND ELEV.

2438.90 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

68.00

6/18/13

DATE DEPTH ft ELEV. ft

2370.9

"X" 60+03 **STATION** 429' Left

**OFFSET** 

Boomhower Diedrich D-120 (Unit 1627)

SHEET 2 OF 4

**ENGINEER EQUIPMENT** 

Pypkowski

**OPERATOR** DRILLING METHOD

BACKEILLED DATE

6" H.S.A.

ENGINE	HNICAL EERING			AMMER DR	ROP SYS	STEM	utomatic		BACKFILLEDD	ATE
ELEV. (ft)	DEPTH (ft)	1	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2403.9 -	- - - 35.00	K	CMS	11 12 11	23	45		МН	SANDY ELASTIC SILT with GRAVEL Dry to moist, medium dense, pale brown (10 YR 6/3)	
	36.50	L	SPT	3 5	12	40			36.50  SILTY SAND with GRAVEL Dry to moist, medium dense, pale brown (10 YR 6/3)	(L) Rock in sampler shoe.
2398.9 -	38.00 - -40 -			7				SM		End day 1 drilling @ 38.0'.
	_								_ <u>43.00</u>	
2393.9 -	<u>45</u> 45.96	M	CMS	<del>- 10/0.1'</del>	<del>10/0.1</del> '	0				Hard drilling @ 44.0'. Progress 0.1'/5 minutes. (M) Last 10 blows; no progress. No sample recovered. Hard drilling from 45.0' - 48.0'. Progress
2388.9 -	50.00		CMS	7	25/0.2'	85			CLAYEY SAND Dry to moist, very stiff to	3.0'/30 minutes @ 250 psi dowr
2383.9 -	50.70 	14	OIVIO	25/0.2'	200.2	33		sc	very hard, mottled brown (7.5 YR 5/3) to pink (7.5 YR 7/3)	pressure. (N) Last 10 blows; no progress. Hard drilling from 50.0' - 55.0'. Progress 5.0'/45 minutes @ 250 psi dowr pressure. Hard drilling from 55.0' - Frogress 4.0'/15 minutes @ 250 psi dowr pressure.
	_									
									60.00	



6/18/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

GROUND ELEV. 2438.90 (ft)

HAMMER DROP SYSTEM Automatic

BI-26

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

6/18/13 68.00

DATE DEPTH ft ELEV. ft

2370.9

"X" 60+03 **STATION** 429' Left

**OFFSET ENGINEER** 

**EQUIPMENT** 

Boomhower Diedrich D-120 (Unit 1627)

SHEET 3 OF 4

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

Hard drilling from 60.0' - 62.0'. Progree 2.0'/20 minute (@ 250 psi do pressure.)  CL  LEAN CLAY with SAND stiff to very stiff, brown (7.5 YR 5/4)  LEAN CLAY with SAND Moist to wet, stiff, (P) Free wate	ELEV.	DEPTH		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2368.9 70.00 P CMS 9 19 95 71.50 P CMS 9 19 125  73.00 Q SPT 2 9 125  CH  FAT CLAY with SAND pale brown (10 YR 6/3) P CMS 12 29 135 P CMS 12 29 125 P CMS 12 29 20 20 20 20 20 20 20 20 20 20 20 20 20	(ft) 2373.9 -	(ft) - - - - - - - - - - - - - - - - - - -				1 foot	Recov'd		Gloup		from 60.0' - 62.0'. Progress 2.0'/20 minutes @ 250 psi down pressure.
71.50 P CMS 9 19 95 71.50  71.50 P CMS 9 19 95 71.50  CH  2363.9 75.00 P CMS 9 125 77  R CMS 12 29 135 76.70  R CMS 12 17 7 18 115  2358.9 80  CL  CL  CL  CL  CL  CL  CL  CL  CL  C	7	- - -	0	CMS	25/0.4	<u>25/0.4</u> °	100		CL	LEAN CLAY with SAND stiff, brown (7.5 YR 5/4)  Moist, stiff to very	blows; no
2363.9	2368.9 -		l	CMS	9 10	19	95			pale brown (10 YR 6/3) 71.50	(P) Free water on sampler @ 70.0'.
2363.9		73.00	Q	SPT	2	9	125		_	FAT CLAY Moist to wet, stiff, pale brown (10 YR 6/3)	
R CMS 12 29 135 76.70  S SPT 7 18 115	2363.9 -	75.00							СН		
2358.9 —80 CL		-	R	CMS	12 17	29	135			76.70	
- CL		- 78.20	S	SPT	7	18	115		_	(7.5 YR 5/4) Moist to wet, very stiff, brown	
	2358.9 -	80									
State   Stat		_							CL		
CMS   33   125   SC   86.50   CLAYEY SAND   Moist to wet, very stiff, brown (7.5 YR 5/4)   CLAYEY GRAVEL with SAND   Moist to wet, hard, brown (7.5 YR 5/4)   GC   GC   GC   GC   GC   GC   GC   G	2353.9 -			0140		00	405		_	85.80	
U SPT 14 36 80 GC CLAYEY GRAVEL with SAND Moist to wet, hard, brown (7.5 YR 5/4)		86.50	ı	CIVIS	24	33	125		sc	OG FO CLAYEY SAND Moist to wet, very stiff,	
dollar   <t< td=""><td></td><td>88.00</td><td>U</td><td>SPT</td><td>14</td><td>36</td><td>80</td><td></td><td></td><td>CLAYEY GRAVEL with SAND Moist to wet,</td><td></td></t<>		88.00	U	SPT	14	36	80			CLAYEY GRAVEL with SAND Moist to wet,	
≥ 90.00		_							GC	00.00	



6/18/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-26 73518

2438.90 (ft) GROUND ELEV.

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 6/18/13 68.00 2370.9

**EXPLORATION LOG** 

"X" 60+03 **STATION** 

429' Left

**OFFSET** Boomhower **ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

SHEET 4 OF 4

Pypkowski

6" H.S.A.

DRILLING METHOD BACKFILLED DATE

GEOTECH ENGINE	INICAL EERING			MMER DR		STEM A	utomatic	[	6/18/13 68.00 2370.9 BACKFILLED	DATE
ELEV. (ft)	DEPTH (ft)		IPLE TYPE	BLOW Co 6 inch Increments	OUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2343.9 -	- - - <u>-</u> <del>-</del> <del>-</del> <del>-</del> <del>-</del> <del>-</del> -	V	CMS	<del>20/0.1'</del>	<del>20/0.1'</del>	0			95.10 END BI-26 @ 95.1'	(V) Last 10 blows; no progress. No sample recovered.
2338.9 -	100 									
2333.9 -	- 105 									
2328.9 -	- 110 -									
2323.9 -	- 115 - -									



6/20/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 2446.30 (ft) GROUND ELEV.

BI-27

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 60+26

**STATION** 35' Right **OFFSET** 

**EQUIPMENT** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 3

Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-			more mente	11000	110007 0			SANDY GRAVEL Dry, tan	
2441.3 -	- - 4.70 -5	A	SPT	5 9	24	0				(A) No sample recovered.
	- 6.20 - 7.20			15 6						(B) No sample
	8.70 - 9.70	В	SPT	3 9	12	0			9.00	recovered.
2436.3 -	-10 10.90	С	SPT	20 31 30/0.2'	30/0.2'	85		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel	(C) Last 10 blows; no progress.
	- 12.20 - 13.50	D	SPT	3 45 50/0.3'	50/0.3'	55		SM	SILTY SAND with GRAVEL very dense, multicolored  14.00	
2431.3 -	- 14.70 15 - 16.20	E	CMS	5 7 22	29	35			SILTY GRAVEL with SAND Dry to moist, very dense, multicolored	(E) 1.0' of 1/4' gravel.
	17.70	F	SPT	4 6 43	49	15		GM	SILTY GRAVEL with SAND Dry to moist, very stiff, yellowish brown (10 YR 5/4)	(F) 1.0' of 1/4" gravel.
2426.3	- 19.70 20 20.50	G	CMS	46	50/0.3'	75			19.00 POORLY-GRADED GRAVEL with SILT and	_
		0	CIVIS	50/0.3'	30/0.3	75		GP GM	POORLY-GRADED GRAVEL with SILT and SAND Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel	
	-								23.00	_
2421.3 -	24.70 25 26.00	Н	SPT	32 56 50/0.3'	50/0.3'	90		GC	SILTY CLAYEY GRAVEL with SAND Dry to moist, very dense, yellowish brown (10 YR 5/4) with multicolored gravel	
	-							GM		
	_									



START DATE \_\_\_6/19/13

END DATE 6/20/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING BI-27 E.A. # 73518

GROUND ELEV. 2446.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_"X" 60+26

OFFSET 35' Right

**OPERATOR** 

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

SHEET 2 OF 3

Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	30.20 - 31.70	ı	CMS	14 20 29	49	95		SM	SILTY SAND with GRAVEL Dry to moist, very stiff to hard, light yellowish brown (10 YR 31.70 6/4)	
	- - 33.20	J	SPT	13 11 16	27	85		SC SM	SILTY CLAYEY SAND Dry to moist, dense, light yellowish brown (10 YR 6/4)	
2411.3 -	- 34.70 35			12				СН	34.00 SANDY FAT CLAY Dry to moist, dense, light	(K) Strongly
	- 36.20	K	CMS	14 16 15	30	85		ОП	yellowish brown (10 YR 6/4) 36.20  CLAYEY SAND with GRAVEL Dry to moist,	cemented nodules in sample.
	- 37.70	L	SPT	12 20	32	75			dense, yellowish brown (10 YR 5/4) with multicolored gravel	
	-							sc		
2406.3 -	— <b>40</b> -								41.00	_
2401.3 -	- 44.70 - 45 _ 46.10 - 47.60	N	CMS	39 50 50/0.4' 26 20 22	50/0.4'	90 75			CLAYEY GRAVEL with SAND Moist, very hard, light yellowish brown (2.5 Y 6/3) with multicolored gravel CLAYEY GRAVEL with SAND Moist, very hard, light yellowish brown (2.5 Y 6/3) with multicolored gravel	End day 1 drilling @ 47.
2396.3 -	<b>50</b>  							GC		
2391.3 -	- 54.70 <b>55</b>		0140	43	400	0.5			CLAYEY GRAVEL with SAND Moist, very	(O) Lightly to
	- 56.20	О Р	CMS	48 78 44 47	126 80	95 80			dense, mottled pink (7.5 YR 8/3) to very pale brown (10 YR 7/3) with multicolored gravel  CLAYEY GRAVEL with SAND Moist, very dense, mottled pink (7.5 YR 8/3) to very pale	moderately cemented.
	57.70	1	01 1	33	30	30			brown (10 YR 7/3) with multicolored gravel	
	_									Lost circulation 58.6'.



START DATE \_\_\_6/19/13

6/20/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING \_ E.A. #

GROUND ELEV. 2446.30 (ft)

HAMMER DROP SYSTEM Automatic

BI-27

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

<sub>ION</sub> "X" 60+26

OFFSET 35' Right
ENGINEER Boomhower

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

SHEET 3 OF 3

Pypkowski

DRILLING 4" Rotary Wash

ELEV.	DEPTH		MPLE	BLOW Co	OUNT	Denvis	LABTECTS	LISCS	MATERIAL RECORDED	DEMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	61.70	Q	CMS	29 26 24	50	80		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very stiff to hard, brown (7.5 YR 5/4)	(Q) Moderately to strongly cemented.
	64.50	R	SPT	8	50/0.3'	75		_	CLAYEY GRAVEL with SAND stiff to hard, brown (7.5 YR 5/4)	comenica.
2381.3 -				50/0.3					END BI-27 @ 64.5'	No groundwate encountered.
2376.3 -	- - -70 -									
2371.3 -	- 75 -									
2366.3 -	- - - - -									
2361.3 -	- 85									
	_									



START DATE \_\_\_6/20/13

END DATE 6/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2390.20 (ft)

HAMMER DROP SYSTEM Automatic

BI-28

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION OFFSET

SET 222' Right
Boomhower

ENGINEER \_ EQUIPMENT \_

Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

"X" 89+10

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

GEOTECI ENGINI	EERING \		HA	AMMER DF	ROP SYS	STEM^	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
					. 1001	. 10001 0			SANDY GRAVEL Dry, tan
	-								
	-								2.50
	-								
	-								
2385.2 -	5.00								LEAN OLAY, Day your doors light gays (40)
		Α	SPT	9 24	65	75			LEAN CLAY Dry, very dense, light gray (10 (A) Moderatic cemented at
	6.50			41					sampler sho
	7.50			13				CL	LEAN CLAY Dry, very dense, light gray (10 (B) Moderate
	9.00	В	SPT	19 27	46	65			YR 7/2) cemented a sampler sho
				21					Sample, one
2380.2	10.00			14					SANDY LEAN CLAY with GRAVEL Dry, very
	11.50	С	SPT	24 36	60	95			dense, light gray (10 YR 7/2)
	12.50								12.00
	12.30	_	01.10	8	47	0.5		СН	FAT CLAY Dry, stiff, light yellowish brown
	14.00	D	CMS	7 10	17	95			13.80 (2.5 Y 6/3)
		E	SPT	14 19	59	95			SANDY LEAN CLAY Dry, hard, light brownish gray (2.5 Y 6/2)
2375.2 -	15 <sub>15.50</sub>			40				CL	End day 1
									16.50 drilling @ 15
	17.50								
	18.40	F	CMS	39 50/0.4'	50/0.4'	90		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 8/3)
	-								19.00
2370.2	20.00			22					SANDY FAT CLAY Dry, dense, brownish
		G	CMS	24	45	95			yellow (10 YR 6/6) to light gray (2.5 Y 8/2)
	21.50			21 6				СН	FAT CLAY with SAND Dry, medium dense,
	23.00	Н	SPT	5 8	13	85			mottled light gray (10 YR 7/2) and white (10 YR 8/1)
									24.00
	25.00								† <del></del>
2365.2	25.00 -25		0.15	17		400			SANDY LEAN CLAY Dry, hard, mottled very (I) Moderate
	26.50	ı	CMS	31 42	73	100			pale brown (10 YR 7/3) to white (10 YR 8/1) strongly cemented
	-	J	SPT	17 21	44	85		CL	SANDY LEAN CLAY Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1) nodules in sample.
	28.00			23					(J) Moderate to strongly
	-								cemented nodules in
	30.00								30.00 sample.

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

6/20/13 START DATE

6/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 GROUND ELEV. 2390.20 (ft)

BI-28

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

STATION **OFFSET** 

**EQUIPMENT** 

"X" 89+10 222' Right

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ENGIN	EERING V			AMMER DR		) I ⊑IVI			BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(11)	31.50	К	CMS	25 29 37	1 foot 66	Recov'd		SM	SILTY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) 31.50
	31.30	L	SPT	15 26	79	95		GM	32.30 SILTY GRAVEL with SAND Dry, very dense, light gray (2.5 Y 7/2)
	33.00	1		53	-			CL ML	SILTY CLAY Dry, very hard, white (2.5 Y 8/1)
2355.2 -	35.00 35			10				CL	SANDY LEAN CLAY Dry, medium dense,
	36.50	М	CMS	13 13 8	26	100			pale yellow (2.5 Y 7/3) 36.50
	38.00	N	SPT	12 12	24	85		-	CLAYEY SAND Dry, medium dense, mottled light gray (2.5 Y 7/2) to white (2.5 Y 8/1)
	_							sc	
2350.2 -	<del>-</del> 40								41.00
	_								
	_								
2345.2 -	45.00 <b>45</b>			8				_	LEAN CLAY with SAND Dry to moist, very
	46.50	0	CMS	14 21 6	35	100		CL	stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)  LEAN CLAY with SAND Dry to moist, very
	48.00	Р	SPT	8 14	22	80		-	stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)
	50.00								
2340.2 -	51.50	Q	CMS	7 8 23	31	100			LEAN CLAY with SAND Dry to moist, very stiff, mottled brown (10 YR 5/3) to light gray (10 YR 7/2)
	53.00	R	SPT	13 16 23	39	85		GC	CLAYEY GRAVEL with SAND dense, light gray (2.5 Y 7/2) 53.00
	33.00			23					END BI-28 @ 53.0'  No groundwater encountered.
2335.2 -	55								
	_								
	_								
	_								
	1					1		1	1



START DATE

JOB DESCRIPTION

LOCATION

7/8/13

7/9/13 END DATE

US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-29 **BORING** 

73518 E.A. #

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 4

"XP" 204+19 STATION

250' Left **OFFSET** Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

**EQUIPMENT** 

**OPERATOR** 

	GROUND ELEV. 2428.90 (ft)							DATE   DEPTH ft   ELEV. ft   DRILLING   6" H.S.A.			
GEOTECH ENGINI	HNICAL EERING		Н	AMMER DE	ROP SYS	TEM A	utomatic		7/11/13 62.00 2366.9 BACKFILLED DA	TE	
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
									SANDY GRAVEL Dry, tan		
	<del>2:5</del> 8		SPT	28/0.2	28/0.2	0		_		Last 10 blows; no progress. No sample recovered.	
2423.9 -	5 5.00 5 5.30		SPT	50/0.3'	50/0.3'	0		-			
	7.50								7.00		
	8.60	Α	SPT	17 47 25/0.1'	25/0.1'	50		sc	CLAYEY SAND with GRAVEL Dry to moist, very dense ,very pale brown (10 YR 8/2) with dark gravel		
2418.9 -	10.00										
2110.0	11.50	В	SPT	6 10 12	22	85		СН	FAT CLAY with SAND Dry to moist, very stiff, very pale brown (10 YR 8/2)		
	12.50								12.00		
	14.00	С	SPT	10 9 13	22	85		-	SANDY LEAN CLAY Dry to moist, very stiff, light yellow brown (2.5 YR 6/4) mottled pale yellow (2.5 YR 8/2)		
2413.9 -	15.00 15							CL			
	16.50	D	SPT	8 15 17	32	100		-	LEAN CLAY with SAND Dry to moist, hard, light brownish gray (10 YR 6/2) mottled brownish yellow (10 YR 6/8)		
	17.50								17.00		
	19.00	Е	SPT	12 16 19	35	100		SC SM	SILTY CLAYEY SAND Dry to moist, dense, very pale brown (10 YR 7/4)		
2408.9 -	20.00							<u> </u>	19.50		
2130.0	21.50	F	CMS	20	34	85		_	LEAN CLAY with SAND Dry to moist, very stiff, pinkish white (7.5 YR 8/2) to light brown (7.5 YR 6/3)		
	23.00	G	SPT	8 8 11	19	85		CL	SANDY LEAN CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3)	(G) Moderately cemented nodules in sample.	
	25.00								24.00	σαπρισ.	
2403.9 -	26.50	Н	CMS	28 28 23	51	95		60	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, light yellowish brown (10 YR 6/4)	(H) Moderately cemented nodules in	
	28.00	I	SPT	12	74	80		- SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3) to brown (10 YR 5/3)	sample. (I) Moderately cemented nodules in	
	_								29.00	sample.	
	30.00										

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



7/9/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-29 73518 GROUND ELEV. 2428.90 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

7/10/13 62.00 2366.9 7/11/13 62.00 2366.9

"XP" 204+19

Pypkowski

STATION **OFFSET** 

250' Left Lawrence

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 2 OF 4

**OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	31.50	J	CMS	13 11 24	35	85		СН	SANDY FAT CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3)	
	- 33.00	K	SPT	19 45 38	83	80			CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1) with dark gravel	
	_							GC		
2393.9	35.00 35.70	L	CMS	51 39/0.2'	39/0.2'	55			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
	-								37.00	
	-								WEAKLY CEMENTED MATERIAL OR GRAVELLY LAYER	
2388.9	<u>40</u> 40.90		CMS	<del> 29/0.1'</del>	<del>29/0.1'</del>	0				Smooth, ever penetration through zone.
2383.9	- <u>45</u> 45.90 -		SPT	<del>10/0.1'</del>	<del>10/0.1'</del>	0			WEAKLY CEMENTED MATERIAL OR GRAVELLY LAYER	
2378.9	- - - 50.00 - 500.30		SPT	50/0.3'	50/0.3'	0		-		
	-								52.50	
2373.9	- - 55.00			7				СН	CANDY FAT OLAY WITH ODAY FLANGE	
	_ 56.50	М	CMS	7 10 12	22	95			SANDY FAT CLAY with GRAVEL Moist, very stiff, brownish yellow (10 YR 6/6)  56.50	
	- 57.20 -	N	SPT	15 50/0.2'	50/0.2'	100		GC	CLAYEY GRAVEL with SAND Moist, dense, brownish yellow (10 YR 6/6) to very pale brown (10 YR 8/2)	(N) Moderatel cemented nodules in sample.
	_									



END DATE 7/9/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-29

E.A. # 73518 GROUND ELEV. 2428.90 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

7/10/13 62.00 2366.9 7/11/13 62.00 2366.9 SHEET 3 OF 4

STATION \_\_"XP" 204+19

OFFSET 250' Left
ENGINEER Lawrence

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments 50/0.2'	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
Ţ	60.20		CMS	<del>-50/0.2</del> '	50/0.2'	0			MODERATELY TO STRONGLY CEMENTED MATERIAL 62.00	Water table
2363.9 -	65.00 65 66.50	0	CMS	49 22 34 9	56	133		-	<u>LEAN CLAY</u> Moist, hard, light yellowish brown (10 YR 6/4) <u>LEAN CLAY with GRAVEL</u> Moist, hard, light	measured @ 62.0' on 07/10/13 @ 9:1 am; measured @ 62' on 07/11/13 @ 8:1 am.
	68.00	Р	SPT	32 20	52	95			yellowish brown (10 YR 6/4)	
2358.9 -	70.00 70	Q	CMS	15 16 30	46	120		CL	LEAN CLAY Moist, very stiff, brownish yellow (10 YR 6/6) to yellowish brown (10 YR 5/6)	
	73.00	R	SPT	7 7 12	19	105			<u>LEAN CLAY</u> Moist, very stiff, brownish yellow (10 YR 6/6) to yellowish brown (10 YR 5/6)	
2353.9 -	75.00 75 76.50	S	CMS	11 15 22 5 6	37 15	120		-	LEAN CLAY with SAND Hard, moist, yellowish brown (10 YR 5/4)  76.50  FAT CLAY Moist, stiff, yellowish brown (10 YR 5/4)	
	78.00			9				CH		
2348.9 -	<b>80</b> 								_ 79.00	
2343.9 -	- 		SH			0				0.2' penetratio @ 700 psi; crushed Shelb Tube.
	- 90.00									



START DATE

7/8/13

7/9/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-29 **BORING** 

LOCATION

73518 E.A. #

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 4

"XP" 204+19 STATION

250' Left **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

Diedrich D-120 (Unit 1627)

Pypkowski

Lawrence

	GROUND ELEV. 2428.90 (ft)  HAMMER DROP SYSTEM Automatic								DATE   DEPTH ft   ELEV. ft   T/10/13   62.00   2366.9   T/11/13   62.00   2366.9   BACKFILLED   DATE   DATE				
ELEV.	DEPTH		MPLE TYPE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS			
(ft)	(ft) - 91.40	U	CMS	1ncrements 26 58 50/0.4'	1 foot 50/0.4'	Recov'd		Group	LEAN CLAY Moist, very hard, light yellowish brown (10 YR 6/4)				
	92.60	V	SPT	24 48 50/0.2'	50/0.2'	110			SANDY LEAN CLAY Moist, very hard, very hard, yellowish brown (10 YR 6/4)				
2333.9 -	95.00 95	14/	CMC	55	50/0.21	100		CL	LEAN CLAY Moist, very hard, yellowish				
	96.30	X	CMS	54 50 <u>/0.3'</u> 25 50 56	50/0.3' 106	100			brown (10 YR 6/4)  SANDY LEAN CLAY Moist, very hard, yellowish brown (10 YR 6/4)				
	97.60			50				_					
2328.9 -	100.00 100 100.90	Υ	CMS	45 50/0.4'	50/0.4'	130			LEAN CLAY with SAND Moist, very hard, yellowish brown (10 YR 6/4)  END BI-29 @ 100.9'				
	_								END BI-23 @ 100.9				
2222.0	105												
2323.9 -	— 105 												
	_												
2318.9 -	110												
	_												
	_												
2313.9 -	<del>-</del> 115												
	_												



END DATE

LOCATION

7/11/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-30

E.A. # 73518 GROUND ELEV. 2427.20 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION "X" 65+98

OFFSET 316' Left

OFFSET 316' Left
ENGINEER Lawrence

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

	EERING V	SAI	MPLE	BLOW CO	DUNT					
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	(1.1)			Increments	1 1001	Necov u			SANDY GRAVEL Dry, tan	
	-									
									2.00	
	2.50									
	-	Α	SPT	5 8	22	90		CL	SANDY SILTY CLAY Dry to moist, very stiff, light yellowish brown (10 YR 6/4)	
	4.00		01 1	14	22			ML	iight yonowion brown (10 110 0/4)	
								L	4.50	
2422.2 -	5 5.00			21					<u>CLAYEY SAND with GRAVEL</u> Dry to moist,	
		В	SPT	26	67	95		sc	very dense, light yellowish brown (10 YR 6/4) to	
	6.50			41					very pale brown (10 YR 8/2) with dark gravel	
	7.50							<u> </u>	7.00	
	7.00			37					CLAYEY GRAVEL with SAND Dry to moist,	
		С	SPT	34	67	90			very dense, very pale brown (10 YR 8/2) with	
	9.00			33					dark gravel	
2417.2 -	10.00									
2411.Z <sup>-</sup>	10		05-	17		00			CLAYEY GRAVEL with SAND Dry to moist, dense, light yellowish brown (10 YR 6/4) to very	
	11.50	D	SPT	17 24	41	80			pale brown (10 YR 8/2) with dark gravel	
	11.00			27				GC	pane are (12 111 0.2) grane	
	12.50							GC		
	-	Е	SPT	11 8	14	25			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, light yellowish brown (10 YR 6/4) to very	
	14.00	_	01 1	6	17	20			pale brown (10 YR 8/2) with dark gravel	
2412.2 -	15.00 15			7					<u>CLAYEY GRAVEL with SAND</u> Dry to moist,	
		F	SPT	6	11	65			medium dense, very pale brown (10 YR 8/2) to	
	16.50			5					dark yellowish brown (10 YR 4/4)	
	17.50							<u> </u>	17.00	
				3				-	<b>LEAN CLAY with SAND</b> Dry to moist, stiff,	
	40.00	G	SPT	4	13	65			light yellowish brown (10 YR 6/4) mottled white powder (10 YR 8/1)	
	19.00			9				-	powder (10 1R 6/1)	
2407.2 -	20.00									
2 <del>4</del> 01.2 -	20		CN 4C	6	20	0.5			LEAN CLAY with SAND Dry to moist, very	
	21.50	Н	CMS	8 14	22	95			stiff, pale yellow (2.5 YR 7/3)	
	21.00			5				CL	SANDY LEAN CLAY Dry to moist, very stiff,	
	00.00	I	SPT	8	19	65			light yellowish brown (10 YR 6/4) mottled white	
	23.00			11					powder (10 YR 8/1)	
	0.5.0.									
2402.2 -	25.00 <b>25</b>			11					SANDY LEAN CLAY Dry to moist, very stiff,	
	L	J	CMS	16	31	95			very pale brown (10 YR 7/4) to vellowish brown	
	26.50			15					26.50 (10 YR 5/4)	
	-	K	SPT	6 7	21	75			<u>CLAYEY SAND with GRAVEL</u> Dry to moist, medium dense, very pale brown (10 YR 7/4) to	
	28.00	1	0 1	7 14	۷.	'3			yellowish brown (10 YR 5/4)	
								sc		
	-									
	30.00								30.00	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

GROUND ELEV. 2427.20 (ft)

HAMMER DROP SYSTEM Automatic

BI-30

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "X" 65+98

STATION "X" 65+98
OFFSET 316' Left

OFFSET 316' Left
ENGINEER Lawrence

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	31.50	L	CMS	16 16 16	32	85		GC	CLAYEY GRAVEL with SAND Dry to moist, medium dense, very pale brown (10 YR 7/4) to 31.50 yellowish brown (10 YR 5/4)	
	33.00	М	SPT	22 18 12	30	65		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, very pale brown (10 YR 7/4) to yellowish brown (10 YR 5/4)	
_	-								34.00	
2392.2	35.00 - 35	N	CMS		93	95			CLAYEY GRAVEL with SAND Dry to moist, hard, very pale brown (10 YR 7/4) and	
	36.50 - 38.00	0	SPT	46 15 27 37	64	75		GC	multicolored, with white (10 YR 8/1)  CLAYEY GRAVEL with SAND Dry to moist, very hard, very pale brown (10 YR 7/4) and multicolored, with white (10 YR 8/1)	
	-								39.00	_
2387.2	40.00 40	P	CMS	34 24	50/0.3'	100		1	<u>GRAVELLY LEAN CLAY with SAND</u> Dry to moist, very hard, yellowish brown (10 YR 5/4) to	
-	41.30	Q	SPT	50/0.3' 25 39	95	95		CL	white (10 YR 8/1) <u>SANDY LEAN CLAY with GRAVEL</u> Dry to moist, very hard, yellowish brown (10 YR 5/4) to	
-	42.80			56				_	white (10 YR 8/1)	
2382.2	<b>−45</b>									Hard drilling
-	-								STRONGLY CEMENTED MATERIALS; HARD DRILLING	44.0'-48.0'; 0.02'/min, 400 psi down.
_	-								48.00	-
2377.2	50.00 50.60	R	SPT	46	50/0.1'	100		_	<u>CLAYEY SAND with GRAVEL</u> Dry to moist,	
	-			50/0.1'					very dense, brown (7.5 YR 5/4) mottled pinkish white (7.5 YR 8/2)	
-	-							SC		
2372.2	- 55.00 55									
	56.50	S	SPT	15 20 25	45	95			CLAYEY SAND with GRAVEL Dry to moist, dense, brown (7.5 YR 5/4) mottled pinkish white (7.5 YR 8/2)	
	-								END BI-30 @ 56.5'	No groundwate encountered.
	_									



7/22/13 START DATE

7/23/13

END DATE US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518

2431.50 (ft) GROUND ELEV

Automatic

BI-31

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

7/23/13 65.00

DATE DEPTH ft ELEV. ft

2366.5

SHEET 1 OF 5 "X" 59+50

STATION **OFFSET** 

**OPERATOR** 

219' Left Lawrence

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

6" H.S.A.

DRILLING METHOD

GEOTECI ENGINI	EERING \			AMMER DR		STEM _A	utomatic	L	BACKFILLED DATE				
ELEV. (ft)	DEPTH (ft)		TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS			
	_												
	2.50							<u></u> -					
	4.00	Α	SPT	16 12 14	26	45		GC GM	dense, yellowish brown (10 YR 5/4) with dark sh gravel	) Sampler oe blocked th rock.			
2426.5	5.00							<u> </u>					
2420.5	6.50	В	SPT	6 5 6	11	85			SANDY LEAN CLAY Moist, stiff, very pale brown (10 YR 7/4)				
	7.50							CL					
	9.00	С	SPT	10 11 15	26	95			SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 7/4)				
	10.00							<u></u> -	9.50				
2421.5	11.50	D	CMS	8 10 14	24	85		-	SANDY SILTY CLAY Moist, stiff, light yellowish brown (10 YR 6/4) to white (10 YR 8/1)				
	13.00	Е	SPT	6 7 8	15	85		CL	SANDY LEAN CLAY Moist, stiff, light yellowish brown (10 YR 6/4) to white (10 YR 8/1)				
									14.00				
2416.5	16.50	F	CMS	8 17 22	39	85		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)				
	18.00	G	SPT	9 11 14	25	75		sc	CLAYEY SAND with GRAVEL Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)				
									19.00				
	20.00							<u> </u>	19.00				
2411.5	20.00	Н	CMS	5 11 14	25	85			SILTY GRAVEL with SAND Moist, medium dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)				
	23.00	ı	SPT	12 17 14	31	65		GM	SILTY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/8)				
									24.00				
2406.5	25.00 -25	J	CMS	11 11	57	55		-	CLAYEY GRAVEL with SAND Moist, dense, multicolored, light yellowish brown (10 YR 6/4)				
	26.50	K	SPT	46 15 15	31	60		GC	to brownish yellow (10 YR 6/8)  CLAYEY GRAVEL Moist, dense, multicolored, light yellowish brown (10 YR 6/4)				
	28.00			16				-	to brownish yellow (10 YR 6/8)				
	30.00								30.00				
	30.00								00.00				

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING .

E.A. # \_\_\_73518

GROUND ELEV. 2431.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-31

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

7/23/13 65.00

DATE DEPTH ft ELEV. ft

2366.5

STATION \_\_"X" 59+50

OFFSET

219' Left Lawrence

Pypkowski

ENGINEER EQUIPMENT

Diedrich D-120 (Unit 1627)

SHEET 2 OF 5

OPERATOR DRILLING

DRILLING 6" H.S.A.

.50 L .50 N	M :	CMS SPT CMS	BLOW Co 6 inch Increments 4 17 22 7 9 11	Last	Percent Recov'd 95 85	LAB TESTS	USCS Group	MATERIAL DESCRIPTION  GRAVELLY LEAN CLAY with SAND Moist, very stiff, moist, reddish yellow (7.5 YR 6/6)  LEAN CLAY with SAND Moist, very stiff, reddish yellow (7.5 YR 6/6)	REMARKS
3.00 N	M :	CMS SPT CMS	4 17 22 7 9 11	39	95		CL	very stiff, moist, reddish yellow (7.5 YR 6/6) <b>LEAN CLAY with SAND</b> Moist, very stiff,	
5.00 5.00	N (	CMS	9 11	20	85		CL	LEAN CLAY with SAND Moist, very stiff, reddish yellow (7.5 YR 6/6)	
70 N	N (	CMS SPT	21						
70 N	N (	CMS SPT	21					34.00	
			50/0.2'	50/0.2' 50/0.2'	100		sc	CLAYEY SAND with GRAVEL Moist, very dense, very pale brown (10 YR 8/2) to light	(O) 50 blows; r
								yellowish brown (10 YR 6/4)	progress. No sample recovered.
) <u>.98</u>	P	SPT	<del>10/0.1'</del>	10/0.1'	0			WEAKLY TO MODERATELY CEMENTED MATERIALS	Moderately had drilling, smooth penetration, weak to moderate cementation.  (P) 10 blows; r progress. No sample recovered.
: 00								43.50	
	Q	SPT	5 13 50/0.4'	50/0.4'	70		GM	SILTY GRAVEL with SAND Moist, very dense, multicolored, light gray (5 YR 7/1) mottled with olive yellow (2.5 YR 6/8)	
								WEAKLY CEMENTED MATERIALS	
).98 F	R	SPT	<del>-20/0.1'-</del>	20/0.1'	0				(R) 22 blows; r progress. No sample recovered.
								STRONGLY CEMENTED MATERIALS	Hard drilling - .08 ft/min @ 3 psi down.
5.00		Q	Q SPT	Q SPT 5 13 50/0.4'	Q SPT 13 50/0.4'	Q SPT 5 13 50/0.4' 70	Q SPT 5 13 50/0.4' 70 50/0.4'	Q SPT 5 13 50/0.4' 70	Q   SPT   13   50/0.4'   70



7/22/13 START DATE

7/23/13 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518

BI-31

2431.50 (ft) GROUND ELEV..

DATE DEPTH ft ELEV. ft 7/23/13 65.00 HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

2366.5

"X" 59+50 STATION

**OFFSET** 

Lawrence

219' Left

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627) Pypkowski

SHEET 3 OF 5

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKEILLED DATE

	INICAL EERING		11/	AMMER DR	OF 313	) I LIVI	utomatic		BACKFILLED DATE	
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMA	ARKS
	61.50	s	SPT	13 20 40	60	115		CL ML	SILTY CLAY with SAND Moist, hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2) 62.00	
	_								WEAKLY CEMENTED MATERIALS 63.00	
2366.5	7 65.00			20				CL	LEAN CLAY with GRAVEL Moist, hard, light (T) Free	wate
	66.50	Т	CMS	25 35	60	100			brown (7.5 YR 6/4) to reddish yellow (7.5 YR on samp 65.50 6/6)	
	68.00	U	SPT	18 12 16	28	95		CL ML	SILTY CLAY Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
2361.5 -	70.00							CL	69.00	
_001.0	71.50	٧	CMS	15	24	100			70.80 LEAN CLAY Moist, stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
	73.00	w	SPT	6 7 10	17	115		СН	FAT CLAY Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
	_								74.00	
2356.5 -	75.00 75 76.50	x	CMS	10 11 15	26	95			LEAN CLAY with SAND Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
	78.00	Υ	SPT	4 7 13	20	125		CL	<u>LEAN CLAY with SAND</u> Moist, very stiff, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
	80.00									
2351.5 -	81.50	z	CMS	41	66	115			GRAVELLY LEAN CLAY Moist, hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR	
	83.00	AA	SPT	34 48 42	90	95		GC	\(\(\begin{align*} \lambda(8/2) \) \(\begin{align*} \begin{align*} \centure{CLAYEY GRAVEL with SAND} \) Moist, very dense, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown	
	85.00								84.00 (10 YR 8/2)	
2346.5 -	85.00 85 86.50		CMS	11 18 37	55	115			GRAVELLY LEAN CLAY Moist, hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR	
	88.00	СС	SPT	9 11 51	62	120		CL	8/2)  LEAN CLAY with SAND Moist, very hard, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown (10 YR	
	_								8/2)	



START DATE

7/22/13

7/23/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-31 73518

GROUND ELEV. 2431.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

7/23/13 65.00

DATE DEPTH ft ELEV. ft

2366.5

SHEET 4 OF 5

STATION **OFFSET** 

219' Left

Lawrence **ENGINEER** 

"X" 59+50

Pypkowski

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED \_ DATE

ELEV.	DEPTH (ft)		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(11)			Increments 12	1 foot	Recov'd		0.000	CLAYEY GRAVEL with SAND Moist, very	
	- 04.50	DD	CMS	36	87	95		GC	dense, multicolored, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6) with very pale brown	
-	91.50 92.00	FF	SPT	51 25	20/0.0'	100			92.00 (10 YR 8/2)	
	02.00		0	20/0.0'	20,0.0	100		†		
-	-									
									WEAKLY TO MODERATELY CEMENTED	
	_								<u>MATERIALS</u>	
2336.5	-95							L	95.00	
	-									
-	-									
	_									
-	-									
2331.5	100.00 <b>100</b>									
2001.0	100	ГГ	CMS	25 33	71	115			SILTY CLAY Moist, hard, light yellowish brown (10 YR 6/4)	
-	101.50	ГГ	CIVIS	38	/ 1	115			blowii (10 11X 0/4)	
				10					<u>SILTY CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	103.00	GG	SPT	12 21	33	125			yellowish brown (10 YR 6/4)	
-	103.00			21						
	_									
								CI		
2326.5	<b> 105</b>							CL ML		
	_									
-	-									
-	-									
	_									
2321.5	110.00 110			20					SILTY CLAY Moist, hard, light yellowish	
		НН	CMS	35	81	85			brown (10 YR 6/4)	
	111.50			46						
-	-	П	SPT	12 11	25	140			SILTY CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)	
	113.00	"	01 1	14	20	140			Signification (1)	
-	-									
2316.5	<b></b> 115							L	115.00	
2310.5	110								<del></del>	
-	-									
	_									
								CL		
-	-									
			1		1	1	1	1		
	_									



START DATE	7/22/13

7/23/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV. 2431.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-31

73518

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

7/23/13 65.00

DATE DEPTH ft ELEV. ft

2366.5

SHEET 5 OF 5

"X" 59+50 STATION 219' Left

**OFFSET** 

Lawrence

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

**OPERATOR** DRILLING METHOD

6" H.S.A.

Pypkowski

ELEV.	DEPTH		MPLE TYPE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)		CMS	Increments 10	1 foot 46	Recov'd		Group	LEAN CLAY with SAND Moist, very stiff, light yellowish brown (10 YR 6/4)	
	121.50		Oivio	28		100		CL		
	-	KK	SPT	7 5	18	125			<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
	123.00			13					123.00 END BI-31 @ 123.0'	
									END BI-31 (# 123.0	
2306.5 -	<del></del> 125									
	-									
	-									
	<u> </u>									
2301.5 -	130									
	-									
	-									
	-									
2296.5 -	135									
	+									
	-									
	_									
2291.5 -	<del> </del> 140									
	-									
	-									
	-									
2286.5 -	145									
	-									
	-									
	-									
		L								



7/24/13 START DATE

7/25/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-32 73518

GROUND ELEV. 2439.40 (ft)

DATE DEPTH ft ELEV. ft HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

SHEET 1 OF 2 "X" 59+01

STATION

334' Left **OFFSET** Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

	DEDTU	SAN	MPLE	BLOW CO				11000		_
ELEV. (ft)	DEPTH (ft)		TYPE	Ginob	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
( )	-			morements	11000	NCCOV U				
	2.50							<u> </u>	2.00	
	4.00	Α	SPT	19 22 21	43	80		SM	<u>SILTY SAND with GRAVEL</u> Moist, dense, very pale brown fines (10 YR 7/3) with dark gravel	
	_ 5.00							<u></u>	4.50	
2434.4	6.00	В	SPT	21 50	50	90		sc	CLAYEY SAND with GRAVEL. Moist, very dense, very pale brown fines (10 YR 7/3) with dark gravel.	
									7.00	
	<del>7:5</del> 8	С	SPT	20/0.2'	20/0.2'	0				(C) Last 10
								GP		blows; no progress. No sample
2429.4	1010.00			46				GC	POORLY GRADED GRAVEL with SILTY	recovered.
	11.50	D	SPT	24 12	36	65		-	CLAY and SAND Moist, dense, very pale brown (10 YR 7/3) to white fines (10 YR 8/1) 12.00	
	12.50							<u> </u>	SILTY SAND Moist, dense, very pale brown	
	14.00	Е	SPT	7 10 29	39	85			(10 YR 7/4)	
	15.00							SM		
2424.4	16.50	F	CMS	11 21 31	52	100			SILTY SAND Moist, dense, very pale brown (10 YR 7/4) fines with dark gravel	
	-	G	SPT	9	18	0.5			17.00	
	18.00	G	3P1	8	10	85		CL ML	SANDY SILTY CLAY Moist, medium dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) and very dark grayish brown 19.00 (10 YR 3/2)	
	-							<u> </u>	19.00 (10 110 3/2)	
2419.4	20.00		CMS		48	95		SM	SILTY SAND with GRAVEL Moist, dense, light yellowish brown (10 YR 6/4) mottled light	
	21.50			22 9					21.50 gray (10 YR 7/2) with dark gravel  CLAYEY GRAVEL with SAND Moist, dense,	
	23.00	I	SPT		27	80		GC	light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) with dark gravel	
	_							L	24.00	
2414.4	25.00									
44 IH.H	26.50	J	CMS	17 22 22	44	100		GC	SILTY CLAYEY GRAVEL with SAND Moist, dense, light yellowish brown (10 YR 6/4) mottled light gray (10 YR 7/2) with dark gravel	
	28.00	К	SPT	12 12 19	31	85		GM	SILTY CLAYEY GRAVEL with SAND Moist, dense, light yellowish brown (10 YR 6/4), mottled light gray (10 YR 7/2) with dark gravel	
									29.00	
	r							GC	<del> </del>	1

ALL FILES.GPJ NV\_DOT.GDT 6/27/16



7/24/13 START DATE

7/25/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. # GROUND ELEV. 2439.40 (ft)

HAMMER DROP SYSTEM Automatic

BI-32

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 59+01 STATION 334' Left

**OFFSET ENGINEER** 

Lawrence Diedrich D-120 (Unit 1627)

**EQUIPMENT OPERATOR** 

Pypkowski DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments 12		Recov'd	2.0.120.0	Group	CLAYEY GRAVEL with SAND Moist, dense,	
	31.50	L	CMS	23 23 11	46	85		GC	light gray (10 YR 7/1) to very pale brown (10 YR 31.50 7/3) to white (10 YR 8/1) mottled with light reddish brown (5 YR 6/4) and light brownish	
	33.00	М	SPT	13 40	53	85		GM	gray (10 YR 6/2) SILTY GRAVEL with SAND Moist, very	
	_								dense, light gray (10 YR 7/1) to very pale brown 34.00 (10 YR 7/3) to white (10 YR 8/1)	
2404.4 -	<b>35</b> .00			16				GC	CLAYEY GRAVEL with SAND Moist, medium	
	36.50	N	CMS	16 23	39	65			dense, light gray (10 YR 7/1) to very pale brown 36.50 (10 YR 7/3) to white (10 YR 8/1)	
	38.00	0	SPT	17 25 28	53	60		GW	WELL GRADED GRAVEL with SAND Moist, dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	_							<u> </u>	39.00	
2399.4 -	40.00			10				-	CLAYEY GRAVEL with SAND Moist, medium	
	41.50	Р	SPT	8 9	17	40		GC	dense, light gray (10 YR 7/1) to very pale brown (10 YR 7/3) to white (10 YR 8/1)	
									40.50	
	_								_ 43.50	43.5' - 45.0' progress
2394.4 -	45 <sup>45.90</sup>	Q	SPT	10/0.1'	10/0.1'	0				0.08'/min. (Q) 10 blows;
	_								STRONGLY CEMENTED MATERIAL	progress. No sample recovered.
	_								48.50	45.0' - 48.5' progress 0.16'/min.
	F0.55								- <del> </del>	48.5' - 53.0'
2389.4 -	50.00 5050.30	R	SPT	50/0.3'	50/0.3'	0		-		progress 1.5'/min. (R) No sampl
									WEAKLY CEMENTED MATERIAL OR GRAVELLY SOILS	recovered.
	-								_ 53.00	
										53.0' - 59.0'
2384.4 -	<del></del> 55									progress 0.04 0.08' ft/min.
									STRONGLY CEMENTED MATERIAL	
									59.00	No groundwa
	<u> </u>								END BI-32 @ 59.0'	encountered.



8/7/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

E.A. #

Northwest Las Vegas - Clark County

**BORING** 

73518

2384.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

BI-33

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

**STATION OFFSET** 

**EQUIPMENT** 

243' Left

"X" 90+94

6" H.S.A.

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR DRILLING** 

METHOD BACKFILLED \_\_ \_ DATE

ELEV. DEPTH Last LAB TESTS **MATERIAL DESCRIPTION** REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd **GRAVELLY SAND** Dry, tan 1.00 5.00 CL 2379.1 16 **LEAN CLAY** Dry, very hard, light gray (10 YR SPT 28 66 95 6.50 38 8.20 <del>10</del>10.00 2374.1 17 SILTY CLAYEY SAND with GRAVEL Dry, SC SPT 24 55 85 hard, light gray (10 YR 7/2) В SM 11.50 31 13.20 15.00 2369.1 8 FAT CLAY with SAND <U>> Dry, very stiff, СН 7 SPT 16 80 mottled white (5 Y 8/1) to light olive gray (5 Y 16.50 9 18.20 <del>20</del>20.00 CL 2364.1 11 **LEAN CLAY with SAND** Dry, very stiff, mottled white (5 Y 8/1) to light olive gray (5 Y CMS 13 26 95 21.50 6/2) 21.50 13 5 SANDY FAT CLAY Dry to moist, stiff, light gray (5 Y 7/2) SPT 5 Ε 11 85 23.00 6 CH 6/27/16 24.00 25.00 25 2359.1 3 **LEAN CLAY with SAND** Dry to moist, stiff, light gray (5 Y 7/2) CMS 5 18 95 26.50 13 (G) Last blow -7 **LEAN CLAY** Moist, medium stiff, white (5 Y CL 4 sampler driven SPT 5 55 G 0.6'. 1 28 10 ≥' 30.00 30.00

ALL FILES.GPJ NV DOT.GDT DOT



START DATE

END DATE

LOCATION

8/6/13 8/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-33 BORING 73518 E.A. #

GROUND ELEV. 2384.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 90+94

6" H.S.A.

**STATION** 

243' Left **OFFSET** Boomhower **ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 2 OF 3

Pypkowski **OPERATOR** DRILLING METHOD

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	31.50		CMS	7 7 9	16	65			LEAN CLAY with SAND Moist, stiff to very stiff, mottled brown (10 YR 5/3) to white (10 YR 8/1)	
	33.00	ı	SPT	4 9 11	20	85			<b>LEAN CLAY with SAND</b> Dry to moist, stiff to very stiff, mottled light gray (10 YR 7/2) to brown (10 YR 5/3)	
2349.1 -	35.00 35		CMS	5 7	15	85		CL	LEAN CLAY with SAND Moist, medium stiff to stiff, yellowish brown (10 YR 5/4)	
	36.50	K	SPT	8 4 4	13	85		_	LEAN CLAY with SAND Moist, medium stiff to stiff, yellowish brown (10 YR 5/4)	
	38.00			9				_	39.00	
2344.1 -	40.00 40			9				SC	CLAYEY SAND with GRAVEL Moist, stiff,	
	41.50	L	CMS	11 10 5	21	85			mottled light gray (10 YR 7/2) to brown (10 YR 41.50 5/4)  SANDY FAT CLAY Moist, stiff, mottled light	_
	43.00	М	SPT	10 35	45	85		СН	gray (10 YR 7/2) to brown (10 YR 5/4)	
	45.00								44.00	-
2339.1 -	46.50	N	CMS	23 27 34	61	100		-	CLAYEY GRAVEL with SAND Dry to moist, very hard, white (10 YR 8/1) to light gray (10 YR 7/2)	(N) Weakly to moderately cemented.
	48.00	0	SPT	10 9 11	20	65		GC	CLAYEY GRAVEL with SAND Moist, very stiff, brown (7.5 YR 5/4)	
2334.1 -	50 								50.00	End day 1 drilling @ 50.
	_									Hard drilling a 52.0' - 53.0'. Progress 1.0'
2329.1 -	55									minutes @ 2 psi down pressure. Hard drilling a
	-								56.50	53.0' - 54.0 <sup>'</sup> . Progress 1.0'
	_ _ _								END BI-33 @ 56.5'	minutes @ 20 psi down pressure. Hard drilling a 54.0' - 55.0'. Progress 1.0' minutes @ 20



START DATE

END DATE

LOCATION

8/6/13

8/7/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-33 **BORING** 

E.A. #

GROUND ELEV. 2384.10 (ft)

73518

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

"X" 90+94 **STATION** 243' Left **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		/IPLE	BLOW CO	DUNT	Dorest	LAD TECTO	USCS	MATERIAL RECORDINA	DEMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2319.1 -	- - - - 65 -									pressure. Hard drilling at 55.0' - 55.5'. Progress 0.5'/2 minutes @ 250 psi down pressure. Hard drilling at 55.5' - 56.5'. Progress 1.0'/9 minutes @ 300 psi down pressure. Terminate hole No groundwate encountered.
2314.1 -	- 70 									
2309.1 -	-  75 -									
2304.1 -	- - <b>80</b> 									
2299.1 -	- 85 - -									
	-									



START DATE \_\_\_8/7/13

END DATE <u>8/8/13</u>

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-34 73518

E.A. # 73518 GROUND ELEV. 2392.90 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION "X" 87+86

OFFSET 306' Left

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski

OPERATOR Pypkowsk
DRILLING
METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		//PLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(1.)	-			Increments	11000	Necov u			GRAVELLY SAND Dry, tan	
2387.9 -	- 4.00 -5 5.50	Α	SPT	11 13 16	29	85		CL	<b>LEAN CLAY</b> Dry, very stiff, very pale brown (10 YR 7/3)	
2382.9 -	9.00 —10 <sub>10.50</sub>	_	SPT	4 1 4	5	75			SANDY LEAN CLAY with GRAVEL Dry, loose, very pale brown (10 YR 7/3)	
2377.9 -	- 14.00 15 15.50	С	CMS	19 23 40	63	85		SM	SILTY SAND with GRAVEL Dry, dense, light brownish gray (10 YR 6/2)	
	17.00	D	SPT	18 12 11	23	85		sc	CLAYEY SAND Dry, very stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)  18.00	
2372.9 -	19.00 20 20.50	E	CMS	12 14	27	95			SANDY FAT CLAY Dry, very stiff, mottled white (10 YR 8/1) to pale brown (10 YR 6/3)	
	22.00	F	SPT	13 10 12 18	30	95		СН	FAT CLAY with SAND Dry, very stiff to hard, mottled white (10 YR 8/1) to pale brown (10 YR 6/3)	
	24.00	G	CMS	18 22	42	85			SANDY FAT CLAY with GRAVEL Dry, very stiff, mottled white (10 YR 8/1) to pale brown	
2367.9 -	-25.50 - 27.00	Н	SPT	22 20 12 14 13	27	95			25.50 (10 YR 6/3)  CLAYEY SAND Dry, very stiff, white (10 YR 8/1)	
	_							sc		
									30.00	



8/8/13 **END DATE** 

BI-34

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** 73518 E.A. #

2392.90 (ft) GROUND ELEV. Automatic HAMMER DROP SYSTEM \_

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 87+86 **STATION** 

**ENGINEER** 

**DRILLING** 

**METHOD** 

**EQUIPMENT** 

306' Left **OFFSET** 

> Boomhower Diedrich D-120 (Unit 1627)

SHEET 2 OF 2

Pypkowski **OPERATOR** 

BACKFILLED \_ DATE

6" H.S.A.

ELEV. DEPTH Last LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd 34.00 | SPT | 30/0.3' | 30/0.3' (I) Last 10 blows; no 2357.9 -35 progress. No sample 36.00 recovered. 39.00 14 SANDY LEAN CLAY with GRAVEL Dry, CL **CMS** 22 50 95 hard, light gray (2.5 Y 7/2) 2352.9 <sup>40</sup>40.50 28 9 SANDY LEAN CLAY with GRAVE L Dry, Κ SPT 14 38 95 hard, light gray (2.5 Y 7/2) 42.00 24 43.00 44 00 20 SANDY FAT CLAY Dry to moist, very hard, **CMS** 98 100 light gray (5 Y 7/2) L 36 45 4<u>5.50</u> 2347.9 62 SANDY FAT CLAY Dry to moist, very hard, 19 SPT 68 light gray (5 Y 7/2) 25 85 Μ СН 47.00 43 End day 1 drilling @ 49.0'. 50.00 2342.9 -50 Hard drilling at 49.0' - 54.0' Progress 5.0'/35 minutes @ 250 psi down pressure. Hard drilling at GC 54.0' - 55.0'. Progress 1.01/25 N CMS 50/0.3' 50/0.3' 100 ALL FILES.GPJ NV DOT.GDT **CLAYEY GRAVEL with SAND** Dry to moist, minutes @ 250 very hard, white (10 YR 8/1) 2337.9 psi down -55 pressure. Hard drilling at 56.50 55.0' - 55.5 END BI-34 @ 56.5' Progress 0.5'/20 minutes @ 250 psi down pressure. DOT No groundwater encountered. ≥'



8/21/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-35 **BORING** 73518

E.A. # 2395.30 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 5 "X" 89+04

**STATION** 249' Left

**OFFSET** Lawrence **ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

White/Pypkowski

DRILLING METHOD 4" Rotary Wash

BACKFILLED \_\_\_ \_ DATE

ELEV.	DEPTH		MPLE	BLOW CO	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd	LAB 12010	Group	WATERIAL DESCRIPTION	ILMARRO
	-									
									2.00	
	2.50			3					SILTY CLAY Dry to moist, medium stiff, light	
	4.00	Α	SPT	3	6	75		CL ML	yellowish brown (10 YR 6/4)	
				0					4.50	
2390.3	5 5.00			4				_	<b>LEAN CLAY</b> Dry, stiff, light yellowish brown	
	6.50	В	SPT	6 9	15	85			(10 YR 6/4) to dark grayish brown (10 YR 4/2)	
	7.50									
	- 7.50			23				-	LEAN CLAY with SAND Dry, very hard, light	
	9.00	C	SPT	34 47	81	80			yellowish brown (10 YR 6/4) to dark grayish brown (10 YR 4/2)	
	10.00									
2385.3	10	Г	SPT	14 19	46	75		1	LEAN CLAY Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	11.50	D	371	27	46	13		-	very pare brown (10 11X 0/2)	
	12.50									
	-	Е	SPT	15 22	55	65			<u>LEAN CLAY</u> Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	14.00	_		33				_	., , , , , , , , , , , , , , , , , , ,	
2380.3 -	15.00									
2000.0		F	SPT	15 22	55	75			LEAN CLAY with SAND Dry, hard, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	16.50			33				-		
	-							CL		
	-									
	-									
2375.3	20.00			9				-	LEAN CLAY Moist, very stiff, brown (10 YR	
	04.50	G	SPT	10	25	75			5/3)	
	21.50			15				_		
	05.00									
2370.3	<b>25</b> .00			17				-	LEAN CLAY Dry, hard, white (10 YR 8/1)	
	26.50	Н	CMS	23 26	49	65				
	-	,	SDT	10	31	75		1	LEAN CLAY with SAND Moist, hard, white	
	28.00	'	SPT	13 18	JI	75			(10 YR 8/1) to light yellowish brown (2.5 YR 6/3)	
	30.00								30.00	
	30.00			l .				I .	00.00	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



8/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-35 **BORING** 

GROUND ELEV..

73518 E.A. #

HAMMER DROP SYSTEM \_ Automatic

2395.30 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 5

"X" 89+04 **STATION** 249' Left

**OFFSET** 

**ENGINEER** 

Lawrence Diedrich D-120 (Unit 1627)

**EQUIPMENT** White/Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ELEV.	DEPTH		/IPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(ft)	(ft)	J	CMS	10 13	1 foot 27	Recov'd 85		CL	SANDY LEAN CLAY Moist to dry, hard, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3)
	31.50	К	SPT	14 3 3 3	6	20			31.50  CLAYEY GRAVEL with SAND Moist to dry, medium stiff, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3) to brownish yellow (10 YR 6/8)  Regin losing
2360.3	- <b>35</b> .00			3					water/circulati @ 33.0', drill head dropped approximately approximately
	36.50	L	CMS	1 7 12	8	60		GC	medium stiff, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3) to brownish yellow (10 YR 6/8)  3.0' under gravity forces no down
	38.00	М	SPT	21 22	43	75			CLAYEY GRAVEL WITH SAND Moist to dry, hard, white (10 YR 8/1) to light yellowish brown (2.5 YR 6/3)
2355.3	40.00 <b>40</b> 40.30	N	CMS	20/0.3'	20/0.3'	0			39.80 Hard drilling,
	-								MODERATELY CEMENTED MATERIALS: HARD DRILLING  42.50  0.3' penetration of sampler like cuttings. (N) Last 10
	-								blows; no progress. No sample recovered.
2350.3	— <b>45</b> –								
	-								48.50
2345.3	50.00 50			22				СН	SANDY FAT CLAY with GRAVEL Moist, Drill with clea
	51.50		CMS	14 23	37	80			hard, very pale brown (10 YR 7/3) to white (10 water. 51.50 YR 8/1)
	52.30 52.90	Р	SPT	23 -50/0.3'	50/0.3'	95		CL	SANDY LEAN CLAY Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)
	54.40	Q	SPT	11 14 17	31	50			CLAYEY GRAVEL with SAND Moist, hard, white (10 YR 8/1) to pale brown (10 YR 6/3)
2340.3 -	— <b>55</b> -							GC	
	_								57.90
									MODERATELY CEMENTED MATERIALS: Hard drilling (Fig. 1971) Hard drilling



START DATE \_\_\_8/19/13

END DATE 8/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION \_

Northwest Las Vegas - Clark County

BORING E.A. # BI-35 73518

GROUND ELEV. 2395.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 5 "X" 89+04

STATION "X" 89+0.

OFFSET 249' Left

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

OFFSET 249' Left
ENGINEER Lawrence

Diedrich D-120 (Unit 1627)

White/Pypkowski

4" Rotary Wash

	ENGINE	EERING V					TEW	atomatic		BACKFILLED DATE	
	LEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMA	RKS
	(11)	- (10)			Increments	1 foot	Recova			WEAKLY CEMENTED AND SOFT MOIST 60.90 LAYER	
		63:90	R	SPT	20/0.1'	<del>20/0.1</del> '	0			STRONGLY CEMENTED; HARD DRILLING  Regain circulation bag bent per 200 g water, tot	onite Jallons al 350
23	330.3 -	65 								gallons bregained circulation slowly los slurry.  (R) Last 7 blows; no progress.	n; still sing
23	325.3 -	- 70								WEAKLY CEMENTED TO MODERATELY CEMENTED: HARD DRILLING	
		72.90			16					72.90  SANDY LEAN CLAY Moist, hard, light brown +/- 4000 st.	gallons
		74.40	S	CMS	15 27 3	42	50		_	(10 YR 7/2) to pale brown (10 YR 6/3) of water/s drained in borehole	slurry
23	320.3 -	75 75.90	Т	SPT	5 5	10	45		_	YR 7/2) to pale brown (10 YR 6/3) between 57.0'-140	.9'.
233	315.3 -	80							CL		
9		82.90									
DT 6/27/		84.40	U	CMS	17	25	115			LEAN CLAY Moist, very stiff, pale brown (10 YR 6/3) with brownish yellow (10 YR 6/8)	
DOT 23	310.3 -	<b>85</b> .90	V	SPT	7 9 17	26	100			FAT CLAY Moist, very stiff, pale brown (10 YR 6/3) with brownish yellow (10 YR 6/8)	
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16		- -								88.00	
NV_DOT_A		_									



(ft)

8/19/13 START DATE

8/21/13 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 2395.30 (ft) GROUND ELEV.

BI-35

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 5

**STATION OFFSET** 

Lawrence

"X" 89+04

249' Left

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

White/Pypkowski

**OPERATOR DRILLING** 4" Rotary Wash

METHOD

HAMMER DROP SYSTEM \_ **BACKFILLED** \_ DATE ELEV. DEPTH Last LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) Increments 1 foot Recov'd 92.90 **LEAN CLAY with GRAVEL** Moist, very stiff, W CMS 15 32 125 CL pale brown (10 YR 6/3) 94.40 17 **LEAN CLAY with SAND** Moist, very stiff, pale 7 2300.3 95 Χ SPT 10 28 100 brown (10 YR 6/3) 95.90 18 97.40 STRONGLY CEMENTED MATERIALS; HARD DRILLING 0.16'/min- 250 psi down <del>|--</del>100 101.40 102.90 CL 23 **GRAVELLY LEAN CLAY** Moist, hard, pale

2295.3 brown (10 YR 6/3) CMS 27 75 110 104.40 48 104.40 6 FAT CLAY with GRAVEL Moist, very stiff, 2290.3 105 SPT pale brown (10 YR 6/3) Ζ 26 120 11 15 105.90 СН 107.00 2285.3 - 110 111.00 CL 112.90 ML 58 SILTY CLAY with SAND Moist, very hard, CMS 65/0.4 95 pale brown (10 YR 6/3) AA 51 114.30 114.30 65/0.4 ALL FILES.GPJ NV\_DOT.GDT **LEAN CLAY with SAND** Moist, hard, pale 2280.3 brown (10 YR 6/3) 115 BB SPT 20 35 110 115.80 15 CL ≥' 120.00



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

8/19/13 START DATE

8/21/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-35 73518

2395.30 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 5 OF 5

**STATION OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

"X" 89+04 249' Left

Lawrence

Diedrich D-120 (Unit 1627)

White/Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ENGINE	EERING			AMMER DR		)   EIVI			BACKFILLED [	/ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2270.3 -	- 122.90 - 124.40 125	СС	CMS	34 79 110	189	50		CL	<u>LEAN CLAY with SAND</u> Moist, very hard, pale brown (10 YR 6/3)	
2265.3 -	- - - 130 - -								128.00	
2260.3 -	_								135.00	
	137.90	DD	CMS	30 46 90	136	85		CL	GRAVELLY LEAN CLAY pale brown (10 YR 6/3) Moist, very hard,	
2255.3 -	<b>140</b>		SPT	41 18 18	36	115			LEAN CLAY Moist, hard, pale brown (10 YR 6/3)	
2250.3 -	- - 145 - -								END BI-35 @ 140.9'	No groundwater encountered.



8/22/13 START DATE

8/22/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

GROUND ELEV.

Northwest Las Vegas - Clark County

BI-36 **BORING** 73518 E.A. #

HAMMER DROP SYSTEM Automatic

2393.30 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 87+37 **STATION** 

SHEET 1 OF 2

312' Left **OFFSET** 

Lawrence **ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

	EERING \		MPLE	BLOW CO	NI INIT						
ELEV. (ft)	DEPTH (ft)		TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS	
	_										
								<u> </u>	1 <u>.50</u>	_	
	2.50			15					<u>LEAN CLAY</u> Dry, hard, very pale brown (10		
	_	Α	SPT	17	39	85			YR 8/2)		
	4.00			22							
2388.3	5.00										
		В	SPT	7 12	41	95		CL	<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 8/2)		
	6.50			29							
	7.50										
	_	С	SPT	9 8	14	95			SANDY LEAN CLAY Dry, stiff, very pale brown (10 YR 8/2)		
	9.00			6					9.50		
2383.3	10.00									_	
2000.0	10	D	SPT	12 18	62	85		CL	<u>SANDY SILTY CLAY</u> Dry, very hard, very pale brown (10 YR 8/2)	(D) Rock in sampler shoe	
	11.50			44				ML		,	
	_ 12.50								<u> </u>		
		E	SPT	10 9	21	100		CL	SANDY LEAN CLAY Dry to moist, very stiff, light yellowish brown (10 YR 6/4) to white (10		
	14.00		0	12		100			YR 8/1)		
0070 0	15.00								_ <u>14.50</u>		
2378.3	_ 15	F	SPT	15 17	31	85			_SILTY CLAYEY SAND with GRAVEL_ Dry to moist, hard, light yellowish brown (10 YR 6/4) to		
	16.50	<u>'</u>	51 1	14	J1	00		SC SM	white (10 YR 8/1)		
	_							SIVI			
	_									_	
	-										
2373.3	-20.00			14				CL	<u>LEAN CLAY with SAND</u> Dry, white (10 YR		
	21.50	G	CMS	12 16	28	80			8/1) to light gray (10 YR 7/2)		
			CDT	7	10	0.5			SANDY FAT CLAY Dry, very stiff, white (10	1	
	23.00	Н	SPT	7 11	18	95		СН	YR 8/1) to light gray (10 YR 7/2)		
									24.00		
	05.00								<del> </del>	1	
2368.3	-25 <sup>25.00</sup>			20					SANDY LEAN CLAY Dry, hard, white (10		
	26.50	1	CMS	33 30	63	85			YR 8/1) to light gray (10 YR 7/2)		
			CDT	12	20	0.5		CL	SANDY LEAN CLAY Dry, hard, white (10		
	28.00	J	SPT	17 22	39	95			YR 8/1) to light gray (10 YR 7/2)		
İ											



8/22/13 START DATE

8/22/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-36 **BORING** 73518 E.A. #

GROUND ELEV. 2393.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 87+37 **STATION** 

312' Left **OFFSET** 

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 2 OF 2

Pypkowski **OPERATOR** 

6" H.S.A.

DRILLING METHOD BACKFILLED \_\_\_\_\_ \_ DATE

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	K	CMS	35 29 45	74	95			SANDY LEAN CLAY Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2)	
	32.90	L	SPT	13	50/0.4'	95		CL	LEAN CLAY with SAND Dry, hard, white (10 YR 8/1) to light gray (10 YR 7/2)	
	_								34.00	-
2358.3 -	35.00									
2356.3	36.40	М	SPT	17 31 50/0.4'	50/0.4'	100		sc	CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to light gray (10 YR 7/2)	
	_								38.20	-
2353.3 -	40.00 40			17				_	CLAYEY GRAVEL with SAND Moist, dense,	
	41.50	N	CMS	27 45 24	72	100		GC	light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)  CLAYEY GRAVEL with SAND Moist, very	
	42.80	0	SPT	44 	50/0.3'	90		-	dense, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	_							L	44.00	-
2348.3 -	45.00 <b>45</b>									
2040.0	46.50	Р	CMS	18 42 64	106	100		СН	SANDY FAT CLAY with GRAVEL Moist, very hard, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	47.70	Q	SPT	13 26 50/0.2'	50/0.2'	100			SANDY FAT CLAY with GRAVEL Moist, very hard, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
	_								49.00	_
2343.3 -	50.00 50	R	CMS	54	50/0.3'	60		-	CLAYEY GRAVEL with SAND Moist, very	(R) 2" rock in
	50.80	K	CIVIS	50/0.3'	50/0.5	00		GC	dense, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	sample.
	_								53.00	-
2338.3 -	55.00							СН	SANDY FAT CLAY Moist, very hard, light olive brown (2.5 YR 5/3) to white (10 YR 8/1) to yellowish brown (10 YR 5/8)	
_000.0	55.70	S	SPT	22 50/0.2'	50/0.2'	100			55.70	
	_			30/0.2					END BI-36 @ 55.7'	No groundwat encountered.
	_									



9/26/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

GROUND ELEV.

Northwest Las Vegas - Clark County

BI-37 **BORING** 73518 E.A. #

HAMMER DROP SYSTEM \_ Automatic

2405.60 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION **OFFSET** 

132' Left Lawrence

"X" 82+60

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

6" H.S.A.

DRILLING METHOD

BACKFILLED DATE

ELEV.	DEPTH		MPLE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION F	REMARKS
(ft)	(ft)	NO.	TYPE	Increments	1 foot	Recov'd		Group	MATERIAL DECORN TION	
	2.50	A	SPT	20 16 8	24	95		GC	2.00  CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 7/3)	
400.6	5 5.00	В	SPT	6	18	95		CL		
	6.50 - 7.50		01 1	10	10	93			7.00	
-	9.00	С	SPT	9 14 17	31	100		CL ML	SILTY CLAY with SAND Dry to moist, very stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
395.6 <del>-</del>	10.00 - 11.50	D	SPT	13 14 20	34	85		CL	SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	12.50	E	SPT	11 11 18	29	85		sc	CLAYEY SAND with GRAVEL Moist to dry, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
390.6 -	15.00 -15	F	SPT	17 25 31	56	75		GC GM	SILTY CLAYEY GRAVEL with SAND Moist to dry, very dense, very pale brown (10 YR 7/3) to brownish yellow (10 YR 6/6)	
	17.50	G	SPT	11 20	59	75		SC SM	SILTY CLAYEY SAND with GRAVEL Moist to dry, very dense, very pale brown (10 YR 7/3)	
385.6	19.00 20.00			39					to brownish yellow (10 YR 6/6)  19.50  CLAYEY SAND with CRAYEL Moiet to day	
	21.50	Н	SPT	14 15 21	36	85		sc	CLAYEY SAND with GRAVEL Moist to dry, very dense, very pale brown (10 YR 7/3) to brownish yellow (10 YR 6/6)	
	-								23.20	
380.6	25.00 25	1	CMS		57	95			<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	26.50 - 28.00	J	SPT	32 16 19 27	46	85		CL	SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	_									



9/26/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

2405.60 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

BI-37

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 82+60 **STATION** 132' Left

**OFFSET** 

Lawrence Diedrich D-120 (Unit 1627)

SHEET 2 OF 2

**EQUIPMENT OPERATOR** 

**ENGINEER** 

DRILLING METHOD 6" H.S.A.

BACKFILLED \_ DATE

Pypkowski

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	K	CMS	17 41 60	101	80			SANDY FAT CLAY Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
2370.6	31.70 - - - 35.00		SPT	25/0.2 <sup>-</sup>	25/0.2'	0			SANDY FAT CLAY Dry to moist, stiff, white	(L) Last 10 blows, no progress. No sample recovered.
	36.50	M	SPT	5 7	12	45		СН	(10 YR 8/1) to very pale brown (10 YR 7/3) to yellow (10 YR 8/6) to dark brown (10 YR 3/3)	
2365.6	40.00 - 40 - 41.50	N	CMS	19 16 26	42	80		_	<u>FAT CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1) 41.50	
	43.00	0	SPT	12 25 48	73	45		GC	CLAYEY GRAVEL with SAND Dry, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	45.00								_44.00	
2360.6	46.40	Р	CMS	15 33 50/0.4'	50/0.4'	85		CL	GRAVELLY LEAN CLAY with SAND Dry, very hard, very pale brown (10 YR 7/3) to light gray (10 YR 7/1)	
-	46.90 -	Q	SPT	50	50	100		] <b>0</b> L	SANDY LEAN CLAY Dry, very hard, very pale brown (10 YR 7/3) to light gray (10 YR 7/1)	
	_								49.00	Hard drilling,
2355.6		R	SPT	50/ 0.1 <b>'</b>	<del>50/ 0.1'</del>	0			MODERATELY TO STRONGLY CEMENTED MATERIALS; HARD DRILLING	250 psi down. 0.01'-0.02'/min (R) 50 blows; r progress. No sample recovered.
	- 55.00								54.50	
2350.6	55 <sup>5.50</sup> 56.50	S	CMS	32 16 7	23	85		CL	GRAVELLY LEAN CLAY with SAND Moist, very stiff to very hard, white (10 YR 8/1) to very pale brown (10 YR 7/2, 10 YR 6/3) to brownish vollow (10 YR 6/8)	
	- 57.70 -	Т	SPT	10 41 50/ 0.2'	50/ 0.2'	95			yellow (10 YR 6/8).  SANDY LEAN CLAY Moist, very stiff to very hard, white (10 YR 8/1) to very pale brown (10 YR 7/2, 10 YR 6/3) to brownish yellow (10 YR 6/8).  MODERATELY TO STRONGLY CEMENTED	No groundwate encountered.



START DATE	10/7/13
017 (1 (1 ) ) (1 )	

10/8/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County BI-37A

**BORING** E.A. #

73518 2405.60 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 5

**STATION OFFSET** 

132' Left Boomhower

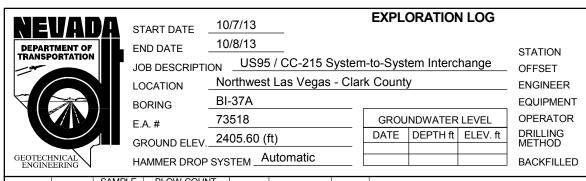
**ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** Pypkowski **OPERATOR** 

"X" 82+60

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	IPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2400.6 -	-			. 1001					Continue Borehole BI-37 as BI-37A from 65.0'.
2395.6 -	- - - 10								
2390.6 -	- - 15 -								
2385.6 -	- <b>20</b> -								
2380.6 -	- - 25 -								
	- -								



k County ENGINEER Boomhower	GROUNDWATER LEVEL	EQUIPMENT OPERATOR DRILLING	Diedrich D-120 (Unit 1627) Pypkowski
BACKFILLED DATE		BACKFILLED .	DATE

SHEET 2 OF 5

ELEV. (ft)	35	NO. TYPE	BLOW CC 6 inch Increments	1 foot	Percent Recov'd	USCS Group	MATERIAL DESCRIPTION	
2370.6 —:								
2370.6 — ;								
2370.6 —:								
2370.6 —:								
2370.6								
-	40							
-	40							
-	40							
	40							
-	40							
2365.6	<del>-</del> -0							
_								
_								
2360.6	45							
2355.6	50							
2350.6	55							
2330.0	55							
2350.6								
	60:90							



10/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-37A 73518

2405.60 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 82+60 **STATION** 

SHEET 3 OF 5

**OFFSET** 

132' Left Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2340.6	- - - - 65.00 - 65	В	CMS SPT	30 15 48 50/0.3'	63	20 600		CL ML	SILTY CLAY with SAND Wet, very dense, very pale brown (10 YR 7/3)  SILTY CLAY with SAND Wet, very hard, pale brown (10 YR 6/3)	(A) Last 10 blows; no progress. No sample recovered. Very hard drilling at 60.2 Progress 0.2'/ minutes @ 40 psi down pressure. Very hard drilling at 60.5 Progress 1.0'/ minutes @ 40 psi down pressure.
									<u>  68.50                                    </u>	Very hard drilling at 61.5
2335.6	70.00									Progress 0.17 minutes @ 40
2555.0	_	D	CMS	10 17	35	100			LEAN CLAY Wet, very hard, pale brown (10 YR 6/3)	psi down pressure.
	71.50	E	SPT	18 6 8	27	115			LEAN CLAY Wet, very hard, pale brown (10 YR 6/3)	Broke through hard layer at 62.5'.
-	73.00		371	19	21	115			11(0/3)	(C) Sample probably from 65.0'; sample (B) had poor
2330.6	74.80 - <b>75</b>			11					LEAN CLAY Moist to wet, very stiff, mottled	recovery.
	- <u>76.30</u>	F	CMS	18 23	41	100			pale brown (10 YR 6/3) to brownish yellow (10 YR 6/6)	
-	78.00	G	SPT	9 11 14	25	115			<b>LEAN CLAY</b> Moist to wet, very stiff, mottled pale brown (10 YR 6/3) to brownish yellow (10 YR 6/6)	
	-							CL		
2325.6	- <b>80</b>									End day 1 drilling @ 80.0
-	- - -									
2320.6	85.00 85 86.50	Н	CMS	12 20 31	51	115			SANDY LEAN CLAY Moist to wet, hard, light brownish gray (10 YR 6/2) to pale brown (10 YR 6/3)	(H) Moderate to strongly cemented
-	88.00	ı	SPT	8 11 16	27	105			SANDY LEAN CLAY brown (10 YR 6/3)	nodules in sample.
	-				1	1		1		I



10/8/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518 2405.60 (ft) GROUND ELEV.

BI-37A

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 5

**STATION OFFSET** 

132' Left Boomhower

"X" 82+60

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski

**OPERATOR** DRILLING METHOD 6" H.S.A.

	EERING V		MPLE	BLOW C	OUNT			11000	BACKFILLED	
ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2310.6 -	- - - - - 95.00	J	CMS	25 42 36 9	78	115			SILTY CLAY Moist to wet, hard, pale brown (10 YR 6/3)  LEAN CLAY with SAND Wet, stiff, mottled	Sporadic thin, hard lenses from 91.0' to 93.0'.
	98.00	K	SPT	6 6	12	120			pink (7.5 YR 7/4) to brown (7.5 YR 4/4)	
2305.6 -	- - - - - -			U						
2300.6 -	- - 195.98 - - -		CMS	25/0.2 <sup>;</sup>	25/0.2'	<del>-</del> 0		CL		Hard drilling at 103.0'. Progress 0.3'/1 minutes @ 250 psi down pressure. (L) Last 10 blows; no progress. No sample recovered.
2295.6 -	110.00									
		М	CMS		50/0.4'	120			<u><b>LEAN CLAY</b></u> Wet, very hard, light yellowish brown (10 YR 6/4)	
	111.40	N	SPT	50/0.4' 11 12 15	27	135			<b>LEAN CLAY</b> Wet, very stiff, light yellowish brown (10 YR 6/4)	
2290.6 -	<b>115</b> 									
	120.00								120.00	



JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-37A 73518

GROUND ELEV. 2405.60 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_"X" 82+60

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

132' Left

OFFSET 132' Left
ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

SHEET 5 OF 5

Pypkowski

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	121.30	0	CMS	22	1 foot 50/0.3'	Recov'd		CL	SILTY CLAY with SAND. Wet hard brown	(O) No sample recovered.
	122.80	Р	SPT	18 24	42	155		ML	SILTY CLAY with SAND Wet, hard, brown (7.5 YR 5/4) 122.80	
	- -								END BI-37A @ 122.8'	No groundwate encountered.
2280.6 -	— 125									
	_									
	_									
	_									
2275.6 -	130									
	_									
	_									
2270.6 -	135									
2210.0	- 133									
	_									
	_									
2265.6 -	— 140									
	_									
	_									
	_									
2260.6 -	145									
	_									
	_									
	_									



START DATE \_\_\_\_11/4/13

11/6/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING

E.A. # 73518

GROUND ELEV. 2436.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-38

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3 "X" 62+13

STATION .

**OPERATOR** 

189' Right

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

		CAN	4DLE	DI OW CO	NI INIT					
ELEV.	DEPTH	NO.	/IPLE TYPE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	110.		Increments	1 foot	Recov'd		Group	SANDY GRAVEL, tan, dry	
	_								GAND I GIVAVEE, tall, dry	
									0.00	
-	-							+	2.00	
	-									
	_									
2431.5	-5									
	-									
	_									
	-									
	-									
2426.5	<b>-10</b>									
0.0										
}	-									
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	_									
-	-									
2421.5	<del></del> 15									
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2416.5	-20									
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2411.5	-25									
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11/6/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-38 73518 GROUND ELEV. 2436.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

**STATION OFFSET ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

189' Right Boomhower

"X" 62+13

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

ENGINE			4DI E	DI OM O	OLINIT					ı
ELEV. (ft)	DEPTH (ft)		MPLE TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	(1.7)			morements	1 1001	Necov u				
	_									
	_									
	_									
0.404.5										
2401.5 -	-35									
	_									
	_									
	-									
	_									
2396.5 -	40									
2390.3	40									
	-									
	_									
	_									
2391.5 -	<b>-45</b>									
2000										
	-									
	_									
										Hard drilling @ 48.0'.
	_									46.0.
2386.5 -	-50									
	52:90	Α	RC			50			SANDY SILTY CLAY with GRAVEL Wet,	End day 1
									very hard, pale brown (10 YR 6/3) to reddish	drilling @ 52.0'.
									53.50 yellow (7.5 YR 6/6)	Lost circulation @ 52.0'.
	F4.00									(A) Retrieved 0.5" caliche.
2381.5 -	54.90 <b>55</b>			17					SANDY SILTY CLAY with GRAVEL Wet.	0.5" caliche. Reactive with
	<b></b>	В	SPT	5	12	40			SANDY SILTY CLAY with GRAVEL Wet, stiff, brown (7.5 YR 5/4)	10% HCl.
	56.40			7						
	-									
	-									End day 2
										drilling @ 59.5'



START DATE \_\_\_\_11/4/13

END DATE \_\_\_\_11/6/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2436.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-38

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION "X" 62+13

OFFSET 189' Right

OFFSET ENGINEER

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD Boomhower
Diedrich D-120 (Unit 1627)

SHEET 3 OF 3

Pypkowski

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW CO 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
. 7	-			orements	11001	11000V U				Circulation restored after sitting overnigh @ 60.0'.
	63.00									Lost circulation
	63.90		RC			35			<u>CALICHE</u> Wet, very hard, multicolored	@ 62.5'. (C) Small
	64.50	D	RC			0			64.50 END BI-38 @ 64.5'	(C) Small caliche sample recovered.
2371.5 -	─65 -								2.10 51 00 @ 04.0	Reactive with 10% HCl.
	-									(D) Burnt end of core barrel. Terminate borehole @ 64.5'
	-									No groundwate encountered.
2366.5 -	_70									
	-									
	-									
	_									
	- 									
2361.5 -	/5 									
	_									
	-									
2356.5 -	-80									
	-									
	-									
	-									
	-									
2351.5 -	85									
	-									
	_									
	_									
	-									



11/26/13 **END DATE** 

BI-39

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

5 4

6

100

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30.00

SPT

R

30.00

73518 E.A. #

2396.50 (ft) GROUND ELEV

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SANDY FAT CLAY Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1)

"X" 86+54 **STATION OFFSET** 

**EQUIPMENT** 

265' Left Boomhower **ENGINEER** 

CME 75/85 (Cascade Drilling)

SHEET 1 OF 4

Mike Lester **OPERATOR** 

8" H.S.A.

DRILLING METHOD

GEOTEC: ENGIN		SAN	MPLE	AMMER DR					
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
									DECORATIVE GRAVEL, tan, dry
	-							L	1.50
	-								
	3.00							CL	
		A	CMS	6 18	38	100		ML	SILTY CLAY Dry, medium dense to dense, very pale brown (10 YR 7/3) (A) No brass tubes in
	4.50			20					4.50 Cascade CMS
2391.5	-5	В	SPT	11 18	31	100			LEAN CLAY Dry, dense, very pale brown (10 Sampler. YR 7/3)
	6.00			13 11					LEAN CLAY, Dry dense year nele brown (10
		С	CMS	18	44	100			LEAN CLAY Dry, dense, very pale brown (10 YR 7/3)
	7.50			26 11				CL	LEAN CLAY with SAND Dry, medium dense,
		D	SPT	11	23	95			very pale brown (10 YR 7/3)
	9.00			12 38				1	LEAN CLAY with SAND Dry, hard, very pale
2386.5	10	E	CMS	38	77	100			brown (10 YR 7/3)
	10,50			39 11					10.50  CLAYEY SAND Dry, hard, very pale brown
	10.00	F	SPT	16	44	100		SC	(10 YR 7/3)
	12.00			28 10					12.00 SANDY LEAN CLAY Dry, very stiff, very pale (G) Moderately
	13.50	G	CMS	15 22	37	100			brown (10 YR 7/3) to strongly cemented
	13.30			16				1	SANDY LEAN CLAY Dry, very stiff, very pale nodules in
	15.00	Н	SPT	17 13	30	95		CL	brown (10 YR 7/3) sample.
2381.5	15			16				1	SANDY LEAN CLAY Dry, hard, mottled very
	16.50		CMS	26 28	54	100			pale brown (10 YR 7/3) to white (10 YR 8/1)
	_		SPT	13 19	36	55		sc	CLAYEY SAND with GRAVEL Dry, hard, mottled very pale brown (10 YR 7/3) to white sampler.
	18.00	J	SFI	17	30	55		30	18.00 (10 YR 8/1)
		K	CMS	25 26	66	100		SM	SILTY SAND with GRAVEL Dry, hard, mottled very pale brown (10 YR 7/3) to white
	19.50		OIVIO	40	00	100		Oivi	19.50 (10 YR 8/1)
2376.5	20	L	SPT	30 15	28	95			CLAYEY SAND Dry, dense, light yellowish brown (10 YR 6/4)
	21.00	_	<b>O</b>	13				sc	
		М	CMS	13 22	54	95			CLAYEY SAND Dry, hard, mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)
	22.50			32					22.50
	-	N	SPT	17 8	20	100			SANDY LEAN CLAY Dry, very stiff, mottled very pale brown (10 YR 7/3) to white (10 YR
	24.00			12 10				CL	8/1) SANDY I FAN CLAY Dry dense venyngle
2371.5	25	О	CMS	15	45	100			SANDY LEAN CLAY Dry, dense, very pale brown (10 YR 7/4) to white (10 YR 8/1)
2011.0	25.50			30 11					25.50  FAT CLAY with SAND Dry, very stiff, mottled
		Р	SPT	8	19	95		СН	very pale brown (10 YR 7/3) to white (10 YR
	27.00			11 17					27.00 8/1)  SANDY LEAN CLAY Dry, very stiff, mottled
		Q	CMS	18	27	95		CL	very pale brown (10 YR 7/3) to white (10 YR
	28.50			9					28.50 8/1)

\_DOT\_ALL FILES.GPJ\_NV\_DOT.GDT\_6/27/16

≥



11/26/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-39

**BORING** E.A. #

END DATE

73518 GROUND ELEV. 2396.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

11/26/13 73.00

DATE DEPTH ft ELEV. ft

2323.5

"X" 86+54 **STATION** 

265' Left **OFFSET** Boomhower **ENGINEER** 

**EQUIPMENT** 

CME 75/85 (Cascade Drilling)

SHEET 2 OF 4

Mike Lester **OPERATOR** 

DRILLING METHOD

BACKFILLED \_\_\_\_\_ \_ DATE

8" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch	Last	Percent Recov'd	LAB TESTS	USCS Group		MATERIAL DESCRIPTION	REMARKS
(it)	31.50	s	CMS	9	14	95				SANDY FAT CLAY Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1)	
	- 33.00	Т	SPT	3 2 5	7	95		СН		SANDY FAT CLAY Dry, medium stiff, very pale brown (10 YR 8/2) to white (10 YR 8/1)	(T) Large rock i sampler shoe.
	_ 34.50	U	CMS	9 9 10	19	95			34.50	SANDY FAT CLAY Dry, stiff, light gray (10 YR 7/2) to very pale brown (10 YR 7/4)	
2361.5 -	-35 36.00	٧	SPT	4 11 28	39	80		GC	36.00	CLAYEY GRAVEL with SAND Dry, very stiff to hard, mottled pink (7.5 YR 7/4) to white (7.5 YR 8/1)	(V) Large rock sampler shoe.
	36.40	W	CMS	50/0.4'	50/0.4'	100		СН		SANDY FAT CLAY Dry, very hard, very pale brown (10 YR 7/3)	Very hard drilling from 36.5' to 37.5'.
2356.5 -	- 40.00			26				CL		SANDY LEAN CLAY Dry, very stiff, light gray	Blew keyway or drill rig; second drill rig (CME 85) on site @ 1:15 PM.
	41.50	X	CMS	23 24	47	100			41.50	(10 YR 7/2)	
	43.00	Υ	SPT	15 24 24	48	100		GC	43.00	CLAYEY GRAVEL with SAND Dry, hard, light gray (10 YR 7/2)	
	- 44.50	Z	CMS	28	47	95		CL		SANDY LEAN CLAY with GRAVEL Dry, very stiff, light gray (10 YR 7/2)	
2351.5 -	-45 <sub>45.40</sub>	AA	SPT	23 50/0.4'	50/0.4'	100		sc	45.70	CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2)	
	47.50	ВВ	CMS	23	40	100		GC		CLAYEY GRAVEL with SAND Dry to moist, very stiff, mottled yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	- 48.90		SPT	8 9 50/0.4'	50/0.4'	100			49.00	CLAYEY GRAVEL with SAND Dry, very hard, light gray (10 YR 7/2)	
2346.5 -	49.80 50		CMS	14	50/0.3'	100		CL	49.80	SANDY LEAN CLAY Dry, very hard, light gray (10 YR 7/2)  CLAYEY SAND with GRAVEL Dry to moist,	
	51.30 52.00	<u> </u>	SPT	19 28	47	100		sc		very stiff, mottled yellowish brown (10 YR 5/4) to white (10 YR 8/1)	
	52.40	FF	CMS	50/0.4'	50/0.4'	0			52.40		Very hard drilling from
2341.5 -	- 55 -										52.4' to 59.0'.
	- - 60.00										



END DATE

LOCATION

11/26/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-39 **BORING** 

73518 E.A. # GROUND ELEV. 2396.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

11/26/13 73.00

DATE DEPTH ft ELEV. ft

2323.5

"X" 86+54 **STATION** 

**EQUIPMENT** 

265' Left **OFFSET** Boomhower **ENGINEER** 

CME 75/85 (Cascade Drilling)

SHEET 3 OF 4

Mike Lester **OPERATOR** 

8" H.S.A.

DRILLING METHOD BACKFILLED \_\_\_\_\_ \_ DATE

(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
-		GG	CMS	12 16 28	44	100		СН	SANDY FAT CLAY Moist, very stiff to hard, very pale brown (10 YR 7/3 to 10 YR 8/2) 61.50	
-	62.50	НН	SPT	12	50/0.5'	100		sc	CLAYEY SAND with GRAVEL Moist, very hard, very pale brown (10 YR 7/3 to 10 YR 8/2) 63.00	Very hard
2331.5	-65								00:00	drilling from 62.5' to 64.0'. End day 1 drilling @ 64.0 Continued har drilling to 70.0
2326.5	<del>70</del> <sup>₹0:90</sup>	-#-	SPT	<del>20/0.1'</del>	<del>20/0.1'</del>	<del></del>			72.00	
¥ -	75.00							CL		Free water on drill rod @ 73.
2321.5	75 76.50	JJ	CMS	4 5 11	16	115		_	LEAN CLAY Moist to wet, stiff, brown (10 YR 5/3) mottled with brownish yellow (10 YR 6/6) 76.50	(JJ) Pocket penetrometer reading - 0.75
	78.00	KK	SPT	5 14 20	34	100		ML	SANDY SILT Moist to wet, dense, brown (10 YR 5/3) mottled with brownish yellow (10 YR 6/6)	tsf.
	80.00								79.00	
2316.5	80 <u>80.30</u>	LL	CMS	35/0.3'	35/0.3'	0			82.50	(LL) Last 10 blows; no progress. No sample recovered.
									<u>ve.vv</u>	
2311.5		MM	CMS	20 17	45	115		ML	SANDY SILT Moist to wet, dense, brown (10 YR 5/3) mottled with brownish yellow (10 YR 86.30 6/6)	(MM) Pocket penetrometer
-	<b>86.50</b> 88.00	NN	SPT	28 5 9 11	20	115			LEAN CLAY with SAND Wet, very stiff, light brownish gray (2.5 Y 6/2) mottled with brownish yellow (10 YR 6/6)	reading - 2.5 t
								CL		



START DATE \_\_1

11/25/13

END DATE \_\_\_\_11/26/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518

GROUND ELEV. 2396.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-39

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

11/26/13 73.00

DATE DEPTH ft ELEV. ft

2323.5

STATION "X" 86+54

OFFSET 265' Left

OFFSET ENGINEER

Boomhower
CME 75/85 (Cascade Drilling)

SHEET 4 OF 4

OPERATOR Mike Lester

DRILLING 8" H.S.A.

		SAN	ИPLE	BLOW CO	OUNT					
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	91.50	00 PP	CMS	4 7 17 3 5	1 foot 24 18	115 105		СН	brownish gray (2.5 Y 6/2) mottled with brownish yellow (10 YR 6/6)  FAT CLAY Wet, stiff, brown (7.5 YR 5/4)  Wet, stiff, brown (7.5 YR 5/4)	P) Pocket
	93.00			13						netrometer ding - 3.0 t
2301.5 -	-95 <sup>95.00</sup> - 96.50	QQ	CMS	8 24 34	58	115		-	(7.5 YR 5/4) to light gray (10 YR 7/2) per rea	Q) Pocket netrometer ding - 2.0 ts
	98.00		SPT	9 15 22	37	115		CL	hard, brown (7.5 YR 5/4) to light gray (10 YR per	R) Pocket netrometer ding - 1.75
2296.5 -	- 100 -								101.50	
2291.5 -	105.00 105 106.50	SS	CMS	5 19 23 8 6 17	42	105 115		СН	FAT CLAY with SAND Wet, very stiff, brown (7.5 YR 5/4) to light brown (7.5 YR 6/4)  GRAVELLY FAT CLAY Wet, very stiff, brown (7.5 YR 5/4) with white nodules (10 YR 8/1)	
2286.5 -	- 110 - -								111.50	
2281.5 -	- - - 115.00 - 115	υυ	CMS	4 10 28	38	105		CL	(7.5 YR 5/4) with white nodules (10 YR 8/1) per rea	J) Pocket netrometer ding - 2.75
	118.00	vv	SPT	3 4 5	9	100				/) Pocket netrometer



START DATE \_\_\_\_11/26/13

11/27/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-40 73518

GROUND ELEV. 2402.20 (ft)

HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_"X" 84+54

OFFSET 224' Left

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower

CME 85 (Cascade Drilling)

SHEET 1 OF 4

Mike Lester

DRILLING 8" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

ELEV.	DEPTH	SAN	MPLE	BLOW C			LAD TESTS	Hece	MATERIAL RECORDETION
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
									DECORATIVE GRAVEL, Dry, tan
	_								1.50
	_								
								00	
	_							GC GM	
2397.2	5.00			40					OU TV OLAVEV ODAVEL KLOAND D
		Α	CMS	19 28	50/0.5'	100			SILTY CLAYEY GRAVEL with SAND Dry, very dense, pale brown (10 YR 6/3)
	6.50			50/0.5'					6.50
	_	В	SPT	17 17	34	95			CLAYEY GRAVEL with SAND Dry, dense, pale brown (10 YR 6/3)
	8.00		<u> </u>	17				GC	p (
									9.00
								<u> </u>	+ <del></del>
2392.2	10.00			20				-	LEAN CLAY with SAND. Dry you stiff you
		С	CMS		40	100			LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 8/3)
	11.50			20				-	CANDY I FAN OLAY Day was selff was a self
	_	D	SPT	8 10	16	85			SANDY LEAN CLAY Dry, very stiff, very pale brown (10 YR 8/3)
	13.00			6					
								CL	
2387.2	15.00 15			7					SANDY LEAN CLAY Dry, very stiff, very pale
		Ε	смѕ	14	38	100			brown (10 YR 8/3)
	16.50			24 8					CRAVELLY LEAN CLAY with SAND Dry
	-	F	SPT	11	25	80			GRAVELLY LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 8/3)
	18.00			14					
									19.00
	00.00								[]
2382.2	20.00			11				1	SILTY CLAYEY SAND with GRAVEL Dry,
	<u> </u>	G	CMS	14	39	95			medium dense to dense, light yellowish brown (10 YR 6/4)
	21.50			25 13				SC	(10 YR 6/4)  SILTY CLAYEY SAND Dry, medium dense,
	† <u> </u>	Н	SPT	10	17	40			light yellowish brown (10 YR 6/4)
	23.00			7				-	
									24.00
	25.00								
2377.2	25.00 -25			18				1	FAT CLAY with SAND Dry, very stiff, white
		I	CMS	15	30	100			(10 YR 8/1)
	26.50			15 9					SANDY FAT CLAY Dry, very stiff, white (10
	<u> </u>	J	SPT	10	24	95		СН	YR 8/1)
	28.00			14				-	
	20.00								20.00
	30.00							1	30.00

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



11/27/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BI-40 **BORING** 73518

E.A. # 2402.20 (ft) GROUND ELEV..

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 4

**STATION OFFSET** 

**EQUIPMENT** 

224' Left

Boomhower **ENGINEER** 

CME 85 (Cascade Drilling)

8" H.S.A.

"X" 84+54

Mike Lester **OPERATOR** DRILLING METHOD

(ft) 31.50	K	TYPE	Increments	1 foot		LAB TESTS		MATERIAL DESCRIPTION	
31.50		CMS	11 19	62	Recov'd 95		USCS Group	CLAYEY GRAVEL with SAND Dry, hard, light gray (2.5 Y 7/2)	
33.00	L	SPT	43 13 14 17	31	80		GC	31.50  CLAYEY SAND with GRAVEL Dry, hard, light gray (2.5 Y 7/2)	
35.00 35.00							SC		Blew hydrauli fitting on CMI 85. End day drilling @ 33.
-35	М	CMS	19 29	54	115			35.80	
36.50 38.00	N	SPT	25 7 7 20	27	60			light gray (10 YR 7/2)  CLAYEY GRAVEL with SAND Dry, dense, light gray (10 YR 7/2)  light gray (10 YR 7/2)	
.40.00									
	0	CMS	16 20	50/0.3'	100			CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)	
42.80	Р	SPT	19 8 10	18	60		GC	CLAYEY GRAVEL with SAND Dry, medium dense, light gray (10 YR 7/2)	
45.00 <b>45</b>			8					CLAYEY GRAVEL Dry to moist, medium	
46.50	Q		15 28	23	95			(10 YR 8/1)  CLAYEY GRAVEL with SAND Dry to moist,	
48.00	R 	SPT	28 19	47	80			(10 YR 8/1)	
50.00								_ +0.00	-
51.50	S	CMS	23 22 20	42	100		СН	GRAVELLY FAT CLAY with SAND Dry to moist, dense, light brownish gray (10 YR 6/2) to 51.50 white (10 YR 8/1)	
53.00	Т	SPT	25 23 30	53	95			CLAYEY SAND with GRAVEL. Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)	
55 QC							CL	55.00	
<u>55</u> #9:40	U	CMS	<del>- 15/0.1'</del>	15/0.1'	0				(U) Last 10 blows; no progress. No sample recovered. Vo hard drilling from 55.0' to 60.0'.
	36.50 38.00 40.00 41.30 42.80 45.00 46.50 48.00 50.00 51.50	36.50 M 36.50 N 38.00 P 40.00 P 42.80 Q 46.50 Q 46.50 R 48.00 S 51.50 S 51.50 T	M CMS 36.50 N SPT  40.00 41.30 O CMS 42.80 P SPT  42.80 Q CMS 46.50 Q CMS 48.00 S CMS 51.50 S CMS 51.50 T SPT  555.90 U CMS	36.50 M CMS 29 25 7 7 38.00 P SPT 7 30 10 10 10 10 10 10 10 10 10 10 10 10 10	36.50 M CMS 29 54 36.50 N SPT 7 38.00 P SPT 8 42.80 P SPT 8 42.80 R SPT 28 48.00 R SPT 28 48.00 S CMS 22 51.50 S CMS 22 51.50 T SPT 25 53.00 T SPT 25 53.00 S 555.90 U CMS 15/0.1' 15/0.1'	36.50 M CMS 29 54 115  36.50 N SPT 7 27 60  38.00 P SPT 8 18 60  41.30 P SPT 8 18 60  42.80 P SPT 8 28 47 80  48.00 F SPT 28 47 80  50.00 S CMS 22 42 100  51.50 S CMS 22 42 100  53.00 T SPT 23 30 53 95  555.90 U CMS 15/0.1' 15/0.1' 0	36.50 M CMS 29 54 115  36.50 N SPT 7 27 60  38.00 A SPT 7 27 60  40.00 A SPT 7 27 60  41.30 O CMS 20 50/0.3' 100  42.80 P SPT 8 18 60  42.80 P SPT 8 18 60  44.50 A SPT 28 47 80  48.00 R SPT 28 47 80  50.00 50  50 S CMS 22 42 100  51.50 S CMS 22 42 100  51.50 T SPT 23 53 95  53.00 T SPT 23 53 95  55.90 U CMS 15/0.1' 15/0.1' 0	36.50 M CMS 29 54 115  36.50 N SPT 7 27 60  38.00 O CMS 20 50/0.3' 100  40.00  41.30 O CMS 20 50/0.3' 100  50/0.3' 18 60  42.80 P SPT 8 18 60  46.50 Q CMS 8 23 95  46.50 R SPT 28 47 80  48.00 F SPT 28 47 80  50.00  50 S CMS 22 42 100  51.50 S CMS 22 42 100  51.50 S CMS 23 53 95  53.00 T SPT 23 53 95  53.00 CL  CL	35.80  M CMS 29 54 115  25 54 115  N SPT 7 27 60  A00.00  A130 O CMS 20 50/0.3 100  A130 O CMS 20 50/0.3 100  A280 P SPT 8 18 60  Q CMS 8 23 95  A6.50 R SPT 28 47 80  A6.50 S CMS 22 42 100  S CMS 22 42 100  S CMS 23 53 95  T SPT 25 53.00  T SPT 25 53.00  T SPT 25 53.00  T SPT 25 53.00  CLAYEY GRAVEL with SAND Dry, dense, light gray (10 YR 7/2)  CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)  CLAYEY GRAVEL with SAND Dry, medium dense, light gray (10 YR 7/2)  CLAYEY GRAVEL with SAND Dry, medium dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)  CLAYEY GRAVEL with SAND Dry, medium dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)  CLAYEY GRAVEL with SAND Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)  CLAYEY GRAVEL with SAND Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)  CLAYEY GRAVEL with SAND Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)  CLAYEY SAND with GRAVEL Dry to moist, dense, light brownish gray (10 YR 6/2) to white (10 YR 8/1)



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

11/26/13 START DATE

11/27/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-40 73518

GROUND ELEV. 2402.20 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 84+54 **STATION** 

224' Left **OFFSET** 

Boomhower **ENGINEER** 

**EQUIPMENT** 

CME 85 (Cascade Drilling)

SHEET 3 OF 4

Mike Lester **OPERATOR** DRILLING METHOD 8" H.S.A.

California   Cal	MATERIAL DESCRIPTION  CLAYEY SAND with GRAVEL Dry to moist, very hard, white (10 YR 8/1)  62.50  (W) Last 10 blows; no progress. No sample recovered. Vehard drilling from 65.0' to 72.0'.
2337.2	CLAYEY SAND with GRAVEL Dry to moist, very hard, white (10 YR 8/1)  62.50  (W) Last 10 blows; no progress. No sample recovered. Very hard drilling from 65.0' to
2332.2 — 70  2327.2 — 75.00  75.00  76.50  X CMS 9 24 100  76.50  Y SPT 5 12 100  78.00  2322.2 — 80	(W) Last 10 blows; no progress. No sample recovered. Vo hard drilling from 65.0' to
76.50 X CMS 9 24 100 15 5 12 100 7 7 2322.2 -80	
_	T3.00  LEAN CLAY Moist, stiff, light brown (7.5 YR 6/3)  LEAN CLAY Moist, stiff, light brown (7.5 YR 6/3)  (X) Pocket penetrometer reading - 2.5  (Y) Pocket penetrometer reading - 2.0
2317.2 - 85 <sup>85.00</sup>	LEAN CLAY Moist, very stiff, light brown (7.5 YR 6/3)  SANDY LEAN CLAY Moist, stiff to very stiff, light brown (7.5 YR 6/3)  (AA) Pocket penetrometer reading - 1.3 (AA) Pocket penetrometer



START DATE \_\_\_\_11/26/13

11/27/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING BI-40 73518

E.A. # 73518 GROUND ELEV. 2402.20 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 4

 STATION
 "X" 84+54

 OFFSET
 224' Left

ENGINEER Boomhower

EQUIPMENT CME 85 (Casc

CME 85 (Cascade Drilling)
Mike Lester

OPERATOR MIKE Leste

DRILLING
METHOD 8" H.S.A.

	EERING V		MPLE	BLOW CO					BACKFILLED C	DATE
ELEV. (ft)	DEPTH (ft)		TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2307.2 -	- - - 95.00 - 96.50	ВВ	CMS	10	42	105		CL	GRAVELLY LEAN CLAY Wet, very stiff, light brown (7.5 YR 6/4) GRAVELLY LEAN CLAY with SAND Wet.	(CC) Pocket
	98.00	СС	SPT	14 25	39	75			GRAVELLY LEAN CLAY with SAND Wet, hard, light brown (7.5 YR 6/4)  98.00  END BI-40 @ 98.0'	penetrometer reading - 1.3 tsf. No groundwater encountered.
2302.2 -	100									
2297.2 -	- 105 - -									
2292.2 -	-110 -									
NV_DOI ALL FILES.GPJ NV_DOI GDJ 6/2///8	115  - -									



START DATE

1/6/14

1/6/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV.

BI-41 73518

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 2389.50 (ft) HAMMER DROP SYSTEM Automatic(ETR 74%)

**STATION OFFSET** 

**EXPLORATION LOG** 

"X" 87+72 596' Right

Pypkowski

**ENGINEER** 

Lawrence Diedrich D-120

SHEET 1 OF 3

**EQUIPMENT OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV.	DEPTH		MPLE TYPE	BLOW C 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)			Increments	1 foot	Recov'd		Стоир	SILTY SAND with GRAVEL Dry, tan	
	_									
	-								2.50	
	_								2.50	†
	_									
0004.5	5.00									
2384.5 -	<del>5</del> 5.90		SPT	31 50/0.4'	50/0.4'	100			<u>LEAN CLAY</u> Dry, very hard, very pale brown (10 YR 7/3)	
	_			30/0.4					(16 IIV/16)	
	_									
	_							CL		
	_									
2379.5 -	-10 <sup>10.00</sup>			9					LEAN CLAY with SAND Dry hard you halo	
		В	SPT	19	44	65			<u>LEAN CLAY with SAND</u> Dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	11.50			25						
									13.20	
	_								<u>  13.20</u>	-
	15.00									
2374.5 -	-15 <sup>15.00</sup>	С	SPT	43	50/0.1'	90		SC	SILTY CLAYEY SAND with GRAVEL Dry to	(C) 25 blows -
	_ 16.10	_	0	49 50/0.1'	00/0.1			SM	moist, very dense, very pale brown (10 YR 7/3)	no progress.
	_									
	-								18.00	+
	_									
2369.5 -	20.00 20									
		D	SPT	15 18	35	80		CL	SANDY LEAN CLAY Moist, hard, very pale brown (10 YR 7/3) with brownish yellow (10 YR	
	21.50			17					6/8)	
	=									
	_								23.20	-
	_									
2364.5 -	-25.00 -25			13				CL	SANDY SILTY CLAY Moist, hard, very pale	
	26.50	Ε	SPT	15 18	33	95		ML	brown (10 YR 7/3) with brownish yellow (10 YR 6/8) and mottled white (10 YR 8/1)	
	-			-				1		Thin weakly to
	-							L	28.20	moderately cemented layer
	_							CL		present from 27 to 55'.
	30.00							CL	30.00	10 55 .



1/6/14 START DATE

1/6/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County BI-41

**BORING** 73518 E.A. #

GROUND ELEV. 2389.50 (ft) HAMMER DROP SYSTEM Automatic(ETR 74%)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 87+72 **STATION** 596' Right

**OFFSET ENGINEER** 

**EQUIPMENT** 

Lawrence Diedrich D-120

Pypkowski

SHEET 2 OF 3

**OPERATOR** DRILLING METHOD

6" H.S.A. BACKFILLED \_\_\_\_\_ \_ DATE

ELEV.	DEPTH	NO.	MPLE TYPE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	SPT	Increments 14 16		Recov'd		Group	LEAN CLAY with SAND Dry to moist, hard, very pale brown (10 YR 6/3) with white (10 YR	(F) Weak to moderately
	31.50			20					8/1)	cemented nodules in sample.
2354.5 -	35.00							CL		
2354.5 -	36.50	G	SPT	14 20 21	41	75			SANDY LEAN CLAY Dry to moist, hard, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) with brownish yellow (10 YR 6/8)	
	_								38.20	-
2349.5 -	<b>40</b> .00		0.07	9	00	0.5		CII	FAT CLAY Moist, very stiff, light yellowish	
	41.50	Н	SPT	10 16	26	85		СН	brown (10 YR 6/4) to pale yellow (2.5 YR 7/3)	
	_								43.20	_
2344.5 -	45.00 45			12					<b>LEAN CLAY</b> Dry to moist, very stiff, pale	
	46.50	I	CMS	24 8	41	100			yellow (2.5 YR 7/3) to white (2.5 YR 8/1) <b>LEAN CLAY with SAND</b> Dry to moist, very	
	48.00	J	SPT	9 17	26	85		_	stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	
2339.5 -	50.00			16				CL	SANDY LEAN CLAY with GRAVEL Dry to	(K) 3/4"+ rock
	51.50	K	CMS		35	100			moist, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1) <b>LEAN CLAY with SAND</b> Moist, hard, pale	sampler.
	53.00	L	SPT		40	85			yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	
2334.5 -	55.00 -55	М	CMS		36	100			<u>LEAN CLAY with GRAVEL</u> Moist, very stiff, brown (7.5 YR 5/4) and white (7.5 YR 8/1)	
	56.50	N	SPT	24 14 12 12	24	65			SANDY FAT CLAY with GRAVEL Moist, very stiff, multicolored	
	33.00			12				СН		
	60.00								60.00	



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

1/6/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-41

END DATE

E.A. # 73518

GROUND ELEV. 2389.50 (ft)

HAMMER DROP SYSTEM Automatic(ETR 74%)

DATE DEPTH ft ELE

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_"X" 87+72

OFFSET 596' Right

EQUIPMENT Lawrence
Diedrich D-120

SHEET 3 OF 3

OPERATOR Pypkowski
DRILLING 6" H.S.A.

ENGINE	ERING V					SIEM	utomatic(E	1111747	BACKFILLED	DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(1)	61.50	Р	CMS	10 17 26 9	43	95 95			SANDY FAT CLAY Moist, very stiff, multicolored  GRAVELLY FAT CLAY with SAND Dry to moist, hard, white (10 YR 8/1) to very pale brown (10 YR 7/3)	(O) Pocket penetrometer reading - 4.5 tsf.
	_							СН		
2324.5 -	<b>-65<sup>65.90</sup></b>	Q	CMS	50/0.1'	50/0.1'	0			07.00	(Q) No sample recovered.
	_								67.00 END BI-41 @ 67.0'	No groundwater encountered.
2319.5 -	_ 70									
	_									
	_									
2314.5 -	<b>75</b>									
	- -									
2309.5 -	- 80									
	_ _ _									
	_									
2304.5 -	—85									
	_									
	-									



1/7/14 START DATE

1/7/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

BI-42 BORING

73518 GROUND ELEV. 2390.00 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

**STATION OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

"X" 88+02 489' Right

Lawrence **ENGINEER** 

Diedrich D-120(#1627)

SHEET 1 OF 3

Pypkowski

DRILLING METHOD 6" H.S.A

GEOTECH ENGINE	HNICAL			ROUND EL AMMER DR			utomatic(E	TR 74%	METHOD DATE	
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION R	EMARKS
2385.0 -	5 5.00	Α	SPT	6 6 7	13	75		ML	3.50  SILT with SAND Dry, medium dense, very pale brown (10 YR 7/3)	
2380.0 -	- - 10	В	SPT	11 12	29	65			8.20  SANDY LEAN CLAY with GRAVEL Dry, very stiff, very pale brown (10 YR 7/3)	
	11.50	1	371	17	29	υυ		CL	Intermittent gravelly layers or weak cementation	
2375.0 -	15.00 15 16.50	С	SPT	10 13 52	65	55		_	SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, light yellowish brown (2.5 YR 6/3)	
2370.0 -	20.00	D	SPT		50/0.4'	85		GM	Intermittent gravelly layers or weak cementation  SILTY GRAVEL with SAND Dry to moist, (D) N	o progre 0 blows.
	21.40			50/0.4'				-	22.00 Intermittent gravelly layers or weak cementation	
2365.0 -	25.00 - 25 - 26.50	Е	SPT	13 13 11	24	80		CL	LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 7/3)	
	30.00							CL ML	30.00	



ALL FILES.GPJ NV DOT.GDT

DOT

≥'

1/7/14 START DATE

1/7/14

**END DATE** US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

Northwest Las Vegas - Clark County

**BI-42 BORING** 

LOCATION

73518 E.A. # **GROUND ELEV.** 

2390.00 (ft) Automatic(ETR 74%) HAMMER DROP SYSTEM.

**GROUNDWATER LEVEL** DEPTH ft | ELEV. ft

**EXPLORATION LOG** 

"X" 88+02 **STATION** 

489' Right **OFFSET** 

Lawrence **ENGINEER** Diedrich D-120(#1627) **EQUIPMENT** 

SHEET 2 OF 3

Pypkowski **OPERATOR** 6" H.S.A

**METHOD** BACKFILLED DATE

**DRILLING** 

**ELEV** DEPTH LAB TESTS MATERIAL DESCRIPTION **REMARKS** Percent NO. TYPE (ft) (ft) ncrements 1 foot Recov'd 10 SILTY CLAY with SAND Dry, hard, very pale F SPT 80 brown (10 YR 7/3) 17 45 31.50 28 CL ML 35.00 2355.0 11 SILTY CLAY with SAND Dry to moist, hard, very pale brown (10 YR 7/3) SPT 15 36 80 G 36.50 21 38.20 40.00 2350.0 8 **LEAN CLAY with SAND** Dry to moist, very SPT 30 80 stiff, very pale brown (10 YR 7/3) Н 11 41.50 19 45.00 2345.0 (I) Moderately 16 SANDY LEAN CLAY Moist, hard, pale yellow (2.5 YR 7/3) with brownish yellow (10 YR 6/8) cemented SPT 22 44 75 CL nodules in 46 50 22 sample. <del>50</del>50.00 2340.0 15 SANDY LEAN CLAY Moist, very stiff to hard, (J) Moderately cemented **CMS** 21 53 85 pale yellow (2.5 YR 7/3) nodules in 51.50 32 sample. 9 **LEAN CLAY with SAND** Moist, very stiff to hard, pale yellow (2.5 YR 7/3) (K) Moderately SPT 12 30 80 Κ cemented 53.00 18 nodules in sample. 54.00 55.00 2335.0 24 SANDY FAT CLAY Moist, hard, pale yellow (L) Torvane 20 (2.5 YR 7/3) to white (2.5 YR 8/1) reading - 15.0 **CMS** 57 100 tsf, pocket 56.50 37 CH penetrometer 11 FAT CLAY with SAND Moist, hard, pale reading - 4.5 tsf. SPT 17 44 yellow (2.5 YR 7/3) to white (2.5 YR 8/1) 75 M 27 58.00 59.00 GC 60.00 60.00



START DATE	1/7/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING BI-42 E.A. # 73518

GROUND ELEV. 2390.00 (ft)

HAMMER DROP SYSTEM Automatic(ETR 74%)

rk County

**EXPLORATION LOG** 

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

STATION \_\_\_ "X" 88+02

OFFSET 489' Right Lawrence

EQUIPMENT Diedrich D-120(#1627)

SHEET 3 OF 3

Pypkowski

DRILLING 6" H.S.A

**OPERATOR** 

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Control of the BLOW C	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	61.50	0	CMS	8 16 27 19	43	85 85		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored, strong brown (7.5 YR 5/8), very pale brown (10 YR 7/3), olive yellow (2.5 Y 6/8), white (10 YR 8/1).  CLAYEY GRAVEL with SAND Moist, dense, multicolored, strong brown (7.5 YR 5/8), very	
2325.0 -	- - 65.00	P	SPT	8 9	16	65			pale brown (10 YR 7/3), olive yellow (2.5 Y 6/8), white (10 YR 8/1).  WEAKLY TO STRONGLY CEMENTED MATERIALS, HARD DRILLING  GRAVELLY LEAN CLAY Moist, very stiff,	(P) Hard drilling
	66.50			7				CL	very pale brown (10 YR 7/3) to white (10 YR 8/1)  67.50  END BI-42 @ 67.5'	beyond sample location. 0.2 ft/min 66.5' 67.0' 250 psi down. .05 ft/min 67.0'
2320.0 -	70 -									67.5' 250 psi down. No groundwate encountered.
2315.0 -	- 75									
2310.0 -	80									
2305.0 -	85									
	_									



JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2425.00 (ft)

BI-43

HAMMER DROP SYSTEM Automatic(ETR 74%)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION OFFSET

**EQUIPMENT** 

**OPERATOR** 

OFFSET -ENGINEER -

Lawrence

Diedrich D-120(#1627)

Pypkowski

"XP" 203+64

304' Right

DRILLING 6" H.S.A.

ELEV.	DEPTH		MPLE		OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd		Group	MATERIAL BESSERI TION	
	_								1.50	
								<u> </u>		-
	2.50			10				-	SILTY GRAVEL with SAND Moist to drv.	
	1 400	Α	SPT	15	29	75		GM	SILTY GRAVEL with SAND Moist to dry, dense, pale brown (10 YR 6/3)	
	4.00			14				1	4.50	
2420.0 -	5 5.00			9					SILTY SAND with GRAVEL Moist to dry,	
		В	SPT	19	34	95		SM	dense, pale brown (10 YR 6/3)	
	6.50			15					7.00	
	7.50			20					CLAYEY SAND with GRAVEL Moist to dry,	
	8.80	С	SPT	42	50/0.3'	100		sc	dense, pale brown (10 YR 6/3)	
	- 0.00			50/0.3'					9.50	
2415.0 -	10.00 1010.30	D	SPT	50/0.3'	50/0 3'	100			POORLY GRADED SAND with SILTY CLAY	
				00/0.0	00/0.0	100		SP SC	and GRAVEL Moist to dry, dense, pale brown	
									(10 YR 6/3) 12.00	
	-								<u>12.90</u>	
	-									Gravelly drillin
	-									slower progres
2410.0 -	1515:28	F	SPT	50/0.2'	50/0-2'	0				(E) N
		_	0	00/0.2	00/0.2					(E) No sample recovered.
	_									
	_							<u> </u>	<u> </u>	-
	_									
2405.0 -	20.00			44				sc	OLAVEY CAND with ODAVEL Mainta day	
	20.80	F	SPT	41 50/0.3'	50/0.3'	100			<u>CLAYEY SAND with GRAVEL</u> Moist to dry, hard, very pale brown (10 YR 7/3)	
									22.00	
								<u> </u>	+ <del></del>	1
	-									
2400.0 -	25.00 25			37				-	CLAVEV CRAVELith CAND Maint to de-	
		G	SPT	31	67	85		GC	CLAYEY GRAVEL with SAND Moist to dry, hard, very pale brown (10 YR 7/3)	
	26.50			36				-		
	-									
	_									
	30.00								30.00	



START DATE	1/8/1

1/8/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-43 **BORING** 73518

E.A. # GROUND ELEV. 2425.00 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION **OFFSET** 

"XP" 203+64 304' Right

SHEET 2 OF 2

**ENGINEER** 

**EQUIPMENT** 

Diedrich D-120(#1627)

Pypkowski **OPERATOR** 

Lawrence

DRILLING METHOD 6" H.S.A.

INICAL ERING								
DEPTH (ft)			6 inch	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
31.50 -	Н	SPT	11 10 15	25	75		GC	CLAYEY GRAVEL with SAND Moist to dry, hard, very pale brown (10 YR 7/3)  33.20
- 35.00 - 36.50 -	1	SPT	17 16 22	38	85		sc	CLAYEY SAND with GRAVEL Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)
- 40.00 - 41.50	J	SPT	20 36 45	81	95		GC	CLAYEY GRAVEL with SAND Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)  (J) Weakly cemented nodules in sample.
- - 45.00 - 46.50 -	K	SPT	7 11 19	30	75		-	CLAYEY GRAVEL with SAND Moist to dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2) cemented nodules in sample.  47.30  GRAVELLY WEAKLY CEMENTED  (K) Strongly cemented nodules in sample1 ft/min 47.5' 48.5' 300 psi
- <sub>56</sub> 5 <u>9.99</u> -	L	SPT	<del>50/0.1'</del>	50/0.1'	<del></del> 0			MATERIALS, HARD DRILLING  MODERATELY TO STRONGLY CEMENTED MATERIALS, HARD DRILLING  51.80  END BI-43 @ 51.8'  CL) No sample recovered. 0.05 ft/min 50.0 51.5' 300 psi down.
- - 55 -								.01 ft/min 51.51.8' 300 psi down.  No groundwa encountered.
	DEPTH (ft)  31.50  31.50  35.00  36.50  40.00  41.50  46.50  46.50	DEPTH (ft) NO.  31.50  - 35.50  - 36.50  - 40.00  - 41.50  - 45.00  - 46.50  - 46.50  - 46.50  - 46.50	DEPTH (ft) NO. TYPE  31.50 H SPT  31.50 J SPT  36.50 J SPT  40.00 J SPT  41.50 K SPT  46.50 K SPT	DEPTH (ft) NO. TYPE   6 inch   11   10   15   15   15   15   15   15	DEPTH (ft) NO. TYPE 6 inch 1 Last 1 foot 1 1	DEPTH (ft)   NO.   TYPE   6 inch   Last   1 foot   Recovid	DEPTH	DEPTH   No.   Type   Sinch   Last   Percent   LAB TESTS   Group



1/8/14 START DATE

1/9/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-44 73518

2421.00 (ft) GROUND ELEV.

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 1/9/14 60.50 2360.5

**EXPLORATION LOG** 

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

"XP" 202+61 337' Right

Lawrence

Diedrich D-120 (Unit 1627)

SHEET 1 OF 3

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV.	DEPTH		/PLE	BLOW CO 6 inch	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments	1 foot	Recov'd		Group	MATERIAL BEGORII FION	
	- <u>2:58</u> -	A	SPT	50/0.2	50/0.2	0				(A) No sample recovered.
2416.0	<u>5</u> 5.90	В	SPT	50/0.1'	<del>50/0.1'</del>	0				(B) No sample recovered.
	- <del>7:5</del> 8 -	С	SPT	50/0.2'	50/0.2	0				(C) No sample recovered.
2411.0 -	<u>10</u> 10.90	Đ	SPT	50/0.1'	<del>50/0.1'</del>	0				(D) No sample recovered.
	-									
2406.0 -	- - 15 <sup>15.00</sup> - 16.50	E	SPT	15 20 31	51	55			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	
2401.0 -	- - - 20.00 - - 21.50	F	SPT	24 24 21	45	80		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, very pale brown (10 YR 7/3)	
2396.0 -	- 25.00 25 - 26.50		SPT	17 37 30	67	80			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(G) Weakly cemented nodules in sample.
	-									



START DATE

1/8/14

BI-44

2421.00 (ft)

1/9/14

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** 

73518 E.A. #

GROUND ELEV Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

60.50

1/9/14

DATE DEPTH ft ELEV. ft

2360.5

SHEET 2 OF 3 "XP" 202+61

STATION **OFFSET** 

337' Right

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		AMPL		BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NC		_	Increments	1 foot	Recov'd		Group	<u>CLAYEY GRAVEL with SAND</u> Dry to moist,	(H) Weakly
	30.80	H	SF	71	50/0.3'	50/0.3'	100		GC	very dense, very pale brown (10 YR 7/3)	cemented nodules in sample.
	_									33.00	
386.0 -	35.00										
.000.0	36.50	ı	SF	РΤ	13 12 21	33	95		СН	SANDY FAT CLAY with GRAVEL Dry to moist, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	_									38.20	
	_									<u></u>	
381.0 -	40.00 40	J	SF	РТ	23 45	110	85			<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/2) and	(J) Weakly cemented
	41.50				65				sc	white (10 YR 8/1)	nodules in sample.
											End day 1 drilling @ 43'.
376.0 -	<del>45</del> 45:90	k	SI	ЭΤ	50/0.1'	50/0 1'				45.00	
					00/011	00/0.1	J			WEAKLY TO STRONGLY CEMENTED MATERIALS	(K) No sample recovered.
											1.25 ft/min 40 psi down, 45' 50'.
371.0 -	50 <sup>50:90</sup>	t	SF	PT	50/0.1'	<del>50/0.1'</del>	0			WEAKLY TO MODERATELY CEMENTED MATERIALS	(L) No sample recovered.
	_										1.25 ft/min 40 psi down, 50' 55'.
366.0 -	55 <sup>55.90</sup>	N	Sf	PT	50/0.1'	<del>50/0.1'</del>	0			WEAKLY TO MODERATELY CEMENTED MATERIALS	(M) No sampl recovered.
											1.6 ft/min 400 psi down , 55' 60'.
366.0 -	<u>5</u> <u>\$5.96</u> 	N	SI	PT	<del>50/0.1'</del>	<del>50/0.1'</del>	0				1.6 ft/n



START DATE

END DATE

LOCATION

1/8/14

1/9/14 JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-44 **BORING** 

73518 E.A. # 2421.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

1/9/14

DATE DEPTH ft ELEV. ft

2360.5

60.50

SHEET 3 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

337' Right **ENGINEER** 

Lawrence

"XP" 202+61

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR** DRILLING METHOD 6" H.S.A.

DVCKEILLED

GEOTECH ENGINE	INICAL EERING		HA	MMER DR	OP SYS	STEM A	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
<u> </u>	60.50	N	SPT	50/0.5'	50/0.5'	100		CL ML	SANDY SILTY CLAY Moist to wet, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)  (N) Free water on sampler.
2356.0 -	65.00 66.00		смѕ	51 78	78	90			
2351.0 -	- - - 70.00 - - 71.50	Р	CMS	27 44 46	90	55		CL	LEAN CLAY with SAND Moist to wet, hard, very pale brown (10 YR 7/3 to 10 YR 8/2) penetrometer reading - 2.5, 3.5, 4.5 tsf.
2346.0 -	- - -75 -								
2341.0 -	- - - 80 -								
2336.0 - 236.0 - 236.0 - 236.0 - 236.0 - 236.0 - 236.0 - 236.0 - 236.0 - 23	- - - 85								
NV_DOI ALL FI	_								



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

START DATE	1/9/14

1/9/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-45 **BORING** 73518 E.A. #

GROUND ELEV. 2423.00 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

**ENGINEER EQUIPMENT** 

**OPERATOR** DRILLING METHOD

STATION

**OFFSET** 

SHEET 1 OF 2

"XP" 204+54

307' Right

Lawrence Diedrich

Pypkowski

6" H.S.A

(E) No sample of the content of the	ELEV.	DEPTH		MPLE	BLOW C		Percent	ercent LAB TESTS		MATERIAL DESCRIPTION	REMARKS
250		(ft)	NO.	TYPE	Increments	1 foot		LAB IESIS	Group	MATERIAL DESCRIPTION	REMARKS
2418.0										2.00	
2418.0		2.50			23					SILTY CLAYEY SAND with GRAVEL Dry to	
2413.0		4.00	Α	SPT	21	42	95			moist, dense, light yellowish brown (10 YR 6/4)	
2408.0	2418.0 -	<u>5 5:28</u>	В	SPT	50/0.2'	50/0.2'	0				(B) No sample recovered.
2408.0		7.50 7.80	С	SPT	50/0.3'	50/0.3'	0				(C) No comple
2408.0		_		0. 1	00/0.0	00,0.0	•			9.00	
2408.0	2413.0 -	10.00									
2403.0	2110.0		D	SPT	45	116	100			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, very pale brown (10 YR 7/3)	(D) 0.4' @ 50 blows, 20 blows for final 0.1'.
2403.0  200  200  200  F SPT 28 71 85  21.50 43  225.00  25 G SPT 13 30 65  CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3)  CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3)  CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  28.20  28.20	2408.0 -	- - 15.00		ept		44	90			CLAYEY GRAVEL with SAND Dry to moist,	
2403.0		16.50 		561		44	80			dense, very pale blown (10 Tix 775)	
2398.0 F SPT 28 71 85  2398.0 CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3)  CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  28.20		_							GC		
2398.0 25.00 25.00 CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  28.20	2403.0	20.00 20		CDT		74	0F			CLAYEY GRAVEL with SAND Dry to moist,	
CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  - 28.20		21.50	<u>г</u>	3F1		/ 1	00			very derise, very pale brown (10 TK 7/3)	
CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)  - 28.20		-									
	2398.0 -	25.00 -25			10					CLAVEY COAVEL with CAND Doubs waist	
		26.50	G	SPT	13	30	65			dense, very pale brown (10 YR 7/3)	
-   sc		-								_ 28.20	
		-							sc		



START DATE	1/9/14	

1/9/14 END DATE

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION Northwest Las Vegas - Clark County

LOCATION

BI-45 **BORING** 

73518 E.A. #

2423.00 (ft) GROUND ELEV. HAMMER DROP SYSTEM Automatic(ETR 74%)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

SHEET 2 OF 2 "XP" 204+54

STATION

307' Right **OFFSET** Lawrence **ENGINEER** 

Diedrich **EQUIPMENT** Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A

BACKEILLED DATE

GEOTECH ENGINE	EERING V		HA			STEM	utomatic(E	··· · · · ·	) BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	31.50	Н	SPT	11 13 14	27	100			CLAYEY SAND with GRAVEL Dry to moist, dense, very pale brown (10 YR 7/3 to 10 YR 8/2)
2388.0 -	35.00 35 36.50	1	SPT	13 16 11	27	95		sc	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, dense, very pale brown (10 YR 7/3 to 10 YR 8/2)
	-								38.20
2383.0	40.00 - 40 - 41.50	J	CMS	23 25 38	63	85		GM	SILTY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3 to 10 YR 8/2)
	-								43.20 Gravelly or weakly cemented materials
2378.0	45 <sup>45.90</sup>	К	SPT	50/0.1'	50/0.1'	0			45.00 STRONGLY CEMENTED MATERIALS HARD DRILLING  (K) No sample recovered.
2373.0 -	- - - 50								END BI-45 @ 45.8'  END BI-45 @ 15.8'  0.1 ft/min 300 psi down. No groundwater encountered.
2368.0 -	- - 55 -								
	_								



1/10/14 START DATE

1/10/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-46 **BORING** 73518

LOCATION

E.A. # 2401.00 (ft) GROUND ELEV. HAMMER DROP SYSTEM Automatic(ETR 74%)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 80+65 STATION

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

190' Right **OFFSET** 

> Lawrence Diedrich D-120(#1627)

SHEET 1 OF 2

Pypkowski

DRILLING METHOD BACKFILLED \_\_\_\_\_ \_ DATE

6" H.S.A.

ELEV.	DEPTH		MPLE TYPE	BLOW CC 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TTPE	Increments	1 foot	Recov'd		Group		
	_								0.00	
	2.50			_					2.00	
	_	Α	SPT	5 9	30	95			<u><b>LEAN CLAY with SAND</b></u> Dry, very stiff, very pale brown (10 YR 8/2)	
	4.00			21				CL		
2396.0 -	5 5.00			10				32	<u>LEAN CLAY with SAND</u> Dry, hard, very pale	
	6.50	В	SPT	15 20	35	100			brown (10 YR 8/2)	
	7.50								7.00	
	_	С	SPT	14 17	42	100			SILTY CLAY with SAND Dry, hard, very pale brown (10 YR 8/2)	
	9.00			25						
2391.0 -	10.00			14				CL ML	SILTY CLAY with SAND Dry, hard, very pale	
	11.50	D		brown (10 YR 8/2)						
	_									
	_								13.20	
	_									
2386.0 -	-15 <sup>15.00</sup>			11				SC	SILTY, CLAYEY SAND Dry to moist, hard, very pale brown (10 YR 8/2 to 10 YR 7/3) with	
	16.50	E	SPT	15 18	33	85		SM	wery pale brown (10 YR 8/2 to 10 YR 7/3) with mottled brownish yellow (10 YR 6/8)	
	_									
	_								18.20	
	20.00									
2381.0 -	20.00	F	SPT	9	25	95		SC	CLAYEY SAND Moist to dry, very stiff, very pale brown (10 YR 7/3)	
	21.50	Г	SFI	16		95			pale blown (10 TK 7/3)	
	_									
	-								23.20	
	25.00									
2376.0 -	25	G	SPT	6 7	16	95		СН	FAT CLAY with SAND Moist to dry, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(G) Weakly to strongly
	26.50		J. 1	9		55			, , (2.6 · · · · · · ) · · · · · · · · · · ·	cemented nodules in
	-									sample.
	-								28.20	
	-							CL	30.00	



1/10/14 START DATE

END DATE

1/10/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-46 **BORING** 

73518 E.A. #

GROUND ELEV. 2401.00 (ft) HAMMER DROP SYSTEM Automatic(ETR 74%)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 80+65 STATION 190' Right

**OFFSET** Lawrence

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120(#1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH	NO.	MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) - 31.50	Н	CMS	22 22 22 24	46	95		CL	SANDY LEAN CLAY Moist to dry, very stiff, pale yellow (2.5 YR 7/3) to white (2.5 YR 8/1)	(H) Weakly to strongly cemented nodules in sample.
2366.0 -	35.00 36.50	ı	SPT	7 13 17	30	85		СН	GRAVELLY FAT CLAY with SAND Dry to moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1) to brownish yellow (10 YR 6/3)	(I) Weakly to strongly cemented nodules in sample.
2361.0 -	40.00 40 41.50	J	SPT	8 9 16	25	95		CL	SANDY LEAN CLAY Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1).	
2356.0 -	45.00 45 - 46.50	К	CMS	15 21 34	55	100		GC	CLAYEY GRAVEL WITH SAND Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1).	(K) Pocket penetrometer reading - 4.5 Torvane read - 15 tsf.
2351.0 -	50.00 50.80		SPT	14 50/0.3'	50/0.3'	100		CH	48.50 49.10 STRONGLY CEMENTED MATERIALS, HARD DRILLING  SANDY FAT CLAY Moist, very stiff, pale yellow (2.5 YR 7/3) to white (10 YR 8/1) END BI-46 @ 50.8'	0.03 ft/min @ 250 psi down from 48.8' to 49.1'. (L) Last 30
2346.0 -	- - 55									blows, no progress. No groundwa encountered.
	_ _ _									



JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

BI-47 73518

GROUND ELEV. 2399.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 "X" 82+14

STATION OFFSET

201' Right Boomhower

EQUIPMENT Boomnower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

	ENGINE	EERING V	-		AMMER DR					BACKFILLED DA	ATE
SANDY GRAVEL Dry, tan    2394.3					6 inch	Last		LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2384.3	(11)	(11)			morements	1 1001	RECOV d			SANDY GRAVEL Dry, tan	
2394.3		-									
2384.3		-								2 50	
SANDY SILTY CLAY: Dry, medium dense, very pale brown (10 VR 7/3)		_									
2394.3											
SANDY SILTY CLAY Dry, medium dense, very pale brown (10 YR 7/3)		5.00							CL		
2389.3	2394.3 -	5 5.00	_						ML	SANDY SILTY CLAY Dry, medium dense,	
2389.3		6.50	l	SPT	_	14	85			very pale brown (10 YR 7/3)	
2389.3		7.50								7.00	
2389.3    10.00		7.50								<b>LEAN CLAY with SAND</b> Dry, medium dense,	
2384.3 10 10 0.00		9 00	l	SPT		11	85		CL	very pale brown (10 YR 7/3)	
11.50										9.50	
C SPT   46   101   95   SC   dense, very pale brown (10 YR 7/3)   12.00   12.00     12.00     14.00   SPT   31   59   45   GM   SM   SM   SM   SILTY CLAYEY GRAVEL with SAND   Dry, very dense, very pale brown (10 YR 7/3)   14.50     14.50     14.50	2389.3 -	10.00			20					CLAYEY SAND with GRAVEL Dry, very	
2384.3		11 50	С	SPT	_	101	95		SC	dense, very pale brown (10 YR 7/3)	
2384.3					33					12.00	
2384.3		12.50			26					SILTY CLAYEY GRAVEL with SAND Dry.	
2384.3		14.00	D	SPT		59	45			very dense, very pale brown (10 YR 7/3)	
16.50   E   SPT   17   28   80   SM   SM   SILTY SAND with GRAVEL   Dry, dense, very pale brown (10 YR 7/3)   17.00					20					14.50	
16.50   E   SPT   17   28   80   SM   pale brown (10 YR 7/3)   17.00   17.50   17.50   17.00     17.50     18   39   80     SC     CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) to yellow (10 YR 7/6)   SC   CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)   22.50	2384.3 -	15.00 15			12					SILTY SAND with GRAVEL Dry dense very	
17.50  17.50  F SPT 21 39 80  19.00  SC  CLAYEY SAND with GRAVEL Dry, dense, very pale brown (10 YR 7/3) to yellow (10 YR 7/6)  SC  CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3) to yellow (10 YR 7/6)  SC  CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)  22.50  H SPT 20 42 95  CL SANDY LEAN CLAY Dry, hard, mottled yellow (10 YR 7/6) to white (10 YR 8/1)  2374.3  25.00  FAT CLAY with SAND Dry, very stiff, mottled		40.50	E	SPT	17	45	80		SM	pale brown (10 YR 7/3)	
2379.3 F SPT 21		16.50			28					17.00	
2379.3 F SPT 21 39 80 very pale brown (10 YR 7/3) to yellow (10 YR 7/6)  SC  CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)  22.50  H SPT 20 42 95  CL SANDY LEAN CLAY Dry, hard, mottled yellow (10 YR 8/1)  2374.3 25 12  FAT CLAY with SAND Dry, very stiff, mottled  FAT CLAY with SAND Dry, very stiff, mottled		17.50			15					CLAYEY SAND with GRAVEL Dry dense	
2379.3		40.00	F	SPT	21	39	80			very pale brown (10 YR 7/3) to yellow (10 YR	
2379.3		19.00			18				90	(10)	
21.50 G SPT 25 56 95 dense, very pale brown (10 YR 7/3)  22.50 22.50 End day 1 @ 21.5'.  SANDY LEAN CLAY Dry, hard, mottled yellow (10 YR 7/6) to white (10 YR 8/1)  24.00 25.00 25.00  2374.3 12	2379.3 -	20.00			10				30	CLAYEY SAND with CDAVEL Dry yery	
22.50			_	SPT	25	56	95			dense, very pale brown (10 YR 7/3)	
22.50   21.5'.    H SPT 20 42 95   CL   SANDY LEAN CLAY Dry, hard, mottled yellow (10 YR 7/6) to white (10 YR 8/1)   24.50   25.00   25.00   12   FAT CLAY with SAND Dry, very stiff, mottled   FAT CLAY with SAND Dry, very stiff, mottled   5.5   5.		21.50			31					22.00	End day 1 @
24.00		22.50			12					T	
2374.3 25 <sup>25.00</sup> 12 FAT CLAY with SAND Dry, very stiff, mottled		-	н	SPT	20	42	95		CL	yellow (10 YR 7/6) to white (10 YR 8/1)	
2374.3 25 <sup>25.00</sup> 12 FAT CLAY with SAND Dry, very stiff, mottled		24.00			22					24 50	
FAT CLAY with SAND Dry, very stiff, mottled	2374.3 -	25.00 25			40					T	
27.50			1	SPT		23	85		СН		
		26.50			13					27.00	
		27.50								T	
J SPT 14 26 80 GRAVELLY LEAN CLAY with SAND Dry to moist, very stiff, light yellowish brown (2.5 Y		-	J	SPT		26	80				
29.00 12 CL 6/3) to white (2.5 Y 8/1)		29.00							CL		
30.00		30.00								30.00	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



TART DATE	1/27/1

1/28/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

2399.30 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

BI-47

73518

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 82+14 STATION 201' Right **OFFSET** 

Boomhower **ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)			CMS	15 20	51	95		CL	LEAN CLAY with SAND Dry to moist, hard, pale yellow (5 Y 7/3)	
	31.50	L	SPT	31 11 19 28	47	95		СН	SANDY FAT CLAY Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to light yellowish brown (2.5 Y 6/3)	
	35.00								34.00	-
2364.3 -	35.00 - 35 - 36.50	М	CMS	17 17 32	49	85		CL	LEAN CLAY with SAND Dry to moist, very stiff, pale yellow (2.5 Y 7/3) to light yellowish brown (2.5 Y 6/3)	(M) Weakly to moderately cemented
	38.00	N	SPT	13 15 20	35	85		СН	FAT CLAYwith SAND Dry to moist, hard, pale yellow (2.5 Y 7/3) with white (2.5 Y 8/1) inclusions	nodules in sample.
2359.3 -	40.00									_
2000.0	41.50	0	SPT	7 7 12	19	95			<b>LEAN CLAY with SAND</b> Moist, very stiff, light olive brown (2.5 Y 5/4) to white (2.5 Y 8/1)	
	_							CL		
2354.3 -	_ 45								45.00 END BI-47 @ 45.0'	Drilled to 45'.
	_								END 61-47 (@ 43.0	Lost inner roc bit down borehole. Terminated borehole. No groundwa encountered.
2349.3 -	- 50									
	-									
2344.3 -	— <b>55</b>									
	_									



TADT DATE	2/10/14
START DATE	2/10/17

2/11/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-48 73518

GROUND ELEV. 2436.00 (ft)

DATE DEPTH ft ELEV. ft HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

"XP" 209+22 STATION

206' Left **OFFSET** 

Lawrence

SHEET 1 OF 3

**ENGINEER EQUIPMENT** 

Deidrich D-120 Pypkowski

6" H.S.A.

**OPERATOR** DRILLING METHOD

DVCKEILLED

GEOTECH ENGINE	EERING		HA	MMER DR	OP SYS	TEM A	utomatic	L	BACKFILLED DA	ATE
ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-									
2431.0 -	5.00 - 6.30	Α	SPT	37 50 50/0.3'	50/0.3'	85		SM	SILTY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3)	(A) Last 25 blows, no progress. Smooth penetration with light pressure (5' - 10').
2426.0 -	<del>10</del> 18:28 - - -	В	SPT	50/0.2	50/0.2'	100		SC SM	SILTY, CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3)  12.60	(B) Last 35 blows, no progress.  Smooth penetration with light pressure (10' - 15').
2421.0 -	1515.90	С	SPT	50/0.1'	50/0.1'	0			17.50	(C) 50 blows, no progress. No sample recovered. Smooth penetration with light pressure
2416.0 -		D	SPT	50/0.2	50/0.2'	100		sc	CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3)  22.60	(15' - 20').
2411.0 - 241	25.00 25.60 -	E	CMS	61 60/0.1'	60/0.1'	80		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) coarser gravels	
	30.00							sc	30.00	



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

2/10/14 START DATE

2/11/14

END DATE US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

BI-48 **BORING** 

GROUND ELEV..

73518 E.A. # 2436.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 209+22

SHEET 2 OF 3

STATION **OFFSET** 

206' Left Lawrence

**ENGINEER EQUIPMENT** 

Deidrich D-120

Pypkowski

**OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

(F) (ft) No. 1792 Increments 1 floot Recovid	ENGINE	HNICAL EERING		HA	AMMER DE	ROP SYS	STEM A	utomatic	L	BACKFILLED DATE
2386.0					6 inch	Last		LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2386.0 23	(it)		F		13 20					CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3) to light cemented yellowish brown (10 YR 6/4), mottled white (10 nodules in
2396.0   460.00   4		_								
2396.0 40.00	2401.0 -	3 <u>3</u> 5.90 	G	CMS	50/0.1'	50/0.1'	0			MATERIALS progress. No sample recovered.
2391.0 H CMS 24 42 80		_								
2391.0 445.98   SPT 50/0.1 50/0.1 0   MODERATELY TO STRONGLY CEMENTED MATERIALS   MODERATELY TO STRONGLY CEMENTED MATERIALS   (I) 50 blow progress. sample recovered.  2386.0 55.00   SPT 50/0.4 50/0.4 50   GC   CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).   (K) Weakly very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).   (K) Weakly very dense, light y	2396.0 -	40.00		CMS		42	80		GC	CLAYEY GRAVEL with SAND Dry to moist, (H) Weakly dense, very nale brown (10 VR 7/3) to light cemented
2381.0		41.50	П	CIVIS		42	80			yellowish brown (10 YR 6/4).  nodules in sample.  Smooth penetration, some weak
2386.0 565.00 J SPT 50/0.4' 50 CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).  GC  CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).  CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 6/4).  CLAYEY GRAVEL with SAND Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).  (K) Weakly very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).	2391.0 -	<u>45</u> 45.90	-	SPT	50/0.1'	50/0.1'	0			- 44'). (I) 50 blows, n
2381.0  CLAYEY GRAVEL with SAND Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).  CLAYEY GRAVEL with SAND Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).  (K) Weakly cemented nodules in sample.		_								MODERATELY TO STRONGLY CEMENTED sample recovered.
very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).  GC  CLAYEY GRAVEL with SAND Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).  (K) Weakly cemented nodules in sample.	2386.0 -	50.00 5050.40	J	SPT	50/0.4'	50/0.4'	50			CLAYEY GRAVEL with SAND Dry to moist, (J) Weakly
K CMS 48 55 50/0.1' 100 CEAYEY GRAVEL with SAND Dry to moist, very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1). (K) Weakly cemented nodules in sample.		_							GC	very dense, very pale brown (10 YR 7/3) to light yellowish brown (10YR 6/4).
very dense, light yellowish brown (10 YR 6/4) to white (10 YR 8/1).	2381.0 -	- - -55.00	I		48				_	CLAYEY GRAVEL with SAND Dry to moist (K) Weakly
58.00		_ 56.10	K	CMS	55	50/0.1'	100			very dense, light yellowish brown (10 YR 6/4) to cemented white (10 YR 8/1).
		-								58.00
- CL 60.00 60.00		60.00							CL	60.00



2/11/14

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

BI-48 73518

2436.00 (ft) GROUND ELEV. HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"XP" 209+22 STATION

206' Left **OFFSET** 

Lawrence **ENGINEER** 

Deidrich D-120 **EQUIPMENT** 

SHEET 3 OF 3

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGINE	INICAL EERING		HA	AMMER DE	ROP SYS	STEM _A	utomatic	L	BACKFILLED DATE	
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C	Last	Percent Percevid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REM	IARKS
(11)	- (11) - 60.30 - -		CMS	Increments 60/0.3'	60/0.3'	Recov'd 100		CL	GRAVELLY LEAN CLAY Moist, very hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3). (L) Last blows, r progress	าด
2371.0 -	- 65.00 65.50	M	CMS	73	73	100			GRAVELLY LEAN CLAY Moist, very hard, very pale brown (10 YR 7/3).  65.50 (M) Stro	ongly
	-								END BI-48 @ 65.5' cemente nodules sample.	ed s in undwater
2366.0 -	- -70 -									
2361.0 -	- - 75 -									
2356.0 -	-  									
2351.0 -	- 85 - -									
	-									



END DATE 2/12/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING BI-49

E.A. # \_\_\_73518

GROUND ELEV. 2432.00 (ft)

HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_\_

**EQUIPMENT** 

**OPERATOR** 

"XP" 207+68 219' Left

OFFSET 219' Left
ENGINEER Lawrence

Deidrich D-120

Pypkowski

SHEET 1 OF 3

DRILLING 6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd		Group	MATERIAL SEGGRIF HON	
2427.0 -	- - - <u>5 5:90</u> -	<b>- ∧</b>	SPT	<del>50/0.1'</del>	<del>50/0.1'</del> -	<del></del> 0		-	7.50	Coarse gravel and cobbles from 0' - 5'.  (A) Gravel or cobbles. No sample recovered. Coarse gravel
2422.0 -	- 10.00 10.60	В	SPT	43 50/0.1'	50/0.1'	100		sc	CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1)	and cobbles from 5' - 10'. (B) Gravel or cobbles.
2417.0 -	- - - 15 <sup>15.00</sup> - 16.50	С	CMS	23 33 40	73	95		CL	SANDY LEAN CLAY with GRAVEL Dry, hard, very pale brown (10 YR 7/3)	Coarse gravel and cobbles from 10' - 15'.
	- - 20.00								18.20	_
2412.0 -	21.50	D	CMS	15 26 46	72	95			CLAYEY SAND Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	_							sc		
2407.0 -	25.00 25 26.50	E	SPT	18 19 18	37	80			CLAYEY SAND with GRAVEL Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	_								28.20	_
	_							GC		
	30.00								30.00	



2/12/14

END DATE 2/12/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

**GROUND ELEV.** 

BI-49 73518

2432.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

STATION OFFSET ENGINEER

219' Left Lawrence

"XP" 207+68

EQUIPMENT

Pypkowski 6" H.S.A.

Deidrich D-120

OPERATOR DRILLING METHOD

BACKFILLED \_\_\_\_\_ DATE

ELEV. DEPTH LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) ncrements 1 foot Recov'd 5 **CLAYEY GRAVEL with SAND** Dry to moist, (F) Weakly medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) with white (10 F SPT 10 20 cemented 45 nodules in 31.50 10 GC YR 8/1) sample. 33.20 2397.0 G CMS 65/0.4' 65/0.4' 75 **CLAYEY SAND with GRAVEL** Dry to moist, SC very dense, very pale brown (10 YR 7/3) 37.70 40.00 2392.0 GC 25 **CLAYEY GRAVEL with SAND** Moist to dry, SPT 60 100 very dense, very pale brown (10 YR 7/3), darker Н 41.50 gravels 25 42.40 **MODERATELY TO STRONGLY CEMENTED MATERIALS** <u>45</u>45.90 2387.0 SPT 50/0.1' 50/0.1' (I) No sample 46.00 recovered. 5050.90 2382.0 SPT 50/0.1' 50/0.1' **GRAVELLY OR WEAKLY CEMENTED** (J) No sample **MATERIALS** recovered 54.00 ALL FILES.GPJ NV DOT.GDT 55.00 55 2377.0 24 **CLAYEY GRAVEL with SAND** Dry to moist, dense, multicolored, pale yellow (2.5 YR 7/3) reddish yellow (7.5 YR 6/6), dark gravels SPT 16 37 100 56.50 GC 21 58.50 MODERATELY TO STRONGLY CEMENTED **MATERIALS** ≥' 60.00 69.99



2/12/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

BORING

73518

GROUND ELEV. 2432.00 (ft)

HAMMER DROP SYSTEM Automatic

BI-49

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

STATION **OFFSET** 

219' Left Lawrence **ENGINEER** 

Deidrich D-120 **EQUIPMENT** 

"XP" 207+68

Pypkowski **OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	-	L	SPT	Increments 50/0.1	<del>50/0.1</del>	Recov'd			GRAVELLY, OR WEAKLY TO MODERATELY CEMENTED MATERIALS	(L) No sample recovered.
	-								63.00	_
2367.0 -	65.00 <b>65</b>		CMS	15 11	23	135		СН	<u>FAT CLAY</u> Moist to wet, stiff, light yellowish brown (10 YR 6/4)	(M) Pocket penetrometer
	66.50			12					68.20	reading - 2.5, 2.5 tsf. Torvar reading - 9, 11 tsf.
2362.0 -	- - 70.00 - 70			- 14						40.5
	71.50	N	CMS	11 20 44	64	120		_	<u>LEAN CLAY with GRAVEL</u> Moist to wet, hard, very pale brown (10 YR 7/3)	(N) Pocket penetrometer reading - 4.5 t (N) Moderatel to strongly
	-							CL		cemented nodules in sample.
2357.0 -	75.00 - 75 - 76.50	0	CMS	8 11 16	27	135			<b>LEAN CLAY</b> Moist, very stiff, light yellowish brown (10 YR 6/4)	(O) Pocket penetrometer reading - 2.75 tsf. Torvane
	-									reading - 15 ts
2352.0 -	- 80.00 <b>80</b>			8				СН	<u>FAT CLAY</u> Moist, very stiff, very pale brown (10 YR 7/3)	(P) Pocket
	_ 81.50 _	Р	CMS	10 16	26	135			(10 YR 7/3) 81.50 END BI-49 @ 81.5'	penetrometer reading - 2.75 tsf. Torvane reading - 6.5 t
	-									No groundwar encountered.
2347.0 -	—85									
	-									
	_									



2/13/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

GROUND ELEV..

73518 E.A. # 2427.00 (ft)

HAMMER DROP SYSTEM Automatic

BI-50

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3 "XP" 205+93

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

235' Left

Lawrence

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGINE	INICAL ERING			AMMER DR		STEM	atomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	-								2.50
2422.0 -	- 5.00 - 6.30	Α	SPT	38 56 50/0.3'	50/0.3'	85		SP SM	POORLY GRADED SAND with SILT and GRAVEL Dry to moist, very dense, very pale brown (10 YR 8/2)
2417.0 -	- - - 10.00 - 10 <mark>10.40</mark>	В	SPT	50/0.4'	50/0.4'	100		sc	8.10  CLAYEY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 8/2)
2412.0 -	- - 15.00 16.50	С	SPT	10 10 29	39	95			2.70  SANDY LEAN CLAY Dry to moist, hard, light yellowish brown (10 YR 6/4) mottled white (10 YR 8/1)
2407.0 -	- - - 20.00 - 21.50	D	SPT	9 11 13	24	95		CL	SANDY LEAN CLAY Dry to moist, very stiff, light yellowish brown (10 YR 6/4) mottled white (10 YR 8/1)
	-								
2402.0 -	25.00 - 25 - 26.50	E	SPT	15 21 21	42	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 8/2)
	- - 30.00								30.00



2/13/14 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

Northwest Las Vegas - Clark County LOCATION

**GROUND ELEV.** 

BI-50 **BORING** 

73518 E.A. #

Automatic HAMMER DROP SYSTEM \_

2427.00 (ft)

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

"XP" 205+93 **STATION** 235' Left

**OFFSET** 

**ENGINEER** 

**METHOD** 

Lawrence

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

6" H.S.A.

Pypkowski **OPERATOR DRILLING** 

BACKFILLED \_ \_ DATE

ELEV. DEPTH LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) Increments 50/0.4' 1 foot 50/0.4' Recov'd 100 SPT 30.40 F **CLAYEY GRAVEL** Dry to moist, very dense, (F) Weakly to very pale brown (10 YR 8/2) strongly cemented. 35.00 2392.0 33 **CLAYEY GRAVEL with SAND** Dry to moist, (G) Pocket dense, pale yellow (5 YR 7/3) penetrometer CMS 24 40 100 G reading - 4.5 tsf. 36.50 16 GC Torvane reading - 15 tsf. 40.00 2387.0 14 **CLAYEY GRAVEL with SAND** Dry to moist, (H) Weakly to CMS 28 80 medium dense, white (10 YR 8/1) to very pale moderately Н 11 brown (10 YR 7/3) to pale yellow (5 YR 7/3) cemented 41.50 17 nodules. 43.00 45.00 2382.0 CL ML (I) With 39 **GRAVELLY SILTY CLAY with SAND** Dry to SPT 50/0.3' 105 moist, very hard, very pale brown (10 YR 7/3) to moderately 29 46.30 light yellowish brown (10 YR 6/4) cemented 50/0.3 nodules. 48.00 50.00 2377.0 J SPT 50/0.0' 50/0.0' (J) No sample recovered. INTERMITTENT WEAKLY TO MODERATELY 6/27/16 **CEMENTED LAYERS** ALL FILES.GPJ NV DOT.GDT 5555:20 2372.0 K CMS 60/0.2' 60/0.2' (K) No sample recovered. INTERMITTENT WEAKLY TO MODERATELY DOT **CEMENTED LAYERS** ≥' 69.99



2/13/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-50 BORING

73518 E.A. #

GROUND ELEV. 2427.00 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

STATION OFFSET **ENGINEER** 

**EQUIPMENT** 

235' Left

Lawrence

Diedrich D-120 (Unit 1627)

"XP" 205+93

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE	0 ' 1-		Dorossi	LAD TECTO	USCS	MATERIAL DESCRIPTION	DEMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments 50/0.1	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2362.0	- 65.00		SFI		30/0.1	U			INTERMITTENT WEAKLY TO MODERATELY CEMENTED LAYERS	
2257.0	66.50	М	CMS	45 33 32	65	100		CL ML	GRAVELLY SILTY CLAY Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(M) Pocket penetrometer reading - 2.5 tsf. Torvane reading - 12 tsf.
2357.0	70 - - - - - - - - - - - - - - - - - -			200psi				СН		Push Shelby
	76.50	N	SH	350psi	350psi	120			FAT CLAY Moist to wet, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)  76.50  END BI-50 @ 76.5'	tube @ 200 psi first 12", then @ 350 psi from 12" - 18". No groundwater encountered.
2347.0	-									
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16  70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	85   									



START DATE \_\_3/

3/10/14

3/11/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-51 73518

GROUND ELEV. 2410.50 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

60.00

3/11/14

DATE DEPTH ft ELEV. ft

2350.5

SHEET 1 OF 4

STATION OFFSET ENGINEER

\_180' Right

Boomhower

"XP" 194+35

EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski

OPERATOR DRILLING METHOD

od 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	-			molements	11000	Recova			SANDY GRAVEL, Dry, tan	
2405.5 -	5.00	Α	SPT	4 4 7	11	80		ML	SANDY SILT Moist, medium dense, pale brown (10 YR 6/3)	
	9.00	В	SPT	11 16 51	67	95			CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
400.5 -	10.00 10 11.40	С	SPT	20 33 50/0.4'	50/0.4'	85		GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
	12.50	D	SPT	25 32 30	62	80		GP GC	POORLY GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)  14.50	
395.5 -	15.00 15	E	SPT	9 12 25	37	80			CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
	17.50	F	SPT	10 14 14	28	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
390.5 -	20.00 20 20.90	G	CMS	24 50/0.4'	50/0.4'	100		sc	CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
	_								23.00	
2385.5 -	25.00 25 26.50	Н	SPT	6 8 14	22	85		СН	SANDY FAT CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3 to 10 YR 7/4)	
	_								28.20	
	_							CL		



3/10/14

3/11/14

END DATE

US95 / CC-215 System-to-System Interchange

JOB DESCRIPTION LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518

BI-51

2410.50 (ft) GROUND ELEV..

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 3/11/14 60.00 2350.5

**EXPLORATION LOG** 

SHEET 2 OF 4 "XP" 194+35 STATION

180' Right

Boomhower Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

**OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

GEOTECH ENGINE	EERING \			MMER DR		TEM A	utomatic	[	3/11/14 60.00 2350.5 BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	ı	CMS	35 29 36	65	95		CL	GRAVELLY LEAN CLAY with SAND Dry to moist, hard, very pale brown (10 YR 7/2) 31.50	
	33.00	J	SPT	10 7 15	22	95			FAT CLAY with SAND Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to white (7.5 YR 8/1)	
	25.00							СН		End day 1 @ 33'.
2375.5 -	35.00	K	CMS	11 14	49	95		CL	35.80  36.50 SANDY LEAN CLAY with GRAVEL Dry, hard,	(M) Weakly to moderately cemented
	36.50	L	SPT	35 12 14 21	35	85		GC	very pale brown (10 YR 7/3) to reddish yellow (7.5 YR 6/8)  CLAYEY GRAVEL with SAND Dry, hard, very	nodules in sample.
	36.00								pale brown (10 YR 7/3) to reddish yellow (7.5 YR 6/8)	
2370.5 -	40.00 40	М	CMS	14 21	49	95		CL	<u>LEAN CLAY with SAND</u> Dry, hard, light gray (10 YR 7/2)	
	41.50	N	SPT	28 8 17	40	95			41.50  CLAYEY GRAVEL with SAND Dry, dense, light gray (10 YR 7/2)	
	43.00			23				GC		
2365.5 -	<b>45</b>							30	46.50	
	_									
2360.5 -	50.00 50			8				MH	ELASTIC SILT Moist, very stiff, reddish yellow	
	51.50 52.10		CMS	11 20 11	31 15/0.1'	95 85			(7.5 YR 6/6) 51.50  CLAYEY GRAVEL with SAND Moist, very	(P) Last 10
2355.5 -	<u>52.10</u>	<u> </u>	3F1	15/0.1'	13/0.1	00		GC	stiff, reddish yellow (7.5 YR 6/6)	blows; no progress. Hard drilling 5 to 53'; Progre 1.0'/15 minute @ 250 psi do pressure.
	_							CL	_ 56.00	Broke through hard layer @ 56.5'.
7	7 60.00								60.00	



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

END DATE 3/11/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING BI-51

E.A. # \_\_\_73518

GROUND ELEV. 2410.50 (ft)

2410.50 (ft)

DATE DEPTH ft ELEV. ft 3/11/14 60.00 2350.5

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

"XP" 194+35

STATION "XP" 194+:
OFFSET 180' Right

**EQUIPMENT** 

**OPERATOR** 

ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

SHEET 3 OF 4

Pypkowski

DRILLING 6" H.S.A.

GEOTECH ENGINE	EERING			AMMER DR		STEM A	utomatic		BACKFILLED [	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	61.50	Q R	CMS	11 22 34 11 14 25	56	115			LEAN CLAY Moist to wet, hard, pale brown (10 YR 6/3) to light gray (10 YR 7/2)  LEAN CLAY with GRAVEL Moist to wet, hard, pale brown (10 YR 6/3) to light gray (10 YR 7/2)	(Q) Free water on sampler. Pocket penetrometer reading - 1.8, 2.3 tsf.
2345.5 -	- 65									
	_							CL		
2340.5 -	70.00 -70 - 71.50	s	CMS	8 7 15	22	0				(S) No sample recovered.
	73.00	Т	SPT	8 10 12	22	155			<u>LEAN CLAY</u> Moist, very stiff, light yellowish brown (10 YR 6/4)	
2335.5 -	- 75 -								_76 <u>.5</u> 0	
2330.5 -	- - - 80.00							CL ML		
	81.50	U	CMS	17 25 26 50/0.4'	51 50/0 4'	105 150			SILTY CLAY with SAND Wet, hard, light yellowish brown (10 YR 6/4)  81.50  LEAN CLAY with SAND Wet, hard, light	(U) Pocket penetrometer reading - 3.8, 4.3 tsf.
	-	-	1			. 33			yellowish brown (10 YR 6/4)	(V) Rock in sampler shoe.
2325.5 -								CL		
	- - 90.00									



END DATE 3/11/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-51 73518

GROUND ELEV. 2410.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

3/11/14 60.00

DATE DEPTH ft ELEV. ft

2350.5

ON "XP" 194+35

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

180' Right Boomhower

Diedrich D-120 (Unit 1627)

SHEET 4 OF 4

\_ Pypkowski

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(π)			CMS	12 32	1 foot 58	Recov'd		Стоир	GRAVELLY LEAN CLAY Wet, hard, light yellowish brown (10 YR 6/4)	(W) Pocket penetrometer
	91.50			26 7				CL	I FAN CLAY with GRAVEL Wet hard light	reading - 2.0, 1.8 tsf.
	-	Х	SPT	10	31	120			<b>LEAN CLAY with GRAVEL</b> Wet, hard, light yellowish brown (10 YR 6/4)	
	93.00			21					93.00 END BI-51 @ 93.0'	
									END DI-31 @ 93.0	
2315.5 -	<del>-</del> 95									
	_									
	_									
	-									
0040 5	400									
2310.5 -	100									
	_									
	_									
	-									
	_									
2305.5 -	105									
2303.3	103									
	_									
	_									
	_									
2300.5 -	110									
	_									
	_									
	-									
2295.5 -	115									
	-									
	-									
	<u> </u>									



3/13/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-52 73518

GROUND ELEV. 2421.90 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 68+86 STATION

**OFFSET** 

67' Right Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 1 OF 3

Pypkowski **OPERATOR** 

6" H.S.A.

DRILLING METHOD BACKFILLED \_\_\_\_\_ \_\_ DATE

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
( )	-			morements	11000	NCCOV u			SANDY GRAVEL, Dry, tan	
	_									_
2416.9 -	5 5.00 - 6.50	A	SPT	12 15 32	47	95		GC GM	SILTY CLAYEY GRAVEL with SAND dense, very pale brown (10 YR 7/3)  7.00	
	7.50	В	SPT	33 47 50/0.4'	50/0.4'	85		sc	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	
2411.9 -	- -1018:28	С	CMS	30/0.2	30/0.2'	0			10.50	(C) Last 10 blows; no
	12.50	D	CMS	35 50/0.4'	50/0.4'	100		SM	SILTY SAND with GRAVEL Dry, very dense, white (10 YR 8/1)	progress. No sample recovered.
2406.9 -	15.00 -15	E	SPT	22 26 30	56	85			CLAYEY GRAVEL with SAND Dry, very dense, white (10 YR 8/1)	_
	17.50	F	CMS	20 28	55	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, white (10 YR 8/1)	
2401.9 -	19.00 20.00			5					CLAYEY GRAVEL with SAND Dry, hard, pale	
	21.50	G	SPT	16 31	47	75			brown (10 YR 6/3)  22.00	-
	24.00	Н	SPT	10 13 13	26	80		СН	SANDY FAT CLAY Dry, hard, pale brown (10 YR 6/3)	
2396.9 -	25.00 -25 - 26.50	1	SPT	14 21 27	48	95		CL	<u>SANDY LEAN CLAY</u> Dry, hard, pale brown (10 YR 6/3) 26.50	
	28.00	J	SPT	17 27 28	55	95		sc	SILTY CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/2)	_
	30.00							SM	30.00	



3/13/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-52 73518

2421.90 (ft) GROUND ELEV. HAMMER DROP SYSTEM \_ Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION **OFFSET** 

**EQUIPMENT** 

"X" 68+86 67' Right

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) Pypkowski

SHEET 2 OF 3

**OPERATOR** 

6" H.S.A.

DRILLING METHOD BACKFILLED DATE

ELEV.	DEPTH		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) - 31.40		CMS	16 26 40/0.4'	1 foot 40/0.4'	Recov'd 0		Gloup	CLAYEY GRAVEL with SAND dense, light gray (10 YR 7/2)	(K) Last 10 blows; no progress.
	-							GC		
2386.9 -	<b>35</b> .00			22					CLAYEY GRAVEL with SAND Dry, dense,	
	36.50	L	SPT	20 29	49	0			light gray (10 YR 7/2) 36.50	
	38.00	М	SPT	11 9 14	23	100			SANDY FAT CLAY Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	
2381.9 -	40.00			17				СН	<b>GRAVELLY FAT CLAY with SAND</b> Dry to	
	41.50	N	CMS	25 41 11	66	95			moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	
	43.00	0	SPT	12 17	29	95			<b>GRAVELLY FAT CLAY with SAND</b> Dry to moist, very stiff, white (10 YR 8/1) to very pale brown (10 YR 7/3)	Hard drilling 44.5' to 45'. Hard drilling
	45.00								_44.00	to 46'; Progre 1.0'/15 minut @ 200 psi de
2376.9 -	<b>45</b> 45.28	Р	SPT	15/0.2'	15/0.2'	85				pressure. (P) Last 10 blows; no progress. No sample recovered.
2274.0	50.00							CL		Hard drilling to 47'; Progre 1.0'/15 minut @ 250 psi do pressure.
2371.9 -	51.40		CMS	9 22 50/0.4'	50/0.4'	100			SANDY LEAN CLAY Dry to moist, very hard, very pale brown (10 YR 7/3) to yellowish brown (10 YR 5/4)	(Q) Free wate on sampler. Hard drilling
									53.00	to 47.5'; Progress 0.5 minutes @ 2 psi down
2000	- - - - - - - - - - - - - - - - - - -									psi down pressure. (R) Last 10 blows; no
2366.9 -	55 56.10	R	SPT	51 38	15/0.1'	85			CLAYEY SAND with GRAVEL Dry to moist, very dense, white (10 YR 8/1)	progress. Hard drilling
	_			15/0.1'				SC		47.5' to 50'; Progress 2.5 minutes @ 2 psi down pressure. Hard drilling
									60.00	to 57'; Progre 1.0'/30 minut



3/13/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-52 73518

GROUND ELEV. 2421.90 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 3

STATION **OFFSET** 

**EQUIPMENT** 

67' Right **ENGINEER** 

Boomhower

"X" 68+86

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	//PLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(**)	- (14)		increments	1 1001	Necov u				@ 250 psi down pressure. End day 1 @
	-							62.50	57'. Hard drilling 57' to
								END BI-52 @ 62.5'	58'; Progress
	-								1.0'/30 minutes @ 250 psi dow pressure.
2356.9 -	-65								Hard drilling 58
2550.9	05								to 59'; Progres 1.0'/60 minutes
	_								@ 250 psi dow pressure.
	-								Hard drilling 59 to 60'; Progres
									1.0'/30 minutes @ 250 psi dow
	_								pressure.
2351.9 -	70								Hard drilling 60 to 61'; Progres
2351.9									1.0'/25 minutes @ 250 psi dow
	_								pressure.
	_								Hard drilling 61 to 62': Progres
	-								to 62'; Progres 1.0'/30 minute: @ 250 psi dow pressure.
	_								Hard drilling 62
2346.9 -	75								to 62.5'; Progress 0.5'/
									minutes @ 250 psi down
									pressure.
	-								No groundwate encountered.
	-								
	_								
2341.9	80								
	-								
	-								
2336.9 -	85								
	-								
	_								



4/1/14 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

**GROUND ELEV.** 

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-53 73518

2379.50 (ft)

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DEPTH ft | ELEV. ft

SHEET 1 OF 2

STATION **OFFSET ENGINEER** 

**EQUIPMENT** 

**METHOD** 

193' Right

Boomhower

"X" 98+67

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR DRILLING** 6" H.S.A.

HAMMER DROP SYSTEM \_ BACKFILLED \_ DATE **ELEV** DEPTH Last LAB TESTS REMARKS MATERIAL DESCRIPTION NO. TYPE (ft) (ft) Increments 1 foot Recov'd SANDY GRAVEL, Dry, tan 2.50 5.00 2374.5 -5 12 SANDY SILT with GRAVEL Dry, very dense, ML very pale brown (10 YR 7/4) SPT 21 51 95 6.50 30 8.20 10.00 2369.5 10 **LEAN CLAY with SAND** Dry, very stiff, pale SPT brown (10 YR 6/3) В 10 20 95 11.50 10 CL 12.50 6 **GRAVELLY LEAN CLAY** Dry, medium dense, **CMS** 5 15 95 very pale brown (10 YR 7/4) to pale brown (10 YR 6/3) 14.00 10 4 **GRAVELLY LEAN CLAY with SAND** Dry to SPT 4 moist, stiff, pale brown (10 YR 6/3) D 9 65 2364 5 15<sub>15.50</sub> 5 16.20 17.00 14 SC **CLAYEY SAND with GRAVEL** Dry to moist, 24 hard, light yellowish brown (2.5 Y 6/3) Ε **CMS** 95 18.50 47 18.50 26 SILTY CLAYEY SAND with GRAVEL Dry to SC SPT 37 79 80 moist, hard, light yellowish brown (2.5 Y 6/3) SM 20.00 42 20.00 2359.5 37 SILTY CLAYEY GRAVEL with SAND Dry to GC **CMS** 50/0.4' G 55 95 moist, very dense, very pale brown (10 YR 7/4)**GM** 21.40 21.40 50/0.4' SILTY CLAYEY SAND with GRAVEL Dry to 32 SC SPT 27 67 moist, very dense, very pale brown (10 YR 7/4) Н 80 SM 22.90 40 22.90 32 SILTY CLAYEY GRAVEL with SAND Dry to 50/0.4 **CMS** 90 Т GC 23.80 moist, hard, very pale brown (10 YR 7/4) 50/0 4 **GM** 24.50 25.00 25 2354.5 13 **LEAN CLAY with SAND** Dry to moist, hard, very pale brown (10 YR 8/3) to light yellowish **CMS** 27 67 85 brown (10 YR 6/4) 26.50 40 13 **LEAN CLAY with SAND** Dry to moist, hard, CL very pale brown (10 YR 8/3) to light yellowish SPT 16 35 100 brown (10 YR 6/4) 28.00 19 15 SANDY LEAN CLAY Dry to moist, hard, very **CMS** 17 42 pale brown (10 YR 8/3) to light yellowish brown L 100 (10 YR 6/4) 29.50 25 15 30.00 SANDY LEAN CLAY with GRAVEL Dry to

DOT.GDT ALL FILES.GPJ NV

≥'



END DATE 4/1/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-53 73518

GROUND ELEV. 2379.50 (ft)
HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

OFFSET 193' Right

EQUIPMENT Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 6" H.S.A.

(ft)	(ft)	NO.	TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.00	М	SPT	Increments 22 25	1 foot 47	Recov'd 100			moist, hard, very pale brown (10 YR 8/3) to light yellowish brown (10 YR 6/4)	5 11 10
	32.50									End day 1 @ 31.0'.
	34.00	N	CMS	19 31 53	84	95			SANDY LEAN CLAY Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	
44.5	-35 <sub>35.40</sub>	0	SPT	25 52	50/0.4'	100			SANDY LEAN CLAY Dry to moist, very hard, white (2.5 Y 8/1) to light yellowish brown (2.5 Y 6/3)	
	-			00/0.1				CL		
	-									Hard drilling from 37' to 38'.
	- 40.00									
39.5	40.90	P	CMS	50/0.4	50/0.4'	120			SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, white (2.5 Y 8/1) to light	
	-		0. 1	00/0.1	00/0.1	100			GRAVELLY LEAN CLAY with SAND Dry to moist, very hard, white (2.5 Y 8/1) to light	
	-								43.00 / 5.	
34.5	45.00 <b>45</b>			14				sc	CLAYEY SAND with GRAVEL Wet, hard,	
	46.50	R	CMS	49	74	100			46.50 7/3)	
	48.00	S	SPT	49 48	97	100		CL	hard, white (10 YR 8/1) to very pale brown (10 48.00 YR 7/3)	No groundwater
	-								21.0 5. 00 @ 10.0	encountered.
29.5	<b>50</b>									
	-									
	_									
24.5	-55									
	-									
	-									
	_									
	39.5 -	34.00  34.00  44.5  -35 <sub>35.40</sub> -40.00  40.90  -41.30  -46.50  -48.00  -29.5  -50  -	34.00 N 34.00 O 34.5 — 3535.40 O  40.00 — 40.00 P — 41.30 Q — 45.00 S — 46.50 R — 46.50 S — 50 — - — — — — — — — — — — — — — — — — — —	34.00 N CMS 34.00 O SPT	39.5  -35 <sub>35.40</sub> -35 <sub>35.40</sub> -35 <sub>35.40</sub> -35 <sub>35.40</sub> -40.00  -40.90  -41.30  -41.30  -41.30  -45  -41.30  -45  -46.50  -48.00	34.5	34.5	34.00 N CMS 31 84 95 34.00 SPT 52 50/0.4' 100 39.5 40.00 P CMS 17 50/0.4' 120 41.30 Q SPT 50/0.4' 50/0.4' 100  34.5 45.00 R CMS 25 74 100  46.50 R CMS 25 74 100  48.00 S SPT 49 97 100  29.5 50	34.5	34.5



END DATE <u>4/1/14</u>

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-54 73518

GROUND ELEV. 2383.70 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 ON "X" 95+89

STATION "X" 95

OFFSET 235' Right
ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	- (11)			Increments	1 foot	Recov'd			SANDY GRAVEL, Dry, tan	
	_								2.50	
2378.7 -	5.00	A	SPT	20 20 26	46	55		GW GM	WELL GRADED GRAVEL with SILT and SAND Dry, dense, light gray (2.5 Y 7/1)	
	_									
2373.7 -	10.00	В	SPT	25 20 17	37	80		GC	CLAYEY GRAVEL with SAND Dry, dense, light gray (2.5 Y 7/1)	
	12.50							<u> </u>	12.00	_
	14.00	С	SPT	15 27 26	53	85		CL	<b>LEAN CLAY with SAND</b> Dry, hard, light gray (2.5 Y 7/1)	
2368.7 -	<u>15</u> 15:28	D	CMS	50/0.2'	50/0.2'	0			16.00	(D) No sample recovered.
	17.50	E	CMS	55	50/0.1'	85		GC GM	SILTY CLAYEY GRAVEL with SAND Dry,	
	_ 18.10	E	CIVIS	50/0.1'	50/0.1	85			very dense, light gray (2.5 Y 7/1)	
2363.7 -	20.00 20.90	F	CMS	40 50/0.4'	50/0.4'	100		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, very dense, light gray (2.5 Y 7/1)	
								<u></u>	_21.50	_
	22.50			18				CL	<b>LEAN CLAY with SAND</b> Dry to moist, dense,	
	24.00	G	CMS	24 33	57	100			very pale brown (10 YR 7/4) 24.00	
2358.7 -	-25 25.50	Н	SPT	16 18 24	42	95		CL ML	SANDY SILTY CLAY Dry to moist, dense, very pale brown (10 YR 7/4)	
									_ 26.80	
	28.00	ı	CMS	21 18 28	46	75		СН	FAT CLAY with SAND Dry to moist, very stiff to hard, pale brown (10 YR 6/3) with white inclusions (10 YR 8/1)	

DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



END DATE

4/1/14

4/1/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

LOCATION BI-54 **BORING** 

73518 E.A. # GROUND ELEV. 2383.70 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "X" 95+89

STATION

235' Right **OFFSET** Boomhower **ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) 31.00	J	SPT	Increments 12 33	1 foot 45	Recov'd 95		СН	pale brown (10 YR 6/3) with white inclusions (10 YR 8/1)	
	32.00			0.7					31.50	
	- 33.30	K	CMS		50/0.3'	100		CL	LEAN CLAY Dry to moist, very hard, mottled light gray (2.5 Y 7/1) to white (2.5 Y 8/1)	
	- 34.80	L	SPT	<del>50/0.3'</del> 17 17 17 18	35	100			CLAYEY SAND with GRAVEL Dry to moist, hard, pale yellow (2.5 Y 8/2)	
2348.7	-35			10				sc	36.00	
	_								_ 36.00	
	37.50		CMC	12		05		CI	SANDY LEAN CLAY Dry to moist, hard, mottled white (10 YR 8/1) to very pale brown	
	39.00	М	CMS	27 33 13	60	95		CL	(10 YR 7/3) <b>LEAN CLAY</b> Dry to moist, hard, mottled white	
2343.7	-40 <sub>40.50</sub>	N	SPT	18 21	39	100			(10 YR 8/1) to very pale brown (10 YR 7/3) 40.50	
	-								END BI-54 @ 40.5'	No groundwate encountered.
	-									
	_									
2338.7	<b>45</b>									
	-									
	-									
	-									
2333.7	50									
	_									
	_									
	-									
2220 7	EF									
2328.7	55 -									
	=									
	-									
	-									



LOCATION

4/2/14

4/2/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-55 **BORING** 73518 E.A. #

GROUND ELEV. 2366.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

"X" 106+95 STATION

183' Right **OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

Eroni	EERING V		//PLE	BLOW CO					BACKFILLED L	DATE
ELEV. (ft)	DEPTH (ft)		TYPE	Ginab	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(17)	-			morements	11000	Necov u			0:30 \ ROADWAY MILLINGS, Dry, dark gray	
2361.0 -	- 5.00							CL ML		
2361.0 -	6.50	A	SPT	3 7 11	18	75			SILTY CLAY Dry, medium dense, pale brown (10 YR 6/3)	
	_								8.20	
2356.0 -	10.00 10 - 11.50	В	SPT	9 9 9	18	85		СН	FAT CLAY Dry, very stiff, pale brown (10 YR 6/3) to light gray (2.5 Y 7/2)	
	12.50			_				<u> </u>	12.00	_
	14.00	С	SPT	25 38 30	68	85		SC SM	SILTY CLAYEY SAND Dry, very hard, very pale brown (10 YR 7/3)	
0054.0	15.00 15							<u></u>	<u> </u>	_
2351.0 -	- 15 - 16.20	D	CMS	28 53 50/0.2'	50/0.2'	90		sc	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)	
	17.50	E	SPT	37 33 19	52	75		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/3)	_
				19					19.50	
2346.0 -	20.00 20 21.50	F	CMS	14 12 27	39	95		СН	FAT CLAY with SAND Dry, very stiff, pale brown (10 YR 6/3)	
	23.00	G	SPT	16 26 47	73	55		CL	LEAN CLAY Dry, very stiff, pale brown (10 YR 6/3) 23.00	
	24.50		CMS	33	63	85		СН	SANDY FAT CLAY Dry, hard, pale brown (10 YR 6/3) to light gray (2.5 Y 7/2) 24.50	(1) 04
2341.0 -	-25 <sub>25.40</sub>	I	SPT	31 50/0.4'	50/0.4'	80		CL	SANDY LEAN CLAY with GRAVEL Dry, very hard, light gray (2.5 Y 7/2)	(I) Strongly cemented at 25.3'.
ı	27.00	J	SPT	33 42 45	87	65		GC	CLAYEY GRAVEL with SAND Dry, very hard, white (10 YR 8/1) to very pale brown (10 YR 28.50 8/2)	
	30.00	К	SPT	15 22 33	55	45		CL	LEAN CLAY with SAND Dry, hard, light brownish gray (10 YR 6/2) with white inclusions 30.00 (10 YR 8/1)	(K) Weakly to moderately cemented.

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



TART DATE	4/2

/14 4/2/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-55 **BORING** 73518 E.A. #

GROUND ELEV. 2366.00 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 106+95 STATION

**ENGINEER** 

**EQUIPMENT** 

183' Right **OFFSET** 

Boomhower Diedrich D-120 (Unit 1627)

SHEET 2 OF 2

Pypkowski **OPERATOR** DRILLING METHOD

6" H.S.A.

GEOTECH ENGINE	EERING V	044		MMER DR						TE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- 31.50	L	CMS	19 56 58	114	85		CL	hard, light yellowish brown (10 YR 6/4) with 31.50 black flecks	(L) Weakly to moderately cemented.
	33.00	M	SPT	13 13 15	28	45		СН	FAT CLAY with SAND Moist, very stiff, light yellowish brown (10 YR 6/4 to 2.5 Y 6/3)  34.00	
2331.0 -	- 35.00 35								34.00	
2331.0 -	36.50		CMS	25 24 31	55	85		CL	SANDY LEAN CLAY Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1) 36.50	(N) Weakly cemented.
	38.00	0	SPT	13 17 21	38	55		СН	FAT CLAY with SAND Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	(O) Weakly cemented.
	-								39.00	
2326.0 -	40.00 40 41.40	Р	CMS	36 50 50/0.4'	50/0.4'	70		CL	SANDY LEAN CLAY Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1)	
	_								43.20	
2321.0 -	- 45.00			17				GC	CLAVEY CRAVEL with CAND Dry to maint	
	46.50	Q	CMS	29 37	66	95			CLAYEY GRAVEL with SAND Dry to moist, hard, light gray (2.5 Y 7/2) to white (2.5 Y 8/1) 46.50	
	48.00	R	SPT	21 18 22	40	65			CLAYEY SAND with GRAVEL Dry to moist, very stiff, very pale brown (10 YR 6/3) to white (10 YR 8/1)	
	-							SC		
2316.0 -	<u>50</u> 50:90 -	-\$-	SPT	<del>- 15/0.1' -</del>	<del>15/0.1'</del>	0			2.00 @ 00.1	(S) Last 10 blows; no progress. No sample recovered.
	-									No groundwa encountered.
2311.0 -	— <b>55</b> -									
	-									
	_									



4/3/14

4/3/14 END DATE

JOB DESCRIPTION

US95 / CC-215 System-to-System Interchange Northwest Las Vegas - Clark County

BI-56

**BORING** E.A. #

LOCATION

73518

GROUND ELEV. 2373.80 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 102+70

STATION 192' Right **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 2

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGINE	HNICAL			AMMER DE		SIEM	atomatio	L	BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								SANDY GRAVEL, Dry, tan  2.50	
2368.8 -	5.00 5 6.50	Α	SPT	3 2 4	6	60		CL ML	SILTY CLAY Dry, medium stiff, very pale brown (10 YR 7/3)	
2363.8 -	- - 10.00		CMC	11	22	95		CL	LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	11.50	С	SPT	12 20 17 9 4	13	55		GC	11.50  CLAYEY GRAVEL with SAND Dry, stiff, white (10 YR 8/1)  14.00	
2358.8 -	15.00 15 16.50	D	CMS	10 21 41	62	85		CL	SANDY LEAN CLAY Dry, hard, light brownish gray (2.5 Y 6/2) to white (10 YR 8/1)	
	- 17.30 -	E	SPT	42 50/0.3'	50/0.3'	90		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2) to white (10 YR 8/1)	
2353.8 -	2028:28 - 22.00		CMS	50/0.2	50/0.2'	0				(F) No sample recovered.
	22.40	G	SPT	40/0.4'	40/0.4'	0				(G) Last 10 blows; no progress. No sample recovered.
2348.8 -	25.00 -25 - 26.50	Н	CMS	20 34 45 23	79	100		CL	LEAN CLAY with SAND Dry, hard, very pale brown (10 YR 7/4)  SANDY LEAN CLAY Dry, hard, very pale	
	28.00	1	SPT	23 23 28	51	85			brown (10 YR 7/4) to white (10 YR 8/1)	
	30.00								30.00	



LOCATION

GROUND ELEV.

4/3/14

4/3/14 **END DATE** 

US95 / CC-215 System-to-System Interchange

JOB DESCRIPTION Northwest Las Vegas - Clark County

BI-56 **BORING** 

73518 E.A. #

Automatic

2373.80 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 102+70 **STATION** 

**DRILLING** 

192' Right **OFFSET** 

Boomhower **ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

6" H.S.A. METHOD

HAMMER DROP SYSTEM \_ BACKFILLED \_\_ DATE BLOW C 6 inch **ELEV** DEPTH USCS Group Last LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) ncrements 1 foot Recov'd 23 **LEAN CLAY with SAND** Dry, hard, mottled 30 white (10 YR 8/1) with yellow (10 YR 8/6) CMS 66 95 36 31.50 SANDY LEAN CLAY Dry, very hard, very pale 20 CL SPT brown (10 YR 8/2) Κ 24 64 85 33.00 40 34.00 **35**.00 2338.8 10 FAT CLAY Dry to moist, very stiff, light brownish gray (2.5 Y 6/2) to pale brown (10 YR CMS 37 85 14 6/3)36.50 23 CH FAT CLAY with SAND Dry to moist, very stiff, 8 Μ SPT 10 25 75 pale brown (10 YR 6/3) 38.00 15 39.00 40.00 CL 2333.8 14 **LEAN CLAY with SAND** Dry to moist, hard, 40.80 CMS 21 51 85 mottled light yellowish brown (2.5 Y 6/3) to white (2.5 Y 8/1) 41.50 30 FAT CLAY with SAND Dry to moist, hard, 7 СН mottled light yellowish brown (2.5 Y 6/3) to 0 SPT 14 38 75 white (2.5 Y 8/1) 43.00 24 43.00 END BI-56 @ 43.0' No groundwater encountered. 2328.8 -45 2323.8 -50 ALL FILES.GPJ NV\_DOT.GDT 2318.8 -55 ≥'



5/20/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

**BORING** 

BI-57

73518 E.A. # GROUND ELEV. 2384.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 131+69

STATION 145' Left

**OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1082)

SHEET 1 OF 2

Beus **OPERATOR** 

DRILLING METHOD 6" H.S.A.

**EQUIPMENT** 

DATE \_\_5/20/2014 Yes BACKFILLED \_

ELEV.	DEPTH		MPLE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd	LAB IESIS	USCS Group	MATERIAL DESCRIPTION	REWARKS
									0.70 Asphaltic Concrete	
	3.50							GC		
	_ 5.00	Α	CMS	29 26 23	49	85			CLAYEY GRAVEL with SAND Dry to moist, dense, light brown (7.5 YR 6/3)  5.00	
2379.5	6.50	В	SPT	16 28 42	70	65		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, light brown (7.5 YR 6/3) 6.50	
	7.90	С	CMS	42 57 50/0.4'	50/0.4'	100		GW GC	WELL GRADED GRAVEL with CLAY Dry to moist, very dense, light brown (7.5 YR 6/4)	
	9.40	D	SPT	31 32 45	77	95		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, very dense, light brown (7.5 YR 6/4)	
2374.5	10.00							<u></u> -	<u> </u>	+
2014.0	11.50	E	CMS	31 35 43	78	100		GW GC	WELL GRADED GRAVEL with CLAY and SAND Dry to moist, very dense, light brown 11.50 (7.5 YR 6/4)	
	12: <del>1</del> 0	F	SPT	34 50/0.4'	50/0.4'	100		GC	CLAYEY GRAVEL with SAND Dry to moist, 12.50 very dense, light brown (7.5 YR 6/4)	
	13.90	G	CMS	50/0.4'	50/0.4'	100			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR 6/4)	
	14.70 15.00 1515.30	Н	SPT	35 50/0.3'	50/0.3'	90			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR	
2369.5			CMS		50/0.3'	0		-	6/4)	(I) No sample
	16.00		CMS	34	50/0.4'	100		GP GC	POORLY GRADED GRAVEL with CLAY and	recovered.
	16.90	1/	SPT	50/0.4		90		-	SAND Moist, very dense, light brown (7.5 YR 6/4)	
	17.70 18.00	K	3P1	50/0.3'	50/0.3'	90			POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR	
	18.90	L	CMS	34 50/0.4'	50/0.4'	100			6/4)  POORLY GRADED GRAVEL with CLAY and	
	20.00							L	SAND Moist, very dense, light brown (7.5 YR	
2364.5	20.00		CMS	50/0.4'	50/0.4'	100		SC	20.70 CLAYEY SAND with GRAVEL Moist, very	
	21.00	N	CMS	30	50/0.4'	100		GP	dense, light brown (7.5 YR 6/4)  POORLY GRADED GRAVEL with CLAY and	
	21.90	O	SPT	50/0.4' 50/0.3'	50/0.3'	0		GC	SAND Moist, very dense, light brown (7.5 YR 22.60 6/4)	(O) No sample
	23.00									recovered.
	23.40	P	CIVIS	50/0.4'	50/0.4	100		sc	CLAYEY SAND with GRAVEL Moist, very dense, light brown (7.5 YR 6/4)	
	25.00							<u> </u>	<del></del>	-
2359.5	25.90	Q	CMS	44 50/0.4'	50/0.4'	100		GP GC	POORLY GRADED GRAVEL with CLAY and SAND Moist, very dense, light brown (7.5 YR	
	26.30		SPT	50/0.4'	50/0.4'	100			26.60 6/4)	
	27.00	S	CMS	13 8	12	100		CL ML	SAND Moist, very dense, light brown (7.5 YR 6/4)	
	28.50			3					brown (7.5 YR 5/4)	
	30.00	Т	SPT	13 13	26	100		CL	LEAN CLAY Moist, medium stiff, brown (7.5 YR 5/4)	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



5/20/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

E.A. #

Northwest Las Vegas - Clark County

BI-57 **BORING** 73518

GROUND ELEV. 2384.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

STATION

**OPERATOR** 

**OFFSET ENGINEER** 

145' Left Boomhower

"XP" 131+69

Diedrich D-120 (Unit 1082) **EQUIPMENT** 

Beus

DRILLING METHOD 6" H.S.A.

DATE \_\_5/20/2014 Yes BACKFILLED \_

	EERING \		MPLE	BLOW CO					BACKFILLED 163 DATE 0/20/2014
ELEV. (ft)	DEPTH (ft)		TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(1.)	31.50	U	CMS	16	72	95			SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 8/2)
2349.5 -	- - -35			5				CL	SANDY LEAN CLAY Dry, stiff, brown (7.5 YR
	36.50	V	SPT	5 4	9	60			SANDY LEAN CLAY Dry, stiff, brown (7.5 YR 5/4) with pinkish white (7.5 YR 8/2) inclusions  36.50  END BI-57 @ 36.5'  No groundwater encountered.
2344.5 -	- 40 -								
2339.5 -	- <b>45</b> -								
2334.5 -	- - -50 -								
2329.5 -	- <b>55</b> -								
	_								



5/21/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV. 2358.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-58

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 117+16 STATION

**OFFSET** 

161' Left Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1082) **EQUIPMENT** 

SHEET 1 OF 2

Beus **OPERATOR** 

DRILLING METHOD 6" H.S.A.

DATE \_\_5/21/2014 Yes BACKFILLED \_

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION R	EMARKS
(11)	(11)			Increments	1 foot	Recov'd		Огоар	0.60 Asphaltic Concrete	
	_									
	-									
	-							CL		
	_									
2353.5 -	5 5.00			5					LEAN CLAY Dry to moist, medium stiff, brown	
	6.50	Α	CMS	5 7	12	95			(10 YR 5/3) 6.50	
	_	В	SPT	2 3	7	80		ML	SILT with SAND Dry to moist, medium stiff, brown (10 YR 5/3)	
	8.00			9					8.00  LEAN CLAY Dry to moist, medium stiff, pale	
	9.50	С	CMS	12 12	24	95			brown (10 YR 6/3)	
2348.5	10	D	SPT	6 7	17	85			LEAN CLAY Dry to moist, medium stiff, pale brown (10 YR 6/3)	
	11.00			10				CL		
	12.00			8				CL	LEAN CLAY with SAND Dry to moist, medium	
	13.50	Ε	CMS	10 11	21	95			stiff, pale brown (10 YR 6/3)	
	_	F	SPT	8 8	22	85			SANDY LEAN CLAY with GRAVEL Dry to moist, medium stiff, pale brown (10 YR 6/3)	
2343.5 -	15.00			14 12					15.00 SILTY CLAY with SAND Moist, stiff, yellowish	
	16.50	G	CMS	10 12	22	100		CL ML	brown (10 YR 5/4) 16.50	
	_	Н	SPT	5	11	85			LEAN CLAY with SAND Moist, stiff, yellowish brown (10 YR 5/4)	
	18.00			5						
	-									
2338.5 -	20.00			10				CL	GRAVELLY LEAN CLAY with SAND Dry to	
	21.50	I	CMS	8 10	18	85		02	moist, medium dense, light olive brown (2.5 Y 5/4)	
	21.00	J	SPT	5 5	12	85			SANDY LEAN CLAY Moist, stiff, light yellowish brown (2.5 Y 6/4) to light gray (2.5 Y	
	23.00		51 1	7	12	00			7/2)	
	-								24.00	
2333.5 -	25.00 25								OLAVEY CAND WITH OF STEEL ST.	
		K	CMS	9 20	40	85		SC	CLAYEY SAND with GRAVEL Dry to moist, dense, mottled light 2 gry (2.5 Y 7/2) to light	
	26.50		057	20 7	4.0	0.0			26.50 yellowish brown (2.5 Y 6/4)  CLAYEY GRAVEL with SAND Dry to moist,	
	28.00	L	SPT	8 10	18	80			dense, mottled light gray (2.5 Y 7/2) to light yellowish brown (2.5 Y 6/4)	
								GC		
	30.00								30.00	

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



START DATE \_\_\_\_\_5/21/14

END DATE

5/21/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-58

E.A. # 73518 GROUND ELEV. 2358.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

STATION "X" 117+16

OFFSET 161' Left
ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1082)

Beus

DRILLING 6" H.S.A.

**OPERATOR** 

BACKFILLED Yes DATE 5/21/2014

ELEV. (ft)	DEPTH (ft)		/IPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	31.50	М	CMS	15 23 23	46	95		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, mottled light gray (2.5 Y 7/2) to light 31.50 yellowish brown (2.5 Y 6/4)	
	33.00	N	SPT	10 11 12	23	85		CL	SANDY LEAN CLAY with GRAVEL Moist, very stiff, pale yellow (2.5 Y 8/2) to light gray (2.5 Y 7/2)	
	-								34.00	_
2323.5	<b>-35</b> 35.40	0	CMS	40/0.4'	40/0.4'	100		GC	CLAYEY GRAVEL with SAND Moist, very stiff to hard, light olive gray (5 Y 6/2)	(O) Last 10 blows; no progress.
	- 38.00								_ 36.70	Hard drilling from 35.4' to 37.0'.
	38.90		SPT	39 50/0.4'	50/0.4'	90		SC	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very hard, white (2.5 Y 8/1) 39.50	
2318.5	40.00 - 41.50	Q	SPT	10 13 12	25	80			SANDY LEAN CLAY with GRAVEL Dry to moist, very hard, white (2.5 Y 8/1)	
	- 41.50			12						
	_							CL		
2313.5	45.00 - 45 - 46.50	R	SPT	4 5 10	15	65			GRAVELLY LEAN CLAY Moist, stiff to very stiff, mottled light brown (7.5 YR 6/4) to white 46.50 (7.5 YR 8/1)	
	-			10					END BI-58 @ 46.5'	No groundwat encountered.
	-									
2308.5	— <b>50</b> -									
	-									
	-									
2303.5	<b>55</b> -									
	-									
	=									



9/22/15 START DATE

9/22/15

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-59 **BORING** 73518

E.A. # 2469.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 49+70 STATION 133' Left

**OFFSET** 

Lawrence

Diedrich D-120 (Unit 1627)

SHEET 1 OF 1

**ENGINEER EQUIPMENT OPERATOR** 

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- - 2.50								1.50	
	4.00	Α	SPT	10 16 18	34	85		CL	LEAN CLAY with SAND Dry to moist, hard, dark grayish brown (10 YR 4/2) to light olive brown (2.5 Y 5/3)	
2464.0	5.00 - - 6.50	В	SPT	19 44 26	70	95		CL ML	SANDY SILTY CLAY with GRAVEL Dry to moist, very hard, light yellowish brown (10 YR 6/4) to brown (10 YR 5/3)	
	7.50	С	SPT	28 60 50/0.4'	50/0.4'	100		SM	SILTY SAND with GRAVEL Moist, very dense, very pale brown (10 YR 7/3).	(C) Broken up gravel in sample.
2459.0	10.00 - 10 - 11.50	D	SPT	24 33 23	56	95		GC GM	9.50  SILTY CLAYEY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3).	(D) Broken u gravel in sample.
	12.50	E	SPT	29 38 22	60	100		GM	SILTY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3).	(E) Broken up gravel in sample.
2454.0	-15 <sup>15.00</sup>	F	CMS	9 7 8	15	85		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, loose, very pale brown (10 YR 7/3).  16.50	
	18.00	G	SPT	8 4 6	10	75		SC SM	SILTY CLAYEY SAND with GRAVEL Moist, loose, very pale brown (10 YR 7/3).	
2449.0	- 20.00 20	Н	CMS	14 10	19	95			SILTY CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 7/3).	
	21.50	I	SPT	9 4 3 3	6	40		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, loose, very pale brown (10 YR 7/3).	
2444.0	- 25.00								24.00	(J) No sample recovered. (K) Moderate cemented
	26.50	J	CMS	1 1 6 5	7	0		СН	SANDY FAT CLAY Moist to wet, loose, very	nodules in sample.  Low blow cou are due to be in north-south
	28.00	K	SPT	4 5	9	40			pale brown (10 YR 7/3) 28.00 END BI-59 @ 28.0'	utility trench.  No groundwa encountered.



9/24/14

9/25/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

9/25/14

Northwest Las Vegas - Clark County

**BORING** 

LOCATION

73518 E.A. #

2415.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

BI-60

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

55.50

DATE DEPTH ft ELEV. ft

2359.5

SHEET 1 OF 4

"XP" 197+87 STATION

227' Right

Lawrence **ENGINEER** 

Deidrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

**OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

BACKEILLED DATE

GEOTECH ENGINE	ERING V			MMER DR		TEM _^	utomatic		BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2410.0 -	- - - 5 5.00	Α	SPT	44 50 50	100	85		GC GM	
2405.0 -	- - - 10.00 - 11.50	В	SPT	20 50 50	100	85		GC	
2400.0 -	- - - 15 15.00 - 16.50	С	SPT	42 27 37	64	80		sc	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)
2395.0 -	- 		SPT	27 50/0.2'	50/0.2'	100		CL	SANDY LEAN CLAY Dry, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)  22.80  (D) Weakly cemented nodules in sample. Last 2 blows, no progress.
2390.0 -	25.00 25 26.50 	E	SPT	19 22 25	47	80		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3) to white (10 strongly cemented nodules in sample.
	30.00							sc	30.00



9/24/14

9/25/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-60 **BORING** 73518

E.A. #

GROUND ELEV. 2415.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/25/14 55.50

DATE DEPTH ft ELEV. ft

2359.5

SHEET 2 OF 4 "XP" 197+87 STATION

**OFFSET** 

227' Right Lawrence

Pypkowski

**ENGINEER** 

Deidrich D-120 (Unit 1627)

**EQUIPMENT OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- 31.50	F	SPT	9 13 16	29	65		sc	dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(F) Weakly to moderately cemented nodules in sample.
2380.0 -	35.00 36.50 38.00	G H	CMS	27 32 39 23 52 31	71	95 80		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)  SILTY SAND with GRAVEL Dry to moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR	(G) Weakly to moderately cemented nodules in sample. (H) Weakly to moderately cemented
2375.0 -	- <b>40</b> 18:28		CMS	50/0.2	50/0.2'	0			40.00	nodules in sample. (I) No sample recovered.
2370.0 -	- - - <u>4</u> 45.96	J	SPT	<del>50/0.1'</del>	<del>50/0.1'</del>	0			WEAKLY TO MODERATELY CEMENTED MATERIALS from 40' to 44'  44.00  STRONGLY CEMENTED MATERIALS from 44' to 47'  WEAKLY TO MODERATELY CEMENTED MATERIALS from 47' to 48'	(J) No sample recovered.
2365.0 -	- - - 50.00 - 51.50	K	CMS	26 52 47	99	100			CLAYEY GRAVEL with SAND Moist, very dense, light yellowish brown (10 YR 6/4)	(K) Weakly to moderately cemented nodules in
	52.00	L	SPT	60	60	100		GC		sample.
2360.0 _	55.00 55 - 56.20		CMS	16 56 50/0.2'	50/0.2'	100		-	<u>CLAYEY GRAVEL with SAND</u> Moist to wet, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	End day 1 drilling @ 54' (M) Weakly to moderately cemented nodules in sample. Free
	-								WEAKLY TO MODERATELY CEMENTED	water on sampler.



9/24/14

9/25/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-60 73518

GROUND ELEV. 2415.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/25/14 55.50

DATE DEPTH ft ELEV. ft

2359.5

SHEET 3 OF 4 "XP" 197+87

**STATION OFFSET** 

227' Right

**ENGINEER** 

Lawrence

**EQUIPMENT** 

Deidrich D-120 (Unit 1627) Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV.	DEPTH		MPLE TYPE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)		CMS	9 18	1 foot 49	Recov'd		Огоир	<u>LEAN CLAY</u> Moist to wet, very stiff to hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(N) Weakly to moderately cemented
	63.00	0	SPT	31 12 31 20	51	100			LEAN CLAY with GRAVEL Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	nodules in sample. (O) Weakly to
	- 65.00									moderately cemented nodules in sample.
2350.0 -	66.50	Р	CMS	12 28 32	60	100			GRAVELLY LEAN CLAY Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(P) Weakly to moderately cemented nodules in
	68.00	Q	SPT	7 8 13	21	120			<b>LEAN CLAY</b> Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	sample. Pock penetrometer reading - 2.5, 4.5 tsf.
2345.0 -	70.00			12				-	<b>LEAN CLAY with SAND</b> Moist to wet, very	(Q) Pocket penetrometer reading - 1.2,
	71.50		CMS	13 20 6	33	105		-	stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) <b>LEAN CLAY</b> Moist to wet, very stiff, very pale	2.3 tsf. (R) Torvane reading - 6 ts
	73.00	S	SPT	11 15	26	100		CL	brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
2340.0 -	<b>75</b>									
	_									
2335.0 -	80.00							-	<b>LEAN CLAY</b> Moist to wet, very pale brown	(T) Push CM
	- 81.20 - -	T	SH			65			(10 YR 7/3) to light yellowish brown (10 YR 6/4)	sampler with shoe extensic 100 psi start, terminate @ 600psi down pressure.
2330.0 -	- 85									Drill @ 500 p down pressu
	- -								87.00	
	_							CL	_ 88.50	



9/24/14

9/25/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-60 73518

GROUND ELEV. 2415.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/25/14 55.50

DATE DEPTH ft ELEV. ft

2359.5

SHEET 4 OF 4

**STATION** OFFSET

**EQUIPMENT** 

227' Right

"XP" 197+87

Lawrence **ENGINEER** 

Deidrich D-120 (Unit 1627)

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

DEPTH (ft)		MPLE							
		TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
- 91.20 - - - -	U	CMS	20	60/0.2'	100		CL ML	GRAVELLY SILTY CLAY Moist to wet, very hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(U) Moderately to strongly cemented nodules in sample.
-								96.00 CEMENTED LENSES from 96' to 97'	
-							L	_ 97.00	
- - 100.00							ML		
<del>- 100</del> 100.80	٧	CMS	43	50/0.3'	100			100.80 SILT with SAND Moist to wet, very dense,	(V) Moderately to strongly
-			50/0.3					brown (10 YR 6/4) END BI-60 @ 100.8'	cemented nodules in sample.
105  									
- 110 - -									
- 115 - -									
	100.00 100.80 100.80	100.00 100.80 V	-100.00 100.80 V CMS	100.00 100.80 V CMS 43 50/0.3'	100.00 100.80 V CMS 43 50/0.3'  -105	100.00 100.80 V CMS 43 50/0.3' 100	100.00 V CMS 43 50/0.3 100  -105 -110 -110	ML  100.00  100.80 V CMS 43  50/0.3' 100  -105  -110	96.00 CEMENTED LENSES from 96' to 97' 97.00  ML  100.80 V CMS 43 50/0.3' 100  100.80 V CMS 60/0.3' 100  100.80 END BI-50 @ 100.8'  100.80 END BI-50 @ 100.8'



10/7/14 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-61 73518

2410.30 (ft) GROUND ELEV.

DATE DEPTH ft ELEV. ft HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

SHEET 1 OF 2

"XP" 193+48 **STATION** 189' Right

**OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(,	(11)			increments	11001	Recov u			0.50 Asphaltic Concrete	
	2.50	A	SPT	14 17 19	36	65		GP GM	POORLY GRADED GRAVEL with SILT and SAND Dry, dense, light gray (10 YR 7/2)	
2405.3 -	-5 <sub>5.50</sub>	В	SPT	10 6 4	10	85		CL ML	SANDY SILTY CLAY Dry to moist, stiff, pale brown (10 YR 6/3)	
	8.00	С	SPT	11 10 9	19	80		sc	CLAYEY SAND with GRAVEL Dry to moist, medium dense, light yellowish brown (10 YR 6/4)	
2400.3 -	9.50 —10	D	SPT		50/0.4'	70			CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 8/2)	-
	12.00	E	SPT	15 27	50	75		GC	<u>CLAYEY GRAVEL with SAND</u> Dry, very dense, very pale brown (10 YR 7/4)	
2395.3 -	13.50 - 14.50 15	F	SPT	7 7	23	65			<u>CLAYEY GRAVEL with SAND</u> Dry, medium dense, very pale brown (10 YR 7/4)	
	17.00		SPT	16 16 26	58	85		sc		_
	18.50	G	351	32	36	65			19.00  SANDY FAT CLAY Dry to moist, very stiff,	_
2390.3 -	-20 21.00	Н	SPT	9 14	23	85		СН	mottled very pale brown (10 YR 7/3) to white (10 YR 8/1)	
	_									
2385.3 -	25.00 - 25 - 26.50	1	CMS	49	86	100		66	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
-	<u>26.60</u> -	<del>- J-</del>	SPT	20/0.1	<del>20/0.1'</del>	0		GC		(J) Last 10 blows; no progress. No sample recovered.
	30.00								30.00	



10/6/14

10/7/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-61 **BORING** 73518 E.A. #

LOCATION

GROUND ELEV. 2410.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"XP" 193+48 **STATION OFFSET** 

189' Right Boomhower

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW CO		Dorossi	LAD TECTO	USCS	MATERIAL DECORPTION	DEMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	К	CMS	18 22 40	62	100		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very stiff, mottled yellowish brown (10 YR 31.50 5/4) to very pale brown (10 YR 8/2)	(K) Lightly to moderately cemented
	33.00	L	SPT	16 23 21	44	85		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, pink (7.5 YR 7/3)	nodules in sample.
	_								_ 34.00	
2375.3 -	35.00 35		CMS	9 16	57	100		CL	SANDY LEAN CLAY Moist, hard, light brown (7.5 YR 6/3)	
	36.50	N	SPT	41 15 16	40	85			36.50  CLAYEY SAND with GRAVEL Moist, dense, light brownish gray (10 YR 6/2)	-
	38.00			24				SC	39.00	
2370.3 -	40.00 40			13				CL	SANDY LEAN CLAY Moist, very stiff, light	
	41.50	0	CMS	13 23 13	36	100			brownish gray (10 YR 6/2) 41.50 CLAYEY GRAVEL with SAND Moist, dense,	
	43.00	Р	SPT	14 19	33	80			light gray (10 YR 7/2) with reddish yellow (5 YR 6/6) inclusion	
365.3	45.00 45			8				GC	CLAYEY GRAVEL with SAND Moist, medium	
	46.50	Q	CMS	14 15 5	29	95		-	dense, pale brown (10 YR 6/3)  CLAYEY GRAVEL with SAND Moist, dense,	(R) Pocket
	48.00	R	SPT	13 21	34	60			pale brown (10 YR 6/3)	penetrometer reading - 2.3, 2.5 tsf.
	50.00								_ 49.00	(S) Pocket
2360.3 -	51.70	s	CMS	16 33 36	69	105		CL	LEAN CLAY with SAND Moist, hard, brown (7.5 YR 5/3) to very pale brown (10 YR 8/2) 51.70	penetrometer reading - 2.5 3.3 tsf.
	- 53.20	Т	SPT	20 35 25	60	100			CLAYEY GRAVEL with SAND Moist, very dense, multicolored	Hard drilling 53.5'; Progre 0.1'/5 minute @ 250 psi do
2355.3 -	_ 55							GC		pressure, 0.2'/10 minut @ 250 psi do pressure.
	_								56.20 END BI-61 @ 56.2'	Hard drilling 54.8'; Progre 0.2'/5 minute
	_								2.1.2 2. 0. (2.00.2	@ 400 psi do pressure, 2.7'/90 minut @ 400 psi do pressure.
										No groundwa encountered



START DATE \_\_\_\_10/8/14

10/9/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-62 73518

GROUND ELEV. 2409.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2 "XP" 193+25

STATION

**ENGINEER** 

OFFSET

242' Right

Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)
OPERATOR Pypkowski

OPERATOR -DRILLING METHOD -

ETHOD 6" H.S.A.

2.50	ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
A   SPT   12   26   55		-								0.50 Asphaltic Concrete	
2404.5		4.00	Α	SPT	12	26	55		_	SAND Dry, dense, very pale brown (10 YR	Bulk sample 1 @ 2.5' - 4.5'.
Tool	2404.5 -	-5	В	SPT	10	17	95		CL	pale brown (10 YR 7/3)	
2394.5			С	SPT	22	40	95		sc	CLAYEY SAND with GRAVEL Dry, dense,	
12.00	2399.5 -	-10	D	SPT	28	68	75		GC	CLAYEY GRAVEL with SAND Dry, very dense, white (10 YR 8/1) to very pale brown (10	_
2394.5		12.00	E	SPT	16 25	61	75		_	SILTY CLAYEY GRAVEL with SAND Dry, very dense, white (10 YR 8/1) to very pale	
2389.5	2394.5 -	14.50	F	SPT	14 20	40	75		GC	CLAYEY GRAVEL with SAND Dry, dense, white (10 YR 8/1) to very pale brown (10 YR	
2389.5 - 20		17.00	G	SPT	20 23	53	85		sc	16.50 CLAYEY SAND with GRAVEL Dry, very	_
2384.5	2389.5 -	19.50		CMS	40	81	95		GC	CLAYEY GRAVEL with SAND Dry, dense,	_
2384.5			ı	SPT	10 14	41	95		СН	SANDY FAT CLAY Dry to moist, hard, very	
2384.5		<u>24</u> :50	J	CMS	<del>15/0.1'</del>	<del>15/0.1'</del>	0				(1) 1 224 10
27.40	2384.5 -		K	CMS		50/0.4'	100		_		blows; no progress. No
					50/0.4' 30 34				CL	YR 8/2)  GRAVELLY LEAN CLAY with SAND Dry, very hard, white (10 YR 8/1) to very pale brown	(K) Weakly to strongly cemented.



START DATE \_\_\_\_10/8/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-62

E.A. # 73518 GROUND ELEV. 2409.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 193+25

STATION "XP" 193+:

OFFSET 242' Right

ENGINEER Boomhower

**EQUIPMENT** 

**OPERATOR** 

Diedrich D-120 (Unit 1627)

SHEET 2 OF 2

Pypkowski

DRILLING 6" H.S.A.

ELEV.	DEPTH		ИPLE	BLOW C			LABTERE	HSCS	MATERIAL DECORPTION	DE:::-
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	31.50		CMS	14 17 28	45	95		GC	CLAYEY GRAVEL with SAND Dry, dense, mottled pale brown (10 YR 6/3) with white (10 31.50 YR 8/1)	(M) Weakly to strongly cemented
	33.00	N	SPT	9 11 14	25	75		CL	LEAN CLAY with SAND Dry, very stiff, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	nodules in sample.
	34.50									_
2374.5 -	-35 36.00		CMS	8 17 24	41	100		sc	CLAYEY SAND with GRAVEL Dry, dense, mottled pale brown (10 YR 6/3) with white (10 36.00 YR 8/1)	
	37.50	Р	SPT	10 11 17	28	75			SANDY LEAN CLAY with GRAVEL Dry, very stiff, mottled pale brown (10 YR 6/3) with white (10 YR 8/1)	
	-							CL		
2369.5 -	— <b>4</b> 0								41.00	
	=									
	- - 44.50							СН		
2364.5 -	-45 45.90	Q	CMS	22 33 50/0.4'	50/0.4'	95			SANDY FAT CLAY with GRAVEL Dry to moist, very hard, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2)	
	- 46.70 -	R	SPT	19 50/0.3'	50/0.3'	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, pale brown (10 YR 6/3) to very pale brown (10 YR 8/2)	
	-									
2359.5 -	<b>—50</b>									
	-							GC		Hard drilling (53'; Progress
	-									0.2'/10 minut @ 250 psi do pressure. Very hard
2354.5 -	— <b>55</b> -									drilling @ 55 Progress 0.5 minutes @ 4 psi down
	-								58.00	psi down pressure. End day 1 @ 56.0'.
	_								END BI-62 @ 58.0'	No groundwa encountered



10/20/14 START DATE

10/20/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BI-63 **BORING** 73518

E.A. # 2408.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

"XP" 185+33 STATION

238' Right **OFFSET ENGINEER** 

Lawrence

Deidrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2402.0	- - - - 5 5.00								2.50	
2403.0	- 6.50 -	Α	SPT	3 4 4	8	85			<b>LEAN CLAY</b> Dry, medium stiff, very pale brown (10 YR 7/3)	
2398.0	- - 10 <sup>10.00</sup> - 11.50 -	В	SPT	7 7 13	20	100		CL	<u>LEAN CLAY</u> Dry, very stiff, very pale brown (10 YR 7/3)	
2393.0	- 15.00 - 16.50 -	С	SPT	11 18 26	44	95			SANDY LEAN CLAY Dry, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
2388.0	- 20.00 - 21.50	D	SPT	26 33 26	59	95		sc	CLAYEY SAND with GRAVEL Dry to moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) mottled with white (10 YR 8/1)	
2383.0	- 25.00 25 <u>25.40</u> -	E	SPT	50/.4'	50/.4'	100		SM	SILTY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 8/2) to white (10 YR 8/1)	Gravelly/cobbl from 22' - 25'. Gravelly/cobbl from 25' - 28'.



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

START DATE \_\_\_\_10/20/14

END DATE

LOCATION

10/20/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-63

E.A. # 73518 GROUND ELEV. 2408.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

OFFSET 238' Right ENGINEER Lawrence

**EQUIPMENT** 

Deidrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRI	PTION	REMARKS
(it)	31.50	F	CMS	13 16 23	39	100		CL	LEAN CLAY Dry to moist, v brown (10 YR 8/2) mottled lig 31.50 (10 YR 6/4)	ery stiff, very pale ght yellowish brown	
	33.00	G	SPT	11 19 24	43	100		CL ML	SILTY CLAY with SAND Dr very pale brown (10 YR 8/2) yellowish brown (10 YR 6/4)	y to moist, hard, mottled light	
	_								34.00		
2373.0 -	35.00	Н	CMS	15 27	59	95		CL	SANDY LEAN CLAY Dry to yellow (2.5 Y 7/3)	moist, hard, pale	
	36.50	ı	SPT	32 11 19 28	47	95		СН	FAT CLAY with SAND Dry pale yellow (2.5 Y 7/3) to stro 5/6) to yellowish brown (10 Y	ong brown (7.5 YR	
	_								39.00		
2368.0 -	40.00	J	CMS	22 24	41	95		GC	CLAYEY GRAVEL with SAN dense, very pale brown (10 Y 11.50 yellow (10 YR 6/6), white (10	R 7/3), brownish	
	43.00	K	SPT	17 9 12 21	33	85		CL	yellow (2.5 Y 7/3)  LEAN CLAY with SAND Mo pale brown (10 YR 7/3), mott	oist, hard, very tled with brownish	
									yellow (10 YR 6/6) and white	: (10 YR 8/1) 	
2363.0 -	45.00 -45	L	CMS	21 32	73	85		CL ML	SILTY CLAY WITH GRAVEL hard, pale yellow (2.5 YR 7/3		
	46.50	М	SPT	41 11 12 17	29	85		CL	LEAN CLAY with SAND Mo yellowish brown (10 YR 6/4), yellowish brown (10 YR 5/6)	mottled with	
	_								brown (10 YR 7/3) 19.00		
2358.0 -	50.00	N	CMS	13 22	57	85			<u>FAT CLAY with SAND</u> Mois yellow (2.5 Y 7/3) mottled wit (10 YR 5/6)		(N) Torvane reading - 11 tsf
	51.50	0	SPT	35 15 17 16	33	95			FAT CLAY with SAND Mois yellow (2.5 Y 7/3) to light yell YR 6/4), mottled with yellowis	lowish brown (10	
								СН	5/6)		
2353.0 -	55.00 -55 -56.50	Р	CMS	11 20 33	53	85			SANDY FAT CLAY Moist, h. (2.5 Y 7/3) to white (10 YR 8, yellowish brown (10 YR 5/6)		
	58.00	Q	SPT	13 16 18	34	65			SANDY FAT CLAY Moist, h. (2.5 Y 7/3), white (10 YR 8/1) brown (10 YR 6/4), brownish and strong brown (7.5 YR 5/6	), light yellowish yellow (10 YR 6/6),	
	_							CL	9.00	o, -	



START DATE \_\_\_10/20/14

END DATE

LOCATION

10/20/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-63

E.A. # 73518 GROUND ELEV. 2408.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_"XP" 185+33

SHEET 3 OF 3

OFFSET 238' Right
ENGINEER Lawrence

EQUIPMENT Lawrence

EQUIPMENT Deidrich D-120 (Unit 1627)

OPERATOR Pypkowski

DRILLING
METHOD 6" H.S.A.

	ENGINE	ERING \			AMMER DR		51EM		L	BACKFILLED D.	AIE
E	LEV.	DEPTH		MPLE	BLOW Co	DUNT Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
F	(ft)	(ft)	NO.	TYPE	Increments 22	1 foot	Recov'd	LAD ILOIO	USCS Group	SANDY LEAN CLAY with GRAVEL Moist,	ILWANNO
		61.50	R	CMS	28 38 17	66	100		CL	hard, very pale brown (10 YR 7/3), light  61.50 yellowish brown (10 YR 6/4), white (10 YR 8/1)  7, and pale yellow (2.5 Y 7/3)	
		63.00	S	SPT	27 36	63	95		sc	CLAYEY SAND with GRAVEL Moist, very dense, very pale brown (10 YR 7/3), light	
										yellowish brown (10 YR 6/4), white (10 YR 8/1), and pale yellow (2.5 Y 7/3)	No groundwater encountered.
		-								END BI-63 @ 63.0'	on our and our
2	343.0	<b>−65</b>									
		-									
		-									
		-									
		=									
2	338.0	<b>-70</b>									
		-									
		-									
		-									
		_									
2	333.0	<b>-75</b>									
		-									
		-									
		-									
		_									
2	328.0	-80									
		-									
		-									
		-									
		-									
2	323.0	85									
l		-									
	}	-									
		-									
2		-									



START DATE

10/21/14

12/3/14

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-64 73518 2418.00 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 5

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

151' Right **ENGINEER** 

Lawrence Diedrich D-120 (Unit 1627)

Pypkowski

"XP" 199+46

DRILLING METHOD 6" H.S.A. / 4" Rotary

Wash BACKFILLED DATE .

ELEV.	DEPTH		MPLE TYPE	BLOW Co	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	NO.	TYPE	Increments		Recov'd		Group		
2413.0	- - <u>5 5</u> :98 -	<b>A</b>	SPT	<del>50/0.1'</del>	50/0.1'	0				(A) Probable cobble/gravel layer. No sample recovered.
2408.0 -	- - - 10 - - 11.40	В	SPT	28 39 50/0.4'	50/0.4'	85		GW	WELL GRADED GRAVEL with CLAY and SAND Moist to dry, very dense, very pale brown (10 YR 7/3)	
2403.0	- - - 15.00			14						
	16.50	С	SPT	27 33	60	75		sc 	very dense, very pale brown (10 YR 7/3)	
2398.0 <del>-</del>	20.00 20 21.50	D	SPT	12 14 20	34	45		СН	FAT CLAY with SAND Moist to dry, hard, pale yellow (2.5 Y 7/3) with white lenses (10 YR 8/1)	
2393.0	- - - <b>25</b> .00			23					23.20	(E) Weakly to
		E	SPT	33 46	79	80		GC	very dense, pale yellow (2.5 Y 7/3) to white (10 YR 8/1)	moderately cemented nodules in sample.
	30.00								30.00	



START DATE \_\_\_\_10/21/14

12/3/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-64 73518

GROUND ELEV. 2418.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_\_ "XP" 199+46

OFFSET 151' Right

**ENGINEER** 

DRILLING METHOD Lawrence
Diedrich D-120 (Unit 1627)

SHEET 2 OF 5

OPERATOR DIEGRICA DIE

6" H.S.A. / 4" Rotary

BACKFILLED Wash DATE

ENGINE	EERING V		ADI E	DI CVA C	OLINIT					
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REM	ARKS
	31.50	F	CMS	31	73	100			CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3)	
	33.00	G	SPT	14 14 17	31	25			CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	_							GC		
2383.0 -	35.00 36.50	Н	CMS	23 49 26	75	95			CLAYEY GRAVEL with SAND Dry to moist, dense, very pale brown (10 YR 7/3) to white (10 to strong cements YR 8/1)	gly
	38.00	I	SPT	9 10 16	26	55		СН	SANDY FAT CLAY Dry to moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1) nodules sample.	in erately to
									39.00 strongly cemente nodules	ed
2378.0 -	40.00 40.90	J	CMS	29 50/0.4'	50/0.4'	65		GC	CLAYEY GRAVEL with SAND Dry to moist, 41.00 very dense, very pale brown (10 YR 7/3) sample. (J) Mode to strong	gly
	_								WEAKLY TO MODERATELY CEMENTED nodules sample.	in Last 20
	_								MODERATELY TO STRONGLY CEMENTED MATERIALS	
2373.0 -	45 <sup>45.90</sup>	K	SPT	50/0.1'	50/0.1'	0			45.00 (K) No s	
	_								STRONGLY CEMENTED MATERIALS  Hard dri 250 - 40 down pr	lling, 0 psi
	49.50								0.06 ft/n	Irilling to rotary
2368.0 -	-50 51.00	L	CMS	46 35 47	82	80		GC	CLAYEY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	ngly ed
	51.80	М	SPT	17 50/0.3'	50/0.3'	65		<u> </u>	CLAYEY GRAVEL with SAND Moist, very 52.00 dense, very pale brown (10 YR 7/3) to light  yellowish brown (10 YR 6/4) sample. (M) Strocemente	eď
	_								STRONGLY CEMENTED MATERIALS nodules sample.	
2363.0 -	54.50 55 56.00	N	CMS	12 22 44	66	85		GC	CLAYEY GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 Cemente nodules	eď
	56.70		SPT	41 50/0.2'	50/0.2'	45			CLAYEY GRAVEL with SAND Moist, very 57.00 dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	ngly ed
	_								STRONGLY CEMENTED MATERIALS nodules sample.  59 00 End We	ek 1 @
	59.50			21				CL	60.00 GRAVELLY LEAN CLAY with SAND Moist to 56.7'. Conclude to	ontinue

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



10/21/14 START DATE

12/3/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-64 73518

GROUND ELEV. 2418.00 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 199+46 STATION

151' Right **OFFSET** 

**EQUIPMENT** 

DRILLING METHOD

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 3 OF 5

Pypkowski **OPERATOR** 

6" H.S.A. / 4" Rotary

Wash BACKFILLED DATE .

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	61.00	P	CMS	37 58	95	85			wet, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	12/2/2014. (P) Strongly cemented nodules in sample.
2353.0	64.50 65 66.00	Q R	CMS	16 20 29 10 16	49	100			LEAN CLAY with GRAVEL Moist to wet, very stiff to hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)  GRAVELLY LEAN CLAY with SAND Moist to wet, hard, very pale brown (10 YR 7/3) to light	(Q) Strongly cemented nodules in sample. (R) Moderatel
	67.50			28					yellowish brown (10 YR 6/4)	to strongly cemented nodules in sample.
2348.0	-70 71.00	s	CMS	9 12 18	30	100			<b>LEAN CLAY</b> Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(S) Moderately cemented nodules in
	72.50	Т	SPT	7 9 13	22	100		CL	LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to pale yellow (2.5 Y 7/3)	sample. Pock penetrometer reading - 4, 4. tsf. Torvane reading - 10.5 tsf.
2343.0	74.50 -75 76.00	U	CMS	11 13 23 8	36	135			LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to pale yellow (2.5 Y 7/3)	(T) Torvane reading - 12.5 tsf. (U) Pocket penetrometer
	- 77.50 -	V	SPT	11 16	27	105		_	LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	reading - 2.5, 4.5 tsf. (V) Pocket penetrometer reading - 3.3, tsf.
2338.0	79.50 <b>80</b> 81.00	W	CMS	11 16 25	41	115			SANDY LEAN CLAY Moist to wet, very stiff, strong brown (7.5 YR 5/6)	(W) Pocket penetrometer reading - 2.8,
	82.50	Х	SPT	10 16 66	82	105			<u>LEAN CLAY with SAND</u> Moist to wet, very hard, strong brown (7.5 YR 5/6) to light yellowish brown (10 YR 6/4)	tsf. Torvane reading - 7 tsi (X) Moderatel to strongly
	- - 84.50								83.00 WEAKLY TO MODERATELY CEMENTED 84.00 MATERIALS	cemented nodules in sample.
2333.0	- <b>85</b> 85.60	Y	CMS	38 47 35/0.1'	35/0.1'	100		CL	GRAVELLY LEAN CLAY Moist to wet, very hard, light yellowish brown (10 YR 6/4)	(Y) Weakly to strongly cemented nodules in sample.
	-									
	89.50			12				4	90.00 <b>LEAN CLAY</b> Moist to wet, very stiff, light	



10/21/14 START DATE

12/3/14

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-64 **BORING** 

E.A. #

73518

GROUND ELEV. 2418.00 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 5

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

151' Right Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627)

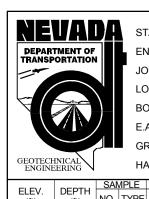
Pypkowski

"XP" 199+46

6" H.S.A. / 4" Rotary

Wash BACKFILLED DATE .

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
( )	91.00	Z	CMS	12	29	125			yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3)	(Z) Weakly cemented
	92.50	AA	SPT	17 7 18 27	45	115		CL	LEAN CLAY Moist to wet, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3)	nodules in sample. (AA) Weakly cemented nodules in
2323.0 -	- 95 -								94.00  SCATTERED WEAK TO MODERATE CEMENTATION  97.00	sample.
2318.0 -	- 99.50 100	ВВ	CMS	11 8	23	115		-	<u>LEAN CLAY</u> Moist to wet, stiff, very pale brown (10 YR 7/3) to light yellowish brown (10	(BB) Weakly
	101.00	СС	SPT	15 15 14 16	30	120		CL	YR 6/4)  LEAN CLAY Moist to wet, very stiff, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4).	particles in sample. (CC) Weakly cemented particles in sample.
2313.0 -	- 105 								106.00	•
2308.0 -	- 109.50 110 110.80	DD	CMS	19 36	35/0.3'	100		CL	<u>SILTY CLAY with SAND</u> Moist to wet, very hard, brown (7.5 YR 5/4)	
	- - 112.30 -		SPT	35/0.3' 27 28 32	60	115		ML	SILTY CLAY Moist to wet, hard, brown (7.5 YR 5/4)	
2303.0 -	- 115 								115.90	
	-							CL		
	119.50		1		1		l	1		



10/21/14 START DATE

12/3/14

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

GROUND ELEV. 2418.00 (ft)

HAMMER DROP SYSTEM Automatic

BI-64

73518

**EXPLORATION LOG** 

"XP" 199+46 151' Right

STATION **OFFSET ENGINEER** 

Lawrence

6" H.S.A. / 4" Rotary

SHEET 5 OF 5

Diedrich D-120 (Unit 1627) **EQUIPMENT OPERATOR** 

Pypkowski

DRILLING METHOD Wash DATE BACKFILLED

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW C 6 inch Increments 60/0.4'	Last	Percent Recov'd 135	LAB TESTS	USCS Group		MATERIAL DESCRIPTION	REMARKS
2293.0 -	120.40 - 121.30 - - -	FF GG	SPT	60/0.4' 31 50/0.4'	60/0.4' 50/0.4'	135		CL	121.30	pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)  LEAN CLAY Moist to wet, very hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)  END BI-64 @ 121.3'	(FF) Weakly cemented lenses in sample. (GG) Weakly cemented lenses in sample. No groundwate encountered.
	-										
2288.0 -	130  										
2283.0 -	- 135 - -										
2278.0 -	<b>140</b>  - -										
2273.0 -	- 145 - -										



START DATE

LOCATION

12/4/14

1/14/15 END DATE

US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-65 **BORING** 

73518 E.A. #

JOB DESCRIPTION

2408.50 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 4

"XP" 191+93 STATION

271' Right **OFFSET** 

Lawrence **ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Deidrich D-120(Unit 1627,1082)

Pypkowski

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ELEV.	DEPTH		MPLE	BLOW CO 6 inch	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments			LAB ILOTO	Group	WATERIAL DESCRIPTION	KEWAKKS
	_								2.50	Drill Unit 1627 from 0' - 46.2'
2403.5 -	4.70 5 6.20	Α	SPT	6 7 12	19	65		CL ML	SILTY CLAY with SAND Moist, very stiff, very pale brown (10 YR 7/3)	
2398.5 -	- 9.70			8				SC SM	8.00  SILTY, CLAYEY SAND Moist, medium	_
	_ 11.20	В	CMS	9 14 7	23	80			dense, light yellowish brown (2.5 Y 6/3)  11.20  CLAYEY SAND with GRAVEL Moist,	(C) Weakly to
	12.70	С	SPT	9 11	20	55		sc	medium dense, yellowish brown (10 YR 5/4) to very pale brown (10 YR 8/2)  13.70	moderately cemented nodules in sample.
2393.5 -	14.70 15			20				GM	SILTY GRAVEL with SAND Moist, dense,	
	- 16.20	D _	CMS	25 36 21	61	85			multicolored 16.20  CLAYEY GRAVEL with SAND Moist, dense,	_
	17.70	E	SPT	18 18	36	45		GC	multicolored 18.70	
2388.5 -	19.70 <b>20</b>			29				sc	CLAYEY SAND Moist, dense, very pale	-
	_ 21.20	F	CMS	26 39 15	65	85			brown (10 YR 6/3) 21.20 SANDY FAT CLAY Moist, very stiff, pale	(G) Weakly
		G	SPT	11 12	23	60		СН	yellow (2.5 Y 7/3) to white (10 YR 8/1) to very pale brown (10 YR 7/3)	cemented nodules in sample.
	24.70			24					23.70	(11) \\(\lambda\tau_{-} = 1.15 \tau_{-} \)
2383.5 -	25 26.20	Н	CMS	24 37 42 17	79	85		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) <u>CLAYEY GRAVEL with SAND</u> Moist, very	(H) Weakly to strongly cemented nodules in
	27.50	I	SPT	42 -50/0.3'	50/0.3'	85			dense, multicolored	sample.
	_							CL	_ 28.60	-



START DATE \_\_\_12/4/14

1/14/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # BI-65 73518

GROUND ELEV. 2408.50 (ft)

HAMMED DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_"XF

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD "XP" 191+93 271' Right

OFFSET 271' Right Lawrence

Deidrich D-120(Unit 1627,1082)

SHEET 2 OF 4

Pypkowski

4" Rotary Wash

GEOTECH ENGINE	NICAL ERING		HA	AMMER DF	ROP SYS	TEM A	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	- 31.20 -	J	SPT	20 24 30	54	75			LEAN CLAY with SAND Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 6/1)  (J) Weakly cemented
2373.5	- 34.70 35 - 36.20	K	CMS	23 18 27 11 30	45	85		CL	SANDY LEAN CLAY with GRAVEL Moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)  SANDY LEAN CLAY Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)  (K) Weakly cemented
	37.70	_	01 1	31	01	33			_ 38.70
2368.5	39.70 40 41.20	М	CMS	14 19 41	60	85		СН	GRAVELLY FAT CLAY with SAND Moist, hard, brown (7.5 YR 5/4) with white (10 YR 8/1)
	- 42.70 -	N	SPT	14 22 24	46	65		ОП	SANDY FAT CLAY with GRAVEL Moist, hard, dark grayish brown (10 YR 4/2) to light yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/3)
2363.5	44.70 45 46.00 46.20	0	CMS	28 32 <del>59/9:2</del> '	50/0.3' 50/0.2'	70		GC	CLAYEY GRAVEL with SAND Moist, very dense, pale yellow (2.5 Y 7/3) to light yellowish brown (10 YR 6/4)  (O) Weakly to moderately cemented
	-								MATERIALS sample.  47.50 End previous week @ 46.2',
2358.5	- 50.00			17					switch drill rigg continue in same hole with Unit # 1082.  CLAYEY GRAVEL with SAND Moist, dense,  Switch drill rigg continue in same hole with Unit # 1082.  No circulation
	51.50	Q R	CMS	23 37 11 13	20	85 60		GC	very pale brown (10 YR 8/2) to yellowish brown (10 YR 5/4)  CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 8/2) to drilling fluid beyond 47.5'.  (Q) Weakly to strongly
2353.5	53.00 - 55.90			7 7 50/0.1'					yellowish brown (10 YR 5/4)  cemented nodules in sample.  (R) Weakly to strongly cemented
	-								modules in sample. (S) No sample recovered.  MODERATELY TO STRONGLY CEMENTED MATERIALS
	- 60.00								CJAINE I AIVI



START DATE \_\_12

12/4/14

1/14/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING BI-65

E.A. # 73518

GROUND ELEV. 2408.50 (ft)

HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION

**EQUIPMENT** 

**OPERATOR** 

"XP" 191+93

OFFSET 271' Right ENGINEER Lawrence

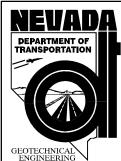
Deidrich D-120(Unit 1627,1082)

SHEET 3 OF 4

Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTI	ON REMARKS
	61.50	Т	CMS	3 4 50	54	0			52.00	(T) No circulation; no sample recovered.
2343.5 -	- - - - - - - - - - - - - - - - - - -	U V	CMS	11 10 15 8 15 13	25 28	80		-	LEAN CLAY with SAND Moist to stiff, very pale brown (10 YR 7/3 LEAN CLAY with SAND Moist to stiff, very pale brown (10 YR 7/3	) moderately cemented nodules in
2338.5 -	70.00 70 71.50	w	CMS SPT	9 59 30 15 21 34	89 55	65 75			LEAN CLAY with GRAVEL Moi hard, very pale brown (10 YR 7/3 LEAN CLAY with GRAVEL Moi hard, very pale brown (10 YR 7/3	nodules in sample.  st to wet, (W) Weakly to moderately cemented lenses in
2333.5 -	75.00 75 76.50	Y Z	CMS	8 11 13 5 6 7	24	100		CL	LEAN CLAY Moist to wet, stiff, brown (10 YR 6/4) to brownish y 6/8)  LEAN CLAY Moist to wet, stiff, brown (10 YR 6/4) to brownish y 6/8)	ellow (10 YR lenses in sample.
2328.5 -	- 80.00 - 81.40		CMS	32 39 50/0.4'	50/0.4'	100			<b>LEAN CLAY with GRAVEL</b> Moi hard, very pale brown (10 YR 7/3	st to wet, very (AA) Weakly moderately cemented
	82.90 - - - 85.00		SPT	23 27 24	51	85			LEAN CLAY with SAND Moist to very pale brown (10 YR 7/3)	o wet, hard, lenses in sample.  (BB) Weakly moderately cemented lenses in sample.
2323.5	86.50	СС	CMS	19 24 64 14 16	88	95 95			SANDY LEAN CLAY with GRAY wet, hard, light yellowish brown (  LEAN CLAY with SAND   Moist to light yellowish brown (10 YR 6/4)	10 YR 6/4) cemented nodules in sample.
	88.00		J. 1	23					38.00 WEAKLY TO MODERATELY CE LENSES	



12/4/14 START DATE

1/14/15

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

73518

BI-65

2408.50 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 4 "XP" 191+93

STATION 271' Right **OFFSET** 

**OPERATOR** 

Lawrence **ENGINEER** 

Deidrich D-120(Unit 1627,1082) **EQUIPMENT** 

Pypkowski

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ENGINE	ERING			MMER DR		/ I E I VI			BACKFILLED DATE DATE	
ELEV.	DEPTH		MPLE TYPE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMA	ARKS
(ft)	(ft) - 91.50		CMS	Increments 42 20 20	1 foot 40	Recov'd		Group	GRAVELLY LEAN CLAY Moist to wet, very stiff, light yellowish brown (10 YR 6/4) cemente nodules	d
	93.00	FF	SPT	12 15 21	36	100			LEAN CLAY with SAND Moist to wet, hard, light yellowish brown (10 YR 6/4) (FF) Moc cemente nodules	derately
2313.5	- 95								sample.	111
	-							CL		
	-									
2308.5	100.00 100   101.50		CMS	22 28 58	86	100			<u>LEAN CLAY with SAND</u> Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	103.00	нн	SPT	24 22 20	42	80			SANDY LEAN CLAY with GRAVEL Moist to wet, hard, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)  END BI-65 @ 103.0'  (HH) We moderate cemente lenses in	ely d
2303.5	- 105 								sample. No grour encounts	ndwate ered.
	-									
2298.5	- 110									
	-									
2293.5 -	- 115									
	-									
	- -									



1/14/15 START DATE

1/15/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

E.A. #

Northwest Las Vegas - Clark County

**BORING** 

73518

BI-66

GROUND ELEV. 2407.50 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 76+88 STATION 241' Right

**OFFSET** 

**ENGINEER** 

Lawrence Deidrich D-120 (Unit 1082)

SHEET 1 OF 2

**EQUIPMENT** Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-									-
2402.5 -	- - 4.40 5 - 5.90	A	SPT	7 9 13	22	80		CL	<u>LEAN CLAY with SAND</u> Moist, very stiff, very pale brown (10 YR 7/3)	
	6.90 - - 8.40	В	SPT	8 6 6	12	80		CL ML	SANDY SILTY CLAY Moist, stiff, pale brown (10 YR 6/3)	
2397.5 -	9.40 10 10.90	С	SPT	5 6 6	12	85		CL	SANDY LEAN CLAY Moist, stiff, light yellowish brown (2.5 Y 6/3)	
	11.90	D	SPT	20 42 34	76	100		GC	CLAYEY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3)	_
2392.5 -	14.40 - 15 15.90	E	SPT	19 24 19	43	85		SM	SILTY SAND with GRAVEL Moist, dense, brownish yellow (10 YR 6/6)	
	16.90	F	SPT	10 9 6	15	65			CLAYEY SAND with GRAVEL Moist, medium dense, brownish yellow (10 YR 6/8) to white (10 YR 8/1)	(F) Weakly cemented nodules in
2387.5 -	19.40 -20 20.90	G	SPT	8 11 13	24	85		SC	<u>CLAYEY SAND with GRAVEL</u> Moist, medium dense, light yellowish brown (10 YR 6/4)	sample.
	21.90	Н	SPT	6 7 11	18	75			SANDY FAT CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)	
2382.5 -	- 24.40 25 25.90	ı	CMS	10 12 15	27	65		СН	SANDY FAT CLAY with GRAVEL Moist, very stiff, very pale brown (10 YR 7/3)	(I) Strongly cemented nodules in
	27.40	J	SPT	6 9 13	22	45			SANDY FAT CLAY Moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1)	sample. (J) Strongly cemented nodules in sample.
	29.40									Sample.



1/14/15 START DATE

1/15/15

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

END DATE

BI-66 73518

2407.50 (ft)

GROUND ELEV. HAMMER DROP SYSTEM \_ Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "X" 76+88

STATION 241' Right

**OFFSET** Lawrence **ENGINEER** 

**EQUIPMENT** 

Deidrich D-120 (Unit 1082)

Pypkowski **OPERATOR** 

6" H.S.A

DRILLING METHOD

BACKFILLED DATE

ENGINI	EERING \			AMMER DR		IEM	atomatic	L	BACKFILLED D	ATE
ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	30.90		CMS	Increments 20 10	1 foot 30	Recov'd 100			medium dense, light yellowish brown (2.5 Y 6/3) to white (10 YR 8/1)	(K) Moderately cemented
	32.40	L	SPT	4 7 9	16	60		СН	GRAVELLY FAT CLAY with SAND Moist, very stiff, light yellowish brown (2.5 Y 6/3) to white (10 YR 8/1)	nodules in sample. (L) Moderately cemented
	24.40								33.40	nodules in sample.
2372.5	34.40 -35 35.90	М	CMS	8 11 17	28	95		CL	SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 7/3) to white (10 YR 8/1) 35.90	(M) Moderately cemented nodules in
	37.40	N	SPT	9 9 12	21	80		sc	CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	sample. (N) Moderately cemented nodules in
	_								38.40	sample.
2367.5 -	39.40 -40 40.90	0	CMS	13 12 13	25	95		CL	SANDY LEAN CLAY Moist, very stiff, very pale brown (10YR 7/3) to light yellowish brown 40.90 (10 YR 6/4)	
	42.40	Р	SPT	5 7 9	16	85			FAT CLAY Moist, very stiff, very pale brown (10 YR 7/3)	
	44.40							СН		
2362.5 -	44.40 -45 45.90	Q	CMS	12 20 31	51	85			FAT CLAY with SAND Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (2.5 45.90 Y 6/3)	(Q) Moderately to strongly cemented
	47.40	R	SPT	15 25 18	43	45		GC	CLAYEY GRAVEL with SAND Moist, hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	nodules in sample. (R) Moderately
									48.40	to strongly cemented nodules in sample.
2357.5 -	49.40 -50 50.90	s	CMS	7 8 10	18	95		СН	FAT CLAY with SAND Moist, stiff, reddish yellow (7.5 YR 6/6)	(S) Strongly cemented nodules in
	52.40	Т	SPT	3 10 16	26	60			CLAYEY GRAVEL with SAND Moist, dense, reddish yellow (7.5 YR 6/6)	sample.
				-				_		(U) Moderately to strongly
2352.5 -	54.40 55	U	CMS		39	85		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, medium dense to dense, very pale brown (10	cemented nodules in sample.
	55.90 - 56.30		SPT	30 50/0.4'	50/0.4'	100			YR 7/3) to white (10 YR 8/1) to light yellowish brown (10 YR 6/4)  CLAYEY GRAVEL with SAND  Moist, very 57.20 dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) to light yellowish brown (10 YR 6/4)	(V) Moderately to strongly cemented nodules in sample.
	_								END BI-66 @ 57.2'	Hard drilling @ 57.2 ft. No groundwater
										encountered.

NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16



1/26/15 START DATE

1/28/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-67 **BORING** 

73518 E.A. # 2409.40 (ft) GROUND ELEV..

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 4

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

185' Right **ENGINEER** 

Boomhower

"XP" 192+22

Diedrich D-120 (Unit 1082)

Pypkowski

4" Rotary Wash

BACKEILLED DATE

ENGINE	EERING			AMMER DR		712101			BACKFILLEDD	/
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_								0.50 Asphaltic Concrete	
	2.50	Α	SPT	8 10	27	0				(A) No sample recovered.
	4.00 4.80		01 1	17	21	o		CL ML		recovered.
2404.4 -	- 6.30	В	SPT	17 16 15	31	80			<b>GRAVELLY SILTY CLAY</b> Moist, hard, light gray (10 YR 7/2) to very pale brown (10 YR 7/3)	
	7.30			6					6.80	
	8.80	С	SPT	7 11	18	80		CL	light brown (7.5 YR 6/4) mottled with pinkish gray (7.5 YR 7/2)	
2399.4 -	9.80 10 11.30	D	SPT	9 11 14	25	75		GL.	SANDY LEAN CLAY Moist, dense, pale yellow (2.5 Y 7/3)	
	12.30								11.80	
	13.80	Е	SPT	17 24 25	49	80		GC	CLAYEY GRAVEL with SAND Moist, dense, multicolored  14.30	
2394.4 -	14.80 15 16.30	F	SPT	23 30 28	58	75		GC GM	SILTY CLAYEY GRAVEL with SAND Moist, very dense, multicolored	
	- 17.30 -	G	SPT	12 23	48	75			CLAYEY SAND with GRAVEL Moist, dense, multicolored	
	18.80 - 19.80			25				sc		
2389.4 -	-20 - 21.30	Н	SPT	12 23 19	42	65			<u>CLAYEY SAND with GRAVEL</u> Moist, dense, multicolored	
	22.30		SPT	14 19	38	65		CL	21.80	
	23.80	' '	OF I	19	30	00			24.30	
2384.4 -	- 26.20	J	CMS	21 44 50/0.4'	50/0.4'	100		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, dense, multicolored 26.20	
	27.70	К	SPT	16 21 10	31	60			<u>CLAYEY SAND with GRAVEL</u> Moist, dense, multicolored	
								sc		End day 1 @ 27.7'.
	30.00								30.00	



1/26/15 START DATE

1/28/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-67 **BORING** 73518

E.A. # 2409.40 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 4

"XP" 192+22 STATION

**OPERATOR** 

185' Right **OFFSET ENGINEER** 

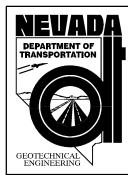
Boomhower

Diedrich D-120 (Unit 1082) **EQUIPMENT** 

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	L	SPT	10 10 13	23	75		CL	SANDY LEAN CLAY Moist, very stiff, brown (7.5 YR 5/3) to pink (7.5 YR 8/3)	(L) Moderately to strongly cemented nodules in sample.
	-								33.20	, i
	- 34.80									
2374.4	- 36.30	М	SPT	12 16 13	29	60			<b>CLAYEY GRAVEL with SAND</b> Moist, very stiff, light gray (10 YR 7/2) to pale brown (10 YR 6/3)	
2369.4	- - 39.80 40			13						(N) Rock in
	<del>- 41.30</del> -	N	SPT	28 22	50	0				sampler shoe No sample recovered.
2364.4	- - 44.80 <b>45</b>			10					CLAYEY GRAVEL with SAND Moist, very	
	46.30	0	SPT	9 7	16	25			stiff, light gray (10 YR 7/2) to pale brown (10 YR 6/3)	
	-							GC		Lost circulation at 47.3'.
2359.4	- 50 -									
	- 52.30									
ļ	- 53.80 -	Р	SPT	28 17 14	31	60			CLAYEY GRAVEL with SAND Moist, very stiff, light gray (10 YR 7/2) to pale brown (10 YR 6/3)	
2354.4	<b>55</b>									
	-									Hard drilling from 58.5' to



START DATE \_\_\_\_1/26/15

END DATE \_\_\_\_1/28/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING BI-67 E.A. # 73518

GROUND ELEV. 2409.40 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 3 OF 4

STATION OFFSET

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

T 185' Right

ENGINEER Boomhower

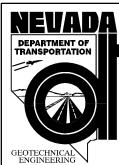
Diedrich D-120 (Unit 1082)

Pypkowski

"XP" 192+22

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- <u>62.38</u> - - - 64.80			Increments 20/0.1						(Q) Last 10 blows; no progress. No sample recovered. (R) Last 10 blows; no progress. No sample recovered.
2344.4 -	- 66.30	S	SPT	7 9 29	38	100			<b>LEAN CLAY with GRAVEL</b> Moist to wet, very stiff to hard, pink (7.5 YR 7/4) to light brown (7.5 YR 6/4)	recovered.
2339.4 -	- 70  									
2334.4 -	74.80 75 76.30	Т	SPT	4 5 7	12	100		CL	LEAN CLAY Moist to wet, stiff, light brown (7.5 YR 6/4)	End day 2 @ 76.3'.
2329.4 -	- 80  									
2001 ALL FILES, GR. 30 NV 2001 (0/27/10)	- 84.80 <b>85</b> <b>86.30</b>	U	CMS	14 18 46	64	115		-	SANDY LEAN CLAY with GRAVEL Moist, dense, pink (7.5 YR 7/4)	
NV DOI ALL FILES.GF2	- 87.20 - -	V	SPT	30 50/0.4'	50/0.4'	120			LEAN CLAY with SAND Moist, very hard, pink (7.5 YR 7/4)	(V) Moderately to strongly cemented nodules in sample.



START DATE \_\_\_1/2

1/26/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

73518

BI-67

GROUND ELEV. 2409.40 (ft)

HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL
DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION \_\_"XP" 192+22

**OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

185' Right

Boomhower

Diedrich D-120 (Unit 1082)

SHEET 4 OF 4

Pypkowski

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2314.4 -	94.80 - 95 - 96.20	w	CMS	23 41 50/0.4' 14 16	50/0.4'	85 100		CL ML	GRAVELLY SILTY CLAY Moist, very dense, pink (7.5 YR 7/4)  SANDY SILTY CLAY Moist to wet, hard, brown (7.5 YR 5/4)	
2309.4 -	97.70 - - - 100 -			23	33	100			100.50	-
2304.4 -	104.80 -105 _ 106.10 _ 107.60	Y	CMS SPT	11 8 30/0.3' 22 21 25	30/0.3'	130 115			LEAN CLAY Moist, very dense, pink (7.5 YR 7/4)  LEAN CLAY with SAND Moist to wet, hard, brown (7.5 YR 5/4)	(Y) Last 10 blows; no progress.
2299.4 -	- 110  -							CL		
2294.4 -	- 114.80 115 - 116.30	AA	CMS	15 19 55	74	0				(AA) No sam recovered.
	118.80	вв	SPT	14 12 27	39	105			LEAN CLAY Moist to wet, hard, brown (7.5 YR 5/4)  118.80  END BI-67 @ 118.8'	- No groundwa



START DATE \_\_\_\_1/29/15

END DATE \_\_\_\_\_1/29/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING \_ E.A. #

GROUND ELEV. 2396.30 (ft)
HAMMER DROP SYSTEM Automatic

**BI-68** 

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

oN "X" 88+93

SHEET 1 OF 2

STATION \_ OFFSET \_

109' Left Boomhower

ENGINEER Boomhower

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Pypkowski
DRILLING
METHOD 6" H.S.A.

METHOD 6 H.S.A.

BACKFILLED \_\_\_\_\_ DATE

BLOW COUNT 6 inch Las ELEV. DEPTH Last LAB TESTS **MATERIAL DESCRIPTION** REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd SANDY GRAVEL, Dry, tan 1.00 4.50 **LEAN CLAY with SAND** Dry, loose, light gray 2391.3 <del>⊢</del>5 SPT 4 8 75 (10 YR 7/2) 4 6.00 9.50 CL 19 **LEAN CLAY** Dry, hard, very pale brown (10 2386.3 -10 YR 8/2) to light gray (10 YR 7/2) В SPT 23 48 55 11.00 25 14.50 SANDY LEAN CLAY with GRAVEL Dry, very 11 2381.3 - 15 SPT 23 stiff, white (10 YR 8/1) to very pale brown (10 С 13 75 YR 8/2) 16.00 10 <u>17.7</u>0 19.50 23 SILTY SAND with GRAVEL Dry, very dense, 2376.3 20 SPT 32 75 85 SM very pale brown (10 YR 8/2) 21.00 43 22.70 ALL FILES.GPJ NV\_DOT.GDT 6/27/16 24.50 <u>CLAYEY SAND</u> Dry, medium dense, very pale brown (10 YR 8/3) with brownish yellow (10 13 2371.3 25 SPT 9 Ε 16 60 SC 26.00 7 YR 6/6) and white (10 YR 8/1) 28.00 DOT CL ≥ 30.00 30.00



1/29/15 START DATE

1/29/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-68 73518

GROUND ELEV. 2396.30 (ft) HAMMER DROP SYSTEM Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 88+93 STATION 109' Left **OFFSET** 

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

	DEDTU	SAN	MPLE	BLOW CO	DUNT			11000		
ELEV. (ft)	DEPTH (ft)		TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	- 31.50	F	CMS	28 27 32	59	100		CL	SANDY LEAN CLAY Dry, dense, light gray (2.5 Y 7/2)	
	33.00	G	SPT	13 20 32	52	75		СН	FAT CLAY Dry to moist, hard, very pale brown (10 YR 7/3) to light gray (2.5 Y 7/2)	
	34.50			13				sc	33.70	
2361.3	-35 36.00		CMS	16 23 8	39	95			7/2) 36.00  SANDY FAT CLAY Dry to moist, hard, very	
	37.50	Ī	SPT	11 18	29	80		_	pale brown (10 YR 7/3) to light gray (2.5 Y 7/2)	
2356.3	-							СН		
2330.3	<b>40</b>  -								41.00	
	-									
2351.3	44.50 45 46.00	J	CMS	8 11 18	29	75		CL	<b>LEAN CLAY with GRAVEL</b> Dry to moist, very stiff, brown (10 YR 5/3) to light gray (10 YR 7/2)	
	47.50	K	SPT	5 11 16	27	95			LEAN CLAY with GRAVEL Dry to moist, very stiff, light brown (7.5 YR 6/4) to pink (7.5 YR 47.50 7/3)  END BI-68 @ 47.5'	No groundwate
	-								LIND DI 00 @ 47.0	encountered.
2346.3	— <b>50</b> -									
	-									
	_									
2341.3	<b>55</b> 									
	-									
	=									



START DATE

2/10/15

2/11/15

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County BI-69

**BORING** 73518 E.A. #

LOCATION

GROUND ELEV. 2427.50 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 4

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

263' Left

"XP" 202+65

Lawrence

Deidrich D-120(Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE		Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-									
2422.5	4.60 -5 5.20	Α	SPT	37 50/0.1'	50/0.1'	0				(A) No sample recovered.
	-								7.40	
2417.5	9.60 — <b>10</b> _ 11.10	В	SPT	5 27 32	59	60		sc	<u>CLAYEY SAND with GRAVEL</u> Dry to moist, very dense, very pale brown (10 YR 7/3) with dark angular gravel	
	-								12.80	-
2412.5 <del>-</del>	14.60 15 _ 16.10	С	SPT	14 12 10	22	60		GC	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, medium dense, very pale brown (10 YR 7/3) to white (10 YR 8/1)	(C) Weakly cemented nodules in sample.
	-									
2407.5	19.60 20 21.10	D	SPT	9 9 16	25	80		ML	<u>SILT with SAND</u> Moist, dense, very pale brown (10 YR 7/3) to white (10 YR 8/1) to light yellowish brown (10 YR 6/4)	(D) Weakly cemented nodules in sample.
	- - 24.60								22.80	_
2402.5	-25 _ 26.10	E	SPT	17 18 19	37	80		sc	CLAYEY SAND with GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	
	-									-
	29.60							GC	30.00	



END DATE

LOCATION

2/11/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-69

E.A. # 73518 GROUND ELEV. 2427.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_"XP" 202+65

OFFSET 263' Left

ENGINEER Lawrence

**OPERATOR** 

EQUIPMENT Deidrich D-120(Unit 1627)

SHEET 2 OF 4

Pypkowski

DRILLING 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	_ 31.10	F	CMS	1 <del>7</del> 17	34	85		GC	CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 6/3) to light yellowish brown (10 YR 6/4) to white (10	(F) Strongly cemented nodules in
	32.60	G	SPT	8 9 12	21	60			YR 8/1) to brownish yellow (10 YR 6/8)  SANDY FAT CLAY Moist, very stiff, very pale	sample. (G) Weakly
	-							СН	brown (10 YR 7/3) to light yellowish brown (10 YR 6/4) to white (10 YR 8/1)	cemented.
	34.60			27				_	CDAVELLY FAT CLAY with CAND Maint	(LL) Change
2392.5 -	─35 _ 36.10	Н	CMS	27 25 34	59	85			GRAVELLY FAT CLAY with SAND Moist, hard, very pale brown (10 YR 7/3) to white (10 36.10 YR 8/1)	(H) Strongly cemented nodules in
	36.70	I	SPT	50 25/0.1'	25/0.1'	100		-	SANDY LEAN CLAY with GRAVEL Moist, very hard, very pale brown (10 YR 7/3) to white (10 YR 8/1)	sample. (I) 25 blows; r
	-							CL	(10 YR 8/1)	progress. Strongly cemented nodules in
	39.60		0.0.7	32	-0/0.01	400		-	LEAN CLAY with CRAVEL Moist york bord	sample.
2387.5 -	-4 <b>0</b> 40.30	J	SPT	50/0.2'	50/0.2'	100			40.30 LEAN CLAY with GRAVEL Moist, very hard, very pale brown (10 YR 7/3)	
	-								WEAKLY TO MODERATELY CEMENTED MATERIALS	
	-								MAILMALO	
2382.5 -	<b>45</b>								45.60	
	-								STRONGLY CEMENTED MATERIALS 47.40	500 psi down pressure, consistant progress.
	_									
2377.5 -	49.60 <b>50</b>			64				<u> </u>	SANDY LEAN CLAY with GRAVEL Moist,	
	_ 51.10	K	SPT	31 22	53	85		CL	hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	
	-								53.00	
	- 54.60								53.50 WEAKLY TO MODERATELY CEMENTED MATERIALS	-
2372.5 -	-55 _ 56.10	L	SPT	12 30 45	75	80		GC	<u>CLAYEY GRAVEL with SAND</u> Moist, very dense, light yellowish brown (10 YR 6/4) with dark gravel	
	-								57.50	300 psi - 450 p
									WEAKLY TO STRONGLY CEMENTED MATERIALS	down pressure consistant progress.
	59. <del>9</del> 0		CDT	50/0.1'	50/0 1'					



START DATE

2/10/15

2/11/15

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

BI-69 **BORING** 73518

GROUND ELEV. 2427.50 (ft)

HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

STATION

263' Left Lawrence

"XP" 202+65

**OFFSET ENGINEER** 

**OPERATOR** 

DRILLING METHOD

Deidrich D-120(Unit 1627)

SHEET 3 OF 4

**EQUIPMENT** Pypkowski

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(It)	- -			Increments	1 foot	Recov'd			WEAKLY TO STRONGLY CEMENTED MATERIALS	(M) No sample recovered.
2362.5 -	64.60 -65 66.10	N	SPT	60 27 39	66	100		CL ML	SILTY CLAY Moist to wet, very hard, very pale brown (10 YR 6/4)	
2357.5 -	- 69.60 70 71.10		CMS	23 24 38 15	62	95		-	SILTY CLAY with GRAVEL Moist to wet, hard, light yellowish brown (10 YR 6/4) 71.10  LEAN CLAY with GRAVEL Moist to wet,	(O) Strongly cemented nodules in sample.
2352.5 -	72.60 - - - 75	P	SPT	17 18	35	100			hard, light yellowish brown (10 YR 6/4)	(P) Strongly cemented nodules in sample.
2347.5 -	- - - 79.60 80			10				CL	<b>LEAN CLAY</b> Moist to wet, very stiff, light	
	_ 81.10 - 82.60	R	SPT	12 26 12 19 21	40	125			yellowish brown (10 YR 6/4) to yellowish brown (10 YR 5/4)  LEAN CLAY Moist to wet, hard, light yellowish brown (10 YR 6/4) to yellowish brown (10 YR 6/4) to yellow (10 YR 6/8)	
2342.5 -									<u>87.00</u>	-
	_								WEAKLY TO STRONGLY CEMENTED MATERIALS  88.80	
	89.60							GC	90.00	



END DATE 2/11/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2427.50 (ft)

HAMMER DROP SYSTEM Automatic

BI-69

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 4 "XP" 202+65

STATION OFFSET

**EQUIPMENT** 

**OPERATOR** 

263' Left Lawrence

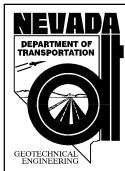
ENGINEER \_

Deidrich D-120(Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

ELEV.	DEPTH		MPLE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	S	TYPE CMS	Increments 29 74	1 foot 50/0.1	Recov'd 110		Group		(S) Strongly
	90.70	Т	SPT	E040 11	50/0.4'	120		CL ML	90.70 CLAYEY GRAVEL with SAND Moist to wet, very dense, very pale brown (10 YR 7/3)  91.60 GRAVELLY SILTY CLAY with SAND Moist to wet, very hard, very pale brown (10 YR 7/3)  END BI-69 @ 91.6'	cemented nodules in sample.
	_								END 69 (Ø 91.6	(T) Strongly cemented nodules in sample. No groundwater
2332.5 -	95 									encountered.
2327.5 -	- 100 -									
2322.5 -	- 105 -									
2317.5 -	- 110 -									
2312.5 -	- 115 -									
	-									



2/12/15 START DATE

2/12/15 **END DATE** 

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

Northwest Las Vegas - Clark County LOCATION

BI-70 **BORING** 73518

E.A. #

GROUND ELEV. 2416.00 (ft)

Automatic HAMMER DROP SYSTEM \_

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

"X" 71+48 STATION 174' Left

**OFFSET** Lawrence **ENGINEER** 

Deidrich D-120 (Unit 1627) **EQUIPMENT** 

6" H.S.A.

Pypkowski **OPERATOR DRILLING** 

**METHOD** BACKFILLED \_\_ \_ DATE

very dense, pale yellow (2.5 Y 7/3) to white (10

YR 8/1) to light yellowish brown (10 YR 6/4) to

**CLAYEY GRAVEL** Dry to moist, very dense,

pale yellow (2.5 Y 7/3) to white (10 YR 8/1) to

light yellowish brown (10 YR 6/4) to very pale

very pale brown (10 YR 7/2)

brown (10 YR 7/2)

to strongly

cemented

nodules in

to strongly

cemented

nodules in sample.

(H) Moderately

sample.

**ELEV** DEPTH Last LAB TESTS MATERIAL DESCRIPTION **REMARKS** NO. TYPE (ft) 1 foot (ft) Increments Recov'd 2.50 2411.0 + 5 5.00 **GP** 44 **POORLY GRADED GRAVEL with CLAY and** SPT 50/0.2' 100 GC Α 5.70 SAND Dry to moist, very dense, very pale 50/0.2 brown (10 YR 7/3) 7.90 10.00 2406.0 23 **CLAYEY SAND with GRAVEL** Dry to moist, (B) Drove first SPT 50/0.3 75 SC В 10.80 50/0.3 very dense, very pale brown (10 YR 7/3) 0.4' in four blows. 12.90 GC 15.00 2401.0 **CLAYEY GRAVEL with SAND** Dry to moist, 24 **CMS** 34 67 100 dense, very pale brown (10 YR 7/3) <u>16.</u>50 16.50 33 **CLAYEY SAND with GRAVEL** Dry to moist, 18 dense, very pale brown (10 YR 7/3) 32 SPT 16 40 D SC 18.00 16 19.00 <del>20</del>20.00 2396.0 <u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, pale yellow (2.5 Y 7/3) to white (10 YR 14 GC CMS 15 49 100 21.50 8/1) to light yellowish brown (10 YR 6/4) to very 21.50 34 pale brown (10 YR 7/2) 31 SANDY LEAN CLAY Dry to moist, hard, pale F SPT 53 24 55 yellow (2.5 Y 7/3) to white (10 YR 8/1) to light 23.00 29 CL yellowish brown (10 YR 6/4) to very pale brown (10 YR 7/2) 24.00 25.00 25 2391.0 21 **CLAYEY GRAVEL with SAND** Dry to moist, (G) Moderately

GC

30.00

6/27/16 ALL FILES.GPJ NV DOT.GDT DOT

≥'

G CMS

26.50

26.90

30.00

58

68

50/0.4'

126

50/0.4'

100

75



2/12/15 START DATE

2/12/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-70 **BORING** 

73518 E.A. # GROUND ELEV. 2416.00 (ft)

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 71+48 STATION 174' Left

**OFFSET** Lawrence **ENGINEER** 

Deidrich D-120 (Unit 1627) **EQUIPMENT** 

6" H.S.A.

Pypkowski **OPERATOR** DRILLING METHOD

BACKFILLED DATE

	EERING	SAN	MPLE	BLOW C			utomatic	11000	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	31.40		CMS	30 47 50/0.4'	50/0.4'	95			CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) (I) Weakly to strongly cemented
	32.70	J	SPT	30 42 50/0.3'	50/0.3'	60		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3) with dark gravel
	-								_ 33.90
2381.0 -	35.00 35		CMC	9	42	05		СН	GRAVELLY FAT CLAY with SAND Moist, very stiff, light yellowish brown (10 YR 6/4) to
	36.50	K	CMS	23 20 56	43	95			36.50 very pale brown (10 YR 7/3) to white (10 YR 8/1)
	38.00	L	SPT	28 26	54	65			CLAYEY GRAVEL with SAND Moist, very pale brown (10 YR 8/2 to 10 YR 7/3) to white (10 YR 8/1) WEAKLY CEMENTED MATERIALS
2376.0 -	40.00			50				GC	
	41.50	М	CMS	53 33 60	93	95			CLAYEY GRAVEL with SAND Moist, very pale brown (10 YR 8/2 to 10 YR 7/3) to white (10 YR 8/1)
	42.20	N	SPT	22 50/0.2'	50/0.2'	70			CLAYEY GRAVEL with SAND Moist, very pale brown (10 YR 8/2 to 10 YR 7/3) to white 43.00 (10 YR 8/1)
	_								MODERATELY TO STRONGLY CEMENTED MATERIALS  END BI-70 @ 44.2 ft.  150 psi down pressure - 25 min.mel.ible progress
2371.0 -	— <b>45</b> -								progress. No groundwa' encountered.
	_								
2366.0 -	50 								
	_								
2361.0 -	- 55								
	_								
	_								



3/23/15 START DATE

3/23/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-71 73518

HAMMER DROP SYSTEM Automatic

GROUND ELEV. 2374.90 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 100+42 STATION

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

147' Left

**OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 1

White

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	(11)			<u> </u>	11000	Necov u			SANDY GRAVEL, Dry, tan	
2369.9 -	4.00	Α	SPT	5 7 12	19	95			<b>LEAN CLAY</b> Dry to moist, very stiff, pale brown (10 YR 6/3)	
	6.50	В	SPT	14 24 33	57	85		CL	LEAN CLAY Dry to moist, hard, pale brown (10 YR 6/3)	
2364.9 -	9.00	C	SPT	12 20 36	56	85			SANDY LEAN CLAY with GRAVEL Dry to moist, hard, pale brown (10 YR 6/3)	
	11.50	D	SPT	13 21 28	49	85			SANDY LEAN CLAY Dry to moist, hard, pale brown (10 YR 6/3) to white (10 YR 8/1)	
2359.9 -	14.00 —15 <sub>15.50</sub>	F	SPT	19 17	29	75		sc	213.50  CLAYEY SAND with GRAVEL Dry to moist, dense, multicolored	-
	16.50	F	CMS	12 22 38	50/0.3'	100		-	16.00  CLAYEY GRAVEL with SAND Dry to moist, very dense, white (10 YR 8/1)	
	17.80	G	SPT	50/0.3' 39 51 49	100	0		GC	19.30	(G) Sampler broke downho Attempted
2354.9 -	-20								END BI-71 @19.3'	recovery of sampler. Abandoned borehole. No sample recovered. No groundwa' encountered.
2349.9 -	- <b>25</b>									



3/24/15 START DATE

3/24/15

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

GROUND ELEV.

73518 2362.90 (ft)

BI-72

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 1 "X" 100+55

STATION 84' Right

**OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

Larracuente **OPERATOR** 

DRILLING METHOD 6" H.S.A.

**EQUIPMENT** 

DVCKEILLED

GEOTECI ENGINI	HNICAL EERING		HA	AMMER DR	OP SYS	STEM A	utomatic		BACKFILLED [	OATE
ELEV.	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	2.40	А	SPT	6 5 19	24	45		SM	SANDY GRAVEL, Dry, tan  1.00  SILTY SAND with GRAVEL Dry, medium dense to dense, light gray (10 YR 7/1)	
2357.9	4.90	В	SPT	16 19 15	34	60		SC SM	4.40 SILTY CLAYEY SAND with GRAVEL Dry, dense, light gray (10 YR 7/1) 6.90	
	8.90 9.90	С	SPT	16 34 17	51	60		sc	CLAYEY SAND with GRAVEL Dry, very dense, light gray (10 YR 7/1)	
2352.9	11.40	D	SPT	16 18 21	39	45			<b>LEAN CLAY with SAND</b> Dry, hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	
2347.9	13.90 14.90		SPT	17 24 26	50	55		CL	LEAN CLAY Dry, hard, very pale brown (10 YR 8/2) to light gray (10 YR 7/2)	(E) Sampler
	16.40	F	SPT	13 28	41	0			16.40 END BI-72 @ 16.4'	(F) Sampler broke downhole. Attempted recovery of sampler. Abandoned borehole. No sample
2342.9	20 									recovered.  No groundwater encountered.
2337.9 - 233	- - - 25									
NAME OF THE PROPERTY OF THE PR										



START DATE \_\_\_\_3/24/15

3/24/15

END DATE 3/24/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

BORING

BI-73 73518

GROUND ELEV. 2376.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION \_\_"X" 100+46

OFFSET

91' Right Boomhower

ENGINEER \_ EQUIPMENT \_

**OPERATOR** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 1

White

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE \_\_\_\_\_

	ELEV.	DEPTH	SAN	MPLE	BLOW CO		Danasat	LAD TECTO	LISCS	MATERIAL DECORPTION	21/0
L	(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMAI	KNS
										SANDY GRAVEL, Dry, tan 1.00	
		_								<del>+ 1.00</del>	
		0.50									
		2.50			30				SM	SILTY SAND with GRAVEL Dry, dense, very	
		_	Α	CMS	37	69	95		0	pale brown (10 YR 7/3)	
		4.00			32					1.50	
		_ 5.00							<u> </u>	<u>  4.50                                   </u>	
-	2371.3 -	-5			4				CL	SILTY CLAY Dry, medium stiff, brown (10 YR	
			В	CMS		10	85		ML	5/3)	
		6.50			5					7.00	
		7.50								<u> </u>	
		_			9					LEAN CLAY Dry, very stiff, brown (10 YR 5/3)	
		9.00	С	CMS	14 26	40	95				
	2366.3 -	10.00			45					LEAN OLAY WALL CAND D	
			D	CMS	15 14	25	85			LEAN CLAY with SAND Dry, very stiff to stiff, light brownish gray (10 YR 6/2) mottled with	
		11.50		Oilio	11					very pale brown (10 YR 8/2)	
		40.50									
		12.50			6					LEAN CLAY with SAND. Dry. stiff to very stiff	
		-	Е	CMS		25	85			LEAN CLAY with SAND Dry, stiff to very stiff, light brownish gray (10 YR 6/2) mottled with	
		14.00			17					very pale brown (10 YR 8/2)	
		15.00									
-	2361.3 -	<del>- 15</del>			16					SANDY LEAN CLAY Dry, very stiff, light	
		40.50	F	CMS		49	95			brownish gray (10 YR 6/2) mottled with very pale brown (10 YR 8/2)	
		16.50			26				CL	pale brown (10 110 0/2)	
		_									
		-									
		_									
:	2356.3 -	20.00 <b>20</b>			26					CANDY I FAN CLAY with CDAYEL Dry hard	
			G	CMS		87	95			SANDY LEAN CLAY with GRAVEL Dry, hard, light brownish gray (10 YR 6/2) mottled with	
		21.50			47					very pale brown (10 YR 8/2)	
		-									
27/1											
/9 L		-									
1.GD	0054.0	25.00 -25									
	2351.3 -	25			28				1	LEAN CLAY with SAND Dry, hard, very pale	
≥		26.50	Н	CMS	33 38	71	95			brown (10 YR 8/2) to pale brown (10 YR 6/3) 26.50	
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16		20.50			30					END BI-73 @ 26.5' No ground	dwater
IES										encounter	
1		-									
۲											
Ĭ,											
źL											



3/25/15 START DATE

3/25/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-74 **BORING** 

73518 E.A. # GROUND ELEV. 2341.50 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

"X" 108+91 STATION 89' Left

**OFFSET** 

Boomhower

Larracuente

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

**OPERATOR** DRILLING METHOD

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(10)	(10)			Increments	1 1001	Recovu			SANDY GRAVEL, Dry, tan 1.00	
	- 2.70 - - 4.20	A	CMS	9 11 18	29	100		СН	SANDY FAT CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to pale yellow (5 4.20 Y 7/3)	
2336.5 -	- <b>5</b> 5.70	В	SPT	9 13 18	31	60			SANDY LEAN CLAY Dry to moist, very stiff to hard, white (5 Y 8/1) to light olive gray (5 Y 6/2)	Weakly to
	- 7.70 - 9.20	С	CMS	13 21 23	44	95		CL	LEAN CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to pale yellow (5 Y 7/3)	strongly cemented nodules prese in samples (A) through (J).
2331.5	<b>10</b> 10.70	D	SPT	8 9 15	24	65			LEAN CLAY with GRAVEL Dry to moist, very stiff, white (5 Y 8/1) to light olive gray (5 Y 6/2)	
	-								11.70	
	12.70 - - 14.20	E	CMS	28 52 63	115	100		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, white (5 Y 8/1) to pale yellow (5 Y 7/3)	
2326.5	<b>15</b> 15.70	F	SPT	18 23 34	57	65			SANDY LEAN CLAY Dry to moist, hard, white (5 Y 8/1) to light olive gray (5 Y 6/2)	
	- 17.70			12					SANDY LEAN CLAY Dry to moist, very stiff,	
	- 19.20	G	CMS	30	48	85			white (5 Y 8/1) to pale yellow (5 Y 7/3)	
2321.5	- <b>20</b> 20.70	Н	SPT	12 11 13	24	65			SANDY LEAN CLAY Moist, very stiff, light gray (5 Y 7/2)	
	- 22.70							CL		
	- 24.20	ı	CMS	23	38	85			GRAVELLY LEAN CLAY with SAND Dry to moist, very stiff, very pale brown (10 YR 7/3 to 10 YR 8/2)	
2316.5	<b>25</b> 25.70	J	SPT	9 39 18	57	80			<b>LEAN CLAY with SAND</b> Dry to moist, hard, very pale brown (10 YR 7/3 to 10 YR 8/2)	
	-									
	30.00								30.00	



START DATE \_\_\_\_\_3/25/15

3/25/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # 73518

GROUND ELEV. 2341.50 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "X" 108+91

STATION "X"
OFFSET 89

T 89' Left
Boomhower

ENGINEER BO

Diedrich D-120 (Unit 1627)

OPERATOR Larracuente

DRILLING 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		//PLE TYPE	BLOW CO 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
. ,	31.50		CMS	12 15 21	36	85			CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	33.00	L	SPT	7 8 16	24	55			CLAYEY SAND with GRAVEL Moist, medium dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
2306.5 -	35.00 35			22				sc	CLAYEY SAND with GRAVEL Moist, very	(M) Last 10
	<u>36.10</u>	M	CMS	31 20/0.1'	20/0.1'	90			dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	blows; no progress. Hard drilling 36.2' to 40'; Progress 1.0'/1 minutes @ 350 psi down pressure.
2301.5 -	40 <sup>4</sup> 0:90	N	SPT	<del>15/0.1'</del>	<del>15/0.1'</del>	0			40.10 END BI-74 @ 40.1'	(N) Last 10 blows; no
2296.5 -	- - - <b>45</b> -									progress. No sample recovered. No groundwate encountered.
2291.5 -	- 50 -									
2286.5 -	- 55									
	_									



3/26/15 START DATE

3/26/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-75 73518 GROUND ELEV. 2417.70 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

STATION **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

183' Left Boomhower

Diedrich D-120 (Unit 1627)

"XP" 196+70

White

**OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
_	-			morements	11000	NCCOV d			SANDY GRAVEL, Dry, tan	
2412.7	5.00	Α	SPT	9 14 27	41	80		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to moist, dense, light brown (7.5 YR 6/4)	
-	7.50	В	CMS	39 40/0.3'	40/0.3'	60		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, light brown (7.5 YR 6/4)	(B) Last 10 blows; no progress.
2407.7	10.00 10.80	С	SPT	17 40/0.3'	40/0.3'	60		sc	CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	(C) Last 10 blows; no progress.
-	12.50 12.80	D	SPT	30/0.3'	30/0.3'	100			CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to very pale brown (10 13.90 YR 8/2)	(D) Last 10 blows; no progress.
2402.7	15.00 15 16.50	E	SPT	32 35 55	90	85		GC	CLAYEY SAND with GRAVEL Dry, very dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
	17.50	F	SPT	31 13 3	16	55		sc	CLAYEY SAND with GRAVEL Dry, medium dense, white (10 YR 8/1) to very pale brown (10 YR 8/2)	
2397.7	20.00 20 21.50		CMS	13 15 19	34	85			CLAYEY SAND with GRAVEL Dry to moist, medium stiff, light yellowish brown (10 YR 6/4) with very pale brown (10 YR 8/2)	
	23.00	Н	SPT	9 10 15	25	65		CL	SANDY LEAN CLAY with GRAVEL Dry to moist, very stiff, light yellowish brown (10 YR 6/4) with very pale brown (10 YR 8/2)	
2392.7	25.00 25 26.50	1	CMS	12 17 43	60	95		СН	FAT CLAY with SAND Moist, hard, yellowish brown (10 YR 5/4)	
-	28.00	J	SPT	18 22 30	52	45		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 8/2)	
	30.00								30.00	



ALL FILES.GPJ NV\_DOT.GDT

DOT

≥'

3/26/15 START DATE

3/26/15

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

**END DATE** 

BI-75 73518

2417.70 (ft)

GROUND ELEV. Automatic HAMMER DROP SYSTEM .

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2 "XP" 196+70

**STATION OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

**DRILLING** 

183' Left

Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

6" H.S.A.

White

**METHOD** BACKFILLED \_ DATE

**ELEV** DEPTH USCS Group Last LAB TESTS MATERIAL DESCRIPTION REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd 25 **CLAYEY GRAVEL with SAND** Dry to moist, 26 dense, white (10 YR 8/1) to light gray (10 YR CMS 66 85 Κ 31.50 40 7/2) SPT 40/0.4' 40/0.4' 50 **CLAYEY GRAVEL with SAND** Dry, very (L) Last 10 dense, multicolored blóws; no progress. GC 35.00 2382.7 12 35.80 CMS 18 38 100 M SANDY LEAN CLAY with GRAVEL Dry to CL 36.50 20 36.50 moist, very stiff, light gray (10 YR 7/2) to yellowish brown (10 YR 5/4) 11 SPT 18 45 55 CLAYEY GRAVEL with SAND Dry to moist, dense, light gray (10 YR 7/2) to yellowish brown 27 38.00 (10 YR 5/4) GC 2377.7 <u>41.50</u> 45.00 2372.7 4 SANDY FAT CLAY with GRAVEL Dry to moist, very stiff, very pale brown (10 YR 7/3) to SPT 6 20 60 CH 46.50 yellowish brown (10 YR 5/4) 14 2367.7 -50 50.70 CL 55.00 2362.7 42 **LEAN CLAY with SAND** Moist, very hard, very (P) Last 10 Ρ **CMS** 40/0.2' 70 55.70 pale brown (10 YR 7/3) blows; no 40/0.2 progress. Hard drilling 57.00 END BI-75 @ 57.0' 56.5' to 57.0'; Terminate borehole. No groundwater encountered.



START DATE	5/6/15

5/7/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County BI-75A

**BORING** E.A. #

GROUND ELEV. 2417.70 (ft)

73518

DATE DEPTH ft ELEV. ft HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

"XP" 196+70 STATION

183' Left **OFFSET** Lawrence **ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 1 OF 4

Larracuente **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		1PLE	BLOW CO 6 inch	JUNI Lact	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	DEPTH (ft)	NO.	TYPE	Increments	1 foot	Recov'd	בעה ובסוס	USCS Group	IVIATERIAL DESCRIPTION	NEWAKKS
	_									0 " 1"
										Continue drillin at site of Borehole BI-75
	_									Derebala DI 75
										Borenole Bi-75
	_									
	_									
2412.7										
2412.7	J									
	_									
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2407.7	<del></del> 10									
	-									
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								1		
}	-									
2402.7	<b></b> 15									
}	-									
}	_									
-	-									
}	_									
2397.7	-20									
	_									
	_									
	_									
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2392.7	25									
.002.1	20									
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TART DATE	5/6/15
IARIDATE	0.00

ND DATE 5/7/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION Northwest Las Vegas - Clark County

BORING BI-75A 73518

GROUND ELEV. 2417.70 (ft)

HAMMER DROP SYSTEM Automatic

## **EXPLORATION LOG**

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 4

STATION \_\_"XP" 196+70

OFFSET 183' Left

EQUIPMENT Lawrence

EQUIPMENT Diedrich D-120 (Unit 1627)

OPERATOR Larracuente

DRILLING 6" H.S.A.

ELEV.	DEPTH	SAM NO.	PLE	BLOW CO	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	NO.	11176	Increments	1 foot	Recov'd		Gloup		
2382.7 -	_ _ 35									
	_									
2377.7 -	-40 -									
2372.7 -	_ _ 45									
	_									
2367.7 -	50 									
2222.7	-									
2362.7 -	55 - -									
	_									



5/6/15

5/7/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-75A 73518

2417.70 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 196+70 STATION

**OFFSET** 

183' Left Lawrence

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

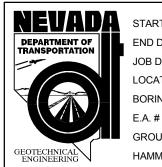
SHEET 3 OF 4

Larracuente **OPERATOR** 

DRILLING METHOD 6" H.S.A.

BACKFILLED DATE

ENGIN	EERING \	CA		AMMER DR			utomatic		BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2352.7	- - - 65.00 - - 66.30	A	SPT	24 21 50/0.3'	50/0.3'	105		CL ML	SANDY SILTY CLAY Moist to wet, very hard, light yellowish brown (10 YR 6/4)  (A) Weakly cemented lenses 1" - 2" thick in sample.  End day 1 drilling @ 66.3'.
2347.7	- 70.00			56					LEAN CLAY with SAND Moint to work your (P) Wookly
	71.30	В	CMS		50/0.3'	70			LEAN CLAY with SAND Moist to wet, very hard, light yellowish brown (10 YR 6/4) cemented zones in sample.
	72.80	С	SPT	26 49	75	85		CL	brown (10 YR 6/4)
2342.7	75.00 75			13				<b>.</b>	LEAN CLAY with GRAVEL Moist, hard, light (D) Strongly
	76.50	D _	CMS	21 35 7	56	120			yellowish brown (10 YR 6/4)  LEAN CLAY Moist, very stiff, light yellowish  cemented nodules up to 2' in sample.
	78.00	E	SPT	11 15	26	115			79.00
2337.7	80.00			22					SILTY CLAY with SAND Moist, hard, light (F) Strongly
	81.50	F	CMS		79	115		CL ML	yellowish brown (10 YR 6/4)  SILTY CLAY with SAND Moist, very hard,  (r) Strongly cemented nodules up to 1' in sample.
	83.00	G	SPT	34 50	84	85		IVIL	light yellowish brown (10 YR 6/4)  (G) Weakly cemented zone: and nodules in
	- 85.00								84.00 sample.
2332.7	- 86.20	Н	CMS	55	50/0.2'	75			SANDY LEAN CLAY Moist, very hard, light yellowish brown (10 YR 6/4) (H) No progress last 20 blows.
	87.70	ı	SPT	50 <u>/0</u> .2' 27 52	79	100		CL	SANDY LEAN CLAY with GRAVEL Moist, very hard, light yellowish brown (10 YR 6/4) (I) Weakly cemented zone in sample.
									88.80
	90.00							GC	90.00



5/6/15 START DATE

5/7/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

BI-75A 73518

GROUND ELEV. 2417.70 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 4 OF 4

"XP" 196+70 STATION

**ENGINEER** 

183' Left OFFSET

Lawrence

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Larracuente **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW Co 6 inch Increments	1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	90.60 90.90	J K	CMS SPT	57 <b>50/0.3'</b>	50/0.1' 50/0.3'	50 100		GC	90.90 CLAYEY GRAVEL with SAND Moist, very hard, light yellowish brown (10 YR 6/4)	
	-								END BI-75A @ 90.9'	No groundwate encountered.
2322.7 -	<b>95</b>  									
2317.7 -										
2312.7 -	105  									
2307.7 -	110 									
2302.7 -	- 115 - -									



START DATE 4/20/15

4/22/15

END DATE 4/22/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-76 73518

GROUND ELEV. 2421.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

65.00

4/21/15

DATE DEPTH ft ELEV. ft

2356.6

STATION \_\_"XP" 198+16

OFFSET

**OPERATOR** 

243' Left Boomhower

EQUIPMENT Boomnower

EQUIPMENT Diedrich D-120 (Unit 1627)

White/Larracuente

SHEET 1 OF 4

DRILLING 6" H.S.A.

BACKFILLED \_\_\_\_\_ DATE

GEOTECI ENGINI	EERING \		HA	AMMER DR	OP SYS	TEM _A	utomatic	L	BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
				moromonio	11000	110007 0			SANDY GRAVEL, Dry, tan
	2.50	A	SPT	14 20 30	50	65		SM	SILTY SAND with GRAVEL Dry, dense to very dense, light brownish gray (10 YR 6/2)
2416.6	5.00			14				CL	SANDY SILTY CLAY Dry, very stiff, very pale
	6.50	В	SPT	12 16	28	75		ML	brown (10 YR 7/3) 7.00
	7.50	С	SPT	17 34	85	80		SC	SILTY CLAYEY SAND with GRAVEL Dry, very dense, light brownish gray (10 YR 6/2)
	9.00			51				SM	9.50
2411.6 -	10 <sup>1</sup> 8:28	D	SPT	25/0.2'	25/0.2'	0			(D) Last 10 blows; no progress. No sample
	- 12: <del>5</del> 8 -	E	SPT	15/0.2'	15/0.2'	0			recovered. (E) Last 10 blows; no
2406.6 -	15.00								sample recovered.
2.00.0	16.50	F	SPT	23 39 77	116	85		SC SM	SILTY CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/3)
	- 1 <del>7:5</del> 8	G	SPT	20/0.2'	20/0.2	0			17.00 (G) Last 10
	-								18.80 blows; no progress; No sample
2401.6	20.00	Н	SPT	20 24	52	75		СН	recovered.  SANDY FAT CLAY Dry, hard, very pale brown (10 YR 7/3)
	21.50			28					22.00
	22.50	ı	SPT	12 23 35	58	60			SANDY LEAN CLAY Dry, hard to very hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)
2396.6 -	25.00 <b>25</b>			20					SANDY LEAN CLAY Dry, hard, light brownish
	26.50	J	SPT	20 28	48	75		CL	gray (10 YR 6/2) mottled with white (10 YR 8/1)
	27.50	K	SPT	16 16	37	65			SANDY LEAN CLAY Dry, hard, light brownish gray (10 YR 6/2) mottled with white (10 YR 8/1)
	29.00			21				_	
	30.00							<u> </u>	30.00



4/20/15

4/22/15

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-76 73518

GROUND ELEV

2421.60 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 4/21/15 65.00 2356.6

**EXPLORATION LOG** 

"XP" 198+16 STATION

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

**OFFSET** 

243' Left Boomhower

Diedrich D-120 (Unit 1627)

SHEET 2 OF 4

White/Larracuente

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW CO 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd		Group		
		L	SPT	16 13	32	75			CLAYEY GRAVEL with SAND Dry, hard, light brownish gray (10 YR 6/2) mottled with white	
	31.50		J	19					(10 YR 8/1)	
	_							GC		
	-								_ 33.30	
	L									
	35.00									
2386.6 -	35			7				CH	FAT CLAY Dry to moist, very stiff to very	
		М	CMS	13	68	85			hard_light gray (10 YR 6/2) to light brownish	
	36.50			55					36.30 gray (10 YR 7/2)	
	F	N	SPT	12 15	40	80			<u>CLAYEY SAND</u> Dry to moist, very stiff to hard, light gray (10 YR 6/2) to light brownish	
	38.00			25				sc	gray (10 YR 7/2)	
										End day 1
	F							H	_ 39.00	drilling @ 38.0
2381.6 -	40.00									
2381.6 -	40			11					GRAVELLY FAT CLAY Dry to moist, dense,	
	41.50	0	CMS	18 34	52	85			white (7.5 YR 8/1) to pinkish gray (7.5 YR 7/2)	
	41.50			15				CH	<b>GRAVELLY FAT CLAY with SAND</b> Dry to	
		Р	SPT	19	44	75			moist, dense, white (7.5 YR 8/1) to pinkish gray	
	43.00			25				-	(7.5 YR 7/2)	
									44.00	
									[	
2376.6 -	45.00 45			18					CLAVEY CRAVEL with SAND Dry to moist	
		Q	CMS	27	45	95			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, white (7.5 YR 8/1) to pinkish gray (7.5	
	46.50			18				GC	YR 7/2)	
	F	R	SPT	8 5	14	45			CLAYEY GRAVEL with SAND Dry to moist, medium dense, white (7.5 YR 8/1) to pinkish	
	48.00	K	SF I	9	14	45			gray (7.5 YR 7/2)	
	L							L	_49.00	
	50.00 50									
2371.6 -	-50			12				CL	<b>GRAVELLY LEAN CLAY</b> Dry to moist, very	
	51.40	S	CMS	29 50/0.4'	50/0.4'	105			hard, pale brown (10 YR 6/3) to very pale brown 51.40 (10 YR 8/3)	
	31.40			21					CLAYEY SAND with GRAVEL Dry to moist,	
		Т	SPT	12	39	75			hard, pale brown (10 YR 6/3) to very pale brown	
	52.90			27				SC	(10 YR 8/3)	
									54.00	
	Ī									
2366.6 -	55.00 55.40	11	CMS	50/0.4'	50/0.4'	100			CANDY FAT OLAY WHILE ORANGE DOLLER	
	39,40	U	CIVIO	26	JU/U.4	100		-	SANDY FAT CLAY with GRAVEL Dry to moist, very hard, pale brown (10 YR 6/3) to very	
	<u> </u>	٧	SPT	13	31	75			pale brown (10 YR 8/3)	
	56.90			18				СН	SANDY FAT CLAY with GRAVEL Dry to moist, hard, pale brown (10 YR 6/3) to very pale	
									brown (10 YR 8/3)	
	ļ .									
	L									
	60.90								60.00	



4/20/15 START DATE

4/22/15

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

BI-76 73518

GROUND ELEV. 2421.60 (ft)

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft 4/21/15 65.00 2356.6

**EXPLORATION LOG** 

STATION

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

"XP" 198+16

243' Left **OFFSET** Boomhower **ENGINEER** 

Diedrich D-120 (Unit 1627)

SHEET 3 OF 4

White/Larracuente

6" H.S.A.

GEOTECH ENGINE	NICAL ERING			AMMER DR		TEM_A			4/21/15 65.00 2356.6 BACKFILLED DATE	≣
ELEV. (ft)	DEPTH (ft)	NO	//PLE TYPE	BLOW CO	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	-	W	CMS	Increments 15/0.1	15/0.1	Recov'd 0		CL	bil pr	V) Last 10 lows; no rogress. No ample ecovered.
2356.6	65.00 65 66.50	X	SPT	21 29 51	80	100		CL ML	light yellowish brown (10 YR 6/4)	() Free water in ampler @ 5.0'.
2351.6 -	- 70.00 - 71.40	Y	SPT	12 27 50/0.4'	50/0.4'	100			SILTY CLAY Moist to wet, very hard, light yellowish brown (10 YR 6/4)	
2346.6 -	75.00 76.50 78.00		CMS P SPT	8 9 13	22	115			LEAN CLAY Moist to wet, yellowish brown (10 YR 5/4)  LEAN CLAY with GRAVEL Moist to wet, very stiff, yellowish brown (10 YR 5/4)	7) CMS push 2) 100 psi down ressure.  nd day 2 rilling @ 78.0'.
2341.6 -	<b>80</b>  							CL		
2336.6 -	85.50 85.50 86.40	BB CC	CMS P SPT	20 50/0.4'	50/0.4'	40 100		-	brown (10 YR 6/4) GRAVELLY LEAN CLAY with SAND Wet, pr	BB) CMS push 0 500 psi down ressure; rushed sampler o.
	-								90.00	



START DATE 4/2

4/20/15

END DATE 4/22/15

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # BI-76 73518

GROUND ELEV. 2421.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

65.00

4/21/15

DATE DEPTH ft ELEV. ft

2356.6

ION "XP" 198+16

STATION "XP" 198
OFFSET 243' Left

**EQUIPMENT** 

**OPERATOR** 

ENGINEER Boomhower

Diedrich D-120 (Unit 1627)

SHEET 4 OF 4

White/Larracuente

DRILLING 6" H.S.A.

ENGINE	HNICAL EERING		HA	AMMER DR	OP SYS	IEM	utomatic		BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
2326.6 - 2321.6 -	- - - - - - - - - - - - - - - - - - -	DD EE	CMS	50 43 48 13 22 39	91	105		CL	SANDY LEAN CLAY Wet, hard, light yellowish brown (10 YR 6/4)  SANDY LEAN CLAY with GRAVEL Wet, very hard, light yellowish brown (10 YR 6/4)  (DD) Pocket penetrometer reading - 2.0 tsf, Torvane reading - 3.8 tsf.
2316.6 -	- - 105.00 105.80 -	FF	CMS	22 30/0.3'	30/0.3'	90		CL ML	GRAVELLY SILTY CLAY with SAND Wet, very hard, light yellowish brown (10 YR 6/4)  (FF) Last 10 blows; no progress. Pocket penetrometer reading - 1.0 tsf.
2311.6 -	110.00 110 - 111.20 - 112.70	GG HH	CMS	35 63 50 <u>/</u> 3.2' 30 32	50/0.2'	110			SILTY CLAY Wet, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Wet, very hard, light yellowish brown (10 YR 6/4)  112.70  (GG) Pocket penetrometer reading - 3.5 tsf, Torvane reading - 3.5 tsf.
2306.6 -	- - - - - -								END BI-76 @ 112.7'



5/4/15

5/4/15

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION

BI-77

**BORING** E.A. #

73518

GROUND ELEV. 2390.10 (ft) HAMMER DROP SYSTEM Automatic

**GROUNDWATER LEVEL** DATE DEPTH ft ELEV. ft

**EXPLORATION LOG** 

"X" 88+38 **STATION** 

337' Right **OFFSET** 

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 1 OF 2

Larracuente **OPERATOR** DRILLING METHOD

BACKFILLED \_\_\_\_\_ \_\_ DATE

6" H.S.A.

ELEV.	DEPTH		MPLE	BLOW C 6 inch	Last	Percent	LAB TESTS	USCS	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd	LAD ILSIS	USCS Group		KLIVIAKKO
									SANDY GRAVEL, Dry, tan	
	2.00									
				13				CL	LEAN CLAY with SAND Dry, hard, very pale	
	3.50	A	SPT	19 35	54	75			brown (10 YR 7/3 )	
								L	4.00	
0005.4	4.50			13					CLAYEY SAND with GRAVEL Dry, dense,	(B) Weakly
2385.1 -	6.00	В	SPT	21 17	38	75		SC	very pale brown (10 YR 7/3)	cemented nodules in sample.
	7.99		edt.	50/0.1'	50/0 1'	0		<u> </u>	6.50	- Campio.
			<del>SP I</del>	<del>- 50/0. I -</del>	<del>50/0.</del> i	0				(C) No samp recovered.
								<u> </u>	8.30	
	9.50									
2380.1 -	1010.20	_	SPT	60	50/0.2'	100		SC SM	SILTY CLAYEY SAND with GRAVEL Dry to	
•				50/0.2'				GIVI	moist, very dense, very pale brown (10 YR 7/3)	
	40.00							L	11.50	_
	12:90	E	CMS	50/0.1'	50/0.1'	0				(E) No samp
	-									recovered.
								GM		
	14.50			30				GIVI	CILTY CRAVEL with SAND Dry to maint	
2375.1 -	15	F	CMS	43	81	100			SILTY GRAVEL with SAND Dry to moist, dense to very dense, very pale brown (10 YR	
	16.00			38					7/3) 16.50	
	17.00									
		G	CMS	30 30	62	95		SC	17.80 CLAYEY SAND with GRAVEL Dry to moist, dense, very pale brown (10 YR 7/3 )	(G) Weakly to moderately
	18.50	1	Oivio	32	02				/ consequence of the control of the	cemented nodules in
	19.50									sample.
2370.1 -	-20		0140	32	400	0.5		CL	SANDY LEAN CLAY Dry to moist, very hard,	
	21.00		CMS	50 50	100	95			very pale brown (10 YR 7/3 ) mottled with brownish yellow (10 YR 6/6)	
	22.00							<u> </u>	21.50	_
	22.00			21				1	CLAYEY SAND with GRAVEL Dry to moist,	(I) Weakly
	23.50	1	SPT	33 24	57	80		SC	very dense, pale yellow (2.5 Y 7/3 ) mottled with brownish yellow (10 YR 6/6)	cemented nodules in
								L	24.00	sample.
	24.50			17				-	LEAN CLAY with SAND Dry to moist, very	(J) Strongly
2365.1 -	-25	J	SPT	25	80	75			hard, pale yellow (2.5 YR 7/3 )	cemented
	26.00			55				-		nodules in sample.
	27.00							CL		,
		K	SPT	20 25	52	65			SANDY LEAN CLAY Dry to moist, hard, pale yellow (2.5 YR 7/3) mottled with brownish	(K) Moderate cemented
	28.50			27					yellow (10 YR 6/6)	nodules in
	29.50									sample.
	20.00			23				†	30.00 SANDY LEAN CLAY with GRAVEL Moist,	



5/4/15

5/4/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BI-77 **BORING** 

LOCATION

73518 E.A. # 2390.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 88+38 **STATION** 

337' Right **OFFSET** 

Lawrence **ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

6" H.S.A.

Larracuente **OPERATOR** DRILLING METHOD

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REM	IARKS
, ,	31.00	L	CMS	31 42	73	100		CL		eď zones
	32.50	М	SPT	15 26 38	64	75		СН	FAT CLAY with SAND Moist, hard, very pale brown (10 YR 7/3) mottled with brownish yellow (10 YR 6/6)	dules.
	- 34.50								33.50	
2355.1 -		N	CMS	24 41 51	92	95		CL	LEAN CLAY with SAND Moist, hard to very hard, white (10 YR 8/1) mottled with pale yellow 36.00 (2.5 Y 7/3) and yellowish brown (10 YR 5/4)	
	37.50	0	SPT	13 16 20	36	55			FAT CLAY with SAND Moist, hard to very hard, white (10 YR 8/1) mottled with pale yellow (2.5 Y 7/3) and yellowish brown (10 YR 5/4)	
	39.50			14				СН	FAT CLAY with SAND Moist, hard, very pale	
2350.1 -	-40 41.00	Р	CMS	26 36	62	95			brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	
	42.50	Q	SPT	8 13 19	32	75		_	FAT CLAY with SAND Moist, hard, pale yellow (2.5 Y 7/3) to very pale brown (10 YR 7/3)	
	- 44.50								43.50	
2345.1 -	44.50 -45 46.00	R	SPT	7 11 16	27	65			LEAN CLAY with SAND Moist, very stiff, pale yellow (2.5 Y 7/3) to very pale brown (10 YR nodules sample	ed s in
	_							CL	Weakly cement 47' to 4	ed from
	49.50			4				_	LEAN CLAY with SAND Moist, very stiff,	
2340.1 -	-50 51.00	S	SPT	6 10	16	80			white (10 YR 8/1) mottled with very pale brown 51.00 (10 YR 7/3), pale yellow (2.5 Y 7/3) and brownish yellow (10 YR 6/6)	ındwate
	_								END BI-77 @ 51.0' encoun	
	-									
2335.1 -	<b>55</b>									
	-									
	-									
	-									



JOB DESCRIPTION

5/5/15

5/5/10

END DATE \_\_\_\_5/5/15

US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

BORING BI-78
E.A. # 73518

GROUND ELEV. 2425.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DEPTH ft | ELEV. ft

STATION \_\_\_\_ "X" 66+82

OFFSET 174' Left

ENGINEER Lawrence

EQUIPMENT Diedrich D-120 (Unit 1627)

6" H.S.A.

SHEET 1 OF 2

OPERATOR Larracuente

BACKFILLED \_\_\_\_\_ DATE

**DRILLING** 

**METHOD** 

**ELEV** DEPTH **MATERIAL DESCRIPTION** 6 inch Last LAB TESTS REMARKS Percent NO. TYPE (ft) (ft) Increments 1 foot Recov'd **RIPRAP - COBBLES and SMALL BOULDERS** 2420.0 <del>-</del> 5 9.00 9.50 20 **CLAYEY GRAVEL with SAND** Moist, very 2415.0 10 stiff, very pale brown (10 YR 7/3) SPT 28 80 GC Α 13 11.00 15 <u>11.50</u> 12.00 5 (B) No sample 6 SPT 12 0 recovered. В 6 13.50 14.00 14.50 3 FAT CLAY Moist, stiff, light yellowish brown 2410.0 - 15 4 (10 YR 6/4) С SPT 11 80 16.00 7 СН 17.00 SANDY FAT CLAY Moist, stiff, pale yellow (D) Weakly to 4 CMS 4 15 (2.5 Y 7/3) to light yellowish brown (2.5 Y 6/4) moderately D 100 cemented 18.50 11 nodules in 19.00 sample. 19.50 5 **CLAYEY GRAVEL with SAND** Moist, medium (E) Weakly 2405.0 20 Ε CMS 11 23 100 dense, pale yellow (2.5 Y 7/3) to light yellowish cemented brown (10 YR 6/4) to white (10 YR 8/1) nodules in 21.00 12 GC sample. 22.00 10 22.80 CMS 8 20 100 LEAN CLAY with SAND Moist, stiff, light 12 23.50 CL yellowish brown (10 YR 6/4) 24.00 with very pale brown (10 YR 8/2) ALL FILES.GPJ NV\_DOT.GDT 24.50 **CLAYEY SAND** Moist, loose, very pale brown 7 2400.0 25 7 SC (10 YR 7/3) to light yellowish brown (10 YR 6/4) G **CMS** 4 100 26.00 3 26.50 27.00 31 **CLAYEY GRAVEL with SAND** Moist, medium (H) Weakly dense, very pale brown (10 YR 8/2) to light CMS 39 cemented zones 19 100 yellowish brown (10 YR 6/4) in sample. 28.50 20 GC DOT 29.50 ≥' 8 30.00



START DATE \_\_5

5/5/15

BI-78

END DATE \_\_\_\_\_\_\_

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

E.A. # 73518 GROUND ELEV. 2425.00 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

STATION OFFSET

174' Left

"X" 66+82

Lawrence

ENGINEER -EQUIPMENT -

Diedrich D-120 (Unit 1627)

OPERATOR Larracuente

DRILLING 6" H.S.A.

ENGINE	INICAL EERING		HA	AMMER DE	ROP SYS	STEM _A	utomatic	L	BACKFILLED DA	TE
ELEV.	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(11)	31.00	I	CMS	5 6	11	0				(I) No sample recovered.
	32.00	J	CMS	7 17 15	32	100		GC	CLAYEY GRAVEL with SAND Moist, medium dense, very pale brown (10 YR 8/2) to light yellowish brown (10 YR 6/4)	(J) Strongly cemented nodules in sample.
2390.0 -	34.50 -35 36.00	К	CMS	11 14 20 20	34	115		CL	GRAVELLY LEAN CLAY Moist, very stiff, very pale brown (10 YR 8/2 to 10 YR 7/3 )  SANDY LEAN CLAY with GRAVEL Moist,	(K) Weakly to moderately cemented zones and nodules in
	37.50	L	SPT	18 26	44	85			very stiff, very pale brown (10 YR 8/2 to 10 YR 7/3 )	sample.
2385.0 -	- 	M	CMS	50/0.2'	50/0.2'	0			38.50	(M) No sample recovered.
2380.0 -	- <u>44:50</u> 45 -	N	CMS	<del></del>	<del>50/0.1'</del>	0			_47.30	(N) No sample recovered.
2375.0 -	49.50 49.90 50	0	CMS	80/0.4'	80/0.4'	75		GC	49.90 CLAYEY GRAVEL with SAND Moist, very dense, very pale brown (10 YR 7/3) END BI-78 @ 49.9'	(O) Weakly to moderately cemented nodules in sample. No groundwater encountered.
2370.0 -	- <b>55</b> - -									
	_									



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

5/4/15 START DATE

5/4/15 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BI-79 **BORING** 

73518 E.A. # GROUND ELEV. 2419.60 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 2

**STATION OFFSET** 

144' Right Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Grayson/Larracuente **OPERATOR** 

"X" 69+13

DRILLING METHOD 6" H.S.A.

ELEV.	DEPTH		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)			Increments	1 foot	Recov'd		Стоир	SANDY GRAVEL, Dry, tan	
2414.6 -	5.00	A	SPT	7 16 22	38	80		ML	SANDY SILT Dry to moist, dense, very pale brown (10 YR 7/3)	
2409.6 -	- 10.00 - 10 0.30	В	CMS	50/0.3	50/0.3'	0			12.60	(B) No sample recovered.
2404.6 -	- - - 15.80 -	С	CMS	80 50/0.3'	50/0.3'	25		GC	CLAYEY GRAVEL with SAND Dry to moist, very dense, very pale brown (10 YR 7/3)	
2399.6 -	- - 20.00	D	CMS	18 12	32	85		СН	SANDY FAT CLAY Moist, hard, very pale brown (10 YR 7/3) to light yellowish brown (10	(D) Weakly to
	21.50	E	SPT	20 24 28 31	59	75		sc	21.50 YR 6/4)  CLAYEY SAND with GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	cemented zone and nodules in sample. (E) Weakly to moderately cemented zone and nodules in sample.
2394.6 -	25.00 25 26.50	F	CMS	19 29 33	62	85			CLAYEY SAND with GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)	(F) Weakly to moderately cemented nodules in
	28.00	G	SPT	19 28 29	57	75		SC SM	SILTY CLAYEY SAND with GRAVEL Moist, very dense, very pale brown (10 YR 7/3) to liq yellowish brown (10 YR 6/4)	ht sample. (G) Weakly to moderately cemented
	30.00								30.00	nodules in sample.



5/4/15 START DATE

5/4/15

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

BI-79 **BORING** 

E.A. # 2419.60 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

73518

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 2

"X" 69+13 STATION 144' Right **OFFSET** 

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Grayson/Larracuente OPERATOR

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGINE	INICAL EERING		HA	AMMER DR	OP SYS	STEM _^	utomatic		BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	DUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	31.50	Н	CMS	17 20 33	53	85		sc	CLAYEY SAND with GRAVEL Moist, dense, very pale brown (10 YR 7/3) to light yellowish brown (10 YR 6/4)  LEAN CLAY with SAND Moist very stiff very  (H) Weakly to moderately cemented zones and nodules in
	33.00	ı	SPT	13 12 15	27	95		CL	pale brown (10 YR 7/3 ) sample.
2384.6 -	- 35 - -								END BI-79 @ 33.0'  No groundwater encountered.
2379.6 -	- <b>40</b> -								
2374.6 -	- <b>45</b> -								
2369.6 -	- 50 								
AL FILES. GT. 301-001-001-001-001-001-001-001-001-001-	- 55 - -								
	_								



9/9/13

9/10/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County TS-1

**BORING** 73518 E.A. #

LOCATION

2406.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 1 OF 3

"XP" 189+88 **STATION** 

313' Right **OFFSET** Boomhower

**ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Beus/Pypkowski OPERATOR

DRILLING METHOD 6" H.S.A.

BACKFILLED \_\_\_\_\_ \_ DATE

ELEV. (ft)	DEPTH (ft)	NO.	TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(it)	- (11)			Increments	1 foot	Recov'd			Asphaltic Concrete	
	3.00	A	CMS	12 12 12	24	100		CL ML	SILTY CLAY Dry, medium dense, very pale brown (10 YR 7/4)	
2401.1 -	-5 6.00 6.50	В	SPT	6 5 14	19	85			LEAN CLAY with SAND Dry, medium dense, very pale brown (10 YR 7/4) to white (10 YR 8/1)	
	8.00	С	CMS	11 15 22	37	95			<b>LEAN CLAY</b> Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)	
	9.50	D	SPT	11 11 17 18	28	85		CL	LEAN CLAY with SAND Dry, very stiff, light gray (10 YR 7/2) to white (10 YR 8/1)  LEAN CLAY with SAND Dry, very stiff, light	
2396.1 -	—10 11.00	E	CMS	15 16 8	31	85			gray (10 YR 7/2) to white (10 YR 8/1)  SANDY LEAN CLAY Dry, very stiff, light gray	
	12.50	F G	SPT	10 13 11 16	38	85 95			(2.5 Y 7/2)  SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)	
2391.1 -	14.00	Н	SPT	22 12 15	36	85			14.00  CLAYEY SAND Dry, very stiff, light gray (2.5 Y 7/2)	
2001.1	- 15 15.50 - 16.60 17.00	I	CMS	21 20 35 15/0.1'	15/0.1'	80		SC	CLAYEY SAND with GRAVEL Dry, very hard, light gray (10 YR 7/2)	(I) Last 10 blows; no progress.
	18.40	J	CMS	31	50/0.4'	95		GM	SILTY GRAVEL with SAND Dry, very dense, light gray (10 YR 7/2)	p. sg. ssc.
2386.1 -	20.00 20			20				sc	CLAYEY SAND with GRAVEL Dry, very	
	21.50	K	CMS	33 41 15	74	95			dense, light gray (10 YR 7/2) 21.50  CLAYEY GRAVEL with SAND Dry, dense,	
	23.00	L	SPT	21 28 25 23	49	80		GC	yellow (10 YR 7/6) to very pale brown (10 YR 8/2) 23.80	
	24.50		CMS	23 31 1	54	95		СН	24.50 FAT CLAY with SAND Dry, dense, yellowish brown (10 YR 5/6) to very pale brown (10 YR	(N) Loose
2381.1 -	-25 26.00	N	CMS	6 26 14	32	55		sc	26.00 CLAYEY SAND with GRAVEL Dry, dense, yellowish brown (10 YR 5/6) to very pale brown	sample recovered.
	27.50	0	SPT	16 19	35	80		СН	\( \( \text{(10 YR 7/3)} \) 27.50 \( \text{SANDY FAT CLAY} \) \text{Dry, hard, very pale} \( \text{brown (10 YR 7/3) to white (10 YR 8/1)} \)	
	29.00	Р	SPT	25 35 53	88	95		sc	CLAYEY SAND with GRAVEL Dry, very dense, white (7.5 YR 8/1)	End day 1 drilling @ 27.5



LOCATION

9/9/13

9/10/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

TS-1 **BORING** 

73518 E.A. #

2406.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

SHEET 2 OF 3

"XP" 189+88 **STATION** 

313' Right

Boomhower **ENGINEER** 

**OFFSET** 

Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Beus/Pypkowski **OPERATOR** 

6" H.S.A.

DRILLING METHOD \_ DATE BACKFILLED \_\_\_

ELEV.	DEPTH		MPLE	BLOW C 6 inch	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(ft)	(ft)	NO.	TYPE	Increments		Recov'd	LAD ILOIO	Group	
	31.50	Q	CMS	55	81	100			GRAVELLY LEAN CLAY with SAND Dry, hard, light gray (10 YR 7/2) with white (10 YR 8/1) nodules
	- - 	R	SPT	18 30 50/0.3'	50/0.3'	100			LEAN CLAY (10 YR 8/1) Dry to moist, very hard, white cemented.
	34.50	S	CMS	27 17 21	38	95		CL	SANDY LEAN CLAY Dry to moist, medium dense to dense, white (10 YR 8/1) to very pale brown (10 YR 7/4)
2371.1 -	-35 36.00	Т	SPT	10 9 11	20	75			SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 8/2) to brown (7.5 YR 5/4)
	37.50								37.00
	39.00	U	CMS	10 15 30	45	95		СН	FAT CLAY with SAND Moist, very stiff, pale brown (10 YR 6/3) to brown (7.5 YR 5/4) with white (10 YR 8/1) nodules
2366.1 -	-40 <sub>40.50</sub>	٧	SPT	11 13 18	31	60		GC	CLAYEY GRAVEL with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) lightly to strongly decompled
	42.00	w	CMS	30	53	100		CL	SANDY LEAN CLAY with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 42.00 8/1) nodules
	43.50	х	SPT	9 13 32	45	95		ML	SANDY SILT with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1)  43.50 nodules strongly cemented.
2361.1 -	45.00	Υ	СМЅ	22	36	85			LEAN CLAY with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules
200	46.50	Z	SPT	7 12 21	33	85		CL	LEAN CLAY Dry to moist, hard, light brown (7.5 YR 6/4)
	48.00	AA	СМЅ	24	42	95			SANDY LEAN CLAY with GRAVEL Moist, dense, light gray (2.5 Y 7/2) to light yellowish brown (10 YR 6/4)
	49.50	ВВ	SPT	2 7 24	31	65		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, light yellowish brown (10 YR 6/4)  49.50 (BB) Sample strongly cemented in
2356.1 -	50 51.00	СС	CMS	20	44	95		СН	SANDY FAT CLAY Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4) (CC) Nodules lightly to
	52.50	DD	SPT	7 9 11	20	65			CLAYEY GRAVEL with SAND Moist, medium dense, brown (7.5 YR 5/4)  strongly cemented.
	54.00	EE	CMS	34	45	85		GC	CLAYEY GRAVEL with SAND Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4)
2351.1 -	55 55.50		SPT	50/0.3'	50/0.3'	60			CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 8/3)
	56.30	GG	CMS	41 50/0.3'	50/0.3'	90			CLAYEY GRAVEL with SAND dry to moist, very hard, very pale brown (10 YR 8/2) to light strongly cemented lenses.
	_								Very hard drilling from 56.5' to 60.0'. Progress 3.5'/30
	60.90								minutes @ 250



9/9/13

9/10/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County LOCATION TS-1

**BORING** 

73518 E.A. # 2406.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"XP" 189+88 **STATION** 313' Right

**OFFSET ENGINEER** 

**EQUIPMENT** 

Diedrich D-120 (Unit 1627) Beus/Pypkowski

Boomhower

SHEET 3 OF 3

**OPERATOR** DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)	NO.	/IPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recovid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
2341.1 -	-		SPT	Increments 15/0-1	1 foot 15/0. 1	Recov'd			END TS-1 @ 60.6'	psi down pressure. (HH) Last 10 blows; no progress. No sample recovered. Very hard drilling from 60.1' to 60.3'. Progress 0.2'/2 minutes @ 300 psi down pressure. Very hard drilling from 60.3' to 60.6'. Progress 0.3'/3'
2336.1 -										minutes @ 300 psi down pressure. No groundwater encountered.
2331.1 -	<b>75</b>  									
2326.1 -	- 80 - -									
2321.1 -	- 85 - -									



9/9/13

9/10/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

**BORING** 

LOCATION

E.A. # GROUND ELEV.

TS-1-2 73518 2406.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/10/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

"XP" 189+88

313' Right **OFFSET ENGINEER** 

**STATION** 

**EQUIPMENT** 

Boomhower/Lawrence Diedrich D-120 (Unit 1627)

SHEET 1 OF 5

Beus/Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED DATE

A	ELEV.	DEPTH	NO.	MPLE TYPE	BLOW Co 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
A CMS   12	(ft)	(ft) -	NO.	ITFE	Increments	1 foot	Recov'd		Group		
Second   S			А	CMS	12 12	24	100			brown (10 YR 7/4) 4.50	
2396.1	2401.1 -	6.00	В	SPT	5	19	85			very pale brown (10 YR 7/4) to white (10 YR	
2396.1		8.00	С	CMS	15 22	37	95			7/2) to white (10 YR 8/1)	
11.00   E   CMS   15   31   85	2206.4		D	SPT	11 17	28	85		CL	gray (10 YR 7/2) to white (10 YR 8/1) <b>LEAN CLAY with SAND</b> Dry, very stiff, light	
12.50	∠ <b>ວ</b> ສຽ. I ¯				16 8					gray (10 YR 7/2) to white (10 YR 8/1)  SANDY LEAN CLAY Dry, very stiff, light gray	
2391.1 — 15			-		13 11 16					SANDY LEAN CLAY Dry, very stiff, light gray (2.5 Y 7/2)	
1   CMS   20   35   15/0.1'   80     CLAYEY SAND with GRAVEL   Dry, very hard, light gray (10 YR 7/2)   16.80   SILTY GRAVEL with SAND   Dry, very dense, light gray (10 YR 7/2)   19.00   19.00     19.00	2391.1 -		Н	SPT	12 15	36	85		90	CLAYEY SAND Dry, very stiff, light gray (2.5	
18.40   J CMS   38   50/0.4'   95   GM   light gray (10 YR 7/2)   19.00		16.60	I	CMS	20 35 15/0.1'	15/0.1'	80			light gray (10 YR 7/2) 16.80	(I) Last 10 blows; no progress.
20.00		18.40	J	CMS	38	50/0.4'	95		GM	light gray (10 YR 7/2)	
21.50	2386.1 -	20.00							sc	CLAYEY SAND with GRAVEL Dry, very	
23.00		21.50			41 15					21.50  CLAYEY GRAVEL with SAND Dry, dense,	
2381.1 — 25 N CMS 6 32 55 SC 26.00 CH 24.30 brown (10 YR 5/6) to very pale brown (10 YR 7/3) Sample recovered (10 YR 7/3) Sample rec		23.00			28 25 23					8/2) 23.80  EAT CLAY with SAND Day degree vellowish	
yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)  O SPT 16 35 80  CH  27.50  SANDY FAT CLAY  Brown (10 YR 8/1)  End day	2381.1 -	-25	N		31 1 6	32	55			brown (10 YR 5/6) to very pale brown (10 YR 7/3)  CLAYEY SAND with GRAVEL Dry, dense,	(N) Loose sample recovered.
CLAVEY CAND with CDAVEL Dr. year End day			0	SPT	14 16 19	35	80		СН	yellowish brown (10 YR 5/6) to very pale brown (10 YR 7/3)  SANDY FAT CLAY Dry, hard, very pale	
29.00   F   SPT   35   88   95   dense, white (7.5 YR 8/1)		29.00	Р	SPT	35	88	95		sc	CLAYEY SAND with GRAVEL Dry, very	End day 1 drilling @ 27.



9/9/13

9/10/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

TS-1-2

E.A. #

73518

GROUND ELEV.

2406.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/10/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 2 OF 5 "XP" 189+88

**STATION OFFSET** 

313' Right **ENGINEER** 

Boomhower/Lawrence Diedrich D-120 (Unit 1627)

**EQUIPMENT** Beus/Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED \_ DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	31.50	Q	CMS	19 26 55	81	100			<b>GRAVELLY LEAN CLAY with SAND</b> Dry, hard, light gray (10 YR 7/2) with white (10 YR 8/1) nodules	(Q) Nodules lightly to strongly
	- 	R	SPT	18 30 <u>50/0.3'</u>	50/0.3'	100			LEAN CLAY Dry to moist, very hard, white (10 YR 8/1)	cemented.
	34.50	S	CMS	27 17 21	38	95		CL	SANDY LEAN CLAY Dry to moist, medium dense to dense, white (10 YR 8/1) to very pale brown (10 YR 7/4)	
2371.1 -	-35 36.00	Т	SPT	10 9 11	20	75			SANDY LEAN CLAY Moist, very stiff, very pale brown (10 YR 8/2) to brown (7.5 YR 5/4)	
	37.50								37.00	-
	39.00	U	CMS	10 15 30	45	95		СН	FAT CLAY with SAND Moist, very stiff, pale brown (10 YR 6/3) to brown (7.5 YR 5/4) with white (10 YR 8/1) nodules	
2366.1 -	-40 40.50	٧	SPT	11 13 18	31	60		GC	CLAYEY GRAVEL with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	(V) Nodules lightly to strongly
	- 42.00		CMS	11 23 30	53	100		CL	SANDY LEAN CLAY with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 42.00 8/1) nodules	cemented. (W) Nodules lightly to
	43.50	Х	SPT	9 13 32	45	95		ML	SANDY SILT with GRAVEL Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	strongly cemented.
2361.1 -	45.00	Y	СМЅ	13 14 22	36	85			LEAN CLAY with SAND Moist, hard, pale brown (10 YR 6/3) with white (10 YR 8/1) nodules	
200	46.50	Z	SPT	7 12 21	33	85		CL	LEAN CLAY Dry to moist, hard, light brown (7.5 YR 6/4)	
	48.00	AA	CMS	18 18 24	42	95			SANDY LEAN CLAY with GRAVEL Moist, dense, light gray (2.5 Y 7/2) to light yellowish brown (10 YR 6/4)	
	49.50	ВВ	SPT	2 7 24	31	65		GC	CLAYEY GRAVEL with SAND Moist, stiff to very stiff, light yellowish brown (10 YR 6/4) 49.50	(BB) Sample strongly cemented in
2356.1 -	-50 51.00	СС	CMS	11 24 20	44	95		СН	SANDY FAT CLAY Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4) 51.00	sampler shoe (CC) Nodules lightly to
	52.50		SPT	7 9 11	20	65			CLAYEY GRAVEL with SAND Moist, medium dense, brown (7.5 YR 5/4)	strongly cemented.
	54.00	EE	CMS	11 11 34 9	45	85		GC	CLAYEY GRAVEL with SAND Moist, very stiff, mottled light gray (10 YR 7/2) to brown (7.5 YR 5/4)	
2351.1 -	<sup></sup> 55.50		SPT	14 50/0.3'	50/0.3'	60			CLAYEY GRAVEL with SAND Moist, very hard, very pale brown (10 YR 8/3)	(00) 0
	- 56.30 -	GG	CMS	41 50/0.3'	50/0.3'	90			CLAYEY GRAVEL with SAND dry to moist, very hard, very pale brown (10 YR 8/2) to light 57.00 gray (10 YR 7/2)	(GG) Sample strongly cemented lenses. Very hard drilling from
	- 60.90									56.5' to 60.0'. Progress 3.5' minutes @ 29



9/9/13

END DATE 9/10/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING

TS-1-2 73518

E.A. # GROUND ELEV.

2406.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/10/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 3 OF 5 "XP" 189+88

STATION "XP" 1
OFFSET 313' F

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD 313' Right
Boomhower/Lawrence

Diedrich D-120 (Unit 1627)

Beus/Pypkowski

6" H.S.A.

ELEV. (ft)	DEPTH (ft)	1	MPLE TYPE	BLOW Co	Last	Percent Recov'd	USCS Group	MATERIAL DESCRIPTION	REMARKS
	- Z -	HH	SPT	Increments 15/0.1	1 foot 15/0.1	0		MODERATELY TO STRONGLY CEMENTED MATERIALS  62.00	psi down pressure. (HH) Last 10 blows; no progress. No sample recovered.
2341.1 -	- 64.50 65 66.00	A2 B2	CMS	6 10 25 8 7 6	35	100		LEAN CLAY Moist, very stiff to hard, very pale brown (10 YR 7/3)  LEAN CLAY with SAND Moist, stiff, very pale brown (10 YR 6/3)	Very hard drilling from 60.1' to 60.3'. Progress 0.2'/25 minutes @ 300 psi down pressure. Very hard drilling from 60.3' to 60.6'.
2336.1 -	- 69.50 70 70.50 71.00	C2	CMS	7 50/ 0.45' 50/ 0.45'	50/ 0.45 50/ 0.45	0 100		LEAN CLAY Moist, hard, very pale brown (10 YR 6/3)	Progress 0.3/30 minutes @ 300 psi down pressure. Drilling with clean water (D2) SPT full, poor sample
2331.1 -	74.50 -75 76.00 -77.50	E2	CMS	18 14 12 4 7 12	26 19	105 95	- CL	LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)  LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)	
2326.1 -	79.50 80 81.00 81.80	G2	CMS	54	63 50/0.30'	100		LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)  GRAVELLY LEAN CLAY with SAND Moist, very hard, very pale brown (10 YR 7/4)	
ALL FILES, GPJ NV DOT GD7716	84.50 85 85.70 86.50	12	CMS SPT	14 51 50/2815 50/ 0.30	50/ 0.15 50/ 0.30	75		SANDY LEAN CLAY Moist, very hard, brown (7.5 YR 5/4)  SANDY LEAN CLAY with GRAVEL Moist, very hard, very pale brown (10 YR 7/4)	
NV_BOT ALLF	- 89.50			20			_	GRAVELLY LEAN CLAY 90.00 pale brown (10 YR 7/4)  Moist, hard, very	



9/9/13

9/10/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County TS-1-2

**BORING** E.A. #

73518

GROUND ELEV.

2406.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/10/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 4 OF 5 "XP" 189+88

**STATION** 

**OPERATOR** 

313' Right **OFFSET** 

Boomhower/Lawrence

**ENGINEER** Diedrich D-120 (Unit 1627) **EQUIPMENT** 

Beus/Pypkowski

DRILLING METHOD 6" H.S.A.

BACKEILLED DATE

ENGINE	ERING \		HA	AMMER DR	ROP SYS	STEM A	utomatic		BACKFILLEDD	ATE
ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW Co 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(,	91.00		CMS	30 30 5	60	0			GRAVELLY LEAN CLAY Moist, hard, very	
	92.50	L2	SPT	9 27	36	55		CL	pale brown (10 YR 7/4)	(L2) 2' + in SP CMS sample?
	94.50			12				-	LEAN CLAY Moiet hard very pale brown	
2311.1 -	95 96.00	l	CMS	20 45 26	65	115			LEAN CLAY Moist, hard, very pale brown (10 YR 7/4)  96.00  SANDY SILTY CLAY Moist, hard, very pale	
	97.50	N2	SPT	30 55	85	100		CL ML	brown (10 YR 7/4)	
	99.50			- 10					98.50	
2306.1 -	100 100.90		CMS	12 19 <u>50/_40'</u> 28	50/ .40'	120			LEAN CLAY with SAND Moist, very hard, light yellowish brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6) LEAN CLAY with SAND Moist, hard, very	(O2) CMS full, not draining pressure
	102.40	l	SPT	25 20	45	75			pale brown (10 YR 6/4)	pressure
	104.50		0110	50/ .30' 30				CL		
2301.1 -	184:88 105 106.30	R2	SPT	30 17 19	36	120			<u>LEAN CLAY</u> Wet, hard, light yellowish brown (10 YR 6/4)	(Q2) 1.3' cuttings in CM sample, No recovery
	<del>-</del> -								108.00	
2296.1 -	109.50 — 110			33					SILTY CLAY Moist, very hard, light yellowish	
	111.00		CMS	31 60 18	91	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
	112.50		SPT	26 45	71	100		CL	brown (10 YR 6/4)	
2204.4	114.50			18				ML	SILTY CLAY Moist, hard, light yellowish	
2291.1 -	115 116.00		CMS	28 40 11	68	100			brown (10 YR 6/4)	
	117.50		SPT	14 26	40	115			110 50	
								<u> </u>	118.50	



9/9/13

9/10/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

TS-1-2

E.A. #

73518

GROUND ELEV.

2406.10 (ft)

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/10/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 5 OF 5

**STATION OFFSET** 

313' Right

Boomhower/Lawrence

"XP" 189+88

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

Beus/Pypkowski

**OPERATOR** DRILLING METHOD

6" H.S.A.

BACKFILLED DATE

ENGINE	EERING			MMER DR		)   LIVI			BACKFILLED DATE
ELEV.	DEPTH		MPLE TYPE	BLOW C 6 inch	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(ft)	(ft) 121.00	W2	CMS	Increments	1 foot 42	Recov'd 115		Group	LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)
	122.50		SPT	5 19 30	49	105		-	LEAN CLAY WITH SAND Moist, hard, light yellowish brown (10 YR 6/4)
	124.50			30				CL	
2281.1 -	125 125.90	Y2	CMS	32 40 50/.40'	50/.40'	100			<u>LEAN CLAY WITH SAND</u> Moist, very stiff, light yellowish brown (10 YR 6/4)
	127.40		SPT	24 24 24 28	52	85			LEAN CLAY WITH SAND Moist, hard, light yellowish brown (10 YR 6/4) to very pale brown 127.40 (10 YR 8/2)
	_								END TS-1-2 @ 127.4'
2276.1 -	— 130								
	_								
	_								
2271.1 -	— 135								
	_								
	_								
2266.1 -	_ 140								
	_								
	_								
	_								
2261.1 -	— 145 -								
	_								
	_								



9/11/13 START DATE

9/24/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

TS-2 **BORING** 

E.A. #

73518 2406.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/23/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 1 OF 5

"XP" 189+92 **STATION** 

313' Right **OFFSET ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

Lawrence

Diedrich D-120 (Unit 1627)

Pypkowski

4" Rotary Wash

BACKFILLED DATE

ELEV. (tt) DEPTH (tt) NO. TYPE (tt) Increments 1 foot Recovid	REMARKS
1 (ii) (ii) No. 11 Increments 1 foot Recovid	
2396.1 — 10 - - - - - -	
2396.1 10	
2396.1 —10	
2396.1 —10	
2396.1 — 10	
2396.1 — 10	
2396.1 —10	
2396.1 —10	
2391.1 —15	
2391.1 —15	
2391.1 —15	
2391.1 — 15	
2391.1 — 15	
2391.1 —15	
2391.1 — 15	
2386.1 +20	
2381.1 +25	



9/11/13 START DATE

9/24/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

TS-2 **BORING** 

73518 E.A. # GROUND ELEV.

2406.10 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/23/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 2 OF 5 "XP" 189+92

**STATION** 313' Right **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

Lawrence **ENGINEER** 

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

ELEV. (ft)	DEPTH (ft)	TYPE	BLOW CO 6 inch Increments	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(14)	-		increments	11000	Necov u				
2371.1 -	- 35								
2366.1 -	- - -40 -								
2361.1 -	- <b>45</b> -								
2356.1 -	- - - 50								
2351.1 -	- 55								
	_								



LOCATION

9/11/13

9/24/13

END DATE JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

Northwest Las Vegas - Clark County

TS-2 **BORING** 

73518 E.A. #

2406.10 (ft) GROUND ELEV.

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/23/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

"XP" 189+92 **STATION** 

**OFFSET** 

313' Right Lawrence

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627)

SHEET 3 OF 5

Pypkowski **OPERATOR** 

DRILLING METHOD 4" Rotary Wash

BACKFILLED DATE

ENGINE	EERING \		HA	AMMER DR		STEM	atomatic	L	BACKFILLED [	DATE
ELEV.	DEPTH		MPLE	BLOW C	OUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) -	NO.	TYPE	Increments	1 foot	Recov'd		Group	MODERATELY TO STRONGLY CEMENTED MATERIALS	
<u> </u>	<u></u>								62.00	
2341.1 -		A	CMS		35	100			<b>LEAN CLAY</b> Moist, very stiff to hard, very pale brown (10 YR 7/3)	
	67.50	В	SPT	25 8 7 6	13	100			LEAN CLAY with SAND Moist, stiff, very pale brown (10 YR 6/3)	
2336.1 -	69.50 -70, 70.50	C	CMS	50/0.5	50/0.5' 50/0.5'	0		-	<b>LEAN CLAY</b> Moist, hard, very pale brown (10	(C) No recovery.
2224.4	- - 74.50			18					YR 6/3)  LEAN CLAY with SAND Moist, very stiff, very	
2331.1 -	76.00 - 77.50	F	SPT	14 12 4 7 12	19	95		CL	pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)  LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)	
2326.1 -	79.50 80 81.00 81.80	G H	CMS	54	63 50/0.3'	100		-	LEAN CLAY with SAND Moist, very stiff, very pale brown (10 YR 6/4) mottled with brownish yellow (10 YR 6/6)  GRAVELLY LEAN CLAY with SAND Moist, very hard, very pale brown (10 YR 7/4)	
2321.1 -	84.50 	l J	CMS	50/08.2'	50/0.2' 50/0.3'	75 100			SANDY LEAN CLAY Moist, very hard, brown (7.5 YR 5/4)  SANDY LEAN CLAY with GRAVEL Moist,	
	- - - 89.50			50/0.3'		3-2			very hard, very pale brown (10 YR 7/4)  GRAVELLY LEAN CLAY 90.00 pale brown (10 YR 7/4)  Moist, hard, very	



9/11/13

9/24/13

END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** 

E.A. #

73518

GROUND ELEV.

2406.10 (ft)

TS-2

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/23/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 4 OF 5

**STATION OFFSET** 

313' Right

"XP" 189+92

Lawrence

**ENGINEER EQUIPMENT** 

Diedrich D-120 (Unit 1627) Pypkowski

**OPERATOR** DRILLING METHOD

4" Rotary Wash

ELEV.	DEPTH		//PLE	BLOW Co		Doroont	LABTESTS	USCS	MATERIAL DESCRIPTION	DEMARKS
(ft)	(ft)	NO.	TYPE	6 inch Increments	Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
- ( - /	( -/	K	CMS	30	60	0				(K) No recover
	91.00			30						
				5					GRAVELLY LEAN CLAY Moist, hard, very pale brown (10 YR 7/4)	
	_	L	SPT	9	36	55			pale brown (10 YR 7/4)	
	92.50			27						
	_							CL		
	94.50									
-	94.50			12					LEAN CLAY Moist, hard, very pale brown	
2311.1	<b></b> 95	М	CMS	20	65	115			(10 YR 7/4)	
	96.00			45					96.00	
Ī				26					SANDY SILTY CLAY Moist, hard, very pale	
	_	Ν	SPT	30	85	100		CL	brown (10 YR 7/4)	
	97.50			55				ML		
	_									
									98.50	
	- 00.50									
-	99.50			12				1	LEAN CLAY with SAND Moist, very hard,	
2306.1	<b> 100</b>	0	CMS		50/0.4'	120			light yellowish brown (10 YR 6/4) mottled with	
	100.90		00	50/0.4'	00/011				brownish yellow (10 YR 6/6)	
Ī	_			28					<b>LEAN CLAY with SAND</b> Moist, hard, very	
		Р	SPT	25	45	75			pale brown (10 YR 6/4)	
	102.40			20						
	_									
								CL		
-	104.50 184.88	0	CMS	50/0.3'	50/0 3'	0		-		(O) N = ========
2301.1	- 105 		OWO	30	00/0.0			1	<b>LEAN CLAY</b> Wet, hard, light yellowish brown	(Q) No recove
		R	SPT	17	36	120			(10 YR 6/4)	
	106.30			19						
	-									
									108.00	
	_		1							
	-									
	- 100 50									
	109.50			33					SILTY CLAY Mojet yeny hard light vellowish	
2296.1		S	CMS	33 31	91	100		_	SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)	
2296.1		S	CMS	33 31 60	91	100			<u>SILTY CLAY</u> Moist, very hard, light yellowish brown (10 YR 6/4)	
2296.1 <del>-</del>	<b>—110</b>	S		31	91	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
2296.1 -	—110 111.00	S	CMS	31 60 18 26	91	100			brown (10 YR 6/4)	
2296.1	<b>—110</b>			31 60 18				-	brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
2296.1 <del>-</del>	—110 111.00			31 60 18 26				CL	brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
2296.1 -	—110 111.00			31 60 18 26				CL ML	brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
2296.1 -	-110 111.00 - 112.50			31 60 18 26					brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish	
	-110 111.00 - 112.50 - 114.50			31 60 18 26 45					brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)	
	-110 111.00 - 112.50		SPT	31 60 18 26 45	71	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish	
	-110 111.00 - 112.50 - 114.50	Т		31 60 18 26 45 18 28					brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)	
2296.1 -	110 111.00 112.50 114.50 115	Т	SPT	31 60 18 26 45	71	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish	
	-110 111.00 - 112.50 - 114.50 - 115 116.00	Т	SPT	31 60 18 26 45 18 28 40 11 14	71	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish	
	110 111.00 112.50 114.50 115	T	SPT	31 60 18 26 45 18 28 40 11	71 68	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish	
	-110 111.00 - 112.50 - 114.50 - 115 116.00	T	SPT	31 60 18 26 45 18 28 40 11 14	71 68	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish brown (10 YR 6/4)	
	-110 111.00 - 112.50 - 114.50 - 115 116.00	T	SPT	31 60 18 26 45 18 28 40 11 14	71 68	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish	
	-110 111.00 - 112.50 - 114.50 - 115 116.00	T	SPT	31 60 18 26 45 18 28 40 11 14	71 68	100			brown (10 YR 6/4)  SILTY CLAY Moist, very hard, light yellowish brown (10 YR 6/4)  SILTY CLAY Moist, hard, light yellowish brown (10 YR 6/4)	



9/11/13 START DATE

9/24/13 END DATE

TS-2

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

E.A. #

Northwest Las Vegas - Clark County

**BORING** 

73518

GROUND ELEV.

2406.10 (ft)

HAMMED DOOD EVETEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

9/23/13 62.00

DATE DEPTH ft ELEV. ft

2344.1

SHEET 5 OF 5

"XP" 189+92 **STATION** 

**OFFSET ENGINEER**  313' Right Lawrence

Diedrich D-120 (Unit 1627)

**EQUIPMENT** 

Pypkowski

**OPERATOR** DRILLING METHOD

4" Rotary Wash

DATE

GEOTECH ENGINI	INICAL EERING		HA	MMER DE	OP SYS	TEM A	utomatic		BACKFILLED DATE
ELEV. (ft)	DEPTH (ft)	NO.	MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
	121.00	Х	SPT	22 20 5 19 30	42	115			LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)  LEAN CLAY WITH SAND Moist, hard, light yellowish brown (10 YR 6/4)
2281.1 -	124.50			32				CL	LEAN CLAY WITH SAND Moist, very stiff,
	125.90	Z	SPT	40 50/0.4' 24 24 28	50/0.4'	85			light yellowish brown (10 YR 6/4)  LEAN CLAY WITH SAND Moist, hard, light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)  END TS-2 @ 127.4'
2276.1 -	- - - - -								END 13-2 @ 121.4
2271.1 -	- 135 -								
2266.1 -	- 140 -								
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16  T. 1.1977 - 1.1972 - 1.19	- 145 -								
NV_DOT ALL FIL	_								



NV\_DOT ALL FILES.GPJ NV\_DOT.GDT 6/27/16

START DATE \_\_\_\_10/9/13

10/10/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION \_

END DATE

Northwest Las Vegas - Clark County

BORING TS-3
E.A. # 73518
GROUND ELEV. 2425.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

STATION "X" 65+30

OFFSET 227' Right

OFFSET ENGINEER

**EQUIPMENT** 

Boomhower
Diedrich D-120 (Unit 1627)

SHEET 1 OF 3

OPERATOR DRILLING METHOD

BACKFILLED \_\_\_\_\_ DATE

Pypkowski

6" H.S.A.

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(iv)	_			morements	11000	Necov u			SANDY GRAVEL, tan, dry	
2420.3 -	5.00	A	CMS SPT	15 30 <del>20/0.4</del> ;	50/0.4' 20/0.1'	100		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
	7.50 - 7.50 - 8:88			50/0.3'	50/0.3' 50/0.4'			GW GC	WELL-GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, very pale brown	(B) Last 10 blows; no progress. No sample recovered.
2415.3 -	9.40 10.00 10 11.50	E	CMS	50/0.4' 9 45 63	108	95		SW	WELL-GRADED SAND with SILT and GRAVEL Dry, very dense, very pale brown 11.50 (10 YR 7/4)	(C) Last 10 blows; no progress; No sample recovered.
	12.20	F	SPT	50 35/0.2' 20	35/0.2'	100		sc	CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	(F) Last 10 blows; no progress.
2410.3 -	14.50 —15 —16.00	G H	SPT	32 71 39 30 41	71	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
	1 <del>7:5</del> 8		CMS	30/0.2'	30/0.2	0			17.50	(I) Last 10 blows; no
2405.3 -	19.00 20 20.50	J	CMS	16 22 27 15	49	100		_	LEAN CLAY with SAND Dry, very stiff, very pale brown (10 YR 7/3 )  SANDY LEAN CLAY Dry, hard, mottled light	progress.
	22.00	K L	SPT	17 15 12	32 43	95		CL	yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)  LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale	
2400.3 -	23.50 - 25.00	M	SPT	29 16 10 11	21	85			brown (10 YR 8/2)  SANDY LEAN CLAY brown (7.5 YR 6/4)  25.00	
35.5	26.50	N O	CMS	13 26 30 9 12	56 26	95			CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)  CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white	
	28.00		OF I	14	20	00		SC	(10 YR 8/1)	
	30.00								30.00	



10/9/13 START DATE

10/10/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

END DATE

TS-3 73518

2425.30 (ft) GROUND ELEV

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

DATE DEPTH ft ELEV. ft

"X" 65+30 **STATION** 

227' Right **OFFSET** 

Boomhower **ENGINEER** 

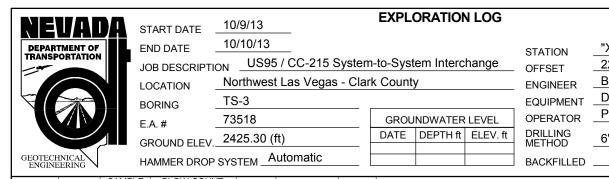
Diedrich D-120 (Unit 1627) **EQUIPMENT** 

SHEET 2 OF 3

Pypkowski **OPERATOR** 

DRILLING METHOD 6" H.S.A.

ELEV. (ft)	DEPTH (ft)  31.50	NO.	MPLE TYPE	BLOW C 6 inch Increments	Last	Doroont					
-	_	Р		IIIOI CITICITIC	1 foot	Percent Recov'd	LAB TESTS	USCS Group		MATERIAL DESCRIPTION	REMARKS
	-		CMS	12 30 47	77	100		GC GM	31.50	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	33.00	Q	SPT	9 8 13	21	85		СН		FAT CLAY with SAND Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to pale yellow (2.5 Y 8/3)	
	- 35.00 35								34.00		
2390.3	36.50	R	CMS	22 26 32	58	100				CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	38.00	S	SPT	16 16 24	40	75		GC		<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	39.50	Т	CMS	17 21 36	57	100			39.50	<u>CLAYEY GRAVEL with SAND</u> Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
2385.3	-40 41.00	U	SPT	11 20 17	37	75		МН		GRAVELLY ELASTIC SILT with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
-	42.00 42.40 43.00	V	CMS	50/0.4'	50/0.4'	100		GM	41.50	SILTY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white	
-	43.00	W	SPT	16 24 50/0.4'	50/0.4'	70		sc		(10 YR 8/1)  CLAYEY SAND with GRAVEL Dry, very dense, light brown (7.5 YR 6/3) to pinkish white	
2380.3	45.00 <b>45</b> 45.40	Χ	CMS		50/0.4'	100			44.70	(7.5 YR 8/2)	
	47.00			28						CLAYEY GRAVEL with SAND Dry to moist,	
	48.50	Y	CMS	15 25 17	40	100				medium dense to dense, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
2375.3	50.00 50	Z	SPT	23 40 45	63	85				CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored  CLAYEY GRAVEL with SAND Dry to moist.	
_	51.50	AA	CMS	32 28 17	60	100				very dense, multicolored  CLAYEY GRAVEL with SAND Moist, very	
	53.00	ВВ	SPT	10 12	22	75		GC		stiff, light brown (7.5 YR 6/4)	End day 1
	- - - - - - - - - - - - - - - - - - -										drilling @ 53.0'.
2370.3	- <b>56.20</b> 56.60	СС	CMS	25 23 <b>25/0</b> :2	25/0.2' 25/0.2'	90				CLAYEY GRAVEL with SAND Moist, very dense, yellowish brown (10 YR 5/6)	(CC) Last 10 blows; no progress.
- - -	- 60.00	טט	OI <sup>-</sup> I	23/0.2	2010.2	J			60.00		(DD) Last 10 blows; no progress. No sample recovered. Hard drilling at 57.5' to 60.0'.



		SHEET 3 OF 3
	STATION	"X" 65+30
	OFFSET	227' Right
	ENGINEER	Boomhower
	EQUIPMENT	Diedrich D-120 (Unit 1627)
	OPERATOR	Pypkowski
t	DRILLING METHOD	6" H.S.A.

\_ DATE

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW CO 6 inch Increments	l aet	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	60.20	EE	SPT	Increments 35/0.2	35/0.2'	0			62.80 END TS-3 @ 62.8'	Progress 3.5'/30 minutes @ 250 psi down pressure. (EE) Last 10 blows; no progress. No
2360.3	65 								END 10-5 @ 02.0	sample recovered. Very hard drilling at 62.0'. Progress 0.3'/20 minutes @ 350 psi down pressure. Very hard drilling at 62.5'.
2355.3	- 70 -									Progress 0.1'/20 minutes @ 350 psi down pressure. No groundwater encountered.
2350.3	75 									
2345.3	80									
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16 8:00F82	85 									



START DATE \_\_\_\_10/9/13

10/21/13

END DATE 10/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. # TS-3A 73518

GROUND ELEV. 2425.30 (ft)

HAMMER DROP SYSTEM \_ Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

STATION OFFSET

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD "X" 65+30 227' Right

Boomhower/ Lawrence

Diedrich D-120 (Unit 1627)

SHEET 1 OF 5

Pypkowski

6" H.S.A. /4" Rotary

BACKFILLED Wash DATE

ENGINE		SAI	MPLE	AMMER DR		) I ⊑IVI			BACKFILLED Wash DA	ATE
ELEV. (ft)	DEPTH (ft)		TYPE	Ginob	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
				<u> </u>	11000	recov d			SANDY GRAVEL, tan, dry	
2420.3 -	5.00	A	CMS	E0/0 41	50/0.4' 20/0.1'	100		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
	L				20,0.1				7.00	(B) Last 10 blows; no
	9.40	D	CMS	37	50/0.3' 50/0.4'	0 85		GW GC	WELL-GRADED GRAVEL with SILTY CLAY and SAND Dry, very dense, very pale brown (10 YR 7/4)	progress. No sample recovered. (C) Last 10
2415.3 -	10.00			50/0.4					9.70 (10 11( 174)	blows; no progress; No
2415.5	11.50	E	CMS	9 45 63	108	95		SW SM	WELL-GRADED SAND with SILT and GRAVEL Dry, very dense, very pale brown 11.50 (10 YR 7/4)	sample recovered.
	- 12.20	F	SPT	50 35/0.2'	35/0.2'	100			CLAYEY SAND with GRAVEL Dry, very dense, very pale brown (10 YR 7/4)	(F) Last 10 blows; no
	13.00							SC	donos, vory pais brown (10 11117)	progress.
	14.50	G	CMS	20 32 71	103	80			13.80	
2410.3 -	15 16.00	Н	SPT	39 30 41	71	80		GC	CLAYEY GRAVEL with SAND Dry, very dense, very pale brown (10 YR 7/4)	
	- 1 <del>7:5</del> 8		CMS	30/0.2	30/0.2'	0			17.50	(I) Last 10
	19.00									blows; no progress.
2405.3 -	20.50		CMS	16 22 27	49	100			<u>LEAN CLAY with SAND</u> Dry, very stiff, very pale brown (10 YR 7/3)	progress.
	22.00	K	SPT	15 17 15	32	80		CL	SANDY LEAN CLAY Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	
	23.50	L	CMS	12 14 29	43	95			LEAN CLAY with SAND Dry, hard, mottled light yellowish brown (10 YR 6/4) to very pale brown (10 YR 8/2)	
2400.3 -	25.00	М	SPT	16 10 11	21	85			SANDY LEAN CLAY brown (7.5 YR 6/4) 25.00	
2100.0	26.50	N	CMS	30	56	95			CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	28.00	0	SPT	9 12 14	26	80		sc	CLAYEY SAND with GRAVEL Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	30.00								30.00	



START DATE \_\_\_\_10/9/13

10/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # TS-3A 73518

GROUND ELEV. 2425.30 (ft)
HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

STATION "X" 65+30

OFFSET 227' Right

OFFSET ENGINEER

**EQUIPMENT** 

**OPERATOR** 

Boomhower/ Lawrence
Diedrich D-120 (Unit 1627)

SHEET 2 OF 5

Pypkowski

DRILLING 6" H.S.A. /4" Rotary

BACKFILLED Wash DATE

ELEV.	DEPTH		MPLE TYPE	BLOW C	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft)	P	CMS	12 30	1 foot 77	Recov'd		GC GM	SILTY CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to 31.50 white (10 YR 8/1)	
	31.50	Q	SPT	47 9 8 13	21	85		СН	FAT CLAY with SAND Dry to moist, very stiff, mottled light brown (7.5 YR 6/3) to pale yellow (2.5 Y 8/3)	
	_								34.00	
2390.3 -	35.00 35			22					CLAYEY GRAVEL with SAND Dry to moist,	
	36.50	R	CMS	26 32	58	100			dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	38.00	S	SPT	16 16 24	40	75		GC	CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	39.50	Т	CMS	17 21 36	57	100			CLAYEY GRAVEL with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white 39.50 (10 YR 8/1)	
2385.3 -	-40 41.00	U	SPT	11 20 17	37	75		МН	GRAVELLY ELASTIC SILT with SAND Dry to moist, dense, mottled pale brown (10 YR 6/3) to white (10 YR 8/1)	
	42.00 42.40	V	CMS	50/0.4'	50/0.4'	100		GM	41.50 Dry to moist,	
	43.00	•		16	00/0.4	100			dense, mottled pale brown (10 YR 6/3) to white	
	44.40		SPT	24 50/0.4'	50/0.4'	70		SC 	CLAYEY SAND with GRAVEL Dry, very dense, light brown (7.5 YR 6/3) to pinkish white 44.70 (7.5 YR 8/2)	
2380.3 -	<b>45</b> 45.40		CMS	50/0.4'	50/0.4'	100			CLAYEY GRAVEL with SAND Dry to moist, very dense, light brown (7.5 YR 6/3)	
	47.00	Y	CMS	28 15	40	100			CLAYEY GRAVEL with SAND Dry to moist, medium dense to dense, light brown (7.5 YR 6/4) to reddish yellow (7.5 YR 6/6)	
	48.50	Z	SPT	25 17 23 40	63	85			CLAYEY GRAVEL with SAND Dry to moist, very dense, multicolored	
2375.3 -	50.00 -50 - 51.50	AA	CMS	45 32 28	60	100			<u>CLAYEY GRAVEL with SAND</u> Dry to moist, very dense, multicolored	
	53.00		SPT	17 10 12	22	75		GC	CLAYEY GRAVEL with SAND Moist, very stiff, light brown (7.5 YR 6/4)	
										End day 1 drilling @ 53.
2370.3 -	<b>5</b> 55.00		CMS	25 23	25/0.2'	90			CLAYEY GRAVEL with SAND Moist, very dense, yellowish brown (10 YR 5/6)	(CC) Last 10 blows; no
	- <b>56.20</b> 56.60		SPT	0 = (0 0)	25/0.2'	0			derise, yellowish brown (10 YR 5/6)	progress. (DD) Last 10 blows; no progress. No sample recovered.
	60.00								60.00	Hard drilling a 57.5' to 60.0'.



10/9/13

10/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

TS-3A 73518

GROUND ELEV.

2425.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

SHEET 3 OF 5

"X" 65+30 **STATION OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD

227' Right

Boomhower/ Lawrence Diedrich D-120 (Unit 1627)

Pypkowski

6" H.S.A. /4" Rotary

Wash BACKFILLED DATE \_

ELEV. (ft)	DEPTH (ft)	NO	MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	60.20	EE	SPT	Increments 35/0.2'	35/0.2'	0			62.80	Progress 3.5/30 minutes @ 250 psi down pressure. (EE) Last 10 blows; no
2360.3 -	- -65 -									progress. No sample recovered. Very hard drilling at 62.0'. Progress 0.3'/2(minutes @ 350 psi down pressure. Very hard
	69.50							CL ML		drilling at 62.5'. Progress 0.1'/2' minutes @ 350 psi down
2355.3 -	-70 71.00	l	CMS	56 30 28	58	100			SILTY CLAY with SAND Moist, hard, light yellowish brown (10 YR 6/4)	pressure.
	71.00	GG	SPT	21 43 33	76	100			SILTY CLAY with SAND Moist, very hard, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6)	
	_								73.50	
2350.3 -	74.50 75 76.00	l	CMS	8 11 16	27	100		_	LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4)	
	77.50	II	SPT	6 8 13	21	100		-	LEAN CLAY Moist, very stiff, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6) mottled with black	
	79.50									
2345.3 -	80 81.00	l	CMS	19 31 26	57	100		CL	<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	82.50	KK	SPT	9 15 27	42	100		-	<u>LEAN CLAY with SAND</u> Moist, hard, light yellowish brown (10 YR 6/4)	
	- - 84.50									
2340.3 -	-85 <sub>85.40</sub>	LL	CMS	56 50/0.4'	50/0.4'	0			000000000000000000000000000000000000000	(LL) No progress last 2
	- 86.90	ММ	SPT	12 24 30	54	100			GRAVELLY LEAN CLAY with SAND Moist, hard, light yellowish brown (10 YR 6/4)  87.30	blows, no sample recovered.
	- 90.50								MODERATELY CEMENTED MATERIALS	(NN) No progress last 4 blows, no
	85:76	NN	CMS	50/0.2'	50/0.2'	0				sample



10/9/13 START DATE

10/21/13 END DATE

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

**BORING** E.A. #

TS-3A 73518

2425.30 (ft) GROUND ELEV.

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

"X" 65+30 STATION

227' Right **OFFSET** 

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

Boomhower/ Lawrence Diedrich D-120 (Unit 1627)

SHEET 4 OF 5

Pypkowski

6" H.S.A. /4" Rotary

DRILLING METHOD Wash BACKFILLED DATE .

ELEV. (ft)	DEPTH (ft)		MPLE TYPE	BLOW C 6 inch Increments	Last	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
, ,	-								MODERATELY CEMENTED MATERIALS  92.00	recovered.
2330.3 -	94.50 9595.30 96.80		CMS SPT	37 50/0.3' 35 39 53	50/0.3'	100		CL ML	GRAVELLY SILTY CLAY with SAND  Moist, very hard, very pale brown (10 YR 7/3)  SANDY SILTY CLAY  Moist, very hard, very pale brown (10 YR 7/3)	
	99.50								99.00	
2325.3 -	100 101.00		CMS	16 9 32	41	0		CL	ODAVELLY LEAN OLAY Maint come hand	(QQ) No sample recovered.
	102.40	RR	SPT	3 6 50/0.4'	50/0.4'	150			GRAVELLY LEAN CLAY Moist, very hard, brownish yellow (10 YR 6/6) to very pale brown (10 YR 7/3)  103.00	
	104.50								WEAKLY CEMENTED MATERIALS 104.00	
2320.3 -	105.00 105.40	SS	CMS SPT	50/0.5' 50/0.4'	50/0.5' 50/0.4'	40 100		CL	GRAVELLY LEAN CLAY with SAND Moist, very hard, brownish yellow (10 YR 6/6) to 106.00 very pale brown (10 YR 7/3)	
	_								WEAKLY TO STRONGLY CEMENTED MATERIALS	Depth 106.0'-110.5' .08ft/min to .15 ft/min drilling rate 250psi down
2315.3 -	<u>189:58</u> —110	υu	SPT	50/0.2	50/0.2	0			110.50	(UU) No sample recovered.
	_									
2240.2	114.50			31				CL ML	SILTY CLAY Moist, very hard, light	
2310.3 -	115 115.80		CMS	56 50/0.3' 19	50/0.3'	95			yellowish brown (10 YR 6/4) <u>SILTY CLAY</u> Moist, very hard, light	
	_ 117.10	WW	SPT	32 50/0.3'	50/0.3'	95			yellowish brown (10 YR 6/4)	
	_								118.30 LEAN CLAY Moist, hard, reddish yellow	
	119.50			22				CL	(7.5 YR 6/6) 120.00	



START DATE \_\_\_\_10/9/13

END DATE \_\_\_\_10/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

Northwest Las Vegas - Clark County

BORING E.A. #

GROUND ELEV..

73518

HAMMER DROP SYSTEM Automatic

TS-3A

2425.30 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

SHEET 5 OF 5

STATION OFFSET

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD 227' Right Boomhower/ Lawrence

Diedrich D-120 (Unit 1627)

Pypkowski

"X" 65+30

6" H.S.A. /4" Rotary

BACKFILLED Wash DATE

Litoni	EERING \			AMMER DR					BACKFILLED VVasii D	ATE
ELEV. (ft)	DEPTH (ft)	SAN NO.	//PLE TYPE	BLOW Co 6 inch Increments	OUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
	121.00	YY	CMS	45 6	71	75			LEAN CLAY (7.5 YR 6/6)  LEAN CLAY (7.5 YR 6/6)  Moist, hard, reddish yellow (7.5 YR 6/6)	
2300.3	124.50		0140	14	04	00		CL	LEAN CLAY Moist, hard, reddish yellow	
	126.00	AB	SPT	39 13	54	140			(7.5 YR 6/6)  LEAN CLAY with GRAVEL reddish yellow (7.5 YR 6/6)  127.50	
2295.3	— — — — —								END TS3-A @ 127.5'	
2290.3	- - - - 135 -									
2285.3										
2280.3	- - - - - - -									



START DATE \_\_\_\_\_10/21/13

10/21/13

TS3-A

73518

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. #

GROUND ELEV. 2425.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

SHEET 1 OF 5

STATION OFFSET ENGINEER

**EQUIPMENT** 

**OPERATOR** 

DRILLING METHOD 227' Right Lawrence

"X" 65+30

Diedrich D-120 (Unit 1627)

Pypkowski

4" Rotary Wash

ENGINE	ERING V			MMER DR		, I LIVI			BACKFILLED D	ATE
ELEV.	DEPTH		/IPLE	BLOW CO	DUNT Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	(ft) - -	NO.	TYPE	Increments	1 foot	Recov'd		Group	Continue drilling down Borehole TS-3 from depth 62.8' as Borehole TS3-A	
2420.3 -	—5 - -									
2415.3 -	- 10 - -									
2410.3 -	- <b>15</b> - -									
	- 20 - -									
2400.3 -	- 25 - - -									



START DATE \_\_\_\_10/21/13

10/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

END DATE

Northwest Las Vegas - Clark County

BORING E.A. # TS3-A 73518

GROUND ELEV.

/. 2425.30 (ft)

HAMMER DROP SYSTEM Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

STATION "X" 65+30

OFFSET 227' Right

OFFSET ENGINEER

DRILLING METHOD Lawrence
Diedrich D-120 (Unit 1627)

SHEET 2 OF 5

OPERATOR DIEGRICA DIE

4" Rotary Wash

ELEV. (ft)	DEPTH (ft)	MPLE TYPE	BLOW CO 6 inch Increments	DUNT Last	Percent Percevid	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
( )	-			1 1001	10000				
2390.3 -	<b>35</b> 								
2385.3 -	- <b>40</b> - -								
2380.3 -	- <b>45</b> -								
2375.3 -	- - - -								
2370.3 -									



START DATE \_\_\_\_10/21/13

10/21/13

JOB DESCRIPTION US95 / CC-215 System-to-System Interchange

LOCATION

GROUND ELEV..

END DATE

Northwest Las Vegas - Clark County

BORING TS3-A

E.A.# 73518

HAMMER DROP SYSTEM \_ Automatic

2425.30 (ft)

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00

DATE DEPTH ft ELEV. ft

2362.3

SHEET 3 OF 5

STATION \_ OFFSET \_

**ENGINEER** 

**EQUIPMENT** 

**OPERATOR** 

227' Right Lawrence

"X" 65+30

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING 4" Rotary Wash

ELEV.	DEPTH		//PLE TYPE	BLOW Co	Last	Percent	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
(ft)	-			Increments	1 foot	Recov'd			_62.80	
2360.3	- <b>65</b> - - - - - 69.50							CL ML		
2355.3	-70 71.00	Α	CMS	56 30 28	58	100			SILTY CLAY with SAND Moist, hard, light yellowish brown (10 YR 6/4)	
-	- 72.50 -	В	SPT	21 43 33	76	100			SILTY CLAY with SAND Moist, very hard, light yellowish brown (10 YR 6/4) to brownish yellow (10 YR 6/6)	
_	74.50			8						
2350.3	75 	С	CMS	11 16 6	27	100			brown (10 YR 6/4)  LEAN CLAY Moist, very stiff, light yellowish	
-	77.50	D	SPT	8 13	21	100			brown (10 YR 6/4) to brownish yellow (10 YR 6/6) mottled with black	
2245 2	- 79.50 <b>80</b>			19					<b>LEAN CLAY with SAND</b> Moist, hard, light	
2345.3	80 81.00	E	CMS	31 26 9	57	100		CL	yellowish brown (10 YR 6/4) <b>LEAN CLAY with SAND</b> Moist, hard, light	
-	- 82.50 -	F	SPT	15 27	42	100			yellowish brown (10 YR 6/4)	
-	84.50			<b>50</b>						(O) N-
2340.3	- 85 <sub>85.40</sub>	G H	CMS SPT	56 50/0.4' 12 24	50/0.4' 54	100			GRAVELLY LEAN CLAY with SAND Moist, hard, light yellowish brown (10 YR 6/4)	(G) No progress last blows, no sample
	86.90 - -			30					87.30	recovered.  (I) No progre last 40 blows,
	- 89: <del>5</del> 8		01.10	50/0.2'	<b>50/0 0</b> 1	0			MODERATELY CEMENTED MATERIALS	no sample recovered.



≥'

22

10/21/13 START DATE

10/21/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

**END DATE** 

Northwest Las Vegas - Clark County

**BORING** E.A. #

TS3-A 73518

2425.30 (ft) **GROUND ELEV.** 

Automatic

**EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

63.00

10/21/13

DATE DEPTH ft ELEV. ft

2362.3

"X" 65+30 **STATION** 227' Right

**OFFSET** 

Lawrence

Diedrich D-120 (Unit 1627)

SHEET 4 OF 5

**ENGINEER EQUIPMENT** 

Pypkowski

**OPERATOR DRILLING** METHOD

4" Rotary Wash

HAMMER DROP SYSTEM \_ **BACKFILLED** DATE **ELEV** DEPTH 6 inch Last LAB TESTS REMARKS MATERIAL DESCRIPTION Percent NO. TYPE (ft) 1 foot (ft) Increments Recov'd MODERATELY CEMENTED MATERIALS 92.00 94.50 37 **GRAVELLY SILTY CLAY with SAND CMS** 50/0.3 100 J 2330.3 9595.30 Moist, very hard, very pale brown (10 YR 7/3)

SANDY SILTY CLAY

Moist, very hard, very CL ML SPT 39 92 100 pale brown (10 YR 7/3) 96.80 53 (L) No sample recovered. 99.00 99.50 16 2325.3 100 CMS 9 41 0 L 101.00 32 CL **GRAVELLY LEAN CLAY** Moist, very hard, 3 brownish yellow (10 YR 6/6) to very pale brown SPT 50/0.4 150 6 102.40 (10 YR 7/3) 50/0.4 103.00 **WEAKLY CEMENTED MATERIALS** 104.00 104.50 105.00 N CMS 105.40 O SPT 50/0.5' 50/0.4' 50/0.5' 50/0.4' 40 **GRAVELLY LEAN CLAY with SAND** 2320.3 CL Moist, very hard, brownish yellow (10 YR 6/6) to 106.00 very pale brown (10 YR 7/3) Depth 106.0'-110.5' .08ft/min to .15 WEAKLY TO STRONGLY CEMENTED ft/min drilling MATERIALS rate 250psi down 189:<del>5</del>8 SPT 50/0.2' 50/0.2' 110 2315.3 110.50 (P) No sample recovered CL ALL FILES.GPJ NV DOT.GDT 114.50 ML 31 SILTY CLAY Moist, very hard, light 2310.3 115 **CMS** 50/0.3 Q 95 56 yellowish brown (10 YR 6/4) 115.80 <del>50/0.3</del>' SILTY CLAY Moist, very hard, light SPT R 50/0.3 95 yellowish brown (10 YR 6/4) 32 117.10 50/0.3 118.30 **LEAN CLAY** Moist, hard, reddish yellow DOT CL 119.50 (7.5 YR 6/6)

120.00



10/21/13 START DATE

10/21/13

US95 / CC-215 System-to-System Interchange JOB DESCRIPTION

LOCATION

END DATE

Northwest Las Vegas - Clark County

**BORING** E.A. #

TS3-A 73518

GROUND ELEV

2425.30 (ft) Automatic **EXPLORATION LOG** 

**GROUNDWATER LEVEL** 

10/21/13 63.00 2362.3

DATE DEPTH ft ELEV. ft

SHEET 5 OF 5

STATION **OFFSET** 

**EQUIPMENT** 

**OPERATOR** 

227' Right **ENGINEER** 

Lawrence

"X" 65+30

Diedrich D-120 (Unit 1627)

Pypkowski

DRILLING METHOD 4" Rotary Wash

GEOT ENC	ECHNICAL GINEERING		HA	AMMER DR	OP SYS	STEM A	utomatic	[	BACKFILLED DATE
ELE\ (ft)	/. DEPTH (ft)		MPLE TYPE		DUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION REMARKS
(1.7)	121.00	S	CMS	26 45 6 10 32	71	75 115			LEAN CLAY (7.5 YR 6/6)  LEAN CLAY (7.5 YR 6/6)  Moist, hard, reddish yellow (7.5 YR 6/6)
2300.	124.50	U	CMS	14	61	80		CL	LEAN CLAY Moist, hard, reddish yellow (7.5 YR 6/6)  LEAN CLAY with GRAVEL reddish yellow (7.5 YR 6/6)
2295.	127.50 - - 3 —130		SFI	34	54	140			127.50 END TS3-A @ 127.5'
2290.	3 —135								
2290.	- 135								
2285. 91/27/9	3 140								
NV_DOT ALL FILES.GPJ NV_DOT.GDT 6/27/16  70  70  70  70  70	3 — 145								

## **BOREHOLE DATA**

	STATION		ELEVATION		FOUND ON	NUMBER OF PAG						ES			
BOREHOLE		OFFSET		DEPTH	SHEET(S)	BORING LOGS	TEST SUMMARY	PARTICLE SIZE	СНЕМ	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL		
BI-1	"XP"188+79	283' Rt.	2406.1'	61.0'	9, GE 05	3	2	6					11		
BI-2	"XP"189+74	257' Rt.	2406.6'	59.2'	9, GE 05	2	3	10		4	5		24		
BI-3	"XP"187+57	242' Rt.	2406.1'	66.5'	9, GE 05	3	3	9			1		16		
BI-4	"X"60+50	192' Rt.	2441.4'	69.3'	10, GE 02	3	3	8					14		
BI-5	"X"60+71	283' Rt.	2439.3'	42.2'	GE 02	2	2	6		4			14		
BI-6	"X"60+71	247' Rt.	2440.0'	75.5'	GE 02	3	2	5					10		
BI-7	"XP"181+80	125' Lt.	2402.6'	83.0'	9	3	4	12		2	1	2	24		
BI-8	"XP"188+86	288' Rt.	2405.9'	97.2'	9, GE 05	4	2	7		4		3	20		
BI-9	"XP"187+60	128' Rt.	2406.8'	76.5'	9, GE 05	3	3	10			1		17		
BI-9A	"XP"187+60	128' Rt.	2406.8'	120.9'	9, GE 05	5	3	8		2		2	20		
BI-10	"X"79+51	207' Rt.	2403.5'	65.1'	11, GE 05	3	2	7			1	1	14		
BI-10A	"X"79+51	207' Rt.	2403.5'	56.5'	11, GE 05	2	1	1					4		
BI-10B	"X"79+51	207' Rt.	2403.5'	78.0'	11, GE 05	3	1	2					6		
BI-11	"X"61+99	291' Rt.	2447.9'	103.0'	10, GE 02	4	4	12		2	2	1	25		
BI-12	"X"62+05	170' Rt.	2436.6'	45.0'	10, GE 02	2	2	5					9		
BI-13	"XP"183+68	99' Lt.	2404.6'	95.1'	9	4	4	13		2		3	26		
BI-14	"XP"189+74	263' Rt.	2406.6'	70.3'	9, GE 05	3	1	4					8		
BI-15	"XP"185+99	1' Rt.	2406.2'	101.5'	9	4	5	17		5	1	2	34		
BI-16	"X"62+06	189' Rt.	2437.0'	56.5'	10, GE 02	2	1	2					5		
BI-17	"X"89+47	154' Rt.	2398.7'	116.5'	11, 16	4	4	12				3	23		
BI-18	"X"89+01	98' Rt.	2388.4'	36.5'	11, 16	2	1	3					6		
BI-19	"X"86+27	114' Rt.	2394.1'	12.0'	11, 16	1	1	1					3		
BI-20	"X"89+07	186' Rt.	2390.7'	13.0'	11, 16	1	1	1					3		
BI-21	"X"87+94	85' Rt.	2390.1'	54.9'	11, 16	2	3	9		2		2	18		
BI-22	"X"87+92	225' Rt.	2392.4'	57.6'	11, 16	2	2	6		2		2	14		
BI-23	"X"80+87	12' Rt.	2421.5'	78.1'	11, GE 05	3	3	8		1			15		
BI-23A	"X"81+07	12' Rt.	2421.5'	122.6'	11, GE 05	5	3	10		3		4	25		
BI-24	"X"87+50	167' Rt.	2393.1'	63.8'	11, 16	3	4	12		3		1	23		

BOREHOLE	STATION				FOUND ON	NUMBER OF PAGES							
		OFFSET	ELEVATION	DEPTH	SHEET(S)	BORING LOGS	TEST SUMMARY	PARTICLE SIZE	СНЕМ	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL
BI-25	"X"91+50	125' Rt.	2387.8'	58.0'	11, 16	2	3	11					16
BI-26	"X"60+03	429' Lt.	2438.9'	95.1'	GE 02	4	3	10		3	3	3	26
BI-27	"X"60+26	35' Rt.	2446.3'	64.5'	10, GE 02	3	3	10					16
BI-28	"X"89+10	222' Rt.	2390.2'	53.0'	11, 16	2	3	11		4	1		21
BI-29	"XP"204+19	250' Lt.	2428.9'	100.9'	10, GE 02	4	4	15		3		4	30
BI-30	"X"65+98	316' Lt.	2427.2'	56.5'	10, GE 02	2	3	10					15
BI-31	"X"59+50	219' Lt.	2431.5'	123.0'	10, GE 02	5	6	20		4		5	40
BI-32	"X"59+01	334' Lt.	2439.4'	59.0'	GE 02	2	3	8					13
BI-33	"X"90+94	243' Lt.	2384.1'	56.5'	11	3	3	9					15
BI-34	"X"87+86	306' Lt.	2392.9'	56.5'	11	2	2	8					12
BI-35	"X"89+04	249' Lt.	2395.3'	140.9'	11	5	5	17		5		4	36
BI-36	"X"87+37	312' Lt.	2393.3'	55.7'	11	2	3	10					15
BI-37	"X"82+60	132' Lt.	2405.6'	60.0'	11, GE 05	2	3	9					14
BI-37A	"X"82+60	132' Lt.	2405.6'	122.8'	11, GE 05	5	3	8		4		2	22
BI-38	"X"62+13	189' Rt.	2436.5'	64.5'	10, GE 02	3	1	1					5
BI-39	"X"86+54	265' Lt.	2396.5'	118.0'	11	4	7	27		4	1	2	45
BI-40	"X"84+54	224' Lt.	2402.2'	98.0'	11	4	4	14		4		2	28
BI-41	"X"87+72	596' Rt.	2389.5'	67.0'	16	3	2	8		2	1		16
BI-42	"X"88+02	489' Rt.	2390.0'	67.5'	16	3	2	7		1			13
BI-43		304' Rt.	2425.0'	51.8'	18, GE 03	2	1	4					7
BI-44	"XP"202+61	337' Rt.	2421.0'	71.5'	18, GE 03	3	2	4				1	10
BI-45	"XP"204+53	282' Rt.	2423.0'	45.8'	18, GE 03	2	2	3					7
BI-46	"X"80+65	190' Rt.	2401.0'	50.8'	11, GE 05	2	2	6					10
BI-47	"X"82+14	201' Rt.	2399.3'	45.0'	11, GE 05	2	2	7		1			12
BI-48	"XP"209+22	206' Lt.	2436.0'	65.5'	GE 03	3	2	3					8
BI-49	"XP"207+68	219' Lt.	2432.0'	81.5'	GE 03	3	3	9		1	1	4	21
BI-50	"XP"205+93	235' Lt.	2427.0'	76.5'	10, GE 03	3	2	6				2	13
BI-51	"XP"194+35	180' Rt.	2410.5'	93.0'	GE 05	4	4	12		4		2	26
BI-52	"X"68+86	67' Rt.	2421.9'	62.5'	10, GE 05	3	3	8					14
BI-53	"X"98+67	193' Rt.	2379.5'	48.0'	12	2	3	10					15

	STATION		ELEVATION		FOUND ON	NUMBER OF PAGE						ES				
BOREHOLE		OFFSET		DEPTH	SHEET(S)	BORING LOGS	TEST SUMMARY	PARTICLE SIZE	CHEM	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL			
BI-54	"X"95+89	235' Rt.	2383.7'	40.5'	12	2	2	7					11			
BI-55	"X"106+95	183' Rt.	2366.0'	50.1'	12	2	3	9					14			
BI-56	"X"102+70	192' Rt.	2373.8'	43.0'	12	2	3	8					13			
BI-57	"XP"131+69	145' Lt.	2384.5'	36.5'	5	2	4	12					18			
BI-58	"X"117+16	161' Lt.	2358.5'	46.5'	13	2	3	11		4		2	22			
BI-59	"X"49+70	133' Lt.	2469.0'	28.0'	GE 01	1	1	4					6			
BI-60	"XP"197+87	227' Rt.	2415.0'	100.8'	18, GE 04	4	3	9		2		1	19			
BI-61	"XP"193+48	189' Rt.	2410.3'	56.2'	GE 05	2	3	11					16			
BI-62	"XP"193+25	242' Rt.	2409.5'	58.0'	GE 05	2	3	9	1			1	16			
BI-63	"XP"185+33	238' Rt.	2408.0'	63.0'	9, GE 05	3	2	8		2	1	2	18			
BI-64	"X"70+35	262' Lt.	2418.0'	121.3'	18, GE 04	5	5	17		2	1		30			
BI-65	"XP"191+93	271' Rt.	2408.5'	103.0'	GE 05	4	6	20					30			
BI-66	"X"76+88	241' Rt.	2407.5'	57.2'	9, GE 05	2	3	11					16			
BI-67	"XP"192+22	185' Rt.	2409.4'	118.8'	GE 05	4	3	10					17			
BI-68	"X"88+93	109' Lt.	2396.3'	47.5'	11	2	2	6			2		12			
BI-69	"XP"202+65	263' Lt.	2427.5'	91.6'	10, GE 02	4	3	8					15			
BI-70	"X"71+48	174' Lt.	2416.0'	44.2'	18, GE 04	2	2	6					10			
BI-71	"X"100+42	147' Lt.	2374.9'	19.3'	12	1	1	3					5			
BI-72	"X"100+55	84' Rt.	2362.9'	16.4'	12	1	1	2					4			
BI-73	"X"100+46	91' Rt.	2376.3'	26.5'	12	1	2	7					10			
BI-74	"X"108+91	89' Lt.	2341.5'	40.1'	13	2	3	9					14			
BI-75	"XP"196+70	183' Lt.	2417.7'	57.0'	10, GE 05	2	2	8		1			13			
BI-75A	"X"69+82	179' Rt.	2417.7'	90.9'	10, GE 05	4	2	6				1	13			
BI-76	"XP"198+16	243' Lt.	2421.6'	112.7'	10, GE 05	4	4	15		1		3	27			
BI-77	"X"88+38	337' Rt.	2390.1'	51.0'	11, 16, GE 07	2	3	8		4		1	18			
BI-78	"X"66+65	174' Lt.	2425.0'	49.9'	10, GE 02	2	3	6					11			
BI-79	"X"69+13	144' Rt.	2419.6'	33.0'	10, GE 05	2	2	4					8			

BOREHOLE			ELEVATION	DEPTH	FOUND ON SHEET(S)	NUMBER OF PAGES									
	STATION	OFFSET				BORING LOGS	TEST SUMMARY	PARTICLE SIZE	СНЕМ	CONSOL	DIRECT SHEAR	TRIAXIAL	TOTAL		
TS-1	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	3	6	21		2	2	1	35		
TS-2	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	5	4	14		7		9	39		
TS-1-2	"XP"189+88	313' Rt.	2406.1'	127.4'	9, GE 05	5							5		
TS-3	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	3	4	14					21		
TS3-A	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	5	4	10		1		3	23		
TS-3A	"X"65+30	227' Rt.	2425.3'	127.5'	10, GE 02	5							5		