Purple Sage Energy Center (formerly Golden Currant) Plan of Development Geotechnical Study

PREPARED FOR

BLM

PREPARED BY

Noble Solar LLC

August 1, 2024

Revised September 9, 2024

1 PLAN OF DEVELOPMENT

1.1 Introduction

On November 9, 2020, Noble Solar LLC, a subsidiary of Valley of Fire Solar, LLC (Valley of Fire) and managed exclusively by Primergy Solar Management LLC (Primergy), filed an application for a right-of-way (ROW) grant (N-100225) with the Bureau of Land Management (BLM) Southern Nevada District Office for the Purple Sage Energy Center.

On May 21, 2024, Noble Solar LLC (herein called the Applicant) submitted an amended application with a new project name, the Purple Sage Energy Center (PSEC or Project). The Applicant is proposing to develop the Project in order to construct, operate, and maintain a solar-powered generating facility. The Project would be in Clark County, Nevada, completely on land managed by the BLM (see **Figure 1**). The Application Area includes approximately 4,444.95 acres (project array boundary plus gen-tie corridor) northwest of Tecopa Road for development of the Solar Facility. The entirety of the Project area would be located within 4,444.95 acres (**Figure 2**).

1.2 Purpose and Need

In connection with the PSEC, the Applicant would need to conduct geotechnical investigations to determine soil and geology suitability in support of facility engineering design that complies with safety, operations, and regulatory standards. Geotechnical testing would also be completed to measure the soil's electrical and thermal properties to ensure proper grounding and electrical system design. The specific drill and testing locations are described in Section 1.5 and shown in **Figure 4, Figure 5 and Figure 6**. The Applicant is therefore applying for a temporary use permit for a period of no more than 12 months through the attached short form (SF-299) (**Appendix A**).

1.3 Project Description

As proposed, the PSEC would consist of photovoltaic (PV) solar panels and lithium ion–based (or similar) energy storage (batteries) on approximately 4,443.60 acres of public lands managed by the BLM, Southern Nevada District, Las Vegas Field Office. The PSEC would provide renewable energy to the electrical transmission grid at the newly constructed Trout Canyon Substation (TCS), owned by GridLiance West, LLC (GLW) (N-98565). The plant would generate electricity using multiple arrays of PV panels electrically connected to associated power inverter units. The current from the power inverters would be gathered by an internal electrical collection system and transformed to transmission voltage prior to leaving the project area.

1.3.1 Project Location, Land Ownership, and Jurisdiction

The project would be located approximately 5 miles southeast of Pahrump, Nevada, and approximately 26 miles west of Las Vegas, Nevada. The Study Area is situated in the Pahrump Valley approximately 2.5 miles southwest of the intersection of Nevada State Route (SR) 160 and Tecopa Road (see **Figure 2**). The PSEC facilities would be located entirely on lands administered by the BLM.

Figure 1. Project Location

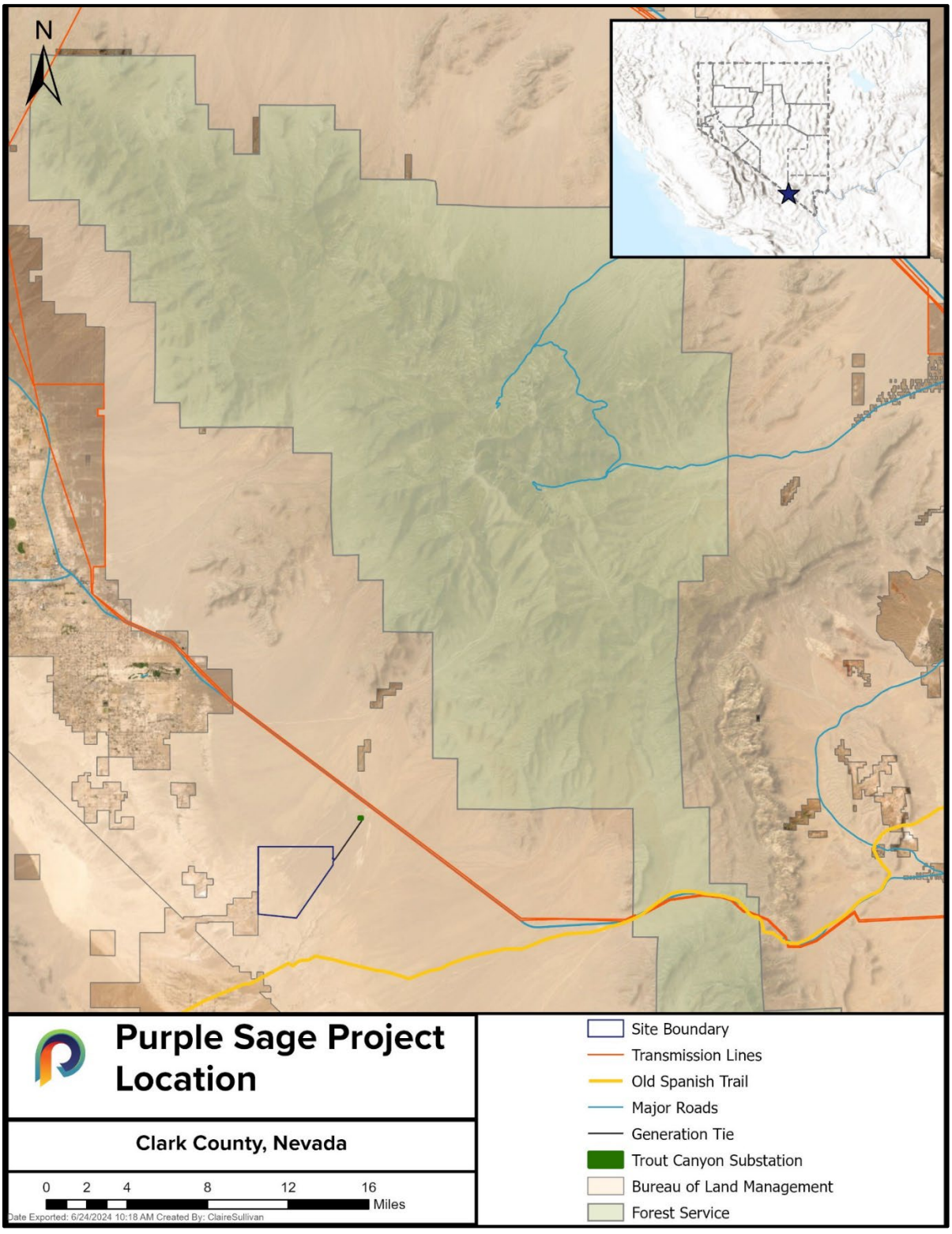


Figure 2. Study Area

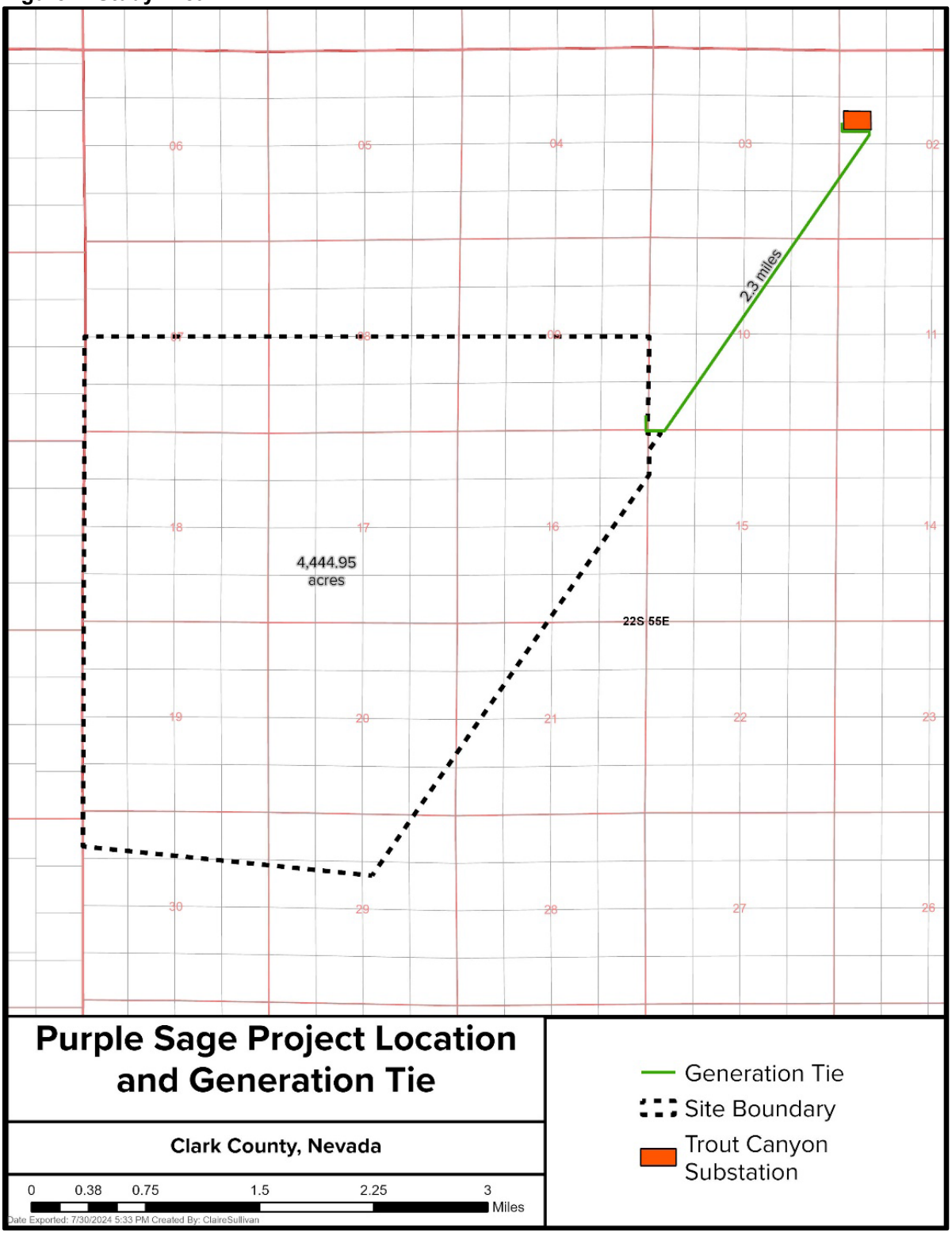
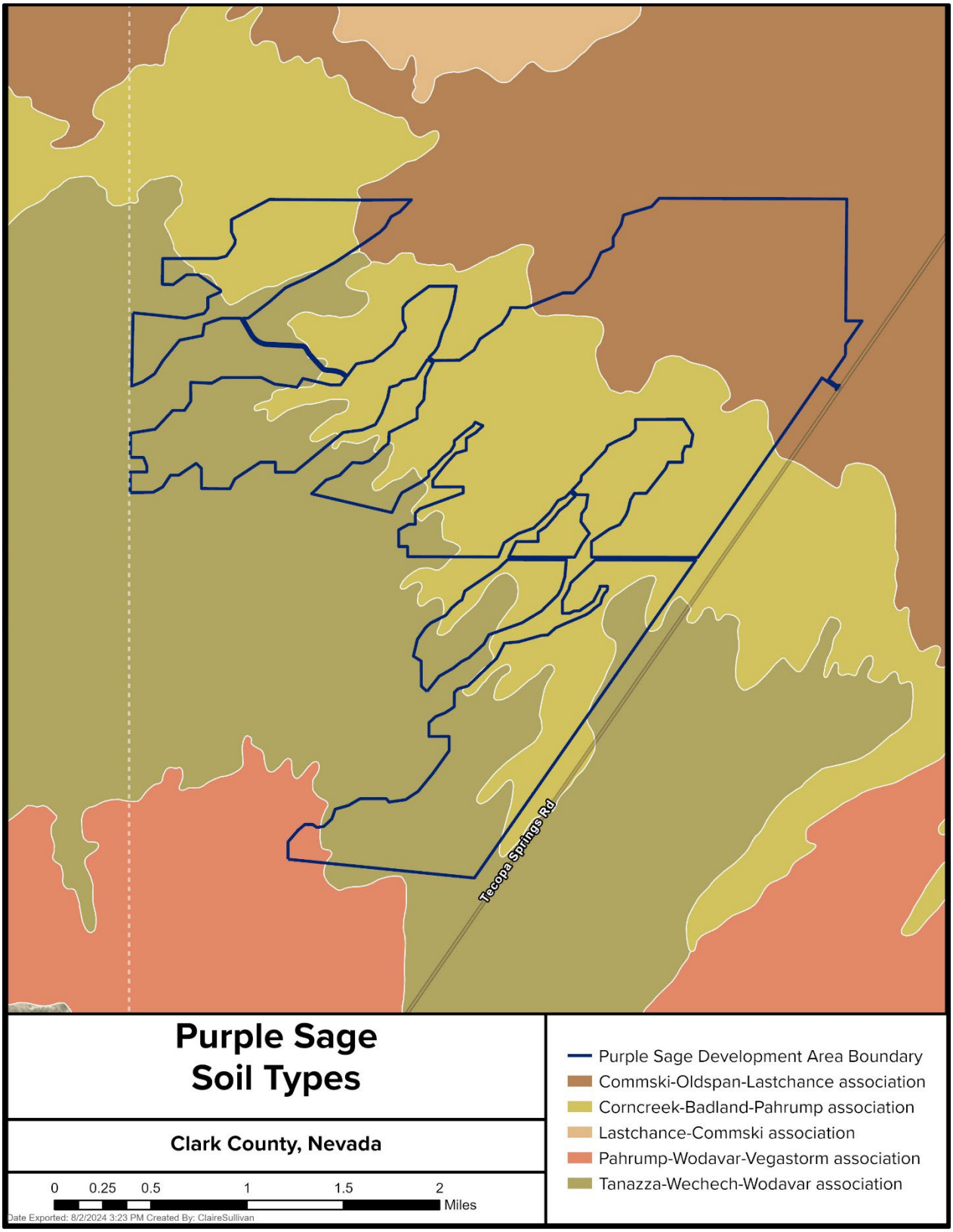


Figure 3. Soil Types



1.3.2 Legal Land Description of Facility (Federal and Non-federal Lands)

The project is located in a portion of Township 22 South, Range 55 East. **Table 1** lists the BLM lands requested to the quarter section as identified in the filed ROW grant application.

Table 1. Facility Legal Descriptions

Township	Range	Sections	Description
22S	55E	02	NWSW; SWNW
22S	55E	03	SESE; NESE
22S	55E	07	Lots 3, 4; E2SW; SE
22S	55E	08	S2
22S	55E	09	S2
22S	55E	10	NENE; NWNE; SWNE; SENW; NESW; SESW; SWSW
22S	55E	15	NWNW
22S	55E	16	NW; NE; SW; W2SE; NESE
22S	55E	17	ALL
22S	55E	18	ALL
22S	55E	19	ALL
22S	55E	20	ALL
22S	55E	21	NW; NWSW
22S	55E	29	NW; NWNE; NENE; SWNE
22S	55E	30	Lot 1; NENW; NE

1.3.3 Temporary Disturbance Methods

All disturbance will be temporary in nature. Existing two-track roads within the project area will primarily be used to access the drilling locations via access points shown in **Figure 4, Figure 5 and Figure 6**. The existing paved SR- 160, Tecopa Road, Front Sight Road, and Cathedral Canyon Road will be used as the main access roads. Workers would need access to the drill equipment; this would involve selective access to minimize crushing vegetation and impacts to large-diameter cacti and yucca.

Figure 4. Test Locations and Temporary Access Paths (BESS)

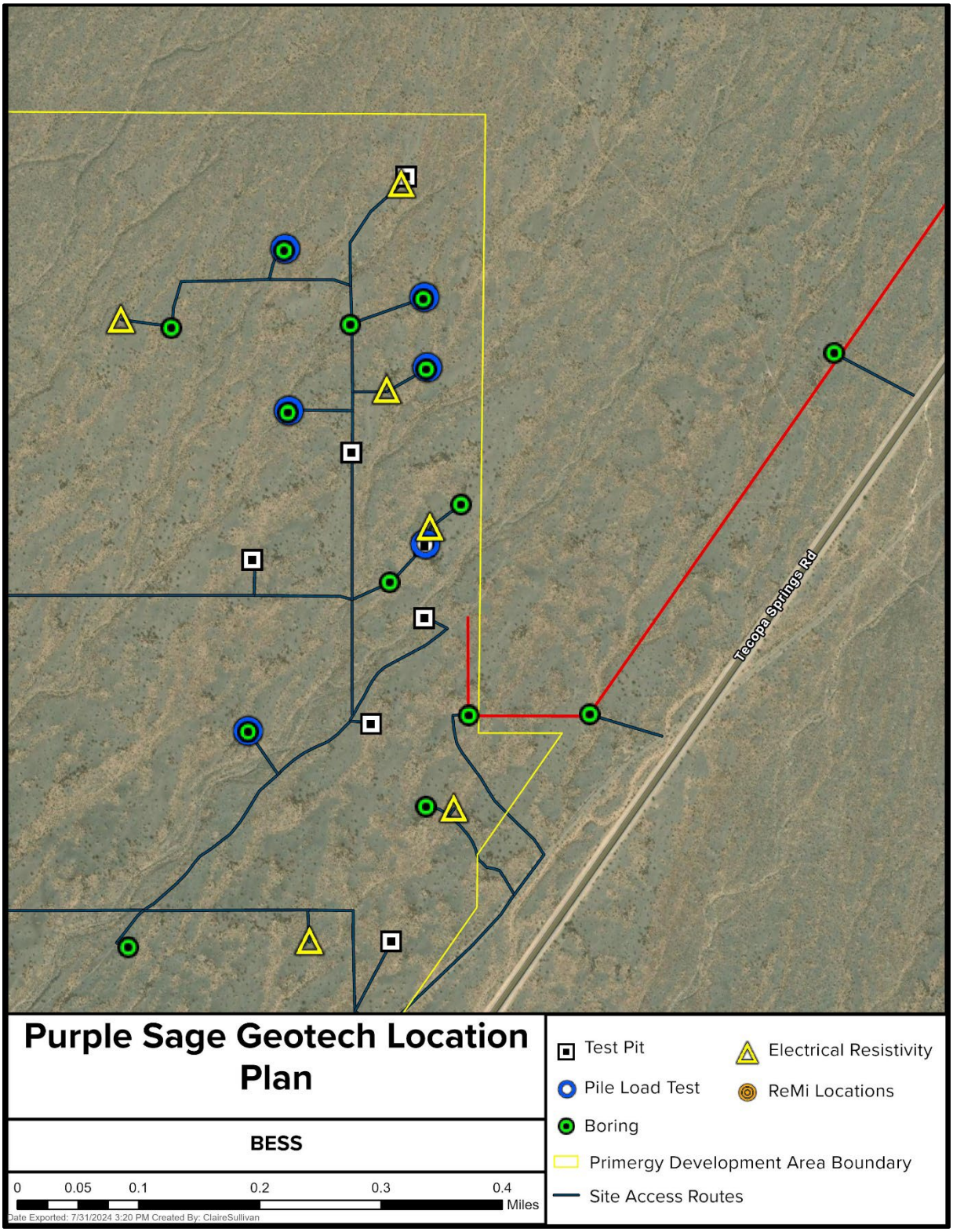


Figure 5. Test Locations and Temporary Access Paths (Substation and Generation Tie-In Route)

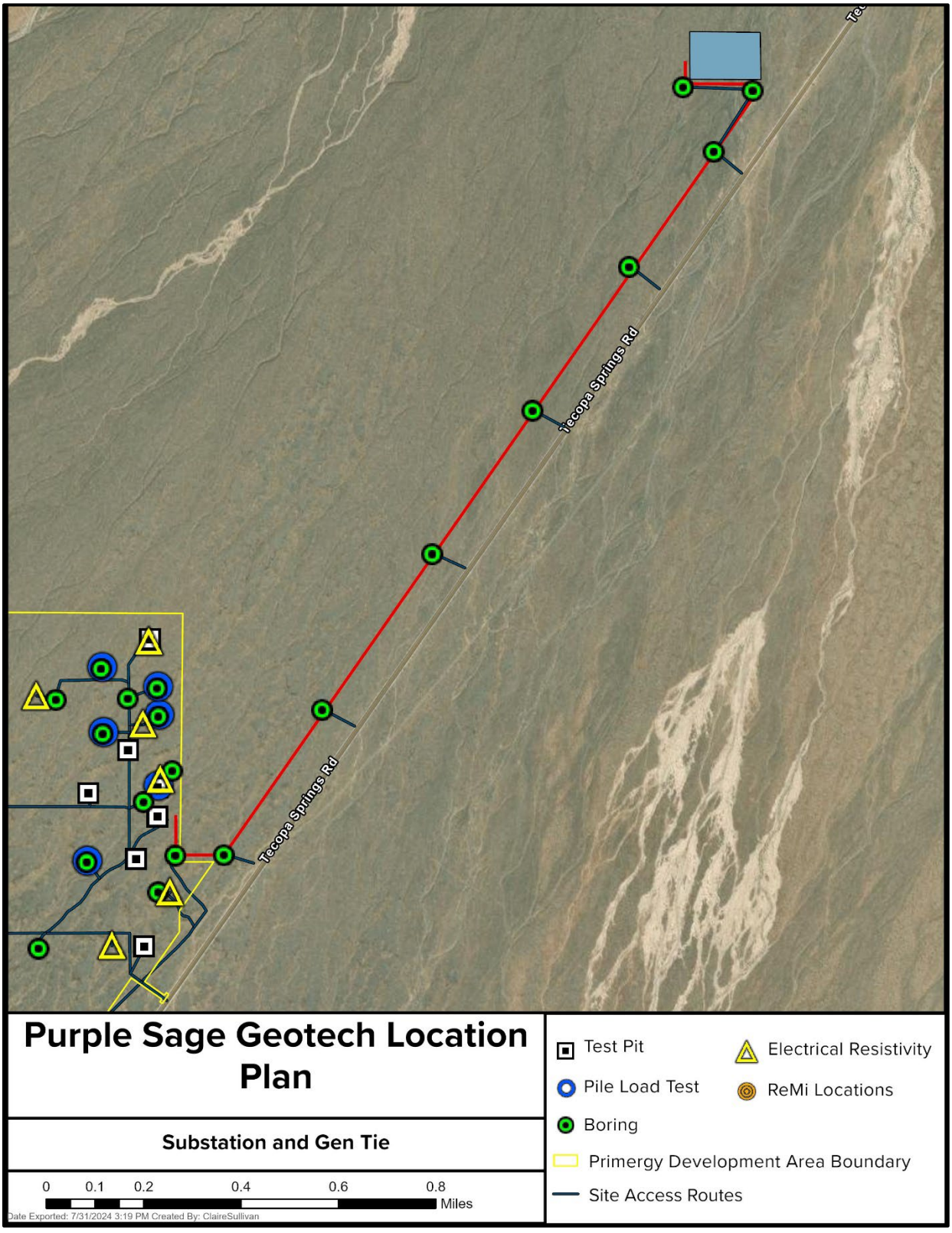
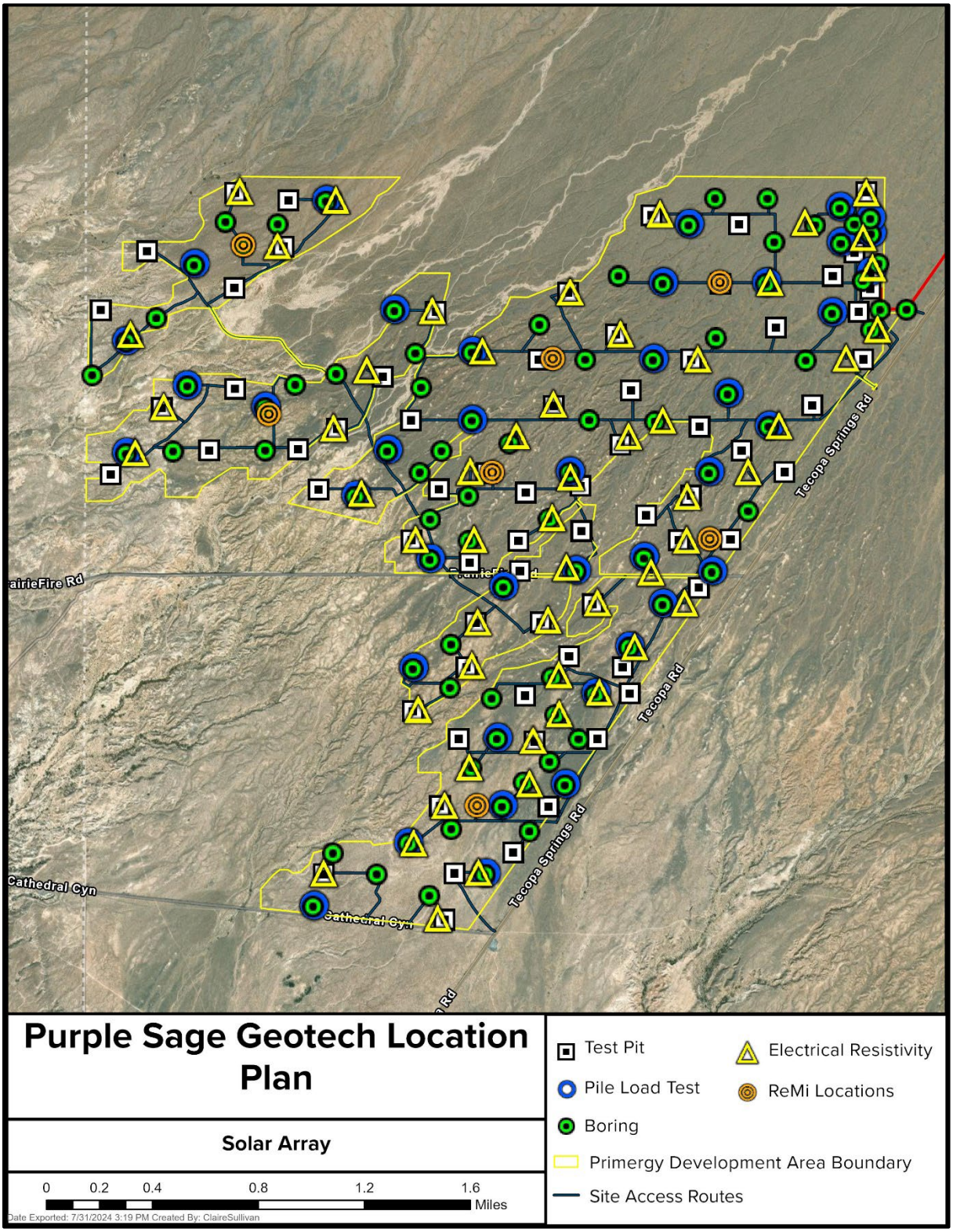


Figure 6. Test Locations and Temporary Access Paths (Solar Array)



1.4 Geotechnical Exploration Equipment and Methods

Before geotechnical work activities start, the contractor will coordinate with BLM to access the property. If needed, underground utilities will be located and marked prior to excavation and any fieldwork.

Once on-site, the drill team will obtain the necessary exploratory core samples using a truck-mounted drill rig with a 14-foot-high tower (e.g., Diedrich D-120, which weighs approximately 28,000 pounds and is 8 feet wide by 29 feet long [**Figure 7**], or a similar type), the drill rig will temporarily disturb an area of 25 feet by 25 feet (See **Table 4**). Two support pickup trucks will transport personnel, equipment, and samples. Other equipment and vehicles to be used consist of one small generator, one portable coring machine, and one delivery truck. During the field activities, four to six workers will be on-site, including one driller, two driller's assistants, and one field logger.

Standard Penetration Testing (SPT), Modified California (MCAL), or Shelby tube samplers will be used to secure geotechnical samples at 96 locations on the site. Samples will be obtained at regular intervals with a minimum of four samples in the upper 10 feet of borings and every 5 feet thereafter. Prior to drilling at each location, the contractor will core with a 6- to 8-inch-diameter core barrel using a portable coring machine. Drilling and sampling will then be completed with the truck-mounted drill rig using hollow-stem augers to sample/evaluate subsurface conditions from 15 feet to a maximum depth of approximately 50 feet below the ground surface. Once drilling is complete, each borehole will be backfilled immediately with flowable bonded aggregate fill approved for use by the Clark County Department of Public Works.

In addition to bore testing, electrical resistivity testing will be performed in 55 locations on the site using a Werner 4 pin method. At each test location, four measurements will be taken at progressively larger electrode spacing of 2.5, 5, 10, 20, and 50 feet. All pins will be placed adjacent to the recognized pathways. This test does not require excavation and is considered "non-invasive".

Near the electrical test locations, soil samples for thermal resistivity testing will be taken. Soil will be extracted using a mini-excavator or backhoe, with soil in the 3- to 4-foot depth range removed for laboratory testing. Soils above that depth will be backfilled and the area of sampling smoothed out. Approximately 1 cubic foot of soil will be removed per test location.

Refraction Microtremor (ReMi) tests will be conducted to access subsurface conditions by measuring the natural vibrations (microtremors) of the ground to determine soil properties, like stiffness by analyzing how seismic waves travel through the earth. The ReMi test consists of placing a series of geophones on the ground surface to record ambient seismic noise or vibrations, without the need for invasive drilling.

Pile load testing will be performed in 40 locations near borehole areas. A group of three piles (6 × 9 feet) will be installed at each location using a truck-mounted or skid steer–mounted unit. Target depth will be 5 feet for two of the piles and 8 feet for the third. Drive times and forces will be recorded during pile placement. Approximately 5 to 10 days later, full load testing, consisting of lateral and axial testing, will take place. All piles will be removed as part of that testing, and test locations will be restored to their original grade and condition. For both phases, an additional truck will accompany the pile-driver unit to transport piles and personnel.

There will be 70 test pit locations on site. The test pits will be fully contained within the work area. The test pits will be excavated by a tracked excavator or rubber-tired backhoe to a depth of up to 10 feet or to refusal. Each test pit will be approximately 2' by 4' wide using a standard bucket. There will be approximately three bulk samples in 5-gallon buckets that will be collected at each location and subsequently tested to evaluate subsurface soil conditions. After the test pit is excavated, it will be backfilled using the excavated soil. The backfill will be tamped down to ensure proper compaction and that the pit is back to natural grade.

1.4.1 Test Locations Temporary Disturbances

While temporary disturbance areas will vary, depending on test type, a maximum temporary disturbance area of 25 feet x 25 feet is assumed for each test location and included in the total test location acreage in **Table 4** below. Trimming is expected to be minimal and will only occur where vegetation can affect access or equipment. Vegetation would be trimmed using hand tools and will maintain a minimum height of 18 to 24 inches. The test areas will not need to be graded or leveled out as the drilling rig can accommodate grade differentials and maintain the vertical position needed to perform the exploratory boring operation. The proposed testing areas may be shifted slightly if it is determined that doing so will reduce the amount of vegetation trimming necessary at each location, and if it minimizes the amount of temporary disturbance. The overall goal will be to minimize, to the extent possible, any trimming of vegetation and temporary disturbance at each location.

Figure 7. Truck-mounted drill rig, Diedrich D-120 type.

1.4.2 Roads and Access

The PSEC geotechnical study areas would primarily be accessed by using Prairie Fire Road, Cathedral Canyon Rd and Tecopa Highway. These are existing paved roads running east-west though the center and the southern boundary and along the western boundary of the project site. Within the project site, Prairie Fire Road provides access to the northern and southern portions of the project area via two-track dirt roads. While the Las Vegas Land and Resource Management Plan (BLM 1998) allows off-highway use within dry washes for all motorized and mechanized vehicles, it is anticipated that access within dry washes will be minimal and will mainly utilize existing paved or two-track dirt roads. When temporary access within washes is required, overland travel will be designed to minimize the crushing of vegetation, particularly larger-diameter cactus and yucca, which will be avoided. Washes may have vegetation within them, but their ephemeral flows minimize densities of vegetation, particularly cacti and yucca.

Table 2 lists the previously disturbed travel access segments that will be used for access to geotechnical locations. **Table 3** lists temporary new disturbance due to overland travel access to geotechnical locations. New disturbance paths will be limited to 9 feet wide. Overland travel access would avoid cacti and yucca. All temporary disturbance areas would be restored in accordance with the BLM-approved Restoration and Revegetation Plan. Spot grading will not be needed for travel along the access routes. **Table 4** below summarizes the temporary disturbances associated with test locations and overland travel access.

Table 2. Previously Disturbed Travel Access

Overland Travel Access Segment No.	Access Type	Length [ft]	Disturbance [sf] (9-ft wide path)	Disturbance [acres]
W12	Borehole	955.94	8603.45	0.20
W15	Borehole	591.91	5327.22	0.12
C28	Borehole	103.66	932.91	0.02
C39	Borehole	144.47	1300.26	0.03
C131	General Access	482.34	4341.03	0.10
C76	General Access	519.10	4671.89	0.11
C82	General Access	994.68	8952.14	0.21
C84	General Access	166.26	1496.34	0.03
C86	General Access	1016.25	9146.26	0.21
C89	General Access	460.66	4145.94	0.10
S46	General Access	176.98	1592.78	0.04
S15	General Access	414.71	3732.39	0.09
S45	General Access	793.84	7144.57	0.16
S54	General Access	796.40	7167.56	0.16
S25	General Access	229.17	2062.50	0.05
W34	General Access	339.05	3051.47	0.07
W38	General Access	806.50	7258.49	0.17
W40	General Access	898.08	8082.75	0.19
C136	General Access	868.02	7812.22	0.18
C137	General Access	376.55	3388.99	0.08

C138	General Access	597.39	5376.53	0.12
S1	General Access	216.27	1946.40	0.04
C51	General Access	1195.90	10763.12	0.25
S3	General Access	677.43	6096.85	0.14
S4	General Access	84.97	764.69	0.02
S7	General Access	1029.97	9269.70	0.21
S12	General Access	881.23	7931.03	0.18
S14	General Access	1089.22	9802.94	0.23
S16	General Access	334.18	3007.58	0.07
S16	General Access	798.14	7183.23	0.16
S23	General Access	550.35	4953.11	0.11
S35	General Access	1378.41	12405.65	0.28
C71	General Access	759.15	6832.35	0.16
C111	General Access	876.28	7886.51	0.18
C106	General Access	268.93	2420.37	0.06
C108	General Access	112.12	1009.11	0.02
C141	General Access	592.47	5332.20	0.12
C121	General Access	819.31	7373.78	0.17
W25	General Access	927.60	8348.36	0.19
W24	General Access	995.92	8963.24	0.21
W36	General Access	710.50	6394.48	0.15
W22	General Access	3151.45	28363.02	0.65
W11	General Access	903.36	8130.25	0.19
W17	General Access	138.25	1244.26	0.03
W19	General Access	973.27	8759.42	0.20
W46	General Access	45.99	413.91	0.01
W4	General Access	474.31	4268.76	0.10
W3	General Access	1507.27	13565.41	0.31
C146	General Access	1270.52	11434.72	0.26
C142	General Access	960.92	8648.32	0.20
C148	General Access	181.90	1637.08	0.04
C40-	General Access	1270.36	11433.28	0.26
C69	General Access	536.44	4827.95	0.11
C74	General Access	552.41	4971.67	0.11
C78	General Access	692.26	6230.37	0.14
C80	General Access	284.67	2562.07	0.06
S10	General Access	189.44	1704.95	0.04
S55	General Access	1147.87	10330.83	0.24
C97	General Access	341.40	3072.64	0.07
C144	General Access	188.65	1697.87	0.04
W13	Test Pit	721.16	6490.41	0.15
C60	Test Pit	531.42	4782.75	0.11
Total Previously Disturbed Road Access Acres				**8.70**

Table 3. Previously Undisturbed Travel Access

Overland Travel Access Segment No.	Access Type	Length (feet)	Disturbance Area (sf)	Disturbance (acres)
S51	Borehole	120.79	1087.08	0.02
S59	Borehole	654.67	5891.99	0.14
S49	Borehole	864.63	7781.65	0.18
S21	Borehole	346.25	3116.25	0.07
S30	Borehole	602.31	5420.78	0.12
S40	Borehole	751.90	6767.13	0.16
S41	Borehole	1111.97	10007.70	0.23
S43	Borehole	476.33	4286.96	0.10
W30	Borehole	189.59	1706.34	0.04
W33	Borehole	766.03	6894.25	0.16
W43	Borehole	1189.76	10707.88	0.25
S25	Borehole	618.22	5563.94	0.13
C47	Borehole	1178.59	10607.27	0.24
C68	Borehole	760.54	6844.86	0.16
C57	Borehole	134.03	1206.24	0.03
C58	Borehole	1306.95	11762.58	0.27
C117	Borehole	664.20	5977.77	0.14
C101	Borehole	1268.51	11416.63	0.26
C99	Borehole	852.93	7676.38	0.18
C129	Borehole	361.29	3251.61	0.07
C77	Borehole	89.83	808.51	0.02
C134	Borehole	328.68	2958.12	0.07
C46	Borehole	689.07	6201.67	0.14
W44	Borehole	19.81	178.25	0.00
C21	Borehole	1288.26	11594.33	0.27
C16	Borehole	171.80	1546.21	0.04
C140	Borehole	298.05	2682.47	0.06
C3	Borehole	583.08	5247.75	0.12
C19	Borehole	830.56	7475.01	0.17
C7	Borehole	1018.31	9164.83	0.21
C26	Borehole	334.09	3006.77	0.07
C123	Borehole	386.97	3482.71	0.08
C124	Borehole	380.05	3420.49	0.08
C125	Borehole	378.53	3406.75	0.08
C126	Borehole	394.58	3551.23	0.08
C127	Borehole	377.75	3399.71	0.08
C127	Borehole	785.79	7072.08	0.16
C128	Borehole	761.58	6854.25	0.16
C118	Borehole	549.12	4942.10	0.11

C25	Borehole	75.54	679.83	0.02
C31	Borehole	58.84	529.56	0.01
C143	Borehole	55.96	503.68	0.01
W20	Borehole	43.47	391.21	0.01
W23	Borehole	63.61	572.49	0.01
C5	Borehole	993.76	8943.81	0.21
W14	Borehole/Pile Load Test	336.96	3032.68	0.07
W41	Borehole/Pile Load Test	408.74	3678.66	0.08
C14	Borehole/Pile Load Test	274.38	2469.43	0.06
C22	Borehole/Pile Load Test	1110.66	9995.94	0.23
C64	Borehole/Pile Load Test	1586.14	14275.24	0.33
C55	Borehole/Pile Load Test	1077.05	9693.42	0.22
C54	Borehole/Pile Load Test	937.69	8439.24	0.19
C95	Borehole/Pile Load Test	23.76	213.80	0.00
C115	Borehole/Pile Load Test	559.41	5034.65	0.12
C34	Borehole/Pile Load Test	928.83	8359.44	0.19
C109	Borehole/Pile Load Test	140.77	1266.90	0.03
C2	Borehole/Pile Load Test	683.86	6154.72	0.14
S58	Borehole/Test Pit/Electrical Resistivity	1282.47	11542.21	0.26
W9	Borehole/Test Pit/Electrical Resistivity	691.76	6225.87	0.14
W8	Borehole/Thermal Resistivity	593.34	5340.03	0.12
S19	Electrical Resistivity/Borehole	456.19	4105.68	0.09
S28	Electrical Resistivity/Borehole	803.79	7234.08	0.17
C45	Electrical Resistivity/Pile Load Test/Borehole	1303.76	11733.80	0.27
C17	Electrical Resistivity/Pile Load Test/Borehole	984.72	8862.49	0.20
C119	Electrical Resistivity/Pile Load Test/Borehole	1177.12	10594.11	0.24
C53	Electrical Resistivity	295.37	2658.31	0.06
C102	Electrical Resistivity	344.20	3097.77	0.07
C130	Electrical Resistivity	84.07	756.64	0.02
C116	Electrical Resistivity	275.29	2477.62	0.06
C75	Electrical Resistivity	355.76	3201.83	0.07
C33	Electrical Resistivity	118.34	1065.06	0.02
C37	Electrical Resistivity	77.32	695.86	0.02
S5	Electrical Resistivity	226.94	2042.50	0.05
C93	Electrical Resistivity	60.39	543.55	0.01
S8	Electrical Resistivity	218.66	1967.95	0.05
S1	Electrical Resistivity	763.49	6871.38	0.16
S31	Electrical Resistivity	500.12	4501.09	0.10
S33	Electrical Resistivity	726.27	6536.46	0.15

W16	Electrical Resistivity	91.54	823.83	0.02
C30	Electrical Resistivity	1268.04	11412.39	0.26
C13	Electrical Resistivity	409.61	3686.48	0.08
C4	Electrical Resistivity	225.27	2027.47	0.05
C9	Electrical Resistivity	819.90	7379.13	0.17
S37	Electrical Resistivity	459.44	4134.94	0.09
C61	Electrical Resistivity	197.24	1775.14	0.04
C107	Electrical Resistivity	97.46	877.12	0.02
C27	Electrical Resistivity	37.96	341.66	0.01
C83	Electrical Resistivity	105.20	946.79	0.02
C87	Electrical Resistivity	208.68	1878.12	0.04
S50	Electrical Resistivity	223.65	2012.84	0.05
S57	Electrical Resistivity	486.61	4379.50	0.10
C65	Electrical Resistivity/Borehole	493.93	4445.35	0.10
C112	Electrical Resistivity/Borehole	651.18	5860.65	0.13
S47	Electrical Resistivity/Pile Load Test/Borehole	330.11	2970.97	0.07
S61	Electrical Resistivity/Test Pit	907.02	8163.15	0.19
S17	Electrical Resistivity/Test Pit	1623.80	14614.17	0.34
S42	Electrical Resistivity/Test Pit	1081.39	9732.53	0.22
W5	Electrical Resistivity/Test Pit	361.06	3249.53	0.07
W6	Electrical Resistivity/Test Pit	456.78	4111.04	0.09
W26	Electrical Resistivity/Test Pit	1391.64	12524.74	0.29
C63	Electrical Resistivity/Test Pit	287.47	2587.27	0.06
C1	Electrical Resistivity/Test Pit	574.20	5167.84	0.12
C67	General Access	803.97	7235.75	0.17
C62	General Access	716.08	6444.72	0.15
C145	General Access	2324.35	20919.12	0.48
C133	General Access	140.40	1263.60	0.03
C35	General Access	1300.60	11705.44	0.27
C38	General Access	672.88	6055.94	0.14
C42	General Access	130.85	1177.63	0.03
C147	General Access	716.90	6452.13	0.15
W32	General Access	417.20	3754.77	0.09
C96	General Access	276.01	2484.13	0.06
C50	General Access	107.86	970.70	0.02
C12	Pile Load Test/Borehole	206.52	1858.64	0.04
C11	Pile Load Test/Borehole	336.54	3028.84	0.07
C8	Pile Load Test/Borehole	511.51	4603.56	0.11
C26	Pile Load Test/Borehole	233.20	2098.82	0.05
S6	Pile Load Test/Borehole	123.66	1112.94	0.03
S53	Pile Load Test/Borehole	413.00	3716.99	0.09
S60	Pile Load Test/Borehole	1445.68	13011.14	0.30

S18	Pile Load Test/Borehole	1227.88	11050.91	0.25
S22	Pile Load Test/Borehole	187.85	1690.62	0.04
S27	Pile Load Test/Borehole	987.50	8887.54	0.20
S34	Pile Load Test/Borehole	90.85	817.63	0.02
S44	Pile Load Test/Borehole	207.80	1870.16	0.04
W18	Pile Load Test/Borehole	61.67	555.00	0.01
S9	Pile Load Test/Borehole	53.12	478.11	0.01
S38	Pile Load Test/Borehole	148.53	1336.75	0.03
C92	Pile Load Test/Borehole	326.42	2937.78	0.07
C91	Pile Load Test/Borehole	76.60	689.41	0.02
C72	Pile Load Test/Borehole	224.29	2018.58	0.05
C122	Pile Load Test/Borehole	205.46	1849.10	0.04
W2	Pile Load Test/Borehole/Electrical Resistivity	304.15	2737.39	0.06
W35	Pile Load Test/Borehole/Electrical Resistivity	313.03	2817.25	0.06
W29	Pile Load Test/Refraction Microtremor	1546.87	13921.82	0.32
C66	Test Pit	1197.91	10781.19	0.25
C59	Test Pit	608.77	5478.90	0.13
C52	Test Pit	1004.25	9038.23	0.21
C100	Test Pit	798.45	7186.01	0.16
C94	Test Pit	865.20	7786.77	0.18
C104	Test Pit	97.70	879.34	0.02
C88	Test Pit	105.53	949.81	0.02
C32	Test Pit	139.17	1252.52	0.03
C36	Test Pit	441.77	3975.89	0.09
C43	Test Pit	347.52	3127.69	0.07
S2	Test Pit	115.90	1043.07	0.02
S11	Test Pit	325.62	2930.61	0.07
S2	Test Pit	69.96	629.62	0.01
C135	Test Pit	107.39	966.54	0.02
S52	Test Pit	220.42	1983.77	0.05
S13	Test Pit	119.19	1072.71	0.02
S48	Test Pit	1753.26	15779.36	0.36
S20	Test Pit	762.20	6859.78	0.16
S24	Test Pit	261.85	2356.63	0.05
S32	Test Pit	74.24	668.18	0.02
W21	Test Pit	1499.59	13496.35	0.31
W10	Test Pit	674.64	6071.80	0.14
W28	Test Pit	923.77	8313.92	0.19
W31	Test Pit	1139.65	10256.88	0.24

W37	Test Pit	111.04	999.33	0.02
W42	Test Pit	566.63	5099.63	0.12
C23	Test Pit	107.01	963.08	0.02
C18	Test Pit	587.23	5285.06	0.12
C139	Test Pit	518.40	4665.59	0.11
C15	Test Pit	645.41	5808.71	0.13
C6	Test Pit	675.12	6076.11	0.14
C10	Test Pit	156.61	1409.47	0.03
C29	Test Pit	347.83	3130.50	0.07
S26	Test Pit	525.17	4726.57	0.11
S36	Test Pit	106.15	955.36	0.02
C110	Test Pit	214.79	1933.14	0.04
C105	Test Pit	943.59	8492.34	0.19
C114	Test Pit	752.55	6772.93	0.16
W45	Test Pit	41.25	371.27	0.01
C120	Test Pit	863.54	7771.82	0.18
C24	Test Pit	93.05	837.47	0.02
C70	Test Pit	252.05	2268.42	0.05
C73	Test Pit	163.73	1473.54	0.03
C79	Test Pit	138.24	1244.13	0.03
C85	Test Pit	51.18	460.58	0.01
C90	Test Pit	133.35	1200.14	0.03
C113	Test Pit	132.39	1191.54	0.03
C49	Test Pit/Borehole	739.10	6651.88	0.15
S15	Test Pit/Borehole/Electrical Resistivity	1123.05	10107.45	0.23
W1	Test Pit/Borehole/Pile Load Test	747.27	6725.44	0.15
S56	Test Pit/Electrical Resistivity	565.41	5088.65	0.12
S39	Test Pit/Electrical Resistivity	367.40	3306.63	0.08
W27	Test Pit/Electrical Resistivity	830.44	7473.98	0.17
W39	Test Pit/Electrical Resistivity	532.04	4788.36	0.11
C56	Test Pit/Electrical Resistivity	845.77	7611.89	0.17
C48	Test Pit/Electrical Resistivity	1052.39	9471.50	0.22
C41	Test Pit/Electrical Resistivity	403.14	3628.28	0.08
C98	Test Pit/Electrical Resistivity	143.67	1293.06	0.03
C19	Test Pit/Pile Load Test/Borehole	1333.79	12004.15	0.28
C20	Test Pit/Refraction Microtremor	2061.76	18555.80	0.43
C103	Refraction Microtremor	321.54	2893.82	0.07
C81	Refraction Microtremor	194.25	1748.23	0.04
C44	Refraction Microtremor	261.81	2356.29	0.05
S29	Refraction Microtremor	816.62	7349.55	0.17

W7	Refraction Microtremor/Borehole/Test Pit	1715.96	15443.64	0.35
Total Previously Undisturbed Travel Access Acres				**22.74**

Table 4. Calculation of Total Planned Disturbance

Disturbance	Acreage
Test Locations (261 locations)	3.74
Temporary Travel Access (previously undisturbed)	22.74
Temporary Travel Access (previously disturbed)	8.70 acres
Total Planned Disturbance	**35.18 acres**

Note: Test location acreage was calculated by assuming a maximum disturbance of 25 feet x 25 feet for each location.

1.4.3 Site Reclamation

Each work area would be kept in an orderly condition and free of trash throughout the drilling activities. All refuse and trash would be collected in closed containers until it is removed from the site and disposed of in an approved manner. Any waste oils, chemicals, and spill cleanups would be hauled to a site authorized for disposal of such materials. Upon completion of the sampling, each location will be recontoured, i.e., raked/re-leveled.

1.4.4 Staging Areas

No on-site staging areas will be needed during the geotechnical fieldwork.

1.4.5 Schedule of Activities

Once permitted, fieldwork in all 261 test areas is expected to take approximately four months to complete. Work will be conducted between the hours of 7:00 a.m. and 7:00 p.m. Each core sample is expected to take approximately two hours to complete. A window of approximately 9-12 months is being requested since some tests will be conducted at different times.

1.4.6 Fire Protection Plan

All federal, state, and county laws, ordinances, rules, and regulations that pertain to prevention, pre- suppression, and suppression of fire would be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations. It would be the responsibility of the drilling contractor to notify the BLM if a project-related fire occurs within or adjacent to the construction area.

Specific safety measures would be implemented during the project to prevent fires and to ensure quick response and suppression in the event a fire occurs. These measures include the following:

- The geotechnical contractor will provide and store, in a place easily accessed, shovels and a 5-lb ABC dry powder carbon monoxide fire extinguisher during all activities. Individual trucks and/or equipment may also contain fire protection equipment.
- The geotechnical contractor will have notification numbers readily available to all employees in case of fire.

1.5 Best Management Practices

As part of the core sampling, PSEC has identified the following best management practices (BMPs):

- Hazardous material shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste, including trash and litter, garbage, solid waste, petroleum products, and other potentially hazardous materials, shall be removed to a disposal facility authorized to accept such materials.
- If vehicle refueling and servicing activities need to be performed in the project area they will be fueled and serviced in areas at least 150 feet from the edge of ephemeral drainages and 328 feet from any wetlands, bodies of water, or wells. Refueling locations should be flat to minimize the chance of a spill spreading. Vehicle spill preventive and containment measures or practices will be incorporated as needed and will include the following:
    - Vehicles and equipment will be maintained at all times to minimize leaks of oils, fluids and fuels. Additionally, vehicles will be inspected for leaks prior to mobilizing onsite and regularly throughout their use.
    - Each crew will be equipped with a spill kit. Spill kits will include, but are not limited to, storage containers, bags of absorbent, absorbent pads, plastic sheeting, and shovels and pertinent soil removal equipment.
    - All reasonable efforts will be made to immediately control the source of discharge and contain the spill. Once a spill is contained, cleanup activities will begin. Contaminated materials will be labeled, contained and disposed of in accordance with all applicable laws and regulations.
    - Spills will be documented and reported to agencies as necessary.
- Boreholes will be backfilled with flowable bonded aggregate fill approved for use, by the Clark County Department of Public Works.
- The desert tortoise (Gopherus agassizii) is the only federally protected species with the potential to occur in the project area and will be considered in accordance with management policies set forth by the BLM and the U.S. Fish and Wildlife Service:
    - A qualified desert tortoise monitor will be on-site during access and geotechnical work.
    - Should a desert tortoise enter the area of activity, activities will immediately stop until the animal has left the area of its own accord.
    - A litter-control policy will be implemented to minimize predation on tortoises by ravens, coyotes, or other predators drawn to the project area. This policy will include the removal of trash from the drilling sites at the end of each workday, along with proper disposal of trash in a designated solid waste disposal facility.
    - A Worker Environmental Awareness Program (WEAP) will be implemented for the installation crew and maintenance personnel prior to commencement of activities. Training materials and briefings will include discussion of the Endangered Species Act and the consequences of noncompliance with it, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all design features of the Proposed Action.

  - Workers, including maintenance personnel, will be instructed to check underneath all vehicles before moving them, as tortoises often take cover under parked vehicles.
- Vehicles accessing the project area would temporarily disturb 22.74 acres of previously undisturbed areas (see **Table 2, Table 3 and Table 4**). Access would minimize disturbance to washes and would not place fill or any soils within the washes.

1.6 Environmental Considerations

The proposed project is not anticipated to have a significant environmental impact on any of the following resources once BMPs are taken into consideration.

- Air Quality: There would be minimal short-term increases in dust emissions during activities. Standard dust suppression would be used (water) during the geotechnical activities. An individual Clark County dust permit is not required, as the total acreage is below the threshold of 5 acres of disturbance.
- Surface and Groundwater Quality and Quantity: The proposed project would not result in impacts to groundwater quality or quantity. Prior experience in the area indicates that there are no water resources in the project area, and drilling depths are not deep enough to encounter groundwater zones. If groundwater is encountered, geotechnical activities will be halted, and the bore holes will be backfilled immediately.
- Existing Noise Levels: There would be short-term increases in ambient noise levels within the vicinity of each core sample during drilling activities (between 2 and 3 hours at each site).
- The nearest sensitive receptors are residences in Pahrump, more than 5 miles northwest, and the Stump Spring Area of Critical Environmental Concern is nearly 1.2 miles southeast. Due to the temporary and transitory nature of bore sampling, it is not anticipated that increases in the existing noise environment would cause impacts to individuals or sensitive receptors.
- Vegetation, Soil, and Soil Stability: There would be minimal disturbance (0.014 acre) to vegetation because of the temporary use around each core sample.
- Desert Tortoise: Desert tortoise is a federally threatened species known to occur in the project area; however, project specific BMPs are provided (see above) to minimize any potential impacts to desert tortoise.
- Avian: If activities occur during the migratory bird season, a survey will be performed to identify any active nests.
- Wildlife: General wildlife in the project area may include a variety of common wildlife, including big-game species, avian species, snakes, lizards, rodents, lagomorphs, desert tortoise, and canids. Because the drilling activities are proposed near SR 106 and Tecopa Road, it is anticipated that effects on wildlife would be minimal and temporary, stopping once the drilling activities have concluded after 2 to 3 hours.

1.7 Literature Cited

Bureau of Land Management (BLM). 1998. *Proposed Las Vegas Resource Management Plan and Environmental Impact Statement.* May 1998. Available at: https://eplanning.blm.gov/epl-front-office/projects/lup/78155/128953/156905/1998_LV_RMP_Volume_1.pdf. Accessed July 29, 2019.

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APPENDIX A

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