Attachment L – Construction Procedures

This Attachment L 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 L provides the required information on wellfield construction procedures in the ore body and Area of Review (AOR).

a. Overview of Project Construction

Wells are anticipated to be located on a 200 ft spacing interval. The average total depth (TD) of production wells will be ±1,500 feet or to the bottom of the ore zone. Wells will be drilled using conventional air rotary or mud rotary drilling technology, although core rigs may be used to obtain ore samples for additional metallurgical testing. Hole orientation and caliper surveys will be conducted to ensure the borehole does not deviate greater than 18-inches per 100 vertical ft. Additional information on logging is discussed in Attachment M.

The basic well design utilizes a 12¼-inch hole, using conventional rotary technology, drilled to the bottom of the ore body. A large diameter hole is necessary to accommodate a 7 or 8-inch fiberglass (FRP) casing. The FRP will either be slotted (perforated) through the ore zone or a combination of solid and slotted sections, and then solid from 40 ft below the top of the ore body to the surface. Conceptual well completion diagrams are available in Attachment M.

The Pregnant Leach Solution (PLS) will be either pumped or air-lifted to surface. It is currently anticipated that airlift will be the main means of recovery from the well. Compressed air is injected through an air tube, forcing PLS up through to the surface, where surface pumps will then pump the PLS through surface pipes to the processing plant.

The well casing must be adequately sized to fit tubing for PLS recovery (~4" diameter), and air (~2"). It is currently anticipated that a 7 or 8-inch FRP will be used from the surface to total depth, with centralizers located at 40-foot intervals along the length of the solid casing. The solid FRP casing will extended at least 40 feet below the top of the ore body. The solid casing will then be cemented between the FRP and geologic formations (annular space) to the surface using either a cement shoe or cement diverter valve to allow cement to be pumped through the casing and upward through the annulus. After the annular cement has set, as part of the cement job, any settling will be filled to ensure the cement is at ground level, a tremie pipe will be used if necessary. After the cement has set, the cement plug will be drilled to allow access to the slotted and blank casing within the ore zone. A combination of air and water will be used to clean the casing and open-hole interval after development. Should modifications be required to the cementing plan, a work plan will be submitted to EPA for review and approval.

Perforated well casing at critical sections, with the use of packers at predetermined depths, will control the leaching zone within the ore body to optimize recovery. FCCC plans to evaluate horizontal directional drilling for future development but will initially use the more traditional vertical well design.

b. Well Construction Details

Wells will be constructed to be compliant with American Water Works Association (AWWA) standards, AWWA A100-06, revision of American National Standards (ANSI/AWWA A100-97), which are also used on non-water wells. This includes the specifications as defined in Section 4 of the standard. These requirements are summarized below:

- Section 4.1 includes general specifications for permits, purchaser, constructor, submittals and protection of groundwater as defined in sections 4.1.1 through 4.1.3.
- Section 4.2 defines specifications for investigation of geologic and hydrologic condition and groundwater quality.
- Section 4.3 defines requirements for materials to comply with the requirements of the Safe Drinking Water Act and other federal requirements.
    - Section 4.3.1 provides specifications for drilling fluid materials.
    - Section 4.3.2 provides specifications for well casing materials.
    - Section 4.3.3 provides specifications for well screen materials.
    - Section 4.3.4 provides specifications for gravel pack materials.
    - Section 4.3.5 provides specifications for grouting and sealing materials.
- Section 4.4 defines engineering specifications for permanent well casing diameter and wall thickness based on hole depth, see Tables 3 through 5 of the AWWA standard found in Section 4.
- Section 4.5 provides specifications for well screen diameter, length and aperture (*i.e.*, perforation) size and arrangement.
- Section 4.6 defines specifications for placement of gravel-pack (OW, MW and AOR wells only).
    - Section 4.6.2 provides specifications for selection of gravel-pack thickness.
    - Section 4.6.3 provides specifications for sampling of gravel-pack for quality control.
    - Section 4.6.4 provides specifications for delivery and storage of gravel-pack materials prior to placement in well annulus.
- Section 4.7 provides specifications for drilling and well construction.
    - Section 4.7.2 defines drilling applications and methods.
    - Section 4.7.3 defines specifications for testing of drilling fluid properties.
    - Section 4.7.4 defines the specifications for installation of well casing, including specifications for casing joints, drive shoes, and sealing of well casing.

  - Section 4.7.5 and section 4.7.6 provide specifications for installation of well screen and gravel-pack materials.
  - Section 4.7.7 provides specifications for disinfection of gravel-pack materials.
  - Section 4.7.8 provides grouting and sealing requirements.
  - Section 4.7.9 defines plumbness and alignment requirements for wells.
  - Section 4.7.10 provides guidance on selection of well sites.
  - Section 4.7.11 provides guidance on reporting and record keeping.
- Section 4.8 defines well development specifications including general requirements (section 4.8.1) and requirements for completion of development (section 4.8.2).
- Section 4.9 defines well disinfection specifications, which is not applicable for FCCC injection wells that are not intended to be used as a drinking water supply well.
- Section 4.10 defines specifications for decommissioning of test holes, partly completed wells, and abandoned wells.

In addition to AWWA requirements, wells will also be constructed in accordance with 40 C.F.R. § 146.32, which will include the following:

1. Wireline geophysical testing will be completed on the first five (5) wells in each mining group of 35 – 40 wells. Wireline geophysics will include, at a minimum, Gamma Ray, Induction, Caliper, and Neutron-density logs. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the EPA with the next quarterly report. Information on logging is available in Attachment M.

2. Once the geophysical survey has been completed, the borehole will be conditioned for well installation.

3. Well screen will be run the length of the ore body, starting from 40 feet into the ore body to total depth. Blank casing may be installed in 20-foot segments to allow for the future use of packers to target injection and recovery zones. Each respective casing joint (screen or blank casing) will be installed in sequence per the proposed well diagram or as directed by field personnel based on the geology drilled.

4. Once the well casing has been installed in the borehole, a tremie pipe, cement shoe or cement diverter valve will be used to allow Type 5 Neat Cement to be pumped through the casing and upwards into the annulus and returned to the surface. If cement is returned to surface, then a temperature log is not required to be run 48 hours after the cement is placed.

c. Wellfield and Piping Distribution Systems

The schematic of the proposed wellfield with well locations and manifold (header) piping layouts are presented in Figure L-1. High Density Polyethylene (HDPE) plastic, or equivalent, has been selected as the material of construction for the surface piping. Project experience has shown that HDPE is resistant to the harsh desert climate for periods of time greater than 10 years. HDPE is also very acid resistant and can withstand higher temperatures than equivalent PVC without loss of working life. The primary injection and recovery trunklines will be identical 8-inch HDPE pipe and the secondary distribution piping will be 2-

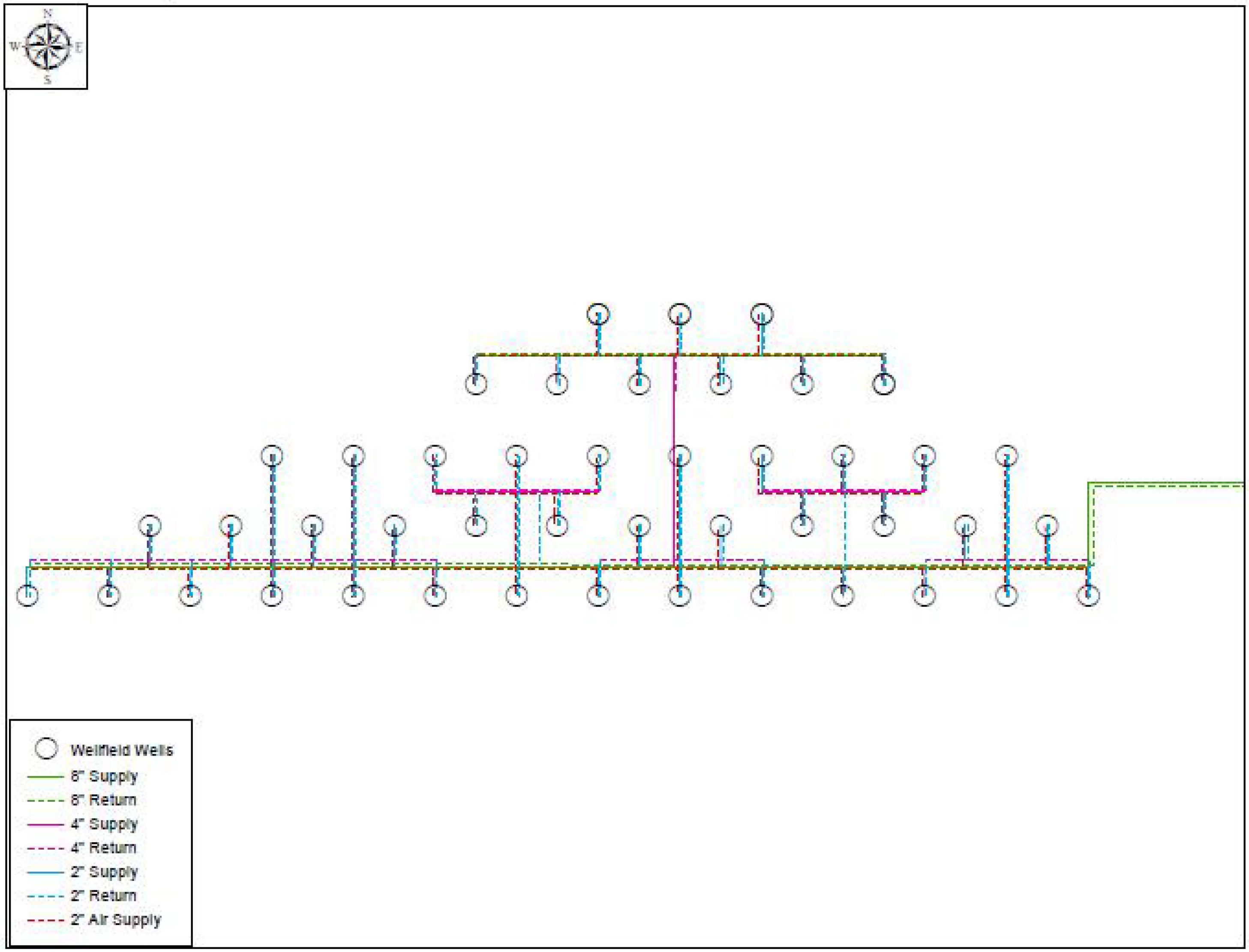
inch HDPE pipe. HDPE is also very flexible, thus eliminating a large number of 90-degree and 45-degree elbows.

d. Well Heads and Airlifts

Well heads will be constructed of fiberglass (FRP) for its corrosion resistance and structural strength. In general, exterior well head parts will be identical for both injection and recovery wells. Airlifts with air de-aerating tanks (foam knock-out tanks) will be used to recover the pregnant borate solution from the ore body. The airlift piping depth will be set at varying depths. Airlifting allows for solution mining without exposing pump internal parts to the acidic solution from the ore body.

Airlifting works with air injection into the well casing, forcing the Pregnant Leach Solution (PLS) up to be recovered at surface level. *See* Figure M-1. The PLS exits out of the well into a foam knockout tank and is then pumped to the plant.

Figure L-1: Typical Wellfield Piping Layout



Attachment M – Well Construction Details

This Attachment M 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.

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This Attachment M provides the required information on the well design and construction in the ore body and Area of Review (AOR).

a. Conceptual Injection/Recovery Well Construction

Proposed construction details for conceptual injection/recovery (I/R) wells are provided in Figure M-3. The basic well design has been proven to be successful by previous owners/operators in the Fort Cady Project ore body for both injection and recovery wells. This method utilizes a 12¼-inch hole, using conventional rotary technology, drilled completely through the ore body. A large diameter hole is necessary to accommodate 7-inch fiberglass casing.

Should technology improve, FCCC may utilize directional drilling to minimize surface disturbance. A conceptual diagram of directional drilling is presented in Figure M-2.

b. Conceptual Monitor/Observation Well Construction

To verify that mining related solutions are not leaving the AOR boundary, the proposed monitor wells (MW & AOR) are located within the ZEI and AOR boundaries, respectively. 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, make-up water 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.

Observation wells (OW) and monitor wells (MW & AOR) will be similar to injection/recovery wells but will be fitted with a minimum 4-inch FRP, PVC and/or steel casing to a total depth of 1,500 ft bgs, with the exception of MW-3b, which will be completed in an interval below the level of the ore body. Transducers will be installed to an approximate depth of 1400 ft bgs. A conceptual diagram is provided in Figures M-4.

c. Conceptual Air Lift

Figure M-1 provides a schematic of the air lifting process.

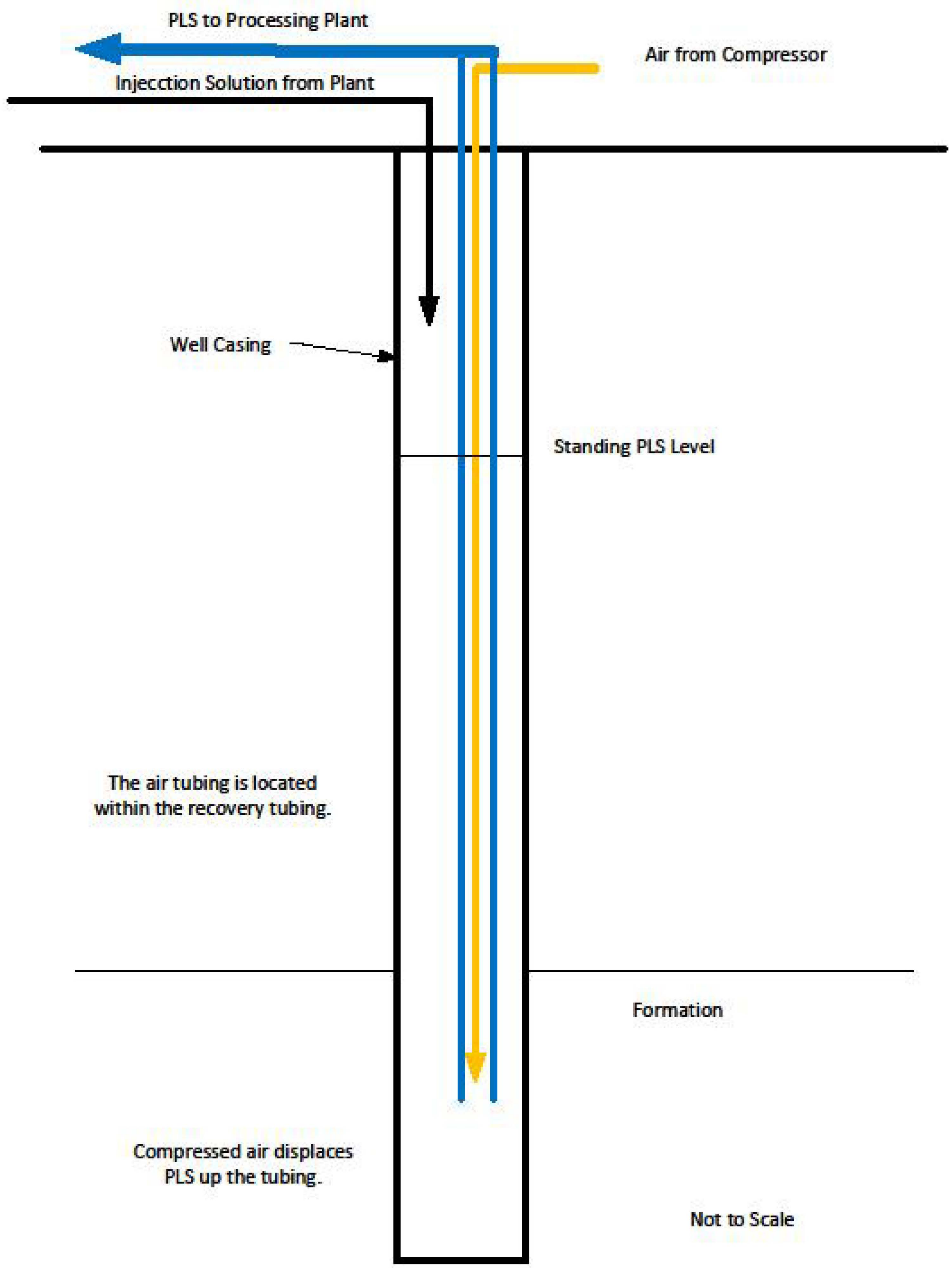


Figure M-1: Airlifting Schematic

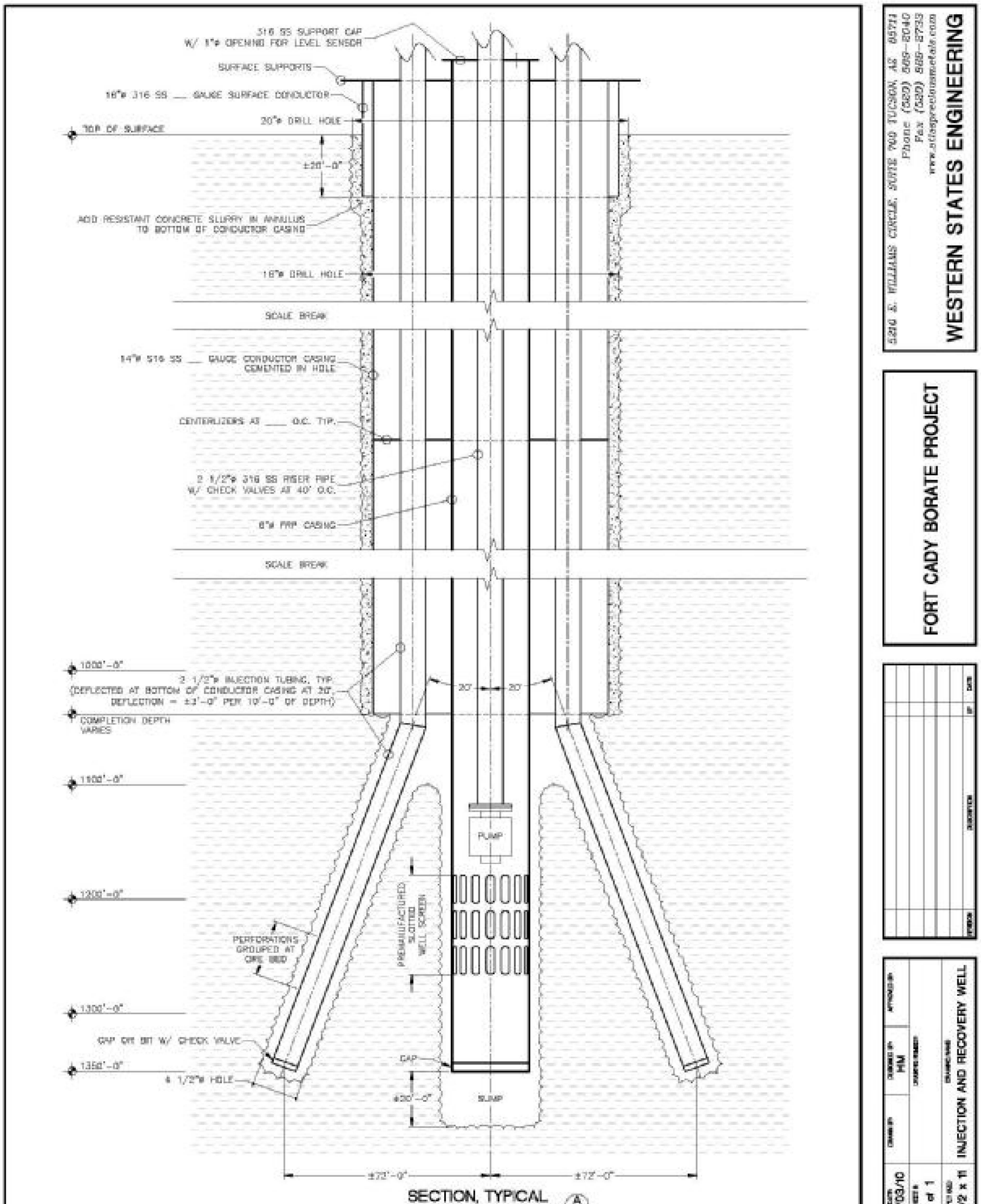
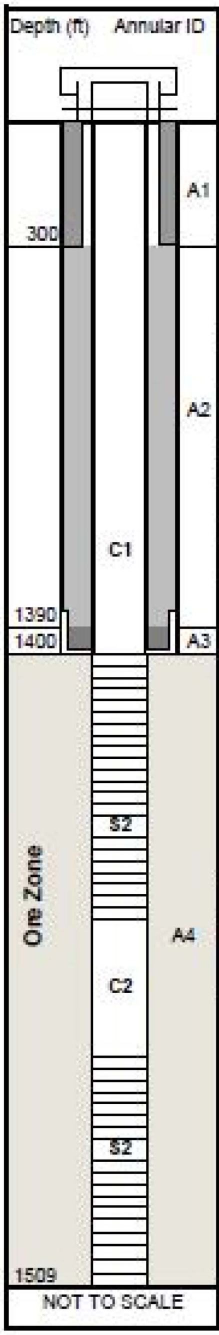


Figure M-2: Schematic of Directional Bore Hole

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.

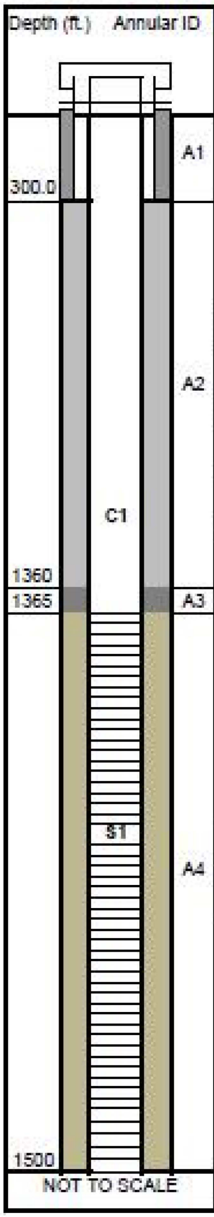
Annular Summary

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 Wells (MW & AOR)



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 5 Neat Cement	0 to 300
A2	Type 5 Neat Cement	300 to 1360
A3	Cement Basket	1360 to 1365
A4	#8-16 Washed Silica Gravel Pack	1365 to 1500

Notes:

Confluence Water Resources LLC
www.confluencewaterresources.com

d. Evaluation for the Presence of USDWs

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.

A geologist will log each borehole during drilling and providing details of lithologic changes, and potential water bearing zones, as the boreholes are advanced. 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 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) 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.

A report summarizing the findings and 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 the actions in the Monitoring and Corrective Action Plan, as summarized in Attachment P.

e. Logging

The following test will be conducted on all I/R wells drilled under the Class III Area UIC Permit.

1. Open-hole geophysical logs for all holes include – caliper, gamma-ray, directional survey, sonic, electrical and acoustic borehole logs.
2. Open-hole compensated neutron-density logs for at least five (5) holes in each mining group of 35 – 40 wells. These will be the same holes that will be used for step-rate injection tests.
3. Cased-hole geophysical logs gamma ray logs or all holes will be run within 48 hours of cementing the annular space. If cement returns to the surface, temperature logs will be run after the 48 hours to establish a baseline temperature. If cement does not return to the surface, or if a different method of cementing is utilized, then the temperature log will be run within 48 hours.

4. Cased-hole temperature logs will be run within 30 – 60 days after commencement of injection as part of Part 2 MIT. If the well does not pass the cased-hole temperature log, then a radioactive tracer survey will be run.

f. Mechanical Integrity Testing

All wells authorized under the Class III Area UIC permit will demonstrate Mechanical Integrity within 30 days of well completion and prior to being put into service, whether as an Observation Well, Monitor Well or Solution Mining Well. Mechanical Integrity Testing, Parts I and II will be completed as discussed in Attachment O Section b, Preventative Measures.

g. Recordkeeping and Reporting

Within 60 days upon completion of drilling, the following information must be submitted to EPA in the Final Well Construction Report:

1. Well coordinates in latitude/longitude and in metes and bounds.
2. Well completion diagram schematic and detailed description of construction, including location of screened intervals.
3. Driller's logs, including materials used.
4. Geophysical logs.
5. Lithology logs, including notation of key formations
6. All downhole equipment.
7. Results of Mechanical Integrity Testing.
8. If applicable, any water encountered above the ore body formation and actions taken to assess if waters are potential USDW's.