Attachment C – Corrective Action Plan and Well Data

This Attachment C has been prepared in support of an application (Application) by Fort Cady California Corporation (FCCC), to the United States Environmental Protection Agency (USEPA) for issuance of an Underground Injection Control Class III Area Permit (UIC Permit) for FCCC's planned Solution Mining Project (Fort Cady Project or Project) in San Bernardino County, California.

The Fort Cady Project colemanite ore body underlies portions of Sections 25, 26 and 27 of T8N, R5E, in San Bernardino County, California. The Fort Cady Project area is located near the Pisgah Crater, approximately 17 miles east of Newberry Springs, California, and two and one-half (2 ½) miles south of I-40 and the Burlington Northern Santa Fe Railway Pisgah siding in the Mojave Desert. The ore body is located in the central portion of the Project area and is bounded to the west and to the east by two faults. The Pisgah Fault, one of the major northwest-trending faults of the Mojave block, crosses the Project area approximately one-half to one mile southwest of the ore body. Fault B, a smaller, north-south trending fault, runs along the eastern portion of the Project area.

FCCC is proposing to establish a commercial "in-situ" mine to recover boric acid from the 412-acre ore body located an average of 1,400 feet (ft) below ground surface (bgs). The boric acid will be removed from the ground through a process that involves pumping a dilute acid solution into the colemanite ore to dissolve the borates, forming boric acid which will then be extracted by a reverse-pumping/airlifting process.

This Attachment C provides maps and a table of known existing boreholes and wells, with the information available for each hole and corrective actions to be taken in case of a well failure.

a. Well Permitting Requirements and Records

The State of California has primacy over only that portion of the Safe Drinking Water Act that covers drilling and closing of water wells, monitoring wells and UIC Class II wells. Should FCCC drill additional water or monitor wells, they will be permitted through San Bernardino County Department of Environmental Health Services (DEHS). All solution mining-associated wells will be permitted under the Class III Area UIC permit, which includes injection/recovery wells, observation wells and monitor wells.

Prior to 2015, California did not make well information available to the public. After 2015, well information may be found on-line at the California Department of Water Resources, although pre-2015 information may not be available. In the fourth quarter of 2018, FCCC retained a consultant to search the San Bernardino County records for information on pre-2017 wells. None were found. FCCC also requested the

Consequently, FCCC's records for wells drilled pre-2017 are incomplete. They are not in a report and do not have a reference. Table C-1 identifies all the well information that is available to FCCC. Duval geologists prepared hole summaries for the holes they drilled. TMS prepared summaries of all remaining holes, which are available in the electronic references. Hole summaries generally include the drill hole location, date drilled, total depth, casing materials of construction, logging information, plugging information and stratigraphy. After the first exploration holes, it appears that Duval did not log the RC chips, but only logged the core portion of the hole which generally began 1,000 ft bgs. It is unknown if Cement Bond Logs were run on each well, however, the limited Cement Bond Log information that is available is included in Table C-1.

FCCC has also provided electronically all available detailed lithologic and wireline logs as Confidential Business Information.

Table C-1: Data on Known Existing and/or Abandoned Wells

ID	Drilled By	Purpose	Longitude	Latitude	Elevation	Total Depth	Date Drilled	Material of Construction	Plugged?	Hole Summary	CBI - Lithology Logs	CBI – Gamma/Caliper/ Spontaneous Potential	CBI - Induction	CBI - Deviation/Directional	CBI - Drillers Report	CBI - Elastic Properties	CBI - 3D-Velocity	CBI - Neutron	CBI - Cement Bond Log	CBI - 4-Arm Diplog	CBI - Caliper	CBI - Temperature
DHB-1	Duval	Monitor	-116.4174911	34.7563070	2004.16	1623	Mar 79	Steel	No	●	●	●	●	●								
DHB-2	Duval	Exploration	-116.4095014	34.7564060	2033.15	1443	Apr 79	Steel/FRP	Yes	●	●											
DHB-3	Duval	Exploration	-116.4202035	34.7541298	1980.24	1773	May 79	Steel	Yes	●	●	●						●				
DHB-4	Duval	Exploration	-116.4227651	34.7521693	1981.09	1708	Jun 79	Steel	Yes	●	●	●										
DHB-5	Duval	Exploration	-116.4228959	34.7563870	1978.23	1730	Jul 79	Steel	Yes	●	●	●										
DHB-6	Duval	Exploration	-116.4199962	34.7583535	2008.70	1616	Aug 79	Steel	Yes	●	●	●										
DHB-7	Duval	Exploration	-116.4129864	34.7504189	2000.58	1735	Sep 79	Steel	Yes	●	●	●				●	●	●				
DHB-8	Duval	Exploration	-116.4259649	34.7570225	1966.53	1809	Dec 79	Steel	Yes	●	●					●						
DHB-9	Duval	Exploration	-116.4280102	34.7586697	1967.12	1750	Jan 80	Steel	Yes	●	●											
DHB-10	Duval	Exploration	-116.4285321	34.7495103	1980.77	1655	Feb 80	Steel	Yes	●	●	●										
DHB-11	Duval	Exploration	-116.4257032	34.7585064	1976.71	1671	Feb 80	Steel	Yes	●	●											
DHB-12	Duval	Exploration	-116.4231813	34.7585756	1992.99	1625	Apr 80	Steel	Yes	●	●	●										
DHB-14	Duval	Exploration	-116.4202021	34.7563339	1987.85	1631	Mar 80	Steel	Yes	●	●							●				
DHB-15	Duval	Exploration	-116.4148089	34.7562440	2012.98	1609	Feb 80	Steel	Yes	●	●											
DHB-16	Duval	Exploration	-116.4182261	34.7514313	1985.40	1845	Mar 80	Steel	Yes	●	●	●										
DHB-17	Duval	Exploration	-116.4229325	34.7544276	1982.78	1804	Apr 80	Steel	Yes	●	●	●										
DHB-18	Duval	Exploration	-116.4184753	34.7500491	Unknown	1878	May 80	Steel	Yes	●	●	●										
DHB-19	Duval	Exploration	-116.4084668	34.7485307	Unknown	1460	Apr 80	Steel	Yes	●	●	●										
DHB-20	Duval	Exploration	-116.4210770	34.7501343	Unknown	1671	May 80	Steel	Yes	●	●	●										
DHB-21	Duval	Exploration	-116.4178601	34.7475196	Unknown	1828	Jun 80	Steel	Yes	●	●											
DHB-22	Duval	Exploration	-116.4181698	34.7541236	Unknown	1711	Jun 80	Steel	Yes	●	●	●										
DHB-23	Duval	Exploration	-116.4154861	34.7471894	Unknown	1857	Aug 80	Steel	Yes	●	●	●										
DHB-24	Duval	Exploration	-116.4153659	34.7517847	Unknown	1780	Sep 80	Steel	Yes	●	●	●										
DHB-25	Duval	Exploration	-116.4133559	34.7487608	Unknown	1818	Sep 80	Steel	Yes	●	●											
DHB-26	Duval	Exploration	-116.4112153	34.7466429	Unknown	1702	Sep 80	Steel	Yes	●	●	●										
DHB-27	Duval	Exploration	-116.4133586	34.7444810	Unknown	1795	Oct 80	Steel	Yes	●	●	●										
DHB-28	Duval	Exploration	-116.4099091	34.7455662	Unknown	1690	Oct 80	Steel	Yes	●	●											
DHB-29	Duval	Exploration	-116.4080959	34.7413058	Unknown	1610	Oct 80	Steel	Yes	●	●	●										
DHB-30	Duval	Exploration	-116.4113768	34.7429018	Unknown	1720	Nov 80	Steel	Yes	●	●	●										
DHB-31	Duval	Exploration	-116.4113867	34.7407311	Unknown	1625	Dec 80	Steel	Yes	●	●	●										
DHB-32	Duval	Water Well	-116.434	34.735	Unknown	870	Dec 80	Steel	Yes	●	●	●										
DHB-33	Duval	Exploration	-116.4094033	34.7395692	Unknown	1860	Jan 81	Steel	Yes	●	●											
DHB-34	Duval	Exploration	-116.4128917	34.7524636	Unknown	1620	Jan 81	Steel	Yes	●	●	●										
DHB-35	Duval	Exploration	-116.440	34.774	Unknown	1459	Feb 81	Steel	Yes	●	●	●										
MWW-1 (MM-1)	Duval	Water Well	-116.435875	34.735108	2058	700	Jan 82	Steel	No	●												
MWW-2 (MM-2)	Duval	Water Well	-116.45273	34.748305	1988	Unk	1982	Steel	No	●												

ID	Drilled By	Purpose	Longitude	Latitude	Elevation	Total Depth	Date drilled	Material of Construction	Plugged?	Hole Summary	CBI - Lithologic Logs	CBI - GCSFT	CBI - Induction	CBI - Deviation	CBI - Drillers Report	CBI - Elastic Properties	CBI - 3D-Velocity	CBI - Neutron	CBI - Cement Bond Log	CBI - 4-Arm Diplog	CBI - Caliper	CBI - Temperature
P-1	MSME	Test Well	-116.4201620	34.7542001	1979.1	1500	Jun 87	Steel	No	●		●		●					●			
P-2	MSME	Test Well	-116.4202032	34.7548024	1980.7	1512	Jun 87	Steel	No	●		●		●					●			
P-3	MSME	Test Well	-116.4208280	34.7541551	1977.3	1510	Jul 87	Steel	Yes	●		●		●					●			
P-4	MSME	Test Well	-116.4208687	34.7544384	1977.4	1510	Jul 87	Steel	Yes	●		●		●					●	●		●
P-4a	FCMC	Test Well	Unknown	Unknown	Unknown	1510	Nov 98	FRP	No	●												
P-5	FCMC	Test Well	Unknown	Unknown	Unknown	1550	Jan 96	Steel	No	●		●		●				●				
P-6	FCMC	Test Well	NE1/4 SE1/4	Unknown	Unknown	1525	Mar 96	FRP	No	●		●		●								
P-7	FCMC	Test Well	NE1/4 SE1/4	Sec 26	Unknown	1475	May 96	FRP	No	●		●		●								
S-1	FCMC	Geomechanical	-116.4241574	34.7581528	1981.49	1500	1990	FRP	Unk	●		●									●	
S-2	FCMC	Geomechanical	-116.4206044	34.7538940	1979.28	1372.0/366	1990	FRP	Yes	●		●		●							●	
S-3	FCMC	Geomechanical	-116.4206044	34.7538940	2051.28	1500	1990	FRP	No	●		●									●	
SMT-1	Duval	Test Well	-116.4176243	34.7562236	2003.00	1315	Feb 81	FRP	No	●	●	●	●	●				●			●	
SMT-2	Duval	Test Well	-116.4177822	34.7561403	2002.20	1316	May 81	FRP	No	●	●	●	●	●							●	
SMT-3	Duval	Test Well	-116.4188778	34.7540982	1982.72	1518	Mar 82	FRP	No	●	●	●	●	●				●				
SMT-6	Duval	Test Well	-116.4193723	34.7543819	1982.43	1450	Apr 82	FRP	Yes	●	●			●				●			●	●
SMT-9	Duval	Test Well	-116.4193353	34.7538873	1980.40	1497	May 82	FRP	No	●	●	●		●								
SMT-92-2	FCMC	Monitoring	T8N R5E Sec 26	Unknown	Unknown	1325	Jun 93	FRP	Unk	●												●
SMT-93-1	FCMC	Monitoring	-116.417321	34.756085	2001.88	1450	Mar 93	FRP	No	●				●				●				
SMT-93-2	FCMC	Monitoring	-116.417355	34.755986	2002.59	Unknown	Unk	FRP	No	●												
APBL-001	FCCC	Exploration	-116.424915	34.761336	2006.5	1569	Dec 17	Steel	Yes	●	●	●		●								
APBL-002	FCCC	Exploration	-116.423705	34.759259	1997.2	1509	Dec 17	Steel	Yes	●	●	●		●								
APBL-003	FCCC	Exploration	-116.421209	34.759227	2019.6	1459	Dec 17	Steel	Yes	●	●	●		●								
APBL-004	FCCC	Exploration	-116.424161	34.757204	1978.4	1738	Nov 17	Steel	Yes	●	●	●		●								
APBL-005	FCCC	Exploration	-116.421664	34.757172	1995.9	1589	Nov 17	Steel	Yes	●	●	●		●								
APBL-006	FCCC	Exploration	-116.419168	34.757140	2002.1	1503	Dec 17	Steel	Yes	●	●	●		●								
APBL-007	FCCC	Exploration	-116.423784	34.755138	1977.9	1775	Dec 17	Steel	Yes	●	●	●		●								
APBL-008	FCCC	Exploration	-116.421287	34.755106	1984.1	1625	Oct 17	Steel	Yes	●	●	●		●								
APBL-009	FCCC	Exploration	-116.418756	34.755073	1992.8	1560	Sep 17	Steel	Yes	●	●			●								
APBL-010	FCCC	Exploration	-116.422742	34.754097	1989.8	1647	Nov 17	Steel	Yes	●	●			●								
APBL-011	FCCC	Exploration	-116.420054	34.753842	1983.7	1778	Oct 17	Steel	Yes	●	●	●		●								
APBL-012	FCCC	Exploration	-116.421743	34.753051	1983.9	1750	Nov 17	Steel	Yes	●	●	●		●								
APBL-013	FCCC	Exploration	-116.419246	34.753018	1992.8	1769	Nov 17	Steel	Yes	●	●	●		●								
APBL-014	FCCC	Exploration	-116.418175	34.751091	1987.0	1845	Nov 17	Steel	Yes	●	●	●		●								
APBL-017	FCCC	Exploration	-116.418785	34.764588	2068.5	1403	Oct 17	Steel	Yes	●	●			●								
APBL-019	FCCC	Exploration	-116.399492	34.749508	2081.6	1703	Dec 17	Steel	Yes	●	●			●								
APBL-020	FCCC	Exploration	-116.397355	34.756485	2093.6	1320	Jun 18	Steel	Yes	●	●			●								
APBL-023	FCCC	Monitoring	-116.421058	34.754043	1982.2	1684	Oct 17	Fiberglass	No	●	●	●		●								
2018 PW-1	FCCC	Water Well	-116.397163	34.763499	2082	1005	Nov 18	Steel	No	●	●	●	●	●		●						
2018 PW-2	FCCC	Water Well	-116.398183	34.763035	2082	1010	Nov 18	Steel	No	●	●	●	●			●						
2018 TW-1	FCCC	Monitoring	-116.401249	34.763663	2,108	1005	Dec 18	Steel	No	●	●	●	●			●						

b. Map of Existing Wells

In accordance with 40 C.F.R. § 144.55(a), Figure C-1 provides an overview of the location of all known existing or abandoned wells drilled prior to 2019 and within a one-mile radius of the ore body. Figure C-2 shows a close-up of these known existing or abandoned wells. Potential future injection/recovery wells, monitoring wells and observation wells are available on Figures A-1 and A-2. Larger versions of Figures C-1 and C-2 are available in Attachment W.

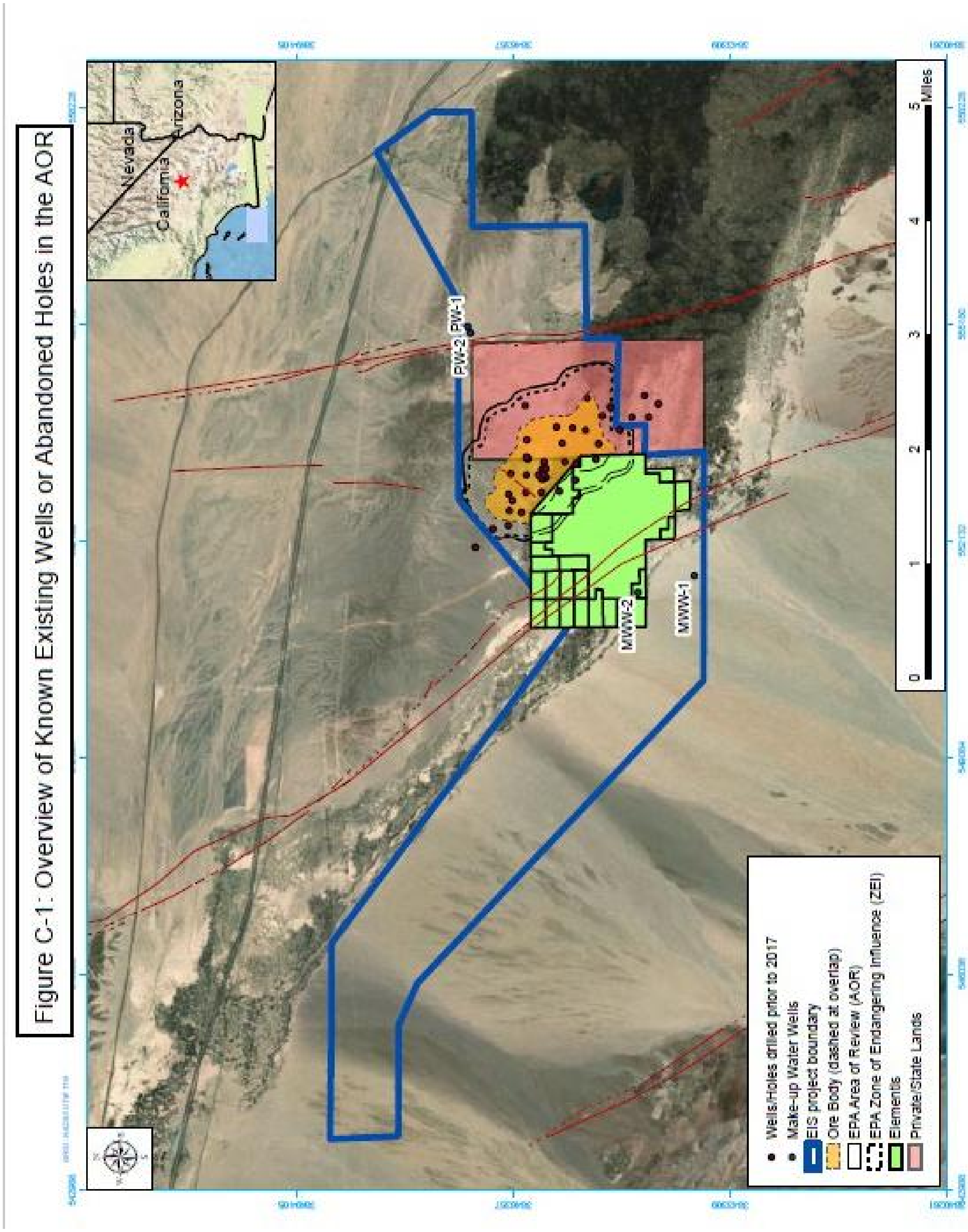
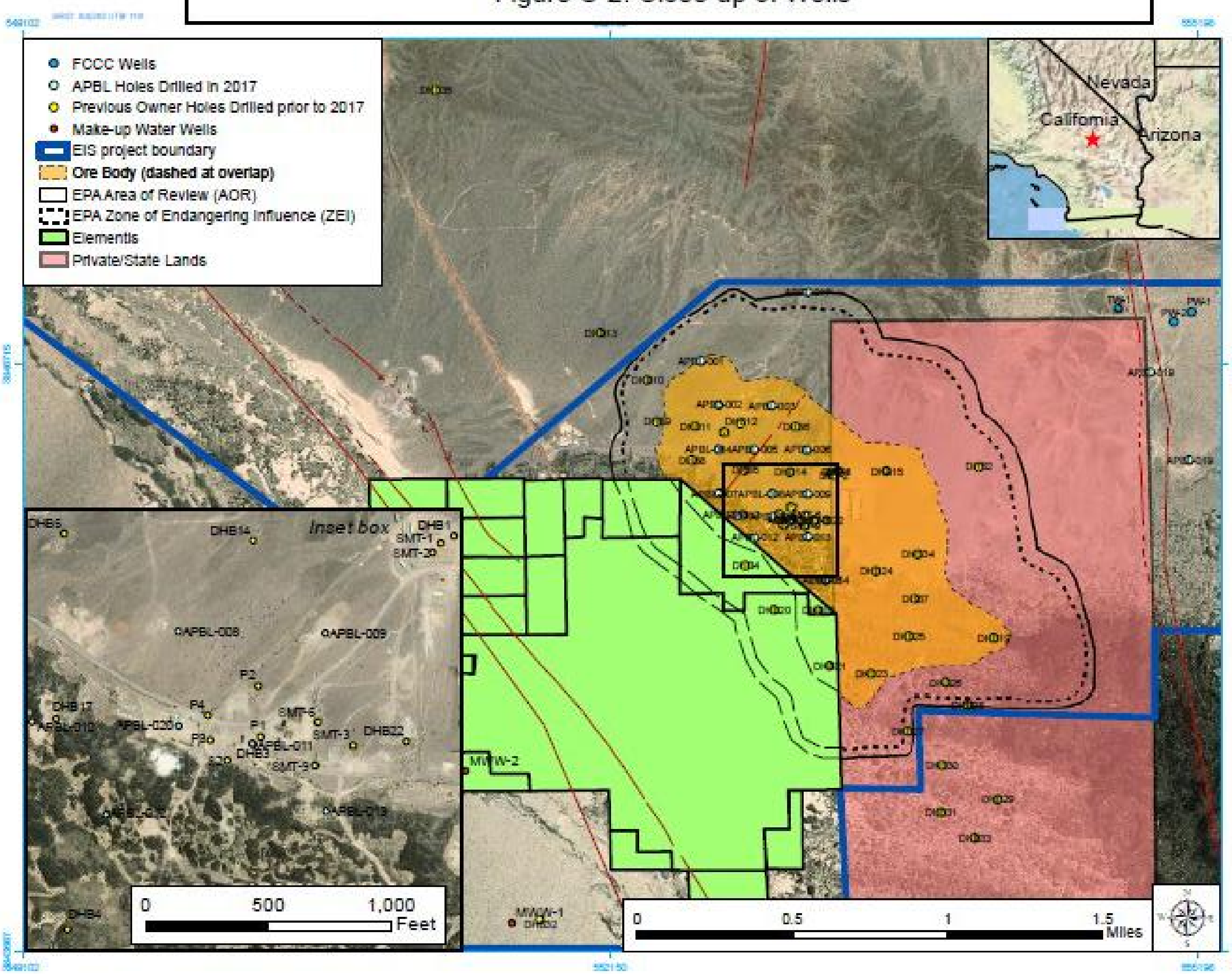


Figure C-1: Overview of Known Existing Wells or Abandoned Holes in the AOR

Figure C-2: Close-up of Wells



c. Corrective Actions

The following corrective action plan is proposed in accordance with 40 C.F.R. § 144.55 for Class III Area wells:

1. 40 C.F.R. § 144.55(b)(1) – Existing Injection Wells – Any wells drilled before 2017 will not be used for injection or recovery wells but may be used for in-wellfield observation wells. If such wells are not required for observation wells, they will be closed in accordance with Attachment Q.
2. 40 C.F.R. § 144.55(b)(2) – New Injection wells –
    a. All injection wells to be drilled by FCCC will be drilled in compliance with Attachments L and M.
    b. FCCC will advance all boreholes, with exception of core holes with air rotary drilling methods. EPA-approved drilling polymers may be augmented to the drill water to ensure the integrity of the borehole. Conventional drilling fluids, materials or drilling "muds" will only be used during coring, or if required to maintain rotary boreholes.
3. 40 C.F.R. § 144.55(b)(3) – Injection Pressure Limitation –
    a. Based upon testing by previous operators, FCCC has established a maximum wellhead injection rate of 250 psi to ensure that the formation fracture pressure is not exceeded. The injection pressure will be measured on the injection solution manifold line to ensure that well head pressures do not exceed 250 pounds per square inch of pressure (psi). The pressure from the header line will be monitored 24 hours per day, 7 days per week at the Distributive Control System. (Formation Fracture Pressure, RESPEC, 2019).
    b. FCCC will conduct step-rate injection testing on at least 5 wells within each mining group of 35 to 40 wells. The Step-rate injection tests will be used to verify the maximum injection pressure identified above. An additional step-rate injection will be conducted on at least one of the initial five (5) wells within a mining group every year for the life of the hole to log fracture pressure fluctuations due to mining. The annual testing will preferably be conducted on the same well each year. Information on the annual step-rate test on the in-service well will be included in the next quarterly report after completion of testing. Should fracture pressures vary over time, FCCC may request a modification to injection parameters. Should fracture pressures not vary over time, FCCC may request authorization to stop annual step-rate testing.
    c. RESPEC conducted an evaluation of relevant existing documents that discussed formation fracture pressures, specifically the 1984 Guckert report, which contained all relevant documentation to support their findings. The RESPEC evaluation found that formation fracture pressures varied by well, based upon a variety of factors. However, the lowest Fracture Pressure at Wellhead was 290 psi. (Formation Fracture Pressure, RESPEC, 2019). Therefore, FCCC has elected to not exceed a pressure of 250 psi at the common manifold header.
    d. FCCC has not identified any documents indicating any historic wells were operated in excess of this fracture pressure. FCCC will not operate any well above 250 psi to ensure that fractures do not occur in the ore body due to overpressure.
    e. As discussed in more detail in the Monitoring and Corrective Action Plan, summarized in Attachment P, FCCC will conduct step-rate tests on at least five (5) wells in each mining group of 35 to 40 wells. The wells tested within the group will be selected to be away from any existing solution mining impacts.

4. 40 C.F.R. § 144.55(b)(4) – Impacts to potential USDWs:
    a. As documented in Attachment A, there are no known USDWs within the Wedge or near the colemanite ore body that can be affected by solution mining. The colemanite ore body is located within an evaporite sequence of low permeability, which is encapsulated by even lower permeable mudstones and claystone.
    b. The colemanite ore body is further isolated from potential USDWs by two (2) confining faults, the Pisgah Fault and Fault B.
    c. "Terra Modeling Services reviewed all existing logs to identify and locate any potential aquifers within the AOR. Very few lenses of lithologies that could be potential aquifers were identified. Further examination indicated that these were severely limited in size and volume, and as such were highly unlikely to be a supply of public drinking water." (TMS, 2019 Memo). TMS then used that information to update the existing ore body model with the non- ore body lithologic information in order to model Units 1 – 4 of the lithological sequence (*see* Figure F-2).
    d. The TMS geologic model was used by RESPEC to develop the AQTESOLV aquifer model. Utilizing the site-specific information provided by TMS, RESPEC "performed an analysis to determine the potential ability of small discontinuous lenses to yield a sufficient quantity of water to be classified as an EPA-defined aquifer. RESPEC reviewed a subset of lithologic logs and other data to assess the viability and likelihood of an aquifer or an underground source of drinking water (USDW) occurring at the project site." RESPEC concluded that due to the low permeabilities of the intermingled mudstone and sandstone, the limited extent of the potential aquifer bearing lenses and the lack of readily available recharge***, the potential does not exist for a USDW to be present in the AOR***. (Hypothetical Aquifer Drawdown, RESPEC, 2019, emphasis added). Upon EPA's request, RESPEC modified the AQESOLV model with best case scenario conditions directed by EPA and not reflective of site-specific conditions in the Project area. The results are available in the electronic references, along with a cross-section of the TMS lithologies used to populate the model.
    e. A numerical groundwater flow model was developed by McGinley & Associates, Inc. (MGA, 2020) to simulate the effects of solution mining at the Fort Cady Project. The model simulated the in-situ mining activities sequentially through mining groups of 35 – 40 wells within each of the three (3) mining blocks until the 412 subsurface acres have been mined. The sequential cycles of injection and recovery (I/R) from the wellfield were simulated in a steady-state calibrated groundwater flow model to estimate the extent of the ZEI and AOR. The model conservatively estimates that no impact from solution mining will be observed outside the ZEI boundary that extends, on average, 1100 feet from the ore body boundary. (MGA&I 2019).
    f. A geologist will log the OW, MW, AOR wells and at least the first five (5) I/R wells in each mining group during drilling and will provide details of lithologic changes as the boreholes are advanced. All known water bearing lithologies or any notable indication of groundwater encountered during drilling will be logged. If a water bearing lithology is encountered or if groundwater is suspected, fresh water will be circulated to clean the hole and an airlift will be conducted. The airlift will continue, and the discharge will be measured until either the hole is determined to be dry, or until a sample representative of formation water can be collected. Discharge will be measured in rotary holes via the time volume method through the cyclone of the drill rig (i.e. the time to fill a vessel of known volume) reported in gallons per minute

(gpm). If discharge is less than one (1) gpm or goes dry, the airlift will be terminated, and fluid level will be monitored over a 12-hour period. A water level indicator will be used to measure the fluid level in the borehole and determine if the fluid is groundwater (i.e. rising to static water level) or is latent drilling fluid with a falling fluid level. If the fluid level is rising and determined to be groundwater, FCCC will begin a second airlift of the borehole which will continue until field parameters are stable (pH, conductivity, temp) after which a water sample will be collected and sent for analysis. Additionally, drawdown and recovery will be measured using a downhole pressure transducer housed below the air-sub of the drill string's bottom hole assembly. The drawdown and recovery data will be analyzed for transmissivity and hydraulic conductivity of the saturated lithology. Physical water level measurements will be collected via water level indicator through the drill rods to assess the depth to static groundwater. If the fluid level is determined to be falling, the lithology tested will be considered dry.

g. A report summarizing the findings and results of groundwater chemistry, static water level, and hydraulic parameters of the water bearing lithologies encountered during drilling, if any, will be prepared and submitted to EPA for their review and comment. Should the quantity and quality of groundwater be present to meet the definitions of a USDW, FCCC will follow with actions in the Monitoring and Corrective Action Plan, as summarized in Attachment P.

d. Potential Well Failures and Closure Requirements

Potential failures of either materials within the well or associated equipment, and their remedies, are addressed in Attachment O. Attachment O includes monitoring requirements to ensure that wells and associated equipment are operating as designed. The identified requirements are included in the Monitoring and Corrective Action Plan, which is summarized in Attachment P.

At the end of the economic life of mining groups of 35 to 40 wells, the ore body will be rinsed, and the wells will be plugged and abandoned in accordance with Attachment Q.

Attachment Q – Restoration and Plugging and Abandonment Plans

This Attachment Q has been prepared in support of an application (Application) by Fort Cady California Corporation (FCCC), to the United States Environmental Protection Agency (USEPA) for issuance of an Underground Injection Control Class III Area Permit (UIC Permit) for FCCC's planned Solution Mining Project (Fort Cady Project or Project) in San Bernardino County, California.

The Fort Cady Project colemanite ore body underlies portions of Sections 25, 26 and 27 of T8N, R5E, in San Bernardino County, California. The Fort Cady Project area is located near the Pisgah Crater, approximately 17 miles east of Newberry Springs, California, and two and one-half (2 ½) miles south of I-40 and the Burlington Northern Santa Fe Railway Pisgah siding in the Mojave Desert. The ore body is located in the central portion of the Project area and is bounded to the west and to the east by two faults. The Pisgah Fault, one of the major northwest-trending faults of the Mojave block, crosses the Project area approximately one-half to one mile southwest of the ore body. Fault B, a smaller, north-south trending fault, runs along the eastern portion of the Project area.

FCCC is proposing to establish a commercial "in-situ" mine to recover boric acid from the 412-acre ore body located an average of 1,400 feet (ft) below ground surface (bgs). The boric acid will be removed from the ground through a process that involves pumping a dilute acid solution into the colemanite to dissolve the borates, forming boric acid which will then be extracted by a reverse-pumping/airlifting process.

This Attachment Q provides the required information on the well plugging and abandonment plan for the ore body and Area of Review (AOR).

a. Restoration Plan

Solution mining wells will be utilized until the recovered boron head grade falls to a level that makes recovery uneconomical. The wells will be mined in groups of 35 – 40 wells. It is anticipated that the wells within the group will reach their economic life as a group. Upon closure of a group of wells, the ore body will be rinsed to remove residual PLS and restore the water parameters to either MCL's or baseline levels, whichever is higher. It is anticipated that the baseline value will be the target to remain below. The rinsing/restoration of "closed" wells will begin within 90 days of "closure". A discussion on baseline levels is available in Attachment P.

To verify that post-closure formation waters do not exceed the pre-mining water quality, within each mining group of 35 – 40 wells, three (3) Injection/recovery wells, roughly in a triangle with two (2) wells on the east side and one on the west, will be converted to rinse verification wells (RVW) and then to post-closure monitor wells (CVWs). The injection/recovery equipment will be removed from the well. MIT testing will be conducted to ensure the integrity of the casing. A transducer will be installed in the well. Once PLS is no longer recoverable, fresh make-up water, or recovered water treated with lime to adjust the pH, will be injected into the well and either recovered from the same well, or from surrounding wells to "rinse" the ore body by replacing PLS with make-up water. Rinsing will occur until the recovered rinse water reaches steady state for field parameters: pH, temperature and conductivity. Once steady state has been achieved in field parameters, and to ensure that post-rinsing formation waters do not exceed baseline concentrations, or maximum contaminate levels (MCLs), whichever is higher, quarterly samples will be collected for five (5) years from the RVW wells and analyzed for the first line on Table P-2. Should any quarterly sample indicate that baseline water quality concentrations, or MCLs, whichever is higher, have been exceeded, additional rinsing may occur. The rinsing/monitoring process will be repeated until five (5) years of quarterly samples have remained below the initial baseline monitoring results. Should any exceedance be detected, then samples will be collected and analyzed for Table P-2, List 2 at least annually. If any samples exceed any analyte on List 2, then List 2 will be used for the quarterly sampling protocol until the analyte is not exceeded for four (4) consecutive quarters.

EPA will be notified of the restoration of the ore body related to the well(s) along with EPA forms 7520-19 for plugging and abandoning wells.

b. Plugging and Abandonment Plan

In accordance with 40 C.F.R. §§ 144.52 and 146.10, FCCC must prepare a Plugging and Abandonment (P&A) Plan. The requirements for P&A of wells are to plug in a manner to prevent movement of fluid out of the injection zone and into or between USDWs. Regardless of the type of well (*i.e.*, push/pull, injection to recovery or directional drilling, monitoring or observation), FCCC will remove all tubing from the well prior to plugging. Cement will be pumped from total depth (TD) to surface using a tremie pipe to ensure that cement is continuous throughout the tubing. To meet these requirements, FCCC will:

1. Document successful rinsing – following the protocol for rinsing and restoration in Attachment Q.a, FCCC will provide documentation to EPA regarding the status of ore body water restoration for either the single well or group of wells proposed to be Plugged and Abandoned.
2. Demonstrate mechanical integrity – Wells proposed for P&A, which are more than five years old, will have a current demonstration of mechanical integrity pursuant to 40 C.F.R. § 146.8(a)(2) (no fluid movement behind pipe) as appropriate for Class III injection wells.
3. Plug and abandon the subject well(s) – P&A will be accomplished, following achievement of static equilibrium, by pulling all free appurtenances and cementing the well from its total depth to ground surface using a tremie pipe to prevent bridging.
4. Regardless of the type of well to be closed, EPA Form 7520-19 will be submitted, using the most current version, 45 days prior to the commencement of plugging operations.
5. Regardless of well type (*i.e.*, push/pull, injection to recovery or directional drilling, monitoring or observation), the process is the same and therefore the information on form 7520-19 is the same.
6. Submit Plugging and Abandonment Report – FCCC will submit a plugging and abandonment report within 60 days after the well is plugged, using the most current EPA Form 7520-19.

Completed examples of injection well and monitoring/observation well forms 7520-19 follow:

OMB No. 2040-0042 Approval Expires 4/30/2022

United States Environmental Protection Agency

EPA

WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee

Fort Cady California Corporation
16195 Siskiyou, Ste 210
Apple Valley, CA 92307
442-292-2120

Permit or EPA ID Number	API Number	Full Well Name
TBD	NA	TBD - Injection/Recovery Well

State	County
California	San Bernardino

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location

TBD 1/4 of TBD 1/4 of Section 25, 26, 35or 36 Township 5 N Range 6E

Latitude TBD

Longitude TBD

ft. from (N/S) Line of quarter section

ft. from (E/W) Line of quarter section.

Well Class	Timing of Action (pick one)	Type of Action (pick one)
Class I Class II X Class III Class V	Notice Prior to Work Date Expected to Commence TBD Report After Work Date Work Ended	Well Rework X Plugging and Abandonment Conversion to a Non-Injection Well

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

1. All wells will remain open an functional until the post-mining ore body rinse and monitoring has been completed. A final report will be submitted to EPA for review and approval.
2. Upon EPA approval, the well driller will remove all tubing from each well.
3. Each 7-inch well will be filled with neat cement from the total depth (TD) to surface with tremie pipe.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR § 144.32)

Name and Official Title (Please type or print)	Signature	Date Signed
Michael X. Schlumpberger CEO	Michael X Schlumpberger	22 OCT 2019

EPA Form 7520-19 (Rev. 4-19)

OMB No. 2040-0042 Approval Expires 4/30/2022

United States Environmental Protection Agency

EPA

WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee

Fort Cady California Corporation
16195 Siskiyou, Ste 210
Apple Valley, CA 92307
442-292-2120

Permit or EPA ID Number	API Number	Full Well Name
TBD	NA	TBD - Observation & Monitor Wells

State	County
California	San Bernardino

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location

TBD 1/4 of TBD 1/4 of Section 25, 26, 35or 36 Township 5 N Range 8E

Latitude TBD

Longitude TBD

ft. from (N/S) ____ Line of quarter section

ft. from (E/W) ____ Line of quarter section.

Well Class	Timing of Action (pick one)	Type of Action (pick one)
[ ] Class I	[ ] Notice Prior to Work	[ ] Well Rework
[ ] Class II	Date Expected to Commence TBD	[X] Plugging and Abandonment
[X] Class III	[ ] Report After Work	[ ] Conversion to a Non-Injection Well
[ ] Class V	Date Work Ended	

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

1. All wells will remain open an functional until the post-mining ore body rinse and monitoring has been completed. A final report will be submitted to EPA for review and approval.
2. Upon EPA approval, the well driller will remove all tubing and equipment, such as transducers from each well.
3. Each 4-inch well will be filled with neat cement from the total depth (TD) to surface with tremie pipe.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR § 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Michael X. Schlumpberger CEO	Michael X Schlumpberger	22 OCT 2019

EPA Form 7520-19 (Rev. 4-19)

c. Plugging and Abandonment Schedule

The P&A schedule will be prepared and updated pending development and updates to the Injection Procedures (Attachment K). Generally, wells will not be proposed for P&A until the end of their economic life, and any rinsing verification and/or post-closure monitoring and observation activities.

Following P&A activities, surface reclamation and restoration will be undertaken to match the existing landscape in accordance with the Surface Mining and Reclamation Act (SMARA) requirements (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1).

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TESTING, MONITORING AND CORRECTIVE ACTION PLAN

(EPA REPORTING REQUIREMENTS)

Fort Cady Project
San Bernardino County
California

Prepared for:

Fort Cady California Corporation
16195 Siskiyou Rd, #210
Apple Valley, CA 92307

June 2020

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APPENDIX A – FIGURES

1.0 PURPOSE OF TESTING, MONITORING & CORRECTIVE ACTION PLAN

Fort Cady California Corporation (FCCC) is in the process of obtaining a Class III Area UIC permit for the Fort Cady Project. As part of the permitting process, in accordance with 40 C.F.R. §§146.31 to 146.34, FCCC is required to prepare, implement and maintain a monitoring plan and corrective action plan. This plan serves to document all permitted testing, monitoring, operating and corrective action requirements in a single document and includes: well notification and construction, testing, recordkeeping and reporting; well field operating requirements, including visual monitoring, recordkeeping and reporting; post-mining groundwater restoration, notification, monitoring, recordkeeping and reporting; monitoring of the observation wells and point of compliance monitor wells; mechanical integrity testing requirements; and corrective action requirements.

A groundwater model was prepared to demonstrate the maximum potential extent of injectate migration during and after mining activities as part of the UIC permit application process. Based upon the results of the model, the Zone of Endangering Influence (ZEI) was identified as the maximum lateral reach of mining related solutions during the life of the mine. The ZEI extends an average of approximately 1,100 feet outside the ultimate wellfield area and is generally 1,300 feet from the downgradient (eastern) boundary of the wellfield and 800 feet from the upgradient (western) boundary of the wellfield.

A series of Observation Wells (OW) are located within the ZEI, approximately 400 feet outside the ore body. Each OW will have a permanently installed transducer to record hydrostatic pressure (water level), pH, specific conductance and temperature to a data logger. The information will be used to update and validate the groundwater flow model.
The Area of Review (AOR) boundary is located an additional 100 to 300 feet outside the ZEI, to include the potential maximum lateral reach of mining related solutions after 50 years of post-closure. The compliance monitoring wells (MW and AOR wells) are located within the AOR, to verify that mining solutions do not leave the AOR.

The ore body is approximately 7,200 feet in length in the NW/SE direction and approximately 3,200 feet wide in the NE/SW direction. In-situ mining will occur in three (3) blocks. Block 1 includes the NW portion of the ore body. Block 2 covers the middle of the ore body and will be the first Block to be mined as it is closest to the process plant. Block 3 covers the SE portion of the ore body. See Figure A-3, Appendix A. Each block will be mined through a series of mining groups, each group will generally include 35 to 40 wells; however, the number of wells may increase or decrease based upon the boric acid recovery from the wellfield. OW, MW and AOR wells associated with each mining block will be drilled prior to commencement of mining in that block. Multiple mining blocks may be in production simultaneously.

This plan outlines the monitoring program that will be implemented to verify that solution mining operational parameters remain within the limits established by the Class III UIC permit.

2.0 WELL CONSTRUCTION AND TESTING

To prevent the migration of mining solutions, all wells identified in the Class III Area UIC Permit application are required to be constructed, operated and closed in compliance with 40 C.F.R. §§146.32, 146.8 and 146.10. The following requirements apply to the Monitor Wells (MW and AOR), Observation Wells (OW), all Injection Wells (IW) and all Injection Wells, which have been converted to Rinse Verification Wells (RVWs) and subsequently Closure Verification Wells (CVWs). The following summarizes the information in the permit application Attachments L and M.

While EPA has regulations regarding the construction, completion and testing of solution mining related wells, FCCC will generally construct wells in accordance with American Water Works Association (AWWA) guidelines, which are summarized in Attachment L.

2.1 Injection/Recovery Well Completion Diagram

Figure M-3, Appendix B, provides the information applicable to the drilling and completion of the 7or 8-inch injection/recovery (I/R) wells.

2.2 Observation & Monitor Well Completion Diagram

Figure M-4, Appendix B, provides the information applicable to the drilling and completion of the 4-inch observation and monitor wells.

2.3 Potential United States Drinking Water Aquifers (USDW)

All previous boreholes drilled at the project, within the wedge (area between Pisgah Fault and Fault B) did not identify any sources of groundwater above the ore body. However, the following activities will be required during drilling the initial monitor wells to confirm that no drinking water aquifer is present overlying the ore body.

To be an Underground Source of Drinking Water (USDW), an aquifer must have a Total Dissolved Solids (TDS) of less than 10,000 mg/l and be able to supply 25 people a day, which is approximately 88 gpm.

FCCC will initially advance all boreholes, with exception of core holes, with air rotary drilling methods. EPA approved drilling polymers may be added to the drill water to ensure the integrity of the borehole. While searching for groundwater aquifers, conventional drilling fluids, materials or drilling "muds" will only be used during coring, or if required to maintain rotary boreholes. Once the presence or absence of a groundwater aquifer has been confirmed, FCCC may resort to mud-rotary drilling, upon concurrence by EPA.

While drilling the initial monitor wells, a geologist will log each borehole during drilling and will provide details of lithologic changes as the boreholes are advanced. All potential water bearing lithologies or any notable indication of groundwater encountered during drilling will be logged. If a water bearing lithology is encountered or if groundwater is suspected, fresh water will be circulated to clean the hole and an airlift will be conducted. The airlift will continue, and the discharge will be measured until either the hole is determined to be dry, or until a representative sample of formation water can be collected. Discharge will be measured in rotary holes via the time volume method through the cyclone of the drill rig (i.e. the time to fill a vessel of known volume) reported in gallons per minute (gpm). If discharge is less than one (1) gpm or goes dry, the airlift will be terminated, and fluid level will be monitored over a 12-hour period. A water level indicator will be used to measure the fluid level in the borehole and determine if the fluid is actually groundwater (i.e. rising to static water level) or is latent drilling fluid with a falling fluid level. If the fluid level is rising and determined to be groundwater, FCCC will begin a second airlift of the borehole which will continue until field parameters are stable (pH, conductivity, temp), or until the well goes dry. If the well goes dry, the well will be allowed to recover and pumped dry three (3) times, after which a water sample will be collected and sent for analysis. Additionally, if sufficient groundwater is present, drawdown and recovery will be measured using a downhole pressure transducer housed below the air-sub of the drill string's bottom hole assembly. The drawdown and recovery data will be analyzed for transmissivity and hydraulic conductivity of the saturated lithology. Physical water level measurements will be collected via water level indicator through the drill rods to assess the depth to static groundwater. If the fluid level is determined to be falling, the lithology tested will be considered dry.

A report summarizing the findings on the presence or absence of groundwater and, if applicable, results of groundwater chemistry, static water level, and hydraulic parameters of the water bearing lithologies encountered during drilling will be prepared and submitted to EPA for their review and comment. Should the quantity and quality of groundwater be present to meet the definitions of a USDW, FCCC will follow with actions in this Monitoring and Corrective Action Plan, as summarized in Attachment P.

After the determination of the presence or absence of water, well drilling will continue to Total Depth (TD).

2.4 Well Logging

The following open-hole and cased hole logging is required during the course of well drilling and construction for formation evaluation, depth control, and detection of borehole anomalies:

Open Hole Geophysical Logs:

- All borings: gamma-ray, induction, temperature, directional survey, sonic, and acoustic logs, unless otherwise stated by permit requirements;

- OW and MW/AOR wells: electrical logs;

- One Injection/Recovery Well (I/R) in each mining block: compensated neutron-density logs. The neutron-density logging will be used to assess formation porosity values for comparison with the values of effective porosity used in the groundwater flow model.

- Potential Action: The groundwater flow model shall be revised accordingly if significant differences are found in the comparison of porosity values used in the model and those measured by the compensated neutron density logs.

Cased Hole Geophysical Logs:

- Steel-cased wells: gamma-ray, temperature, and /or cement bond logs (CBLs) on all steel cased wells over the entire length of the well casing after the steel casing has been installed and cemented in place, unless otherwise stated by permit requirements.
  - Evaluation: The CBL evaluation shall allow detection and assessment of any micro-annuli between the casing and cement as well as any cement channeling in the borehole annulus.

- Fiberglass reinforced plastic (FRP) cased wells: Gamma-ray and temperature logs for determination of the top of cement in the casing/wellbore annulus, conducted within 48 hours of cementing the borehole annulus, if cement has not returned to the surface in the well annulus during cementing activities and the annulus is not subsequently backfilled with cement to the surface.
  - GR-temperature logs will be performed 30-60 days after injection operations begin, to evaluate the mechanical integrity of the casing/wellbore annulus (Part II mechanical integrity testing).

2.5 Well Development and Formation Water Sampling

After cased-hole logging, the well will be developed by airlifting until field parameters have stabilized. Once the well is fully developed, a sample will be collected under the monitoring protocol discussed in Section 5 and Section 6.

Mechanical Integrity Testing (MIT), discussed in Section 9, will be completed on all new wells.

2.6 Well TW-1 Review

Well TW-1was drilled as part of the Fault B Program in the 4th Quarter of 2019. Although the lithologic logs do identify formations of sandstone and tuff, when the well was air lifted for development, it blew dry within minutes. The recovery rate was calculated at 2/3 gpm, which was verified when transducers were installed as part of the PW-1 pump test. The recovery rate derived from the transducers was 0.10 gpm. FCCC believes that sufficient data is available on TW-1 recovery rates to demonstrate that the well will produce at a rate of less than ½ gpm. Should EPA require additional testing, a plan will be prepared for EPA's review and approval.

2.7 Well Construction Recordkeeping & Reporting

Prior to Testing

- FCCC must submit plans and specification to EPA at least 30 days prior for their review and approval.

- After receipt of EPA's approval of the plans and/or specifications, FCCC must provide EPA with 30 days' notice to allow EPA to observe the testing

<u>Post Construction Completion – Prior to Use</u>

Prior to any well being placed in service, a Final Well Construction Report, along with EPA Form 7520-09, or the newest version, will be completed and submitted to EPA for their review and acceptance. This applies to all project wells (those completed within the AOR) and must be submitted within 30 days after completion of the well. Or, in the case of I/R wells, completion of the group of wells. The Final Well Construction Report must include:

- Well completion diagram, including cement, casing, slotted casing, tubing, air hose, etc.
- Driller's Log, including materials tallies.
- Lithologic logs identifying tops of potential USDW bearing formations.
- Statement for site geologist regarding the potential presence of a USDW and associated activities.
- Copies of all logs, including an interpretation by a qualified professional.
- Downhole equipment,
- Well location, both in Lat/long and elevation and metes and bounds.
- Results of MIT.
- Report on formation testing (step-rate testing, etc.)

3.0 FORMATION TESTING

3.1 Start-Up Maximum Manifold Injection PSI

In accordance with 40 C.F.R. §146.33, FCCC is required to establish the formation fracture pressure to ensure that the wellhead pressure does not exceed the formation fracture pressure. The formation fracture pressure was calculated by previous operators to be 270 psi at the wellhead. FCCC has established a maximum wellhead pressure at the manifold of 250 psi.

3.2 Injection Formation Testing

Formation testing will be performed upon installation of the first five (5) I/R wells in each mining block to determine the layout and number of recovery wells, and to assess hydraulic parameters (e.g. hydraulic conductivity, specific storage) of the formation. Hydraulic parameter results from the formation testing will be compared to parameters used in the groundwater flow model.

- o <u>Potential Action</u>: The groundwater flow model shall be updated and reevaluated with revised hydraulic parameters from the formation testing, if the test-derived parameters are significantly different from those used in the model.

3.3 Formation Fracture Pressure Testing

EPA is requiring a verification of the formation fracture pressure. After completion of the MIT, a qualified hydrogeologist will conduct a step-rate test at the first five (5) IW's in each mining block. The five (5) I/R test wells must be representative of the formation and not influenced by other existing wells or previously leached zones. Therefore, the wells must be located at least 400-feet from any other wells as established by the directional survey.

3.4 Future Formation Fracture Pressure Testing

EPA has expressed concern that as mining progresses, the formation fracture pressure may decrease (i.e. the formation may fracture at a lower psi). FCCC will select one of the first five (5) wells to conduct a step-rate test annually for the first three (3) years.

3.5 Recordkeeping & Reporting

The results of all step-rate tests will be documented in a report by a qualified hydrogeologist and the report submitted to EPA for their review and approval within 60 days of completion of the test.

4.0 WELLFIELD INJECTION & RECOVERY PROCESSES

4.1 Sequential Wellfield Areas

The orebody wellfield will encompass approximately 273 acres of surface disturbance which is capable of supporting the approximate 450 wells required over the life of mine (LOM). Wells are anticipated to be located on a 200-foot spacing interval. Infrastructure will be developed in sequence with the wellfield and will consist of main trunk lines and branch lines. The total number of wells may be increased or decreased during LOM, depending upon recovery rates.

The orebody has been divided into three mining blocks. To ensure an adequate baseline has been established, Observation and Monitor Wells will be installed at least 6-months prior to mining in Block 2. Additional monitor wells will be installed at least one year prior to the start of solution mining in Blocks 1 and 3. The first five holes will be drilled in Block 2.

Figure L1 in Appendix A includes the conceptual layout of the distribution manifolds and the proposed pipeline layout supplying injection fluid to respective conceptual injection wells. This system will be modified and moved as dictated by production throughout the LOM as new areas are opened to leaching and leached areas are closed. Power, pipelines and roads will be extended to each well as it is completed.

All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water (USDWs). There are no known USDWs within the Project area, however the initial monitor wells will be logged and observed for the presence of water bearing zones during well installation. If potential USDWs are encountered during well field development, additional characterization and/or protective measures may be required per permit requirements. The casing and cement used in the construction of each new well will be designed for the life expectancy of the well. A typical injection well construction diagram is included in Appendix A.

4.2 Well Field Injection and Recovery Processes

Infrastructure will be developed in sequence with each wellfield development and will consist of main trunk lines and branch lines. As indicated in Figure L-1, Appendix A, the primary injection and recovery trunk lines will be 7-inch FRP pipe and the secondary distribution piping will be either a 2-inch or 3-inch FRP pipe.

4.2.1 Solution Injection

Solution will be injected down each well and into the formation through screened well casing at critical sections, with the use of packers at predetermined depths to control the leaching zone within the ore body to optimize recovery. Injection pressures are anticipated to average 150 psi and will not exceed 250 psi.

4.2.2 Solution Recovery

Pregnant leach solution (PLS) will be brought to the surface by air-lift procedures, or pump jacks, into deaeration tanks, where excess air will be removed. The PLS will then be pumped from the deaeration tank to the process plant for borate recovery.

The return PLS from the mine will be sampled and measurements will be conducted to test the effectiveness of the borate recovery reaction. Acid concentration measurements via titration for boric acid and HCl, and pH measurements are good initial indicators for effectiveness of reaction.

4.2.3 Process Water Composition

The injection solution, a weak acid solution (<5% HCl and 95% recycled process water and/or make-up water), will be injected into the ore body. The dilute HCl will dissolve the colemanite mineral to form an aqueous solution of boric acid, calcium chloride and trace minerals. The pregnant solution will have a boric acid head grade (3.0-5.0% H_3BO_3) as the product of a chemical reaction between the injected weak acid and the alkaline elements in the colemanite ore body forming a boric acid solution.

Injection solution will initially include up to 5% HCl and make-up water. The make-up water may be from wells MWW-1 or MWW-2 (from the aquifer west of the Pisgah Fault), or from PW-1 or PW-2 (from the aquifer east of Fault B).

The recovered (recycled) process water will contain any minerals from the ore body that are not precipitated during the process. Therefore, recycled waters are considered to be similar to formation water and make-up water.

5.0 PROCESS WELLFIELD MONITORING

5.1 Injection/Recovery Inward Gradient

To ensure that mining solutions stay within the AOR, EPA requires 0.5% more solution to be recovered than injected.

FCCC will track total injection and total recovery rates on a monthly basis, with a goal of achieving 0.5% greater recovery than production. However, due to the initial extremely low porosities within the ore body, this may not be possible. The total injection and total recovery quantities will be summarized on a monthly basis and reported to EPA in the quarterly reports. At the end of the first year of operations, the groundwater flow model will be updated, and will be used to evaluate the optimal net extraction percentage necessary to keep mining related solutions within the ZEI.

5.2 Visual Inspections

All wellfield fluid distribution piping, tanks, pumps, flow meters, pressure gages, valves, and other equipment necessary for the proper functioning of the process circuit will be inspected weekly to observe for signs of leakage or other malfunction. Completion of the inspection and any findings will be noted in a weekly maintenance inspection logs. If leakage or malfunction is observed, operation of the system will cease until repairs are made.

Hazardous materials releases will be logged in incident reports and reported by management to the California Office of Emergency Services (Cal OES).

5.3 Wellfield Parameter Monitoring

The wellfield parameters in Table 1 will generally be monitored and logged on a per-well basis and as daily wellfield totals. Monitoring frequency will be no less than daily.

Monitoring data will be entered into an electronic spreadsheet that will be reviewed daily by the control room operation and no less than weekly by the operations manager to ensure proper wellfield function and compliance. If the monitoring data suggest that excessive loss of fluid to the formation is occurring, the operations manager will be notified immediately, and corrective actions will be employed (see Section 10).

Table 1 – Injection and Recovery Well Monitoring Parameters			
Parameter	**Units**	**Frequency**	**Instrument**
Injection rate (gpm)	gpm	Continuous	Digital recorder
Daily injection volume	gallons	Daily	Digital totalizer
Total cumulative injection volume	gallons	Continuous	Digital totalizer
Injection pressure, measured at the header manifold	psig	Daily	Digital recorder
Injection fluid temperature, measured at the header manifold	°F	Daily	Digital recorder
Production rate	gpm	Continuous	Digital recorder
Daily produced fluid volume	gallons	Daily	Digital totalizer
Total cumulative produced fluid volume	gallons	Continuous	Digital totalizer
Produced fluid temperature	°F	Daily	Digital recorder
Specific Conductance	mmhos/cm	Continuous	Digital recorder

Note: If the continuous digital recorder is not operational due to temporary maintenance of the transducer or well, a sample will be collected manually at least once/8-hour period. The data will be used for confirmation of permit compliance.

6.0 MONITORING AND OBSERVATION WELLS

The monitoring and observation well network consists of three monitoring well classes which serve three different objectives: 1) monitoring locations to ensure mining solutions do not leave the AOR (MW and AOR wells); 2) monitoring of groundwater proximal to mining operations (Observation Wells), located approximately 400 feet from the ore body and within the ZEI boundary; and 3) wellfield closure monitoring (Rinse Verification Wells and Closure Verification Wells). Specific monitoring zones are summarized below. Proposed well locations are indicated on Figure A-3 in Appendix A, and additional descriptive information is provided in Table 2. Well schematic diagrams are also provided in Appendix A.

Table 2 – Proposed Monitoring and Observation Wells				
Purpose	**Well ID**	**Casing Diameter and Type**	**Mining Block**	**Screened Interval (feet bgs)**
ZEI Boundary Monitoring	MW-1	4-inch Steel	1	1300 - 1500
ZEI Boundary Monitoring	MW-2	4-inch Steel	1	1300 - 1500
ZEI Boundary Monitoring	MW-3a	4-inch Steel	2	1300 - 1500
ZEI Boundary/Basal Conglomerate Monitoring	MW-3b	4-inch Steel	2	1600 - 1700
ZEI Boundary Monitoring	MW-4	4-inch Steel	3	1300 - 1500
ZEI Boundary Monitoring	MW-5	4-inch Steel	3	1300 - 1500
ZEI Boundary Monitoring	MW-7	4-inch Steel	2, 3	1300 - 1500
AOR Boundary Monitoring	AOR-1	4-inch Steel	1	1300 - 1500

AOR Boundary Monitoring	AOR-2	4-inch Steel	1	1300 - 1500
AOR Boundary Monitoring	AOR-3	4-inch Steel	2	1300 - 1500
AOR Boundary Monitoring	AOR-4	4-inch Steel	3	1300 - 1500
AOR Boundary Monitoring	AOR-5	4-inch Steel	3	1300 - 1500
AOR Boundary Monitoring	AOR-7	4-inch Steel	2, 3	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-1	4-inch Steel	1	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-2	4-inch Steel	1	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-3	4-inch Steel	2	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-4	4-inch Steel	3	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-5	4-inch Steel	3	1300 - 1500
ZEI/Operational Monitoring	OW-6	4-inch FRP[1]	2	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-7	4-inch Steel	2,3	1300 - 1500
ZEI/Operational Monitoring - Compliance	OW-8	4-inch Steel	1	1300 - 1500
Rinse Verification Monitoring (Converted recovery wells, 5/mining well group)	RVW's	7-inch FRP	1 - 3	1300 - 1500
Closure Verification Monitoring (RVW's, 3/mining well group)	RVW's	7-inch FRP	1 - 3	1300 - 1500

[1] OW-6 to be placed within ore body to be used as future injection or recovery well.

6.1 Well-Spacing Rationale

The results from the numerical groundwater model were used to locate the position of the ZEI and related AOR. The model results were also used to identify the optimal locations for the OW and MW/AOR Wells. The spatial coverage provided by the seven (7) OW's and 13 MW/AOR wells is deemed sufficient to detect diffuse excursion plumes that would occur in the fine-grained subsurface lithologies. The diffuse nature of any excursions is supported by the groundwater flow model of the proposed solution mining activity. The combined observation and monitoring well spacing is greater than 2,000 feet on the downgradient (eastern) side of the ore body. This well spacing is considered by FCCC hydrogeologists to be sufficient to detect fluid excursions in the fine grained subsurface lithologies present at the site. Should significant water producing intervals be encountered during observation, monitoring, and production well installation, additional monitoring wells may be installed in the potential USDW to reduce the well spacing in the vicinity of potential water bearing zones.

6.2 Sampling Methodology

Groundwater samples will be collected from a sampling port located at each well head, or via a HydraSleeve™. The samples will be placed in laboratory-provided sample containers, preserved with designated preservative as needed, labeled, and placed on ice in a cooler pending delivery to the laboratory. The following section describes sampling methodology for the three types of monitoring/observation wells.

Monitor Wells

Initially, five compliance monitoring wells will be drilled within the Area of Review (AOR): MW3a and 3b, AOR3, MW7 and AOR7. The well locations are indicated in Figure A-3 and will be screened at the same approximately depth that injection will occur in the orebody, or 1,300–1,500 feet bgs. The wells will be sampled at least quarterly for groundwater compliance.

Observation Wells

The observation wells will be used to collect continuous measurements of hydrostatic pressure and water quality parameters using a dedicated multiparameter sonde inserted to the mid-point depth of the well screen interval. Placement of the sonde in the screened interval will provide for water-quality parameters (pH, temperature, specific conductance) that are representative of the formation water that naturally flows through the well. The transducer may be contained within the multiparameter sonde or may be a separate probe placed approximately 50 feet below the water level in the well. The transducer will be set at a fixed vertical datum to provide reliable, continuous measurements of water table elevation at anticipated 4-hour increments. The multiparameter sonde and pressure transducer will be equipped with an internal data logger and water level data will be downloaded from the transducer at monthly intervals. Collecting water samples from the observation wells will generally be conducted only if parameter sonde monitoring indicates an exceedance of baseline conditions.

Rinse and Closure Verification Wells

The closure monitoring wells will be sampled by airlift of water from the injection zone, for which the wells will be already equipped. Samples will be collected from a spigot at the well head. Alternately, if airlift procedures become impractical during post-closure monitoring period, samples will be collected with a no-flow HydraSleeve sample bag. The HydraSleeve design allows for a sample to be collected at depth from the screened interval of a well that is representative of formation water, without generating purged wastewater at the surface that requires disposal.

6.3 Sampling Frequency and Constituents

The sampling frequency and the constituents to be measured are included in Table 3, below.

Table 3 - Sampling Frequency and Constituents to be Measured		
Well Class	**Parameters**	**Frequency**

Monitoring Wells Quarterly List 1	pH, eC, TDS, As, B, Ca, Cl, Cr, Na, SO_4, Se, Mg, F	Quarterly
	Temperature, Specific Conductance, pH	Quarterly
Monitoring Wells Initial List 2	Alkalinity, Bicarbonate (CaCO3), Alkalinity Total (as CaCO3), Al, Sb, As, Ba, B, Be, Cd, Ca, Cl, Cr, Cu, F, Fe, Pb, Li, Mg, Mn, Hg, Nitrate + Nitrite (as N), Nitrogen, Total (as N), pH, K, Se, Ag, Si, Na, SO4, Tl, TDS, Zn, TPH, BTEX, Naphthalene, octane; radionuclides – radium 226 and radium 228 (combined), radon, uranium isotopes	First 6 Monthly Samples, then semi-annually. Radionuclides will be sampled for the first four (4) quarters.
Observation Wells	Hydrostatic Pressure (water level) Temperature, Specific Conductance, pH	Continuous, except for periods of maintenance; Monthly data downloads
Rinse/Closure Verification Wells	Monitoring Wells Quarterly List 1	Quarterly
	Temperature, Specific Conductance, pH	Quarterly

6.4 Post-Closure Monitoring

Monitoring wells, observation wells, and closure verification wells will be monitored for a period of five years following mine closure and aquifer restoration in order to demonstrate no significant risk of residual fluid excursion outside the AOR, unless otherwise stated in permit requirements.

6.5 Sampling Collection and Preservation

Groundwater samples are collected from a sampling port located at each well head, or from a dedicated HydraSleeve sample bag and placed in laboratory-provided sample containers, preserved with HCl or other designated preservative as needed, labeled, and placed on ice in a cooler pending delivery to the laboratory.

6.6 Subsidence Monitoring

FCCC will conduct a survey, either an InSar or by a licensed surveyor, at least every two years. All survey points will be tracked in a spreadsheet and plotted on a graph to identify any changes in surface elevations.

7.0 BASELINE PARAMETER AND EXCEEDANCE DETERMINATION

The natural background (pre operation baseline) water quality of injection zone formation water was previously measured to have a TDS concentration between 23,300 mg/L to

31,200 mg/L, as documented in Mann, 1981. Additional background formation water samples will be collected following the installation of new wells in areas where it is evident that native groundwater exists.

The natural background water quality at monitoring and observation wells will be determined from at least four samples from the new wells, collected at intervals no less than monthly and no more than quarterly. Baseline parameters for the ZEI observation wells will be established from at least one quarter of continuous multiparameter sonde measurements that will be underway in each observation well prior to initiation of mining. Exceedance action levels for each constituent with a background value that is below the maximum contaminant level (MCL) will be set to the EPA MCL.

For those constituents in each well with background concentrations that are above the MCL the action level for defining an exceedance will be set by a basic statistical determination using the observed natural variability of the baseline data (the standard deviation) and the corresponding elevated concentration at which there is 95% confidence that the elevated concentration does not fall within the range of the natural background variability. The formula for determining the action level is $AL = M + KS$, where AL is the action level, M is the mean concentration, S is the standard deviation, and K is the one-sided normal tolerance interval with a 95% confidence level.

It is recommended that the background and action level determination for the constituents with natural background concentrations above MCLs be based on at least six groundwater samples for proper statistical representation. The 95% confidence level ($\gamma = 0.95$) K value for a sample set with six measurements is 3.707 (Table 1, Lieberman, G.J., 1958, Tables for one-sided statistical tolerance limits: Industrial water control, Vol XIV, No. 10). K values for sample population sizes less than or greater than six can be found in the Lieberman Table 1, which is readily available online. Obvious outliers will be excluded from the data used in the AL calculation. The sampling, baseline, and action level determination should be performed with data from an individual well for proper statistical representation and should not incorporate inter-well variability.

Time series plots of the data from the monitoring wells will be provided in quarterly and annual monitoring reports which will be submitted according to permit conditions. During report preparation, the plots will be observed for upward or downward trends in the data, and any observed trends will be called out in the text of the report, and the magnitude of the trend relative to the established action levels will be noted.

8.0 POST-CLOSURE RESTORATION & PLUGGING & ABANDONMENT

8.1 Post-closure Rinsing

Solution mining wells will be utilized until the recovered boron falls below a level that makes recovery uneconomical. The wells will be mined in groups and will reach their economic limit as a group. Upon closure of a well or group of wells, the ore body will be rinsed to remove residual PLS and restore the water parameters to either MCL's or baseline levels, whichever is higher. The rinsing/restoration of "closed" wells will begin with 90 days of "closure". A discussion on baseline levels is available in Attachment P.

Water will be recovered from each "closed" well and used as make up water within the plant. Either fresh make-up water will be injected into the closed well or recovered water will be treated with lime to adjust the pH and then reinjected. Once wells are rinsed individually, rinsing the group will begin. Groups will be rinsed by injecting into one well and recovery from direction well(s). This process will be repeated until the recovered water field parameters, pH, conductivity, and temperature, are stable. There is no time limit on the rinsing phase during active operations as the recovered waters will be used in the plant as needed.

Once field parameters are stable and the pH is between 6.5 and 9 S.U.s, a sample will be collected from each well in the group and analyzed for FCCC List 1. The well(s) will be added to the quarterly sampling list and monitored quarterly until the parameters for the well reach steady-state for four quarters. The results of the sampling will be included in the quarterly permit submitted to EPA for their review and will be incorporated into the groundwater modeling. EPA will be notified of the restoration of the ore body related to the well(s) along with 7520-19 for plugging and abandoning wells.

8.2 Plug and Abandon IW's

In accordance with 40 C.F.R. §§ 144.52 and 146.10, FCCC must prepare a Plugging and Abandonment (P&A) Plan. The requirements for P&A of wells are to plug in a manner to prevent movement of fluid out of the injection zone and into or between USDWs. Regardless of the type of well (*i.e.*, injection/recovery, monitoring or observation), FCCC will remove all tubing from the well prior to plugging. Cement will be pumped from total depth (TD) to surface using a tremie pipe to ensure that cement is continuous throughout the tubing. To meet these requirements, FCCC will remove all hardware from the well, then cement from TD to the surface with neat cement.

9.0 MECHANICAL INTEGRITY TESTING

The Mechanical Integrity Testing (MIT) requirement per 40 C.F.R. Sec. 146.33(b)**(3)** states "Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well for salt solution mining." Wells will be tested within 30 days of initial completion or workover and then MIT will be conducted at permitted compliance intervals under maximum allowable injection pressure to ensure that there are no leaks in the injection well casing or annular seal that enable injectate to enter a formation outside injection zone.
If an injection well is inactive for two years, a notice of actions and procedures to ensure a USDW will not be endangered by the existence of the well, which may include MIT testing.

Part I (internal) MIT is performed to establish that there are no leaks in the well casing or injection tubing, or in the packer used to isolate the injection zone. Part II (external) MIT is conducted to establish that the wellbore annualar space has been properly cemented/sealed during construction and has not developed leaks that will allow injected fluid to stray above the approved injection interval.

Log sheets for each MIT will be maintained to document the test and its results. A copy of the completed log sheet and all data recorded and output during the tests will be filed electronically.

9.1 Part I Mechanical Integrity Testing

The Part I mechanical integrity test will consist of placing a packer less than 50 feet above the well injection interval, followed by pumping fluid through the tubing until maximum allowable well head pressure is reached. After reaching maximum injection pressure, the well head pressure will be monitored and recorded at 5-minute intervals for 30 minutes. Pressure loss greater than that set forth in the UIC permit will result in a MIT Part I test failure. In the event of a test failure, the packer will be moved and reset within 50 feet of the injection zone, and the test will be repeated. Repeated test failure will be considered indicative of a casing failure, at which point injection activities in the well will be ceased until addition downhole optical and instrument surveys can be performed and any leak points can be repaired or isolated from pressurized injection fluids.

9.2 Part II Mechanical Integrity Testing

Part II MIT testing will be performed by downhole temperature and radioactive iodine tracer surveys conducted immediately following Part I testing. The surveys will be conducted by standard techniques consistent with EPA guidance. Evidence of fluid excursion recorded in the temperature or radioactive traced surveys will be cause for failure of Part II MIT testing. Data products from the downhole logging will be filed with the MIT log sheet.

Wells with confirmed failures in MIT testing will cease injection immediately and will be repaired by squeeze cementing or other means or plugged and abandoned within six months.

10.0 CORRECTIVE ACTION PLAN

10.1 Process or Wellfield

Wellfield monitoring parameters will be recorded and evaluated no less than daily by the operations personnel for indications of excessive fluid loss to the formation, excessive injection pressures that may compromise the structural integrity of the confining formation, and other critical criteria as determined by the operations manager necessary to meet permit operating conditions. Should these parameters be out of compliance, corrective actions will be employed. Corrective actions include, but are not limited to:

- Inspect plumbing system and vessels for signs of leakage or other performance issue.
- Adjust injection rates and pressures to improve injection and recovery parameters.
- Adjust the injection interval through the use of packers.
- Monitor fluid levels, specific conductivity, and pH in surrounding wells to observe

solution migration patterns.

- Conduct mechanical integrity testing to verify that the packers and well casing are not leaking.
- Cease operations of non-compliant systems until the source of the problem is determined and the situation is resolved.

10.2 Identification of a Potential USDW

As discussed in Section 2.3, geologists will be at the rig during the drilling of all new wells in the AOR Boundary and will follow standard protocol to identify potential groundwater aquifers. A report will be prepared summarizing all activities associated with the investigation, including the analytical results, and a summary of findings on the presence or absence of a potential aquifer. The report will be submitted to EPA for their review and acceptance within 30 days after receipt of the analytical results.

If a potential aquifer has been identified, follow up actions could include drilling a hole within 1/4 mile of the original hole of interest, to be completed in the zone(s) of interest, but above the ore body formation. Additional details will be submitted in the above report for EPA's comment and approval.

10.3 Potential Mining Solutions in OW

The Observations Wells have been sited to validate the groundwater model and monitor subsurface conditions in the ore zone interval. As noted in Section 6.3, information will be collected from a downhole transducer and uploaded at least monthly, tracked on a spreadsheet and graph and submitted to EPA in the quarterly report.

A range of baseline data will be collected prior to the commencement of solution mining. It is currently anticipated that there may be seasonal variations in water levels that will be documented during baseline data collection. Should any parameter vary in accordance with baseline action levels as discussed in Section 7, FCCC will take the following steps:

- Ensure transducer is working accurately, if yes then,
- Using a low flow hydrasleeve, collect a sample from approximately 1,400 ft bgs. and submit to laboratory for the Monitor Well analyte list.
- Update the groundwater model to evaluate possible causes and solutions.
- Prepare report of all corrective action activities and recommendations to EPA within 60 days of initial readings of concern.

10.4 Potential Mining Solution in MW

The groundwater monitor wells have been sited to ensure that mining related solutions will not leave the AOR. As noted in Section 6.3, quarterly samples will be collected to establish baseline values for the analytes of interest and to identify any potential seasonal variations in the groundwater. Should any parameter vary in accordance with baseline action levels as discussed in Section 7, FCCC take the following steps:

- Resample within three (3) business days for all parameters.
- If analytical results remain above the seasonal variations, notify EPA within 10

days of exceedance.

- Update the groundwater model to evaluate possible causes and solutions.
- Prepare and submit a corrective action plan to EPA with 30 days. The plan may include actions such as, drilling additional wells, running geophysical logs, etc.

10.5 Surface Elevations

Potential land subsidence from solution mining will be monitored using InSAR remote sensing or another acceptable method, such as land-based surveying. Should variations in surface elevations occur that are more that the average long-term subsidence rate of 0.03 ft/yr, FCCC will take the following steps:

- Review injection/recovery rates to ensure that balance of injection versus recovery is as close to equal as possible.
- Update the groundwater model to evaluate possible causes and solutions.

10.6 Earthquake Response

Should the facility be impacted by an earthquake of sufficient magnitude to cause noticeable shaking, the well field will be shut down to ensure that wells have not been damaged by the quake. Actions may include conduct full MIT pressure testing or running a video log, with an experienced operator, to ensure no damage has occurred. Upon verification that no damage has occurred, wells can be put back into service.

A report of all earthquake inspection activities will be provided to EPA in a report within 30 days of completion of testing.

If a well has been damaged by earthquake activity, FCCC will evaluate potential remedies, such as cement squeezing, etc. or to plug and abandon the well.

10.7 MIT Failure

Should a well fail MIT testing, based upon the cause of test failure, FCCC will prepare a workover plan, or plug and abandon the well. All steps identified in the Sections above regarding EPA notification and reporting will be followed.

APPENDIX A

Figures

Figure A-3: Process Facilities and Initial Wells

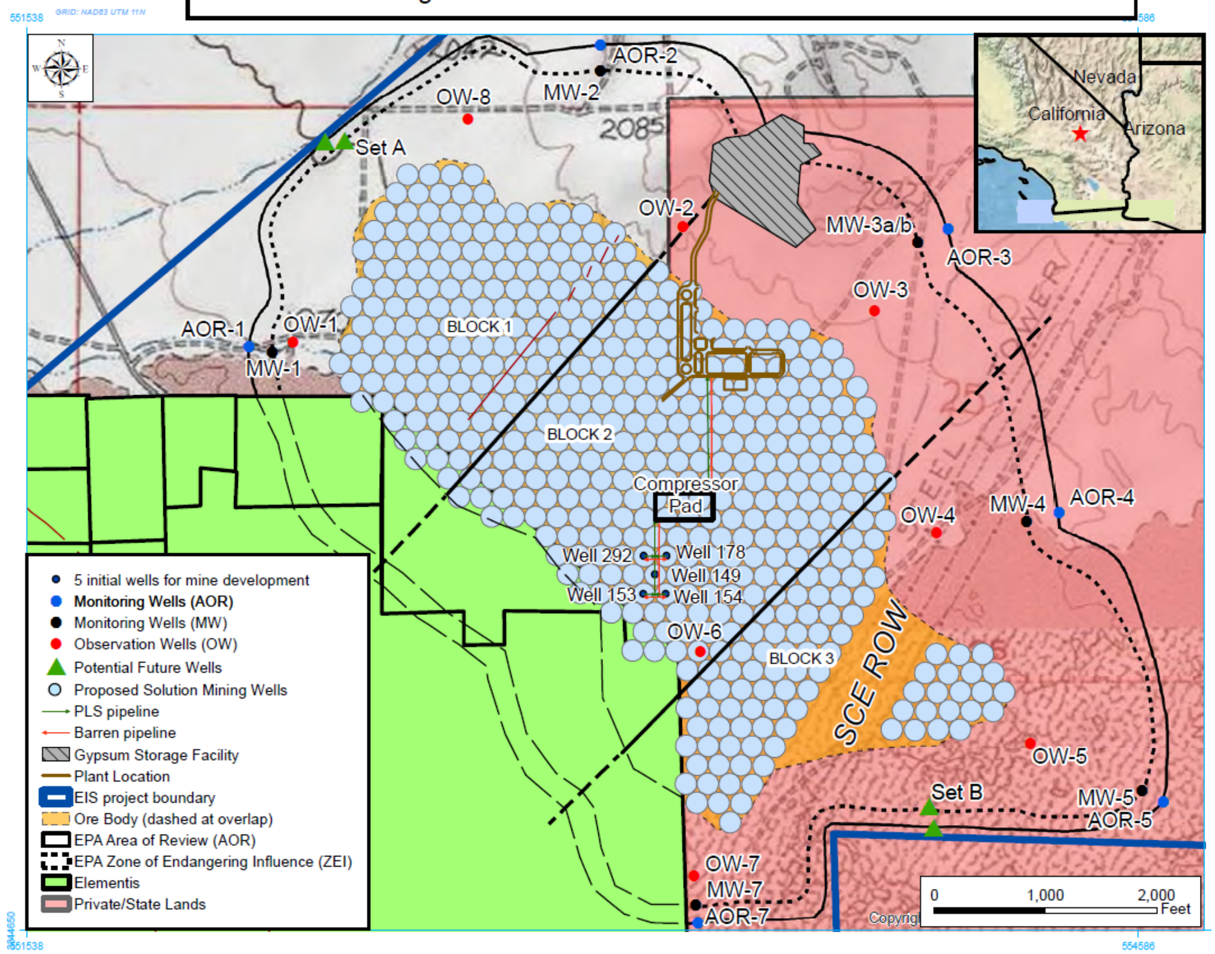


Figure L-1: Typical Wellfield Piping Layout

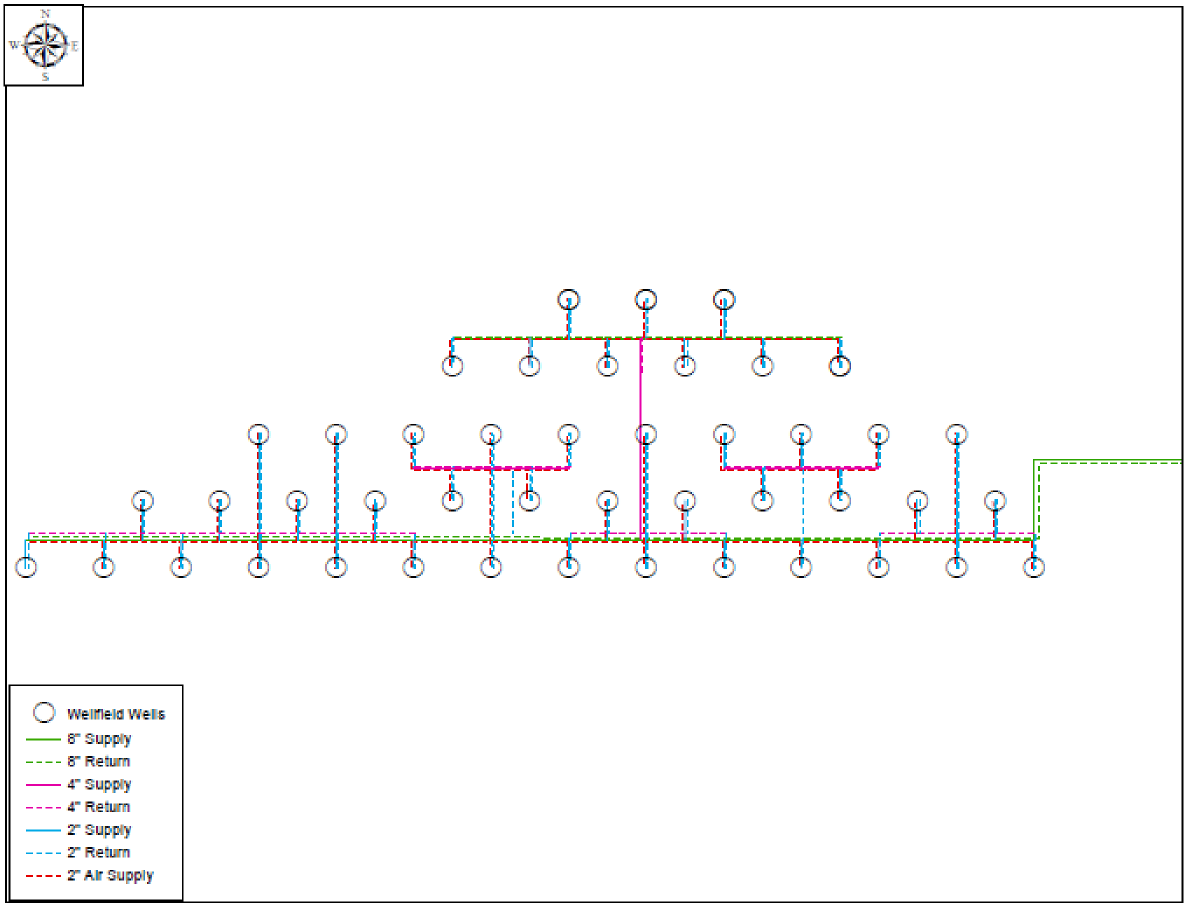
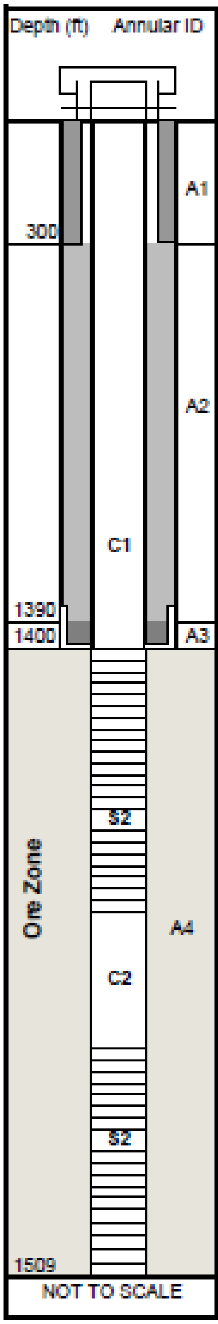


Figure M-3: Conceptual Injection/Recovery Well Design



Fort Cady California Corporation

Site Location:	Ft. Cady	**Well No.**	Conceptual
Project Number:	NA	**Boring No.**	TBD
Coordinates: Lat/Long	TBD	**Ground Elv.**	TBD
	TBD	**Top of Casing**	TBD

Drilling Summary

Total Depth: 1500 ft

Borehole Diameter:	12.75"
Stickup Height:	3 Ft
Depth of Conductor Casing	0-300 Ft
Contractor:	TBD
NV License No.	TBD
Rig:	TBD
Bits(s):	12.75" Tricone
Drilling Fluid:	Clean Makeup Water/Polymer
Conductor Casing:	Steel Monument

Conceptual

Well Details

C = Blank Casing, S = Screen

ID	Depth (ft)	
C1	0 to 1390	Conceptual at least 40 ft into ore body
A3	1390 to 1400	Conceptual Cement Basket
C2	(±1400 to 1450)	Conceptual Sections of solid and
S2	1450 to 1509	screened casing.

End-cap depths are not listed on this form.

Casing Type: C 7 inch diameter Fiberglass (FRP) Casing. Wall Thickness: 0.25"

Screen Type: S 7-inch diameter Fiberglass (FRP) 0.060-inch Perforations.

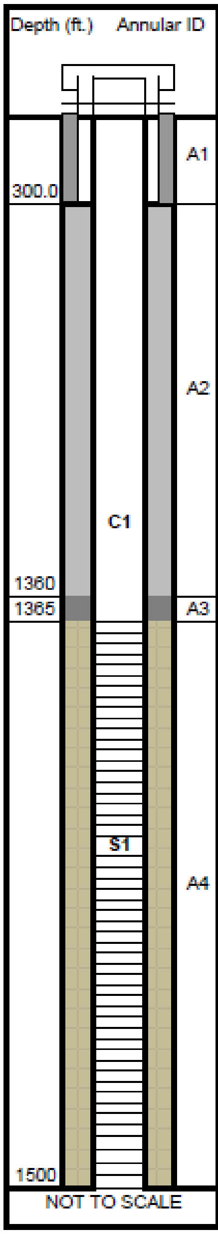
Annular Summary

ID	Description	Depth (Ft)
A1	Type 5 Neat Cement	0 to 300
A2	Type 5 Neat Cement	300 to 1390
A3	Cement Basket With Layer of Coated Bentonite Pellets	1350 to 1390
A4	Annular space open to Ore Body	1390 to 1500

Notes:

Confluence Water Resources LLC
www.confluencewaterresources.com

Figure M-4: Conceptual Well Design
4-Inch Diameter, FRP
Observation (OW) & Monitor Well(MW)



Fort Cady California Corporation

Site Location:	Fort Cady	**Well No.**	FC2018-OW or MW
Project Number:	NA	**Boring No.**	TBD
Coordinates: Lat/Long	TBD	**Ground Elv.**	TBD ft.
	TBD	**Top of Casing**	TBD ft.

Drilling Summary

Total Drill Depth: 1010 ft.

Borehole Diameter:	8.75 - Inches
Stickup Height:	3 Ft
Conductor Casing:	0 - 300 Ft Minimum 50 ft - Maximum 300 ft
Contractor:	TBD
CA License No.	TBD
Rig:	Speedstar 50K, or equivalent
Bits(s):	8.75" Tricone
Drilling Fluid:	Clean Make-up Water/Polymer
Conductor Casing:	Steel

Well Details

C = Blank Casing
S = Screen or Perfs

ID	Depth (ft.)
C1	0 to 1360
S1	1360 to 1500

Casing Type:	C	4" diameter fiberglass (FRP) casing. Wall thickness 0.25"
Screen/Perf Type:	S	4" diameter fiberglass (FRP) casing, 0.020 factory slots.

Annular Summary

ID	Description	Depth (Ft)
A1	Type II Neat Cement	0 to 300
A2	Type II Neat Cement	300 to 1360
A3	3/8" Coated bentonite pellets	1360 to 1365
A4	#8-16 Washed Silica Gravel Pack	1365 to 1500

Notes: