

**PUBLIC NOTICE OF INTENT TO ISSUE A
CLASS III UNDERGROUND INJECTION CONTROL AREA PERMIT
FOR
FLORENCE COPPER, INC.**

Comment period through January 30, 2015

PURPOSE OF PUBLIC NOTICE

Public Comments for the Draft Permit:

The United States Environmental Protection Agency, Region 9 (EPA) is soliciting public comments on its proposal to issue a Class III Underground Injection Control (UIC) Area Permit for Florence Copper, Inc. (FCI) to construct and operate an in-situ copper recovery (ISCR) facility known as the Production Test Facility (PTF) on FCI property near the Town of Florence, Arizona. The PTF well field is proposed to be constructed within Section 28, Township 4 South, Range 9 East, Pinal County, Arizona.

The Class III UIC Area Permit, if issued, would authorize FCI to inject a dilute sulfuric acid solution into the copper orebody and recover copper-laden solution for the purpose of producing copper at the overlying PTF surface facilities and assessing the feasibility of initiating commercial ISCR operations on FCI property surrounding the PTF site. EPA proposes to issue the permit and the authorization to construct, operate, restore and close the PTF for a period of up to two (2) years, with post-closure monitoring for a period of up to five (5) years following closure operations.

The primary injection interval would be the copper oxide orebody present within the Bedrock Oxide Unit at the PTF site at depths of 450 to 1,200 feet below ground surface. The orebody is approximately 250 acres in areal extent and located within a highly fractured, igneous, copper oxide, bedrock formation underlying the FCI property. After completing a thorough technical review of all submitted information, as well as the operational standards, monitoring requirements, and existing geologic setting, EPA has made a preliminary determination that the activities allowed under the draft Class III UIC Area Permit (draft Permit) are protective of underground sources of drinking water as required by the Safe Drinking Water Act (SDWA).

EPA has made a preliminary determination to issue a Class III UIC Area Permit to FCI pending this public notice and comment review period. This action is being taken as provided by Part C of the SDWA and pursuant to Title 40 of the Code of Federal Regulations (CFR) Parts 124, 144, 146, and 147.

Public Comments for the Section 106 Process of the National Historic Preservation Act:

During the public comment period for the draft Permit, EPA is also providing the public an opportunity to comment on resolution of potential adverse effects to historic properties from the proposed project in the draft Permit, measures to avoid, minimize, or mitigate potential adverse effects to historic properties, and the draft Memorandum of Agreement (MOA) to resolve such

effects (36 CFR §800.2(d) and §800.6(a)(4)). To provide the public with the background documentation required under 36 CFR §800.11(e), EPA is providing detailed information about the project and its effects on historic properties, a summary of views submitted to EPA by consulting parties, and a copy of the draft MOA. EPA will consider all comments submitted during the public comment period regarding resolution of potential adverse effects of the project on historic properties at the site.

PUBLIC COMMENTS

EPA requests public comment on the draft Permit and will accept comments in writing through the end of the comment period on January 30, 2015 (40 CFR §124.10).

EPA also requests comments and input on resolving the adverse effects of the proposed project in the draft Permit for purposes of the Section 106 process under NHPA. All written comments should clearly state the purpose of the information by referring to the NHPA Section 106 process. EPA will accept input through the end of this public comment period on resolving adverse effects of the project on historic properties.

During this period, all written comments should be mailed, faxed, or emailed using the contact information listed below.

U.S. Environmental Protection Agency, Region 9
Drinking Water Protection Section, Mail Code WTR-3-2
75 Hawthorne Street
San Francisco, CA 94105
Attention: Nancy Rumrill
Telephone: (415) 972-3293
Email: rumrill.nancy@epa.gov

EPA has scheduled a public hearing on the draft Permit from 7 pm to 10 pm on Thursday, January 22, 2015 at the Gym of the Florence High School, 1000 South Main Street, Florence, Arizona. Prior to the public hearing, EPA has also scheduled an open-house information session to provide information about the proposed project and EPA's draft Permit and to answer questions. The open-house is scheduled for 4 pm to 6 pm on January 22, 2015 at the same location as the public hearing.

EPA's statement of basis, the draft Permit, and the permit application prepared by FCI, are available for public review online at the web address below. Detailed information about the project and its potential effects on historic properties, a summary of views submitted to EPA by consulting parties, and a copy of the draft MOA are also available for public review online at the following address.

<http://www.epa.gov/region09/water/groundwater/uic-permits.html>

All of these materials are also available for public review Monday through Friday during regular business hours at the following location:

U.S. Environmental Protection Agency Environmental Information Center/Library
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4406
library-reg9@epa.gov

The statement of basis, draft permit, and information about the potential effects on historic properties are also available for review at the following location:

Florence Community Library
1000 S. Willow St.
Florence, AZ 85132
(520) 868-8311

FINAL PERMIT DECISION AND APPEALS PROCESS

After the close of the public comment period, EPA will issue a response to comments, a final permit decision, and will notify all commenters regarding this decision. The final decision shall be to either revoke the existing permit and reissue the permit or deny the reissuance of the permit, pursuant to 40 CFR §124.15(a). If comments are filed which request a change in the draft permit, the final decision shall become effective no sooner than thirty (30) days after the service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any person who filed comments on the draft permit, participated in any public hearing on this matter, or takes issue with any changes in the draft permit, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process. If no comments request a change in the draft permit, the permit shall become effective immediately upon issuance.

STATEMENT OF BASIS
U.S. Environmental Protection Agency, Region 9
Draft Class III Underground Injection Control Area Permit
Permit Number R9UIC-AZ3-FY11-1
Florence Copper, Inc.

Location:

Florence Copper Project, two miles northwest of the business district of Florence, Arizona
Well Field Site - Section 28, Township 4 South, Range 9 East, Pinal County, Arizona

Permittee Contact:

Mr. Dan Johnson
General Manager and Vice President
Florence Copper, Inc.
1575 West Hunt Highway
Florence, Arizona 85132
Telephone: (520) 374-3984
Email: DanJohnson@florencecopper.com

Regulatory Contact:

Nancy Rumrill, Environmental Engineer
U.S. Environmental Protection Agency, Region 9
Drinking Water Protection Section, Mail Code WTR-3-2
75 Hawthorne Street
San Francisco, CA 94105-3901
Telephone: (415) 972-3293
Fax: (415) 972-3545 (include name and mail code from above)
Email: Rumrill.Nancy@epa.gov

I. Purpose of the Statement of Basis

The U.S. Environmental Protection Agency, Region 9 (EPA) has prepared this Statement of Basis for the draft Underground Injection Control (UIC) Class III permit (Draft Permit) to be issued to Florence Copper, Inc. (FC). Pursuant to the UIC regulations in Title 40 of the Code of Federal Regulations (CFR) §124.8, the purpose of this Statement of Basis is to briefly describe the principal facts and the considerations that went into preparing the above referenced Draft Permit. To meet these objectives, this Statement of Basis contains background information on the permit process, a description of the facility, the aquifer exemption for the project, a brief discussion of the specific permit conditions, and the reasons for these permit conditions.

II. Permit Process

Application and Review Period

The EPA Water Division Director has authority to issue permits for underground injection activities under 40 CFR §144.31. Florence Copper, Inc. (FCI) (previously known as Curis Resources (Arizona), Inc.) is applying for UIC permit number R9UIC-AZ3-FY11-1 to construct and operate a pilot-scale in-situ copper recovery (ISCR) facility known as the Production Test Facility (PTF) on FCI property near the town of Florence, Arizona. If authorized, the wells will be used to inject dilute sulfuric acid solution into the ore-body and recover copper-laden solution for the purpose of producing copper at the PTF surface facilities and assessing the feasibility of initiating commercial ISCR operations on FCI property surrounding the PTF site.

EPA issued UIC Permit # AZ396000001 to BHP Copper, Inc. in 1997 authorizing BHP to operate an ISCR facility at the Florence property. At the same time, EPA also granted an aquifer exemption for the proposed mining area. BHP Copper drilled four Class III injection wells, nine recovery wells, and seven observation wells into the oxide ore formation and operated a pilot project to demonstrate hydraulic control as required by the UIC permit. However, BHP Copper deferred developing the full-scale facility and later sold the property to Merrill Mining, LLC. In 2010, Curis Resources (Arizona), Inc. (or FCI) acquired the Florence Copper project property, and requested transfer of the existing UIC permit to develop and operate an ISCR facility. Given the lengthy time period since original permit issuance, EPA decided it was appropriate to require submission of a new UIC application, pursuant to 40 CFR §124.5(c)(1), revoke the existing permit and transfer the authorization to operate the Florence ISCR facility to the new owner upon issuance of a new permit under 40 CFR §144.39(b).

FCI initially submitted an application for a Class III UIC Permit in March 2011 to amend and transfer the existing UIC permit AZ396000001. The initial application from FCI was for authority to construct and operate the ISCR project, on both a pilot scale and a commercial basis, within an area approximately 212 acres in size, located on property owned by FCI and leased by FCI as Arizona State Mineral Lease No. 11-26500. In June 2012, FCI revised the application to seek authorization to construct and operate only a pilot PTF operation on 13.8 acres located within the State Mineral Lease. In July 2012, EPA determined that the application for the proposed PTF was incomplete and directed FCI to revise the application and submit supplemental information.

Over approximately two years, FCI provided substantial clarifications and supplemental information to modify and update the permit application. After completing a thorough technical review of all submitted information, EPA has determined that the information provided by FCI is sufficient to complete the Draft Permit. The Draft Permit would provide authorization to construct, test, and inject at the proposed PTF site for 14 months followed by aquifer restoration and closure operations for nine months and a post-closure monitoring period of five (5) years. The total duration of this authorization would be seven (7) years. The Draft Permit contains pre-drilling, construction, operation, maintenance, monitoring, reporting, aquifer restoration, closure, abandonment, and financial responsibility requirements.

Based on the operational standards, monitoring requirements, closure and restoration requirements, and existing geologic setting, EPA believes the activities allowed under the proposed Draft Permit are adequately protective of Underground Sources of Drinking Water (USDWs) as required by the Safe Drinking Water Act (SDWA).

Consultation

As part of the permit process, pursuant to 40 CFR §144.4, EPA is required to consider whether other federal laws, specifically Section 106 of the National Historic Preservation Act (NHPA) and Section 7 of the Endangered Species Act (ESA), apply to the issuance of a UIC permit. EPA determined that these laws are applicable and followed the requirements and procedures of each, as described below.

EPA also provided an opportunity for consultation to Indian tribes pursuant to the *EPA Policy on Consultation and Coordination with Indian Tribes* (Policy). The Policy complies with the Presidential Memorandum issued November 5, 2009, directing agencies to develop a plan to implement fully Executive Order 13175, titled “Consultation and Coordination with Indian Tribal Governments.” EPA’s Policy is to consult on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests.

Section 106 of the NHPA:

Section 106 of the [National Historic Preservation Act of 1966 \(NHPA\)](#) requires Federal agencies to take into account the effects of their undertakings on historic properties. Issuance of a federal permit is considered a federal undertaking, therefore, EPA is required to meet the statutory responsibilities under Section 106 of the NHPA. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the federal Advisory Council on Historic Preservation (ACHP) titled, “[Protection of Historic Properties](#)” at 36 CFR Part 800. FCI Property contains known archaeological sites and cultural resources that are eligible for inclusion in the National Register of Historic Places (NRHP), referred to as historic properties. Early on in the review of the proposed project, EPA determined that the undertaking was a type of activity that could affect historic properties. These sites and other cultural resources were the focus of a prior Programmatic Agreement between the Gila River Indian Community, Hopi Tribe, Arizona State Historic Preservation Office (SHPO), Magma Copper Company (subsidiary of former permittee, BHP Copper) and the federal ACHP when EPA issued the existing UIC permit to BHP Copper in 1997. For the new permitting action, EPA has developed a draft memorandum of agreement (MOA) to avoid, minimize, or mitigate potential adverse effects of the proposed activity on historic properties pursuant to 36 CFR §800.6(b-c).

In consultation with the SHPO, EPA determined and documented the Area of Potential Effect (APE) as the entire FCI property, including the State Trust Land. In addition, EPA identified, in coordination with the SHPO, several consulting parties in accordance with 36 CFR § 800.2. The consulting parties includes four federally-recognized tribes - the Gila River Indian Community, the Hopi Tribe, Tohono O’odham Nation, and Yavapai-Prescott Indian Tribe, in addition to the Arizona State Historic Preservation Officer, the Arizona State Land Department (ASLD),

National Park Service, Arizona State Museum, Archaeology Southwest, and the Town of Florence.

Subject to the criteria in 36 CFR §800.5(a), EPA found that the proposed project may have adverse effects on historic properties within the APE because the project may directly or indirectly alter the characteristics of some of the historic properties. EPA notified the ACHP of the finding of adverse effects and ACHP elected to participate in the Section 106 Consultation Process. EPA consulted with all parties to identify historic properties, assess effects, and resolve potential adverse effects to historic properties from this undertaking and to develop the draft MOA referenced above.

During the public comment period for the Draft Permit, EPA is also seeking public comment and input on resolving the potential adverse effects of the proposed project, including measures to avoid, minimize, or mitigate potential adverse effects to historic properties and the draft MOA to resolve such effects (36 CFR §800.2(d) and §800.6(a)(4)). To provide the public with the background documentation required under 36 CFR §800.11(e), EPA is providing detailed information about the project and its effects on historic properties, a summary of views provided by consulting parties, and a copy of the draft MOA for public review. EPA will consider all comments submitted during the public comment period regarding resolution of potential adverse effects of the project on historic properties at the site.

Section 7 of the ESA:

Under Section 7 of the ESA, EPA is required to ensure that any action authorized by the Agency does not jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. EPA consulted with the U.S. Fish and Wildlife Service (USFWS) Tucson office of the Arizona Ecological Services Field Office, who provided technical assistance to determine whether federally listed species occur within the proposed project boundaries. EPA also provided the USFWS a copy of the screening analysis summary prepared by FCI on March 17, 2011, which screened for special-status species at the project area. Based on the USFWS review, there are no areas within the proposed project boundaries that are designated or proposed for designation as critical habitat for federally listed species. Further, the USFWS concurred with the analysis that there is only the potential for candidate species - the Tucson shovel-nosed snake and the Sonoran desert tortoise – to occur in the proposed project area. Therefore, EPA determined that the proposed project is not anticipated to impact a federally listed species or its critical habitat in the area. However, FCI will implement a Wildlife Monitoring Plan (Appendix H of the Draft Permit) to document that the proposed facility does not jeopardize the continued existence of any federally listed endangered or threatened species or adversely affect its critical habitat.

Consultations with Indian Tribes:

In May 2012, EPA sent a notification letter to federally-recognized Indian tribes in Arizona regarding the UIC permit application for the proposed Florence Copper PTF. EPA's letter provided tribes the opportunity to consult on a government-to-government basis under EPA's Policy for Consultation and Coordination with Indian Tribes. In reply to our notification letter,

the Gila River Indian Community (Community) provided a letter to express concerns about the proposed project and request information regarding potential impacts to water resources in the area of the proposed project. Over the past two years, EPA and the Community have continued consultation through correspondence, phone conferences and in-person meetings, apart from consultation under Section 106, to receive and discuss input regarding the proposed project and EPA's review of the UIC permit application. EPA has considered the Community's concerns and input on the proposed project to date and anticipates further consultation with the Community prior to making a final UIC permitting decision.

Public Participation

Pursuant to 40 CFR §124.10, the public shall be given at least thirty (30) days to review and comment on draft UIC permits and at least thirty (30) days advance notice of any public hearing for a UIC permit. Pursuant to 40 CFR §124.10(b)(2), the draft permit and public hearing notices may be combined.

For this Draft Permit, EPA is providing a fifty (50) day public comment period. In addition, EPA has scheduled a public hearing during the public comment period. (40 CFR §§124.11 and 124.12). The public hearing is scheduled for 7 pm to 10 pm on January 22, 2015 at the Gym of the Florence High School, 1000 South Main Street, Florence, Arizona. At the hearing, any person may submit oral or written statements and data concerning the Draft Permit. EPA is also convening a public open-house meeting at 4 pm to 6 pm on January 22, 2015 at the same location to provide information to the public and answer questions prior to the public hearing. All persons, including the applicant, who object to any condition of the Draft Permit or EPA's decision to prepare a Draft Permit must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position by the close of the comment period on January 30, 2015 (40 CFR §124.13). EPA is providing notice to the public of the comment period and the public hearing by publication in the Casa Grande Dispatch and the Tri Valley Central newspapers.

Final Decision-Making Process

After the close of the public comment period, EPA will review and consider all written comments and oral testimony relevant to the Draft Permit and application. EPA will prepare and send a response to comments to the applicant and each person who has submitted written comments or requested notice of the final permit decision. EPA will also post a transcript of the hearing and the response to comments document on our website. The response to comments document will contain a response to all significant comments on the Draft Permit, EPA's final permitting decision, any permit conditions that are changed and the reasons for the changes, and procedures for appealing the final permitting decision. The final decision shall be to either revoke the existing permit and reissue the new permit or deny reissuance of the permit. The final decision shall become effective no sooner than thirty (30) days after EPA's service of the notice of decision. Within thirty (30) days after the final permit decision has been issued, any person who filed comments on the Draft Permit, participated in any public hearing on this matter or takes issue with any changes from the draft to the final permit decision, may petition the Environmental Appeals Board to review any condition of the permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process. If no comments

request a change in the Draft Permit, the permit shall become effective immediately upon issuance (40 CFR §124.15).

III. Description of the Project

The Ore Body and the In-Situ Copper Recovery Method

The copper ore body is centered 2.5 miles northwest of the Town of Florence, Arizona and is approximately 250 acres in areal extent. The recoverable copper below the PTF site is located between 450 and 1,200 feet below ground surface in a highly fractured, igneous, copper oxide bedrock formation. The overlying strata are composed of alluvial basin-fill sediments derived from erosion of the surrounding, primarily igneous rock formations and deposition over the Precambrian bedrock surface. The ore body is located in the saturated zone below the water table, which is at approximately 130 feet below ground surface. The saturated geologic formations are comprised of three distinct water bearing hydro-stratigraphic units referred to as the Upper Basin Fill Unit (UBFU), Lower Basin Fill Unit (LBFU), and the Bedrock Oxide Unit. The UBFU and LBFU are separated by a thin, regionally extensive aquitard referred to as the Middle Fine Grained Unit (MFGU).

FCI proposes to recover copper by an in-situ recovery method using injection and recovery wells at the PTF site. This method involves injecting a dilute sulfuric acid-based solution (lixiviant) into the Bedrock Oxide Unit ore body, dissolving copper oxide minerals, and recovering the copper in solution. The copper-laden pregnant leach solution (PLS) is pumped out through surrounding recovery wells, followed by treatment at the surface to extract the copper from the PLS by means of a solvent extraction/electrowinning (SX/EW) process. The PTF well field would include four injection wells, nine recovery wells, seven observation wells, and four multi-level sampling wells. A total of eight monitoring wells are required around and within the PTF well field to ensure that formation water quality is not degraded at and beyond the perimeter of the monitoring well locations and within the overlying basin-fill formations during PTF operation. The monitoring wells are also intended to ensure that PTF area water quality is maintained at the required levels during the five-year post-closure monitoring period.

Surface Facilities and Impoundments

In addition to the well field and required monitoring wells, the proposed PTF project includes the construction, operation, and eventual closure of surface facilities and impoundments. The project surface facilities would include the SX/EW plant, process water impoundment, runoff pond, tank farm, and other ancillary facilities according to FCI's design and operation plans. The surface facilities and impoundments would occupy approximately 13.8 acres, including 2.2 acres occupied by the PTF well field.

In-situ Copper Recovery Operations and Closure Plans

All PTF facilities shall be constructed to prevent unauthorized discharges. The PTF test well block will be bermed to protect against storm water run-on and each well will be located in a containment sump. A pipeline will connect the test well block to tanks located at the SX/EW plant. The tanks will serve to temporarily store solutions in preparation for injection, circulation

to the SX/EW plant or to portable water treatment units for reuse, or neutralization prior to being placed in the PTF water impoundment.

Injection is proposed to occur in the Bedrock Oxide Zone, which is located approximately 450 feet to 1,200 feet below ground surface at the PTF site. To prevent vertical excursion of injected fluids, the uppermost 40 feet of the oxide zone will be excluded from injection. The 700-foot injection interval will be divided and screened into multiple intervals to focus injection into targeted areas of the oxide zone. Packers will be used to focus injection into selected intervals. The maximum aggregate injection rate proposed for PTF operations is 240 gallons per minute (gpm), and the maximum extraction rate is limited by the capacity of the planned SX/EW plant to 300 gpm. At the maximum injection rate and maximum recovery rate, extraction will exceed injection by 25 percent.

Hydraulic control of PTF operations will be maintained from the time that injection of lixiviant begins until the time that groundwater quality is restored to a level that meets the criteria specified in the UIC Permit. Hydraulic control will be maintained by increasing the recovery rate in the extraction wells and/or reducing the injection rates in the injection wells to maintain or increase the inward hydraulic gradient between observation wells and recovery wells. The volume of lixiviant injected and ISCR fluids recovered will be recorded and compared at least once every 24 hours.

Hydraulic control will also be monitored by comparing groundwater levels in the paired observation and recovery wells. In addition, electrical conductivity of the groundwater will be monitored in the observation and recovery wells to detect any unusual increases in the observation wells and verify maintenance of hydraulic control. Hydraulic control shall be maintained at all times until PTF closure is successfully completed, including during periods when groundwater or other rinse water solutions are injected during aquifer restoration and closure operations.

Existing coreholes and wells located within the Area of Review (AOR) of the PTF operation (defined as 500 feet from the PTF well field perimeter) will be plugged and abandoned before injection commences in PTF wells and in accordance with the Plugging and Abandonment Plan. At the end of PTF operations, all constituents of concern in the groundwater must be restored to maximum contaminant levels (MCL) or pre-operational background concentrations if those concentrations exceed the MCLs. After aquifer restoration, all PTF wells, the monitoring wells, and the existing BHP Test wells will be abandoned in accordance with the Plugging and Abandonment Plan in Appendix C of the permit and ADWR regulations. Plugging and Abandonment plans may be modified, subject to EPA approval.

IV. Brief Summary of Specific Permit Conditions

The purpose of EPA's UIC Program is to protect drinking water aquifers, referred to as "underground sources of drinking water" or "USDWs," from contamination due to injection activities, as mandated under the SDWA. In order to protect public health and USDWs, EPA is proposing permit conditions and requirements for pre-drilling, construction, corrective actions, operation, monitoring and reporting, restoration and closure, plugging and abandonment, permit

duration, and financial responsibility in the Draft Permit. The sections below summarize the proposed conditions, requirements and other permit considerations.

Requirements Prior to Drilling, Testing, Constructing, or Operating (Part II, Section A of the Draft Permit)

The Draft Permit requires FCI to provide evidence of financial assurance prior to starting injection well drilling and construction. In addition, the permit calls for adequate notification of activities to construct, test, and operate the proposed facility and timely reporting of those activities.

Well Construction (Part II, Section C of the Draft Permit)

The Draft Permit requires FCI to notify EPA of the location of the wells constructed under the permit, including all monitoring wells and point of compliance (POC) wells.

Geophysical logs and other tests conducted during drilling and construction must include open-hole logs, casing logs, and injection formation tests. Open-hole logs must be conducted over the entire open-hole sequence below the conductor casing for the purpose of formation evaluation, depth control, and detection of borehole anomalies. FCI is required to conduct formation evaluation wireline logging operations and to provide and use those results to estimate and report values for porosity, permeability, lithology, formation water resistivity, total dissolved solids (TDS) concentrations, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence.

Drilling, work-over, and plugging procedures must comply with the applicable portions of the Arizona Oil and Gas Conservation Commission regulations of the Arizona Administrative Code. FCI is required to case and cement the wells to prevent the movement of fluids into or between USDWs. The injection well steel casing string shall be cemented to at least 40 feet below the top of the Bedrock Oxide Unit to minimize the potential for migration of ISCR fluids into the LBFU, while in injection and recovery operations. Fiberglass reinforced plastic casing shall be installed and cemented inside of the steel casing of injection and recovery wells to isolate the steel casing from corrosive injectate and ISCR fluids. Proposed drilling, workover, and plugging procedures must be submitted to EPA for approval.

The Draft Permit also requires installation and maintenance of monitoring devices in injection and recovery wells necessary to continuously measure and record injection pressure, annulus pressure, injection and flow rates, and injection and production volumes. The injection wells must have downhole and wellhead pressure transducers to monitor and prevent exceedance of the maximum allowable injection pressure as well as for monitoring mechanical integrity. Each observation and multi-level sampling well shall be equipped with an annular conductivity device (ACD) to detect any fluid movement in vertical channels within the cemented casing/wellbore annulus. Conductivity sensors (CS) shall be strapped to the well screens of recovery, observation, and multi-level sampling wells at regular intervals to facilitate electrical resistivity profiling of the formation during injection and recovery operations.

FCI shall perform aquifer pump tests prior to injection in order to evaluate subsurface characteristics of the Bedrock Oxide Zone. Results of the aquifer tests shall be compared to parameters used in the groundwater flow model, and the model parameters will be revised accordingly if the resulting test parameters are significantly different from those used in the original model.

A Final Well Construction Report and a Completion of Construction Notice must be submitted to EPA within sixty (60) days after completion of all PTF and monitoring wells. FCI must give advance notice to EPA of planned physical alterations or additions to the permitted injection wells.

Corrective Actions (Part II, Section D of Draft Permit)

Before injection and recovery wells are placed in service, all existing non-Class III wells and coreholes within the PTF Project AOR shall be abandoned according to the Plugging and Abandonment Plan and Exhibit Q-3 in Appendix C of the permit. Several additional wells in the AOR may require remedial cementing in the casing/wellbore annulus to ensure protection of the upper USDW, subject to EPA review and approval. EPA shall be notified and final Plugging and Abandonment plans and procedures shall be submitted to EPA for approval at least 30 days in advance of abandonment operations.

Well Operation (Part II, Section E of the Draft Permit)

The Operations Plan submitted with the permit application is included in Appendix E of the Draft Permit. Planned maximum PTF injection and recovery rates are approximately 240 gpm and 300 gpm, respectively. Injection rates will not be allowed to exceed 240 gpm, and extraction will not be allowed to fall below 110 percent of the injection rate on a daily average basis without prior written approval from EPA. An inward hydraulic gradient of at least one foot between paired observation and recovery wells must be maintained for demonstrating hydraulic control. In addition, electrical conductivity measurements in the recovery wells should exceed those readings in the paired observation well to verify hydraulic control. Actions are required to be taken by FCI to restore hydraulic control within 24 hours if the extraction to injection ratio falls below 110 percent, the inward gradient at any well pair is less than one foot, or the electrical conductivity data indicate a possible loss of hydraulic control.

Prior to injection, FCI must demonstrate that the PTF wells will maintain proper mechanical integrity. The Draft Permit requires periodic mechanical integrity tests (MITs) via casing/tubing annular pressure tests, continuous pressure monitoring in injection wells, radioactive tracer and/or temperature surveys, and cement evaluation analysis to ensure protection of USDWs. ACDs will be installed in the casing/wellbore annulus of observation and multi-level sampling wells to verify the absence of significant fluid movement into the upper USDW through vertical channels adjacent to the wellbore. Loss of mechanical integrity requires notification of EPA and action to restore mechanical integrity or plug and abandon the well. A demonstration of mechanical integrity is required within thirty (30) days following the installation of a new PTF or monitoring well. Injection wells are required to be pressure-tested at least once every 12 months while active and every two years while inactive until closure and abandonment of the well.

Injection pressure limitations are based upon the results of 14 step-rate tests (SRTs) performed in four coreholes during well testing operations conducted by BHP Copper in 1995. Injection wells shall be operated at pressures less than the fracturing pressure of the Bedrock Oxide Zone. The Draft Permit also requires that FCI operate their injection wells in such a manner as to not initiate or propagate fractures in the injection formation or the confining zone, nor to cause migration of fluids into or between the surrounding USDWs.

Injection fluids shall be limited to only fluids authorized by this permit and generated by the PTF operation. Fresh water may be injected to assess the hydraulics of the injection and recovery patterns in the PTF and to assess the performance of related surface facilities. The estimated composition of the injectate as submitted with the application is incorporated into the permit and shall be binding on FCI unless revised and approved by EPA. During closure operations, fresh groundwater may be injected to restore the PTF injection and recovery zone to permit standards to ensure adequate protection of the surrounding USDWs.

Monitoring, Record Keeping, and Reporting of Results (Part II, Sections F and G of Draft Permit)

The Draft Permit requires continuous monitoring of injection and recovery rates, total cumulative volume of injectate and produced fluids, wellhead and down-hole injection pressures, annular pressure, and injection and produced fluid temperatures, as well as daily monitoring of injection and recovered fluid volumes.

In addition to any state-authorized POC wells at the site, eight (8) supplemental monitoring wells will be installed to serve as water quality monitoring wells during PTF operations and post-closure monitoring periods. Monitored parameters include expected constituents of ISCR solutions that will be monitored at quarterly or semiannual intervals. Alert Levels (ALs) shall be established for specific analytes approved by the Director, and Aquifer Quality Limits (AQLs) shall be established for parameters with primary MCLs. Prior to the commencement of injection, baseline water quality samples for all required parameters shall be collected such that accepted statistical methods can be applied to assign ALs and AQLs at all POC and monitoring wells.

Hydraulic control monitoring of the oxide injection zone shall be performed using seven observation wells at the perimeter of the PTF well field. In addition, electrical conductivity shall be monitored in the recovery and observation well pairs on a daily basis to verify that hydraulic control is maintained.

FCI is required to maintain all operational and monitoring records, and to submit quarterly summary reports of operations and monitoring activities to EPA during the PTF operational, closure, and post-closure monitoring periods.

Contingency Plans (Part II, Section H of the Draft Permit)

The permit includes contingency plans to address any loss of hydraulic control during PTF and closure operations and for groundwater quality exceedances detected at POC and other monitoring wells during the life of the PTF project, including groundwater quality monitoring

during the post-closure monitoring period. Corrective actions are required to be initiated by FCI within 24 hours of their awareness of a loss of hydraulic control.

The permit includes provisions for verification and corrective actions to be initiated when groundwater quality exceedances are detected in the POC and other monitoring wells. Written reports to EPA are required within 30 days of verification of an exceedance, which provide an evaluation of the cause, impacts, and potential mitigation of the discharge responsible for the exceedance.

Restoration and Plugging and Abandonment (Part II, Section I of the Draft Permit)

Aquifer restoration and closure activities shall commence within 60 days after completing copper recovery operations in the injection and recovery zone of the PTF. The groundwater quality shall be restored to concentrations which are less than or equal to primary MCLs, or pre-operational background concentrations if the pre-operational background concentrations exceed MCLs. FCI is required to ensure that constituents without primary MCLs shall not impact surrounding USDWs in a way that could adversely affect the health of persons. FCI shall maintain hydraulic control of the PTF zone fluids during rinsing operations, which can include injection/recovery or only recovery operations.

Rinsing progress will be monitored by analyzing sulfate concentrations in the water recovered from well-field manifolds. FCI will document the results of restoration/closure operations in a subsequent quarterly report and notify EPA of the schedule for commencement of plugging and abandonment operations.

FCI will be required to plug and abandon the wells as provided in the Plugging and Abandonment Plan in Appendix C of the Draft Permit. After cessation of injection operations for two (2) years, FCI must plug and abandon the inactive well(s) regulated by this Draft Permit in accordance with the Plugging and Abandonment Plans, unless FCI provides notice to EPA. EPA reserves the right to change the manner in which a well will be plugged if the well is modified during its permitted life or if the well is not consistent with EPA requirements for construction or mechanical integrity.

FCI will be required to comply with the Post-Closure Monitoring Program at Part II.F and the AQL exceedance contingency plan established in Part II.2.b of the permit to ensure that restoration operations were successful in returning the groundwater quality in the PTF injection zone to the required levels.

Post-Closure Audits (Part II, Section J of the Draft Permit)

During the third, fifth, and seventh years after commencement of PTF operations, FCI shall conduct a post-closure audit of the computer modeling to update the predicted fate and transport of pollutants produced by the PTF operations. FCI shall submit reports to EPA describing the post-closure audits as well as any changes in the conceptual model, any model redesign, and any changes in predicted post-closure conditions.

Duration of Permit (Part II, Section K of the Draft Permit)

EPA proposes to issue the permit and the authorization to inject and conduct restoration and closure activities at the PTF site for a period of two (2) years with five additional (5) years for post-closure monitoring unless terminated under the conditions set forth in Part III, Section B.1 of the Draft Permit.

Financial Responsibility (Part II, Section L of the Draft Permit)

FCI must demonstrate adequate financial responsibility to plug and abandon all wells associated with the proposed permit, and to ensure proper closure of site operations. Authorization to construct, inject, and operate the wells under the authority of this permit will be granted only after such financial assurance is in place and approved by EPA. The financial responsibility mechanism and amount will be reviewed and updated periodically, as required by EPA. EPA may require FCI to change to an alternate method for demonstrating financial responsibility.

V. Aquifer Exemption

In recognition of the broad definition of USDWs and the commercial use of underground injection, EPA's regulations stipulate that an aquifer may be designated as an "exempted aquifer" if it meets specified criteria at 40 CFR §146.4. Such aquifers would otherwise qualify as a USDW and protected but are not currently used as a drinking water source and have no real potential to be used as drinking water sources in the future based on specific criteria. The effect of EPA's approval of an aquifer exemption is that the portion of the aquifer covered by the exemption is no longer protected as a USDW.

Historical Activity at the Site and the Existing Aquifer Exemption (Part II, Section B of the Draft Permit):

The Draft Permit describes the lateral and vertical boundaries of an existing aquifer exemption, which was approved by EPA pursuant to the procedures in 40 CFR §144.7. EPA approved the aquifer exemption in May 1997 for UIC Class III permit # AZ396000001, issued to BHP Copper to conduct in-situ copper mining at the Property. EPA based the aquifer exemption approval on BHP Copper's demonstration that the aquifer in question was not a current source of drinking water and could not serve as a source of drinking water in the future because it contains minerals that are expected to be commercially producible (criteria at 40 CFR §146.4(a) and (b)(1)).

In accordance with the provisions of 40 CFR 144.7(b)(1), the aquifer exemption approved by EPA has specific lateral and vertical limits. The exempted zone is located in the subsurface interval of approximately 400 feet to 1600 feet below ground surface. Specifically described in the existing aquifer exemption, the upper aquifer exemption boundary is defined as 200 feet above the oxide zone, or the base of the Middle Fine-Grained Unit (MFGU), whichever is further below ground surface. In addition, the lower aquifer exemption boundary is defined as the base of the reactive interval amenable to copper leach solutions, encompassing the oxide zone, which contains an economical amount of copper, and copper in the sulfide zone that is leachable. The outer lateral limits are a 500-foot circumscribed area around the original mine zone boundary (also known as the In-Situ Copper Recovery (ISCR) Area) of 212-acres and further specified by

coordinate system points connected together forming a definite boundary line (see the Aquifer Exemption dated May 1, 1997 in Appendix B of the Draft Permit).

BHP Copper utilized the exemption to operate for a short time to inject into their permitted Class III wells. BHP's injection occurred within the boundaries of the exempted aquifer from November 1997 to February 1998 for the principal purpose of demonstrating hydraulic control on the copper test mine block.

Aquifer Exemption Consideration for the Proposed PTF:

FCI's PTF project is proposed for in-situ copper recovery within the same ore body as the BHP Copper project. The targeted copper oxide zone and area of review (AOR) for the proposed PTF is a relatively small lateral area well within the boundaries of the existing aquifer exemption. For the PTF, the AOR is a circumscribed area of 500 feet from the PTF well field and the existing aquifer exemption boundary is an additional 500 feet and more beyond the PTF's AOR. At the proposed PTF well field, the upper exemption boundary is at the base of the MFGU.

FCI has demonstrated in the UIC application that the injection and in-situ copper recovery fluids of the proposed PTF operations will remain within the AOR and, thus, well within the previously approved aquifer exemption boundaries.

Although the existing aquifer exemption granted by EPA in 1997 is still in effect, EPA has reviewed whether the portion of the exempted aquifer that will be impacted by the proposed PTF operations continues to meet the regulatory criteria in 40 CFR §146.4(a) and (b)(1). Based on this review, EPA concluded that the portion of the aquifer that would be impacted by PTF operations continues to meet the criteria for the aquifer exemption because: 1) it does not currently serve as a source of drinking water; and 2) it cannot now and will not in the future serve as a source of drinking water because it contains minerals that are expected to be commercially producible. Additional detail about EPA's aquifer exemption review and conclusions are provided below.

Review of the Regulatory Criteria:

1. Evaluation of the aquifer as a source of drinking water:

Under 40 CFR § 146.4(a), an aquifer or portion thereof in the exempted area must not currently serve as a source of drinking water. Information provided in FCI's UIC application indicates that the exempted portion of the aquifer that will be impacted by the PTF does not currently serve as a source of drinking water. To make this determination, EPA first confirmed that there are no drinking water or other producing water wells within the AOR. In addition, EPA reviewed, as described below, whether any existing drinking water wells would produce water from the PTF-impacted portion of the existing exempted area over the lifetime of the wells.

All of the Town of Florence's existing public water supply wells to the east and southeast of the Florence Copper property boundary are upgradient of the FCP property in Florence, Arizona.

The nearest down-gradient public water supply wells exist for Anthem at the Merrill Ranch residential development within two to three miles west to northwest of the proposed Florence Copper in-situ leaching project. Those wells are screened in the LBFU aquifer. The LBFU is located just above and in contact with the Bedrock Oxide Zone, the source of the copper to be recovered at the FCI facility.

The natural ground water flow gradient in the proposed project area is toward the north-northwest, which is generally in the direction of the drinking water wells that supply homes in Merrill Ranch. The ground water flow model results in FCI's application indicate that the transport distance and areal distribution of sulfate in the Bedrock Oxide Unit would extend 300 feet northward and down gradient along the trend of the Sidewinder Fault Zone five years after PTF project closure, for an average groundwater flow velocity of 60 feet per year. The Sidewinder Fault and other faults located at the PTF project area are oriented in a north-south direction and do not extend upward into the basin-fill sediments or to the area in which the Merrill Ranch wells are located. Downgradient and upward movement of ground water in the Bedrock Oxide Unit is predicted by the model to be extremely limited due to very low hydraulic conductivity outside of the fault zones. The fault zones provide a preferential flow path that bypasses the Merrill ranch wells.

In the PTF model, sulfate migrates from the Bedrock Oxide Unit into the lower layer of the LBFU, however, sulfate concentrations in the LBFU were simulated at less than 10 mg/L above background in a relatively small area centered approximately 200 feet west of the center of the PTF well field five years after closure. That equates to groundwater flow velocity of 40 feet per year. Therefore, based on these groundwater flow model simulations presented in the application and other calculations, groundwater migration from the LBFU above the proposed PTF mine zone, representing the exempted portion of the LBFU aquifer, has a travel time to the location of the closest Merrill Ranch well in excess of 200 years, which would exceed the reasonable lifetime of any public drinking water wells.

2. Evaluation of potential future source of drinking water:

To meet the requirements of 40 CFR § 146.4(b)(1) for an aquifer exemption, it must be shown that the formation will not be a potential future source of drinking water due to the presence of minerals or hydrocarbons in a commercially producible quantity. Documentation provided to EPA indicates that the portion of the exempted aquifer that will be impacted by the proposed PTF operations cannot now and will not in the future serve as a source of drinking water because it contains minerals that are expected to be commercially producible. In the application for the original aquifer exemption, BHP Copper demonstrated that the aquifer for which they were seeking exemption, which includes the portion of the aquifer that would be impacted by the proposed PTF operations, contains commercially producible quantities of mineralized copper. That demonstration was supported by BHP Copper's operation of in-situ copper recovery from the mineralized copper zone, although that operation did not progress to full commercial development. More recently, Florence Copper provided a report entitled "NI 43-101 Florence Copper Project, Technical Report, Pre-Feasibility Study," which provides further data confirming the aquifer's potential for economic mineral development. Based on the original demonstration, BHP's limited production/recovery, and FCI's more recent documentation, EPA

has determined that the current pilot project area under review contains commercially producible copper and would, therefore, not serve as a future source of drinking water (40 CFR § 146.4(b)(1)).

Underground Injection Control Program

DRAFT AREA PERMIT

**Class III In-Situ Production of Copper
Permit No. R9UIC-AZ3-FY11-1**

**Florence Copper Project
1575 West Hunt Highway
Florence, Arizona 85132**

Issued to:

Florence Copper, Inc.

**1575 West Hunt Highway
Florence, Arizona 85132**

TABLE OF CONTENTS

PART I. AUTHORIZATION TO CONSTRUCT AND INJECT	6
PART II. SPECIFIC PERMIT CONDITIONS	8
A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING	8
1. Financial Assurance	8
2. Field Demonstration Submittal, Notification, and Reporting	8
B. AQUIFER EXEMPTION	8
1. Exempted Zone	8
2. No Migration into or between Underground Sources of Drinking Water (USDWs).....	9
3. Adequate Protection of USDWs.	9
C. WELL CONSTRUCTION.....	9
1. Location of PTF Wells	9
2. Logging and Testing during Drilling and Construction.....	10
3. Drilling, Work-over, and Plugging Procedures.....	11
4. Well Casing and Drilling.....	11
5. Cementing	12
6. Monitoring Devices.....	13
7. Injection Interval	14
8. Injection Formation Testing.....	14
9. Final Well Construction Report and Completion of Construction Notice.....	14
10. Proposed Changes and Work-overs	15
D. CORRECTIVE ACTION (PLUGGING AND ABANDONMENT PLAN).....	15
E. WELL OPERATION	16
1. Operations Plan	16
2. Demonstrations Required Prior to Injection.....	17
3. Mechanical Integrity	17
4. Injection Pressure Limitation	20
5. Injection Volume (Rate) Limitation.....	21
6. Injectate Fluid Limitations	21
F. MONITORING PROGRAM	23
1. Water Quality Monitoring Wells.....	23
2. Level 1 and Level 2 Parameters, Alert Levels, and Aquifer Quality Limits.....	23
3. Baseline Data and Statistical Methods.....	26
4. Water Quality Monitoring Schedule	27
5. Hydraulic Control Monitoring Wells	27
6. Annular Conductivity.....	28
7. Injectate Solution (Lixiviant) Monitoring.....	28

8.	Groundwater Elevation Monitoring.....	28
9.	Monitoring Information.....	29
10.	Monitoring Devices.....	29
G.	RECORDKEEPING AND REPORTING	31
1.	Recordkeeping.....	31
2.	Reporting of Results.....	31
3.	Quarterly reports	32
4.	Copies of all reports of PTF aquifer pump testing.....	32
5.	Copies of the monitoring results and all other reports	32
H.	CONTINGENCY PLANS	33
1.	Loss of Hydraulic Control.....	33
2.	Water Quality Exceedances at POC and other Monitoring Wells	34
I.	RESTORATION and PLUGGING & ABANDONMENT	36
1.	Closure	36
2.	Post-Closure:	37
J.	POST-CLOSURE AUDITS.....	37
K.	DURATION OF PERMIT	38
L.	FINANCIAL RESPONSIBILITY	38
1.	Demonstration of Financial Responsibility.....	38
2.	Insolvency of Financial Institution.....	38
3.	Insolvency of Owner or Operator.....	39
M.	NATIONAL HISTORIC PRESERVATION ACT.....	39
	PART III. GENERAL PERMIT CONDITIONS.....	40
A.	EFFECT OF PERMIT.....	40
B.	PERMIT ACTIONS.....	40
1.	Modification, Revocation and Reissuance, or Termination.....	40
2.	Transfers.....	40
C.	SEVERABILITY	41
D.	CONFIDENTIALITY	41
E.	GENERAL DUTIES AND REQUIREMENTS	41
1.	Duty to Comply.....	41
2.	Penalties for Violations of Permit Conditions.....	41
3.	Need to Halt or Reduce Activity not a Defense	42
4.	Duty to Mitigate	42
5.	Proper Operation and Maintenance.....	42

6.	Property Rights.....	42
7.	Duty to Provide Information	42
8.	Inspection and Entry.....	42
9.	Signatory Requirements	43
10.	Additional Reporting Requirements.....	43
11.	Continuation of Expiring Permit.....	44

APPENDIX A – Project Maps, Aquifer Exemption Delineation, and Well Locations

- *Figure A-9: Area of Review Production Test Facility*
- *Figure S-1: Lateral Extent of Aquifer Exemption Area*
- *Figure S-2: Vertical Extension of Aquifer Exemption Boundary*
- *Exhibit S-1: Aquifer Exemption document for the Florence In-Situ Project issued by EPA in 1997*
- *Figure P-1: Existing and Proposed POC, Operational Monitoring ,and Supplemental Monitoring Wells*
- *Table P-1: Existing POC Wells Proposed for Use in Conjunction with PTF*
- *Table P-2: Proposed New POC and Supplemental Monitor Wells for use in Conjunction with the PTF*
- *Figure 11-1: Monitor Well Locations (Revised) Proposed Test Facility*

APPENDIX B – Proposed Well Construction Procedures and Diagrams

- *Attachment L – Well Construction Procedures*
- *Attachment M – Well Construction Details, including the following diagrams:*
- *Drawings M-1 through M-5: Typical Well Construction Diagrams*
- *Drawings M-6 and M-7: Annular Conductivity Device Details*
- *Drawings M-8 and M-9: Conductivity Sensor Device Details*
- *Figures 11-2, 12-1, 12-2, 12-3, 12-4, 18-2, and 18-3: Supplemental Monitoring Well Design Diagrams from Exhibit M-1 of the application*
- *Figure M1-1: Operational Monitoring Well MW-01 Design*

APPENDIX C - Plugging and Abandonment Plan

- *Attachment Q: Plugging and Abandonment Plan*
- *Exhibit B-1: Figure 18-1 Wells and Core Holes within 500 Feet of PTF*
- *Exhibit C-1: Table C-1: Wells and Core Holes within 500 feet of the PTF Well Field*
- *Exhibit Q-3: EPA Forms 7520-14, Plugging and Abandonment Plans and P&A Schematics for Existing Wells and Core Holes*

APPENDIX D – Geophysical Logging Requirements

- EPA Region 9 Temperature Log Requirements

APPENDIX E – Operations Plan

- *Exhibit K-2, Operations Plan, including Table 3.1 in Appendix A in Attachment K*

APPENDIX F - Closure and Post-Closure Plan

- *Exhibit Q-2: Closure and Post Closure Plan*
- *Exhibit Q-4: EPA Forms 7520-14 and P&A Schematics for BHP Test Wells
EPA Forms 7520-14 and P&A Schematics for PTF AOR Wells*

APPENDIX G – Memorandum of Agreement on Historical Preservation

APPENDIX H – Wildlife Monitoring Plan

APPENDIX I – EPA Reporting Forms List

APPENDIX J – Region 9 Step Rate Test Policy

APPENDIX K - Groundwater Quality Alert Levels and Compliance Monitoring

- *Exhibit P-1, Alert Levels, in Attachment P*
- *Tables P-3 and P-4 in Attachment P, compliance monitoring tables*

PART I. AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control regulations of the U.S. Environmental Protection Agency (EPA) codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, 147, and 148,

Florence Copper, Inc.
1575 W. Hunt Highway
Florence, Arizona 85132

is hereby authorized, contingent upon Permit conditions, to construct and operate a Class III injection well Production Test Facility (PTF) and engage in in-situ copper recovery (ISCR) operations at the Florence Copper Project (FCP). The PTF site is located in Township 4 South, Range 9 East, Section 28 in Pinal County, Arizona, approximately two miles northwest of the business district of Florence, Arizona, as depicted in Figure A-9 in Appendix A. The PTF will consist of four (4) injection, nine (9) recovery, seven (7) observation and four (4) multi-level sampling wells situated in an area approximately 300 by 300 feet and two acres in size.

The permit authorizes injection of an acidic solution into the Oxide Bedrock Zone at depths greater than 40 feet below the top of the Oxide Bedrock Zone for the purpose of copper recovery and production testing. The Oxide Bedrock Zone is located approximately 475 to 1,200 feet below ground level at the PTF site and is situated within the EPA-approved aquifer exemption area. The PTF well field will be surrounded by eight (8) monitoring wells located within the 500-foot radius circular Area of Review (AOR) that circumscribes the well field.

For the permitted wells within the AOR, EPA will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this permit have been met. EPA will grant authorization to inject only after the requirements of Part II, Sections C, D and E-2 of this permit have been met. Operation of each injection well will be limited to maximum volume and pressure as stated in this permit.

All conditions set forth herein refer to Title 40 Parts 124, 144, 146, 147 and 148 of the Code of Federal Regulations (CFR), which are regulations in effect on the date that this permit is effective.

This permit consists of forty-four (44) pages plus appendices, and includes all items listed in the Table of Contents. Further, it is based upon representations made by Florence Copper, Inc. (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this permit.

This permit and the authorization to construct, test, and inject are issued for a period of up to seven (7) years, which includes the approximate two (2)-year PTF operational life and the proposed five (5)-year post-closure monitoring period, unless terminated under the conditions set forth in Part III, Section B.1 of this permit.

This permit is issued and becomes effective on _____

Jane Diamond, Director
Water Division, EPA Region IX

PART II. SPECIFIC PERMIT CONDITIONS

A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING

1. Financial Assurance

The Permittee shall supply evidence of financial assurance prior to commencing injection well drilling and construction, in accordance with Section L of this part.

2. Field Demonstration Submittal, Notification, and Reporting

- a. Prior to each demonstration required in the following sections B through D, the Permittee shall submit plans and specifications for procedures to the EPA Region 9, Drinking Water Protection Section for approval. The submittal address is provided in Section G, paragraph 5. No demonstration in these sections may proceed without prior written approval from EPA.
- b. The Permittee must notify EPA at least thirty (30) days prior to performing any required field demonstrations, after EPA approves the plans/procedures for testing, in order to allow EPA to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration required in this Part to EPA within thirty (30) days of completion, unless otherwise noted.

B. AQUIFER EXEMPTION

1. Exempted Zone

EPA approved an Aquifer Exemption at the FCP site on May 1, 1997. Pursuant to 40 CFR 144.7 and 146.4, the exempted portion of the aquifer at the FCP site is defined by the following lateral and vertical boundaries:

a. Lateral Aquifer Exemption Boundary

The lateral aquifer exemption boundary is located 500 feet beyond the outline of the orebody referred to as the in-situ copper recovery (ISCR) area delineated in Figure S-1 and in the existing Aquifer Exemption in Exhibit S-1 in Appendix A.

b. Vertical Aquifer Exemption Boundaries

The upper and lower boundary of the exempted aquifer are described in the existing Aquifer Exemption in Exhibit S-1 in Appendix A, as the following:

The upper aquifer exemption boundary is defined as 200 feet above the oxide zone, or the base of the Middle Fine-Grained Unit (MFGU), whichever is further below ground surface. The lower aquifer exemption boundary is defined by the base of the reactive interval amenable to copper leach solutions. The lower boundary encompasses the Oxide Bedrock Zone, which contains an economical amount of copper, and copper in the Sulfide Bedrock Zone that is leachable.

The vertical aquifer exemption boundaries are depicted in Figure S-2.

2. No Migration into or between Underground Sources of Drinking Water (USDWs).

Pursuant to 40 CFR 144 and 146 and the conditions established herein, during the approximate two (2)-year life of the PTF operation and five (5)-year post-closure monitoring period, the Permittee shall ensure that there is no migration of injection fluids, process by-products, or formation fluids beyond the exempted zone described at Part II, Section B.1 and delineated in the existing Aquifer Exemption in Appendix A of this permit.

3. Adequate Protection of USDWs.

Pursuant to 144.12 and 146.10(a)(4), the Permittee shall adequately protect USDWs by commencing, within sixty (60) days after completing copper recovery operations in the PTF, restoration of groundwater in the injection and recovery zone of the PTF to primary maximum contaminant levels (MCLs) under 40 CFR Part 141, or to pre-operational concentrations if those concentrations exceed MCLs, and by subsequently plugging and abandoning the wells in the PTF in accordance with Part II.I.1, Restoration and Plugging & Abandonment Plan, and Appendix F, Closure and Post-Closure Plan, of this permit.

C. WELL CONSTRUCTION

1. Location of PTF Wells

- a. The PTF's four (4) injection, nine (9) recovery, seven (7) observation, and four (4) multi-level sampling wells shall be constructed within the designated area delineated in Figure A-9 in Appendix A and located in Township 4 South, Range 9 East, Section 28 in Pinal County, Arizona (at coordinates latitude 33 degrees, 3 minutes, 1.39 seconds North and 111

degrees, 26 minutes, 4.69 seconds West). The PTF site will be approximately 300 feet in diameter and octagonal in shape, as depicted in Figure A-9 in Appendix A. The PTF site is located approximately two miles northwest of the business district of Florence, Arizona.

- b. After drilling is completed, the Permittee must submit final well location coordinates, distances in feet from the closest section lines in Section 28 and latitude/longitude coordinates of the wells constructed under this permit, including all monitoring wells and point of compliance (POC) wells. The distances and direction of each monitoring and POC well from the PTF well field shall also be provided in the Final Well Construction Report required under paragraph 9(a) of this section. If final well field coordinates differ significantly from the proposed coordinates described in paragraph (a) above, justification and documentation of any communication with and approval by EPA shall be included.

2. Logging and Testing during Drilling and Construction

Open-hole geophysical logs shall be run in each well boring for the purpose of formation evaluation, depth control, and detection of borehole anomalies. Geophysical tools will include caliper, gamma-ray, temperature, directional survey, and electrical logs. In addition, compensated neutron-density logs will be run in selected borings, including the four injection well borings within the PTF. Porosity values determined from the neutron-density logs shall be compared to porosities applied to the groundwater flow model in the PTF project area, and the porosity values in the model shall be revised accordingly if significant differences are found in the comparison with log porosities.

Cased-hole geophysical logs, including gamma ray, temperature, and cement bond logs (CBLs), shall be run in all injection, recovery, and steel-cased monitoring wells over the entire length of each well after the outer steel casing has been installed and cemented to surface. Gamma ray and temperature logs are required in fiberglass reinforced plastic (FRP)-cased observation and multi-level sampling wells. CBLs are also required in these wells if they produce useful information about the cement bond to the FRP casing and borehole wall. Additional geophysical surveys may be conducted as required by EPA. The CBL evaluation will enable the analysis of bond between cement and casing, as well as between casing and formation, and shall allow detection and assessment of any micro-annulus between the casing and cement as well as any cement channeling in the borehole annulus. Refer to Appendix D for information on EPA Region 9 temperature logging guidelines and requirements.

3. Drilling, Work-over, and Plugging Procedures

Drilling, work-over, and plugging procedures must comply with applicable portions of the Arizona Oil and Gas Conservation Commission's requirements in the Arizona Administrative Code, found at Title 12, Natural Resources, Chapter 7, Article I, R12-7-108 to R12-7-127. Drilling, work-over, and plugging procedures shall be submitted to EPA for approval. Once approved, a thirty (30)-day advance notice shall be submitted to EPA for witnessing purposes. Procedures shall include the following:

- a. Details for cementing casing strings;
- b. Records of daily Drilling Reports (electronic and hard copies);
- c. Blowout Preventer (BOP) System testing on recorder charts including complete explanatory notes during the test(s), if applicable;
- d. Casing and other tubular and accessory measurement tallies.

Information to be provided for reporting forms such as EPA Form 7520-9, Completion of Construction Report, EPA Form 7520-12, Well Rework Record, or EPA Form 7520-14, Plugging and Abandonment Plan (refer to list in Appendix I) is also acceptable to include in the procedures. The Permittee must also comply with the requirements of the Arizona Department of Water Resources minimum construction standards in the Arizona Administrative Code found at Title 12, Chapter 15, Article 8, Well Construction and Licensing of Drillers.

4. Well Casing and Drilling

The well construction procedures described in Attachment L of the permit application and schematic details submitted in Attachment M of the application are hereby incorporated into this permit as Appendix B, and shall be binding on the Permittee. All new PTF and monitoring wells shall be cased and cemented to prevent the migration of fluids into or between USDWs. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well and shall be maintained until the well is plugged and abandoned.

EPA may require minor alterations to the construction requirements based upon information obtained during well drilling and related operations. Final casing setting depths will be determined by the field conditions, well logs, and other input from the Permittee and EPA staff. EPA approval must be obtained for any revisions prior to installation, and these will be documented in the Final Well Construction Report (See paragraph 9(a) below).

5. Cementing

PTF injection and recovery wells will be drilled, and casing will be installed in two stages. The steel casing will be installed and cemented from land surface to a point at least 40 feet below the top of bedrock (defined as the bedrock exclusion zone) by the plug displacement method. The lower section of each injection and recovery well will be drilled from the bottom of the cemented steel casing to the design depth.

In the second stage for the injection and recovery wells, after the FRP casing and PVC well screen have been installed and annular materials have been emplaced in the lower section of the boring by tremie, cementing of the upper section of the inner FRP casing will be accomplished by pumping a cement slurry down a tremie pipe to fill the annular space between the inner FRP casing and outer steel casing from the bottom of the bedrock exclusion zone to ground surface.

The observation and multi-level sampling wells will be drilled in a single stage at a constant diameter to the design depth. After the FRP casing, PVC screen, and filter pack have been installed, cementing of the upper portion of the casing will be accomplished by pumping a cement slurry down a tremie pipe to fill the annular space between the borehole and casing from the bottom of the bedrock exclusion zone to ground surface.

In wells where a tremie pipe is used for cement placement, the discharge end of the tremie pipe will be continuously submerged in the cement until the zone to be filled is completely filled. An acid-resistant, sulfate-resistant, Portland Type V cement or an EPA-approved substitute shall be placed in the well annuli of all wells from the bottom of the casing to land surface. The well casing will be hung in tension until the cement has cured. The well casing will be filled with a fluid of sufficient density to maintain pressure equalization with the cement slurry in the annulus to prevent collapse of the well casing during the cementing operation.

Water and/or appropriate mud-breaker chemicals will be circulated through the casing or tremie pipe prior to cement placement to reduce mud viscosity and assist in removal of mud from the borehole/casing annulus. An excess quantity of cement will be pumped into the annular space in order to verify “clean” slurry returns from the well prior to terminating the cementing operation. Following placement of the cement slurry, the cement will be allowed to cure for a minimum of 24 hours before performing additional operations on the well.

- a. The cement shall be Type V unless the Permittee submits the following information to the Director regarding a Type V substitute:
 - i. The results of an immersion test for resistance to pregnant leach solution of equivalent mass samples of Type V cement and any proposed substitute cement,

- ii. A comparison of the percentage weight change between samples,
- iii. A demonstration that the substitute experiences little visual change, a weight increase or decrease within 5 % to 8 % and no significant change in compressive strength.

Upon completion of this demonstration, and subject to EPA approval, a substitute cement that meets these criteria may be substituted for Type V cement for well construction.

6. Monitoring Devices

The Permittee shall install and maintain in good operating condition:

- a. A tap on the discharge line between the injection pump and the wellhead for the purpose of obtaining representative samples of injection fluids; and
- b. Devices to continuously measure and record injection pressure, flow rates, injection and production volumes, subject to the following:
 - i. Pressure gauges shall be of a design to provide:
 - (A. A full pressure range of at least fifty (50) percent greater than the anticipated operating pressure; and
 - (B. A certified deviation accuracy of five (5) percent or less throughout the operating pressure range.
 - ii. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent or less throughout the range of rates allowed by the permit.
- c. Annular Conductivity Devices

The Permittee shall rely on a monitoring program to demonstrate mechanical integrity in observation and multi-level sampling wells, under 40 CFR 146.8(a)(2) and condition Part II.E.3.a.ii.A of this permit. Each well shall be equipped with an annular conductivity device (ACD) to detect vertical channels adjacent to the well bore. The ACD will be installed on the FRP well casing and shall be placed as close to the MFGU as possible and shall never be more than 10 feet above the MFGU or more than 10 feet above the exempted zone in the Lower Basin Fill Unit (LBFU) if the MFGU base is more than 200 feet above the LBFU (vertical limit of the exempted zone). The ACD will consist of a pair of metal bands spaced approximately three (3) feet apart and connected to electrical

wires that extend to the surface. The ACD shall be constructed of materials suitable for contact with the annular seal materials and the process related solutions. Details of the ACDs are presented in Drawings M-6 and M-7 in Appendix B.

d. Conductivity Sensors:

A conductivity sensor (CS) shall be strapped to the well screens of recovery, observation, and multi-level sampling wells at regular intervals to facilitate electrical resistivity profiling of the formation during injection and recovery operations as depicted in Drawings M-8 and M-9 in Appendix B.

7. Injection Interval

The Permittee shall only inject fluids at depths greater than forty (40) feet below the top of the Oxide Bedrock Zone unless the Permittee has received written approval from the Director to expand the injection interval. To ensure that the injection interval is at least forty (40) feet below the top of the Oxide Bedrock Zone, the Permittee shall case and cement all injection wells in a manner described at Part II.C.4 and C.5 of this permit from ground surface to at least forty (40) feet below the top of the Oxide Bedrock Zone. The Permittee will develop the injection interval for each well by drilling into the Oxide Bedrock Zone, beyond the bottom of the steel casing and cemented interval. Well screen and short blank PVC casing sections will be installed through the oxide interval below the bedrock exclusion zone.

8. Injection Formation Testing

The Permittee shall perform aquifer pump tests prior to injection in order to evaluate subsurface characteristics of the Oxide Bedrock Zone, overlying basin fill units, and the confining MFGU within the PTF AOR. Test results will be reported to EPA in accordance with Part II.G of this permit. Results of the aquifer tests will be compared to parameters used in the groundwater flow model, and the model parameters will be revised accordingly if the resulting test parameters are significantly different from those used in the model.

9. Final Well Construction Report and Completion of Construction Notice

- a. The Permittee must submit a final well construction report, including logging and other results, with a schematic diagram and detailed description of construction, including driller's log, materials used (e.g., tubing tally, cement, and other volumes), to EPA within sixty (60) days after completion of all PTF and monitoring wells. Construction details, downhole equipment, depths to key formation tops and the USDW base,

and screened interval depths will be in the Well Construction Report and schematics of all PTF and monitoring wells.

- b. The Permittee must also submit a notice of completion of construction to EPA (refer to EPA Form 7520-9 listed in Appendix I). Injection operations may not commence until all well and formation testing is complete, necessary reports are submitted, and EPA has inspected or otherwise reviewed and approved the construction and other details for the permitted wells and notified the Permittee of EPA's approval.

10. Proposed Changes and Work-overs

A well work-over is any physical alteration or addition to an existing well that results in a change in the composition, diameter, perforations, screen depths, tubing, or depth of the well casing or a change in the cement in the outer annulus.

- a. The Permittee shall give advance notice to EPA, as soon as possible, of any planned physical alterations or additions to the permitted PTF and monitoring wells. Any changes in well construction require prior approval by EPA and may require a permit modification under the requirements of 40 CFR §§144.39 and 144.41.
- b. In addition, the Permittee shall provide all records of well work-overs, logging, or other subsequent test data, including required mechanical integrity testing, to EPA within thirty (30) days of completion of the activity.
- c. Appendix I contains a list of the appropriate EPA reporting forms for well changes or work-overs.
- d. Demonstration of mechanical integrity shall be performed within thirty (30) days of completion of workovers or alterations and prior to resuming PTF injection and recovery activities, in accordance with Section E.3 of this part.

D. CORRECTIVE ACTION (PLUGGING AND ABANDONMENT PLAN)

Before injection and recovery wells are placed in service:

1. All existing non-Class III wells and coreholes within the 500-foot PTF Project AOR shall be abandoned according to the Plugging and Abandonment Plan (Appendix C). The identification, location, and construction details of the wells and coreholes to be plugged and abandoned are listed in Table C-1 and the Plugging and Abandonment Plans (EPA Form 7520-14) for each well and corehole within the AOR are included in Appendix C. EPA shall be notified, and

final plugging and abandonment (P&A) plans and procedures shall be submitted to EPA for approval at least 30 days in advance of plugging operations.

2. As the cementing and abandonment records for the DM-B well are not available, DM-B well shall be re-entered, and the Permittee shall demonstrate subject to EPA's approval that cement is placed at the base of the USDW in the casing/wellbore annulus and to the surface within the casing. If this cannot be demonstrated to EPA's satisfaction, the Permittee shall re-plug the well to ensure cement is placed at the base of the USDW in the casing/wellbore annulus and to the surface within the casing. EPA shall be notified and final P&A plans and procedures shall be submitted to EPA for approval at least 30 days in advance of such plugging operations for the DM-B well.
3. The OB3-1, OB4-1, PW3-1, and PW4-1 wells in Table C-1 list bentonite grout seal in the casing annulus. The Permittee shall demonstrate, subject to EPA's approval, that this is bentonite cement or other acceptable material placed at the base of the USDW in the casing/wellbore annulus and to the surface within the casing prior to plugging operations. If this cannot be demonstrated to EPA's satisfaction, the Permittee shall perforate the casing and place cement at the base of the USDW in the casing/wellbore annulus and to the surface within the casing. EPA shall be notified and final P&A plans and procedures shall be submitted to EPA for approval at least 30 days in advance of such plugging operations for these wells.

E. WELL OPERATION

1. Operations Plan

The revised Operations Plan submitted with the permit application for the PTF is incorporated into this permit as Appendix E, and shall be binding on the Permittee with the following conditions.

- a. Planned PTF injection and recovery rates will be approximately 240 and 300 gallons per minute (gpm), respectively. During PTF operations, the injection rate shall not exceed 240 gpm, and the extraction rate shall not fall below 110 percent of the injection rate on a daily average basis without prior written approval of a lower percentage from EPA.
- b. An inward gradient of at least one foot between observation and recovery wells must be established prior to injection of sulfuric acid solution and maintained for demonstrating hydraulic control.
- c. In addition, electrical conductivity measurements in the observation and recovery wells are required to confirm hydraulic control. Conductivity

readings in the recovery wells should always exceed readings in the observation wells to confirm hydraulic control.

- d. Actions shall be taken to restore hydraulic control within 24 hours if the extraction to injection ratio falls below 110 percent, the inward gradient at any well pair is less than one foot, or the electrical conductivity data indicate a possible loss of hydraulic control.

2. Demonstrations Required Prior to Injection

For the PTF wells, injection operations may not commence until construction is complete, and the Permittee has complied with following mechanical integrity requirements.

The Permittee shall demonstrate that the PTF wells have and maintain mechanical integrity consistent with 40 CFR §146.8 and with paragraph 3 of this section. The Permittee shall demonstrate that there are not significant leaks in the casing and tubing, and that there is not significant fluid movement through the casing/wellbore annulus or vertical channels adjacent to the injection wellbore. The Permittee may not commence initial injection into the wells, nor recommence injection after a work-over which has corrected any loss of well integrity, until the Permittee has received written notice from EPA that the demonstration provided is satisfactory and that injection is authorized.

3. Mechanical Integrity

Pursuant to 40 CFR 144.51(q), all PTF wells, monitoring wells, and the existing BHP test wells shall maintain mechanical integrity at all times. Pursuant to 40 CFR 146.8, all PTF wells, monitoring wells, and BHP test wells shall demonstrate mechanical integrity, Parts I and II, by the following methods and schedule:

a. Methods for Demonstrating Mechanical Integrity

- i. Part I: Mechanical Integrity Pursuant to 40 CFR 146.8(a)(1), the Permittee shall demonstrate Part I of the mechanical integrity requirement by the following methods:

- (A. A packer will be installed immediately above the proposed injection interval, the wellbore will be completely filled with water, and a hydraulic pressure equal to or above the maximum allowable wellhead injection pressure and not less than 100 pounds per square inch (psi) will be applied. This test shall be for a minimum of thirty (30) minutes. A well passes the mechanical integrity test (MIT) if there is less than a five (5) percent decrease/increase in pressure

over the thirty (30) minute period. A well shall not be operated at injection pressures greater than the maximum allowable injection pressure determined as set forth in Part II.E.4 below; and,

(B. Continuous pressure monitoring

The tubing/casing annulus and injection pressure in active injection wells shall be monitored and recorded continuously by a digital instrument with a resolution of one tenth (0.1) psi. The average, maximum, and minimum monthly results shall be included in the quarterly report to EPA per Section G, paragraph 2.k of this part unless more detailed records are requested by EPA.

ii. Part II: Mechanical Integrity Pursuant to 40 CFR 146.8(a)(2), the Permittee shall demonstrate Part II of the mechanical integrity requirement by the following methods:

(A. A monitoring program, as defined at Part II.F.6 of this permit, designed to verify the absence of fluid movement through vertical channels adjacent to the well bore in observation and multi-level sampling wells.

(B. A demonstration that the injectate is confined to the proper zone shall be conducted and presented by the Permittee and subject to approval by EPA. A temperature log and radioactive tracer survey shall be run in all PTF wells. Temperature logs and radioactive tracer surveys shall be run in accordance with EPA Region 9 guidance (Temperature log guidance in Appendix D). Proposed MIT procedures must be submitted to EPA for review and approval. Once approved, the Permittee may schedule the external MIT, providing EPA at least thirty (30) days notice before the external MIT is conducted. The demonstration shall be scheduled to occur approximately sixty (60) days after commencement of injection; and,

(C. After installing and cementing casing, conducting a cement squeeze operation, or any well cement repair, the Permittee shall provide cementing records and cement evaluation logs that demonstrate isolation of the injection interval and other formations from the USDWs. Cementing records and logs shall demonstrate complete filling of the annulus between the borehole wall and well casing with cement.

Cement evaluation must assess the following four objectives:

- 1) Bond between casing and cement;
- 2) Bond between cement and formation;
- 3) Detection and assessment of any micro-annulus (small gaps between casing and cement); and
- 4) Identification of any absence of cement and cement channeling in the borehole annulus.

The Permittee may not commence or recommence injection until the Permittee has received written notice from EPA that the cement evaluation/demonstration is satisfactory.

b. Schedule for Demonstrations of Mechanical Integrity

EPA may require that an MIT be conducted at any time during the permitted life of any well authorized by this permit. The Permittee shall also arrange and conduct MITs according to the following requirements:

- i. A demonstration of mechanical integrity shall be made within thirty (30) days subsequent to the installation of a new PTF or monitoring well. Injection wells will be pressure tested for mechanical integrity in accordance with paragraph 3.a.i.A of this section no less frequently than once every twelve (12) months while active and every two (2) years while inactive unless abandonment or closure occurs prior to that time. Internal mechanical integrity of PTF wells shall also be demonstrated within thirty (30) days after a work-over is conducted, the construction of the well is modified, a conversion of a well to injection or recovery service occurs, or when loss of mechanical integrity becomes evident during operation.
- ii. A demonstration of mechanical integrity using a monitoring program shall be made in accordance with the schedule in Part II.F.6.
- iii. Results of the MITs shall be submitted to the Director in the quarterly reports.

c. Loss of Mechanical Integrity

The Permittee shall notify EPA, in accordance with Part II, Section G, Paragraph 2(g) of this permit, under any of the following circumstances:

- i. a well fails to demonstrate mechanical integrity during a test, or
- ii. a loss of mechanical integrity becomes evident during operation, or
- iii. a significant change in the injection pressure and/or rate occurs during normal operating conditions.

Furthermore, for new injection wells, injection shall not commence, and for operating wells, injection shall be terminated and may not resume, until the Permittee has taken necessary actions to restore integrity to the well and has demonstrated that the well has integrity as defined at Part II.E.2(a), above.

d. Prohibition without Demonstration

After the permit effective date, injection into the well may commence only if:

- i. The well has passed an internal pressure MIT in accordance with paragraph 3.a.i.A of this section; and
- ii. The Permittee has received written notice from EPA that the internal pressure MIT demonstration is satisfactory.

4. Injection Pressure Limitation

- a. Injection wells shall be operated at pressures less than the fracturing pressure of the Oxide Bedrock Zone. Based on field test data at the PTF site, a fracture gradient of 0.65 psi/foot (ft) of depth, measured from ground surface to the top of the injection interval, will be used to establish maximum hydraulic pressure that may be exerted on the injection zone. The maximum wellhead pressure will vary accordingly, dependent on the depth of the interval receiving the injection fluid, but in no event shall it exceed the calculated pressure that can be safely applied to well equipment. In no case shall pressure in the injection zone during injection initiate new fractures or propagate existing fractures in the injection zone or the confining zone. In no case shall injection cause the movement of injectate or formation fluids into a USDW. Injection pressures shall be monitored continuously and recorded on a daily basis. Automatic alarms and shut-in equipment shall be installed and triggered if injection pressures exceed the maximum allowable pressures.
- b. The injection pressure limitations in paragraph (a) may be increased by the Director based on the results of a valid step-rate injection test in the respective proposed injection zone(s). The Director will determine any

allowable increase based upon the step-rate test results and other parameters reflecting actual injection operations. Step-rate testing shall be performed in accordance with the EPA Region 9 Step-Rate Test Policy, which is included in Appendix J of this permit.

- c. Should the Director approve an increase in injection pressure limitations per paragraph (b), the increase shall be made part of this permit by minor modification procedures (40 CFR Part 144.41).

5. Injection Volume (Rate) Limitation

- a. The planned PTF injection and recovery rates are approximately 240 and 300 gpm, respectively. During PTF operations, the injection rate will not be allowed to exceed 240 gpm, and extraction will not be allowed to fall below 110 percent of the injection rate on a daily average basis without prior written approval from EPA.
- b. The Permittee may request an increase in the maximum injection rate or a decrease in the minimum ratio of extraction to injection rate allowed in paragraph (a) above. Any such request shall be made in writing and appropriately justified to EPA.
- c. Any request for an increase in injection rate or decrease in the minimum ratio of extraction to injection rate shall demonstrate to the satisfaction of EPA that the increase in volume or reduction in the minimum percent extraction to injection rate will not interfere with the operation of the facility or its ability to meet conditions described in this permit, change its well classification, or cause migration of fluids into USDWs or beyond the PTF well field AOR.
- d. The injection rate shall not cause an exceedance of the injection pressure limitation established under item 4(a) of this section.

6. Injectate Fluid Limitations

- a. The Permittee shall not inject any solid wastes as defined by 40 CFR Part 261.
- b. Injection fluids shall be limited to only fluids authorized by this permit and generated by the PTF operation. No fluids shall be accepted from other sources for injection into the permitted wells.
- c. Fresh water may be injected to assess the hydraulics of the injection and recovery patterns in the PTF and to assess the performance of related surface facilities.

- d. During PTF operations, the injectate solution (lixiviant) shall consist of a dilute sulfuric acid solution that includes inorganic and organic constituents as defined below. The lixiviant shall have a pH of approximately 2 and not less than 1. Organic compounds in the lixiviant shall be limited to those listed in Part II.F.7.(a) of this permit. The average total concentration of all organics in the lixiviant listed in Part II.F.7(a) for each quarter of monthly sampling shall not exceed 10 milligrams per liter (mg/L). The estimated composition of the injectate is provided in Table 3.1 in Appendix E. Inorganic constituents in the lixiviant shall be limited to constituents in the sulfuric acid, in calcium carbonate, or other neutralizing agents used for the purposes described in Section (e) below, and to constituents resulting from the interaction of lixiviant with groundwater and minerals in the oxide zone. Concentrations of inorganic constituents in the lixiviant shall be subject to the requirements of Section (f) below.
- e. During closure, fresh groundwater may be injected to restore the zone to federal drinking water standards or pre-operational background concentrations. The Permittee may also adjust the pH with sodium carbonate or other neutralizing agents to aid in the precipitation of soluble metals.
- f. At least 30 days prior to commencement of the PTF operations, the permittee shall submit a report for the Director's approval that includes the name and grade of each process chemical that is proposed to be used at the PTF and that fits in one of the three following categories: (1) organic compounds to be used in the SX/EW process; (2) sulfuric acid to be used in the SX/EW process or to prepare solutions for injection; or (3) sodium carbonate or other chemicals to be injected, or to be used in ISCR solutions. The report shall include the name and grade of each reported chemical, and a Material Safety Data Sheet (MSDS) for each. The report shall also include recommendations, with justifications, as to which constituents of the reported chemicals should or should not be included in the Level 1 or Level 2 groundwater monitoring program defined at Part II.F.2 and the injectate monitoring program defined at Part II.F.7 of this permit.
- g. The permittee may use a process chemical not included in the reports submitted pursuant to Section (f) above provided the permittee submits a report for the Director's approval at least 30 days prior to the date of the proposed use of the chemical and receives written approval by the Director. Reports submitted pursuant to this section during PTF operations must include information required by Section (f) above.
- h. The permittee shall expand the groundwater monitoring program defined at Part II.F.2 and the injectate monitoring program defined at Part II.F.7 as

necessary to conform to the Director's conditions of approval of reports submitted pursuant to Sections (f) and (g) above.

- i. The monitoring and advance notification requirements of Part II.E.6 and Part II.F.7 apply only to injectate solution (lixiviant) prior to injection and to constituents of process chemicals that may become part of the lixiviant. The requirements do not apply to pregnant leach solution (PLS) that is being re-injected to increase the concentration of copper in the PLS before it is delivered to the SX/EW plant for processing.

F. MONITORING PROGRAM

1. Water Quality Monitoring Wells.

POC wells established by the ADEQ, the seven (7) additional monitoring wells required by EPA, and the MW-01 operational monitoring well shall serve as water quality monitoring wells for the federal UIC permit established herein. The proposed POC and water quality monitoring well locations are depicted in Figures P-1 and 11-1 and are described in Tables P-1 and P-2 in Appendix A. The water quality monitoring well designs are shown in Figures 11-2, 12-1 through 12-4, 18-2, 18-3, and M1-1 in Appendix B.

2. Level 1 and Level 2 Parameters, Alert Levels, and Aquifer Quality Limits

- a. **Level 1 Parameters:** Level 1 analytes include constituents of ISCR solutions that are most likely to provide an early indication of groundwater impacts associated with the operation of the solvent extraction/electrowinning (SX/EW) plant and PTF. Level 1 analytes shown in Table 1 below, shall be sampled at least quarterly from each POC and monitoring well in accordance with the schedule described in Part II.F.4 of this permit.
- b. **Level 2 Parameters:** Level 2 analytes include probable constituents of the ISCR solutions for which primary MCLs have been established pursuant to 40 CFR 141 and other relatively probable constituents which are likely to appear in greater concentrations in groundwater impacted by ISCR solutions than in non-impacted groundwater. Level 2 analytes shown in Table 2, below, shall be sampled at least once every six months from each POC and monitoring well in accordance with the schedule described in Part II.F.4 of this permit.
- c. **Alert Levels (ALs):** With the exception of the field parameters which will not be assigned ALs (except for pH), the Permittee shall establish ALs for

Level 1 and Level 2 analytes subject to review and approval by EPA, as described in Exhibit P-1: Alert Levels in Appendix K of this permit.

- d. Aquifer Quality Limits (AQLs): The Permittee shall establish AQLs for parameters with primary MCLs pursuant to 40 CFR 141, as follows:
- i. If the calculated AL is less than the MCL, then the AQL shall be set equal to the MCL.
 - ii. If the calculated AL is greater than the MCL, then the AQL shall be set equal to the AL.

Table 1: Water Quality Parameters - Level 1

Parameter (mg/L unless noted)	AQL	AL
Fluoride	TBD	TBD
Magnesium	NA	TBD
Sulfate	NA	TBD
Total Dissolved Solids	NA	TBD
pH, units (field)	NA	TBD
Specific Conductance, micromhos/cm (field)	NA	NA
Temperature, deg F or deg C	NA	NA

Note: The Permittee shall utilize the applicable analytical methods described in Table I of 40 CFR 136.3, or in Appendix III of 40 CFR 261, or in certain circumstances, other methods that have been approved by the EPA Administrator.

AQL - Aquifer Quality Limit (as defined at Part II.F.2.d)

AL - Alert Level

TBD - To be determined and approved by the Director for all POC wells, the seven monitoring wells required by EPA, and the MW-01 operational monitoring well prior to the commencement of injection.

NA - Not applicable: Shall be measured and reported but no contingency level shall be established.

Table 2: Water Quality Parameters - Level 2

Parameter	AQL	AL
Common Ions (mg/L unless noted)		
pH (field), units	NA	NA
Specific conductance (field), micromhos/cm	NA	NA
Temperature (field), deg F or deg C	NA	NA
Bicarbonate	NA	NA
Calcium	NA	NA
Carbonate	NA	NA

Parameter	AQL	AL
Chloride	NA	NA
Fluoride	TBD	TBD
Magnesium	NA	TBD
Nitrate-N	TBD	TBD
Nitrite-N	TBD	TBD
Potassium	NA	NA
Sodium	NA	NA
Sulfate	NA	TBD
Total dissolved solids	NA	TBD
Cation/Anion balance	NA	NA
Formation-Related Metals (mg/L)		
Aluminum	NA	TBD
Antimony	TBD	TBD
Arsenic	TBD	TBD
Barium	TBD	TBD
Beryllium	TBD	TBD
Cadmium	TBD	TBD
Chromium (Total)	TBD	TBD
Cobalt	NA	TBD
Copper	TBD	TBD
Iron	NA	TBD
Lead	TBD	TBD
Manganese	NA	TBD
Mercury (inorganic)	TBD	TBD
Nickel	NA	TBD
Selenium	TBD	TBD
Thallium	TBD	TBD
Zinc	NA	TBD
Formation-Related Radioactive Chemicals		
(pCi/L)		
Gross Alpha ¹	TBD	TBD
Gross Beta	TBD	TBD
Radium 226 and Radium 228 (combined)	TBD	TBD
Radon	NA	TBD
Uranium (Total)	NA	TBD
Process-Related Organics²		
(mg/L)		

Parameter	AQL	AL
Total petroleum hydrocarbons-diesel	NA	TBD
Benzene	TBD	TBD
Ethyl benzene	TBD	TBD
Toluene	TBD	TBD
Total Xylene	TBD	TBD
Napthalene	TBD	TBD
Octane	TBD	TBD

Note: The Permittee shall utilize the applicable analytical methods described in Table I of 40 CFR 136.3, or in Appendix III of 40 CFR 261, or in certain circumstances, other methods that have been approved by the EPA Administrator.

AQL - Aquifer Quality Limit (as defined at Part II.F.2.d)

AL - Alert Level

TBD -To be determined and approved by the Director for all POC wells, the seven monitoring wells required by EPA and the MW-01 operational monitoring well prior to the commencement of injection.

NA -Not applicable: Shall be measured and reported but no contingency level shall be established.

¹ Gross alpha excludes radon-222 and uranium.

² Any organic compound not listed above shall be so listed if an MCL has been established for that organic compound and if the organic compound is detected in the injectate.

3. Baseline Data and Statistical Methods

Prior to the commencement of injection, the Permittee shall:

- a. Collect baseline water quality samples for all Level 1 and Level 2 parameters such that accepted statistical methods can be applied to assign ALs and AQLs at all POC and monitoring wells. For Process-Related Organics (Level 2), two (2) months of data collection with nondetectable organic levels will be sufficient for background characterization.
- b. Submit to the Director mean baseline concentrations, standard deviations, ALs, federal AQLs, based on statistical methods used to establish ALs and AQLs, as described in Exhibit P-1 in Appendix K of this permit, or based on other methods approved by the Director, which:
 - i. establishes a means of verifying whether or not USDWs are endangered during PTF recovery operations, closure, and post-closure, and

- ii. establishes specific points at which contingency plans are activated.
 - c. Receive written approval from the Director for the baseline data, action levels, and statistical approach defined at (b), above.
4. Water Quality Monitoring Schedule

All POC wells and all monitoring wells shall comply with the following monitoring schedule for the approximate two (2) year PTF operation and restoration life and the five (5)-year post-closure period:

Table 3. Monitoring Schedule for the POC and Monitoring Wells during PTF Life and Post-Closure Period

Time Period	Water Quality Parameters	Sampling Frequency
PTF Life	Level 1	At least once per quarter
	Level 2	At least once every six months
Post-Closure	Level 1	At least once per quarter for the first two years after closure
	Level 2	At least once every six months

Note: Level 1 and Level 2 Water Quality Parameters are defined at Part II, Section F.2 in Table 1 and Table 2, respectively.

Note: The Quarterly Compliance Monitoring Tables (Level 1 parameters) for each POC and monitoring well are presented in Table P-3 and the Semiannual and Contingency Monitoring Tables (Level 2 parameters) for each POC and monitoring well are presented in Table P-4 in Appendix K of this permit.

5. Hydraulic Control Monitoring Wells

External monitoring of the ISCR process around the perimeter of the PTF well field shall be conducted to verify hydraulic control. This monitoring of the oxide zone shall be performed using seven observation wells at the perimeter of the PTF well field and nine recovery wells. PTF hydraulic monitoring will entail using the nearest two recovery wells to each perimeter observation well for head comparison and for verifying that the head gradient is inward, that is, from the observation well towards the PTF well field. Head monitoring will be accomplished using pressure transducers placed in both the observation wells and recovery wells from which average daily head measurements will be recorded. In addition, the Permittee shall monitor electrical conductivity in the observation and recovery wells on a daily basis to verify that hydraulic control is maintained.

6. Annular Conductivity

If the Permittee relies on a monitoring program to demonstrate mechanical integrity under 40 CFR 146.8(a)(2) and Part II.E.3.a.ii., the Permittee shall measure annular conductivity at the following frequency:

- a. Prior to injection and recovery to obtain baseline data, and
- b. At least once per quarter during the life of the well.

7. Injectate Solution (Lixiviant) Monitoring

The Permittee shall comply with the following injectate solution monitoring requirements:

- a. At least once per month, the Permittee shall measure the pH and the total concentration of total petroleum hydrocarbons (TPH)-diesel, benzene, toluene, ethylbenzene, xylenes (total), naphthalene, and octane in the injectate solution using applicable analytical methods described in Table I of 40 CFR 136.3, in USEPA SW-846, Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, unless other methods have been approved by EPA.
- b. The Permittee shall modify the list of organic constituents required under the injectate solution monitoring program defined at (a), above, if the Permittee has received written approval from the Director for a change in the injectate solution, as detailed at Part II.E.6. of this permit, and the list described at (a), above, does not include all organic constituents which are present or could be present in the raffinate pond.
- c. The Permittee shall measure inorganic constituents in the pregnant leach solution (PLS) and lixiviant at least once per month using applicable analytical methods described in Table I of 40 CFR 136.3, in USEPA SW-846 unless other methods have been approved by EPA. The inorganic analytes to be measured shall include all constituents listed in Table 3.1, Appendix E of this permit plus molybdenum, strontium, and thorium.
- d. The Permittee shall modify the list of inorganic constituents described in (c) above in accordance with the requirements of Part II.E.6.

8. Groundwater Elevation Monitoring.

Groundwater depths and elevations, measured in feet relative to mean sea level, in the POC and other monitoring wells shall be measured on a quarterly basis and reported in accordance with Part.II.G.2.d.

9. Monitoring Information

Records of monitoring activity required under this permit shall include:

- a. Date, exact location, and time of sampling or field measurements;
- b. Name(s) of individual(s) who performed sampling or measurement;
- c. Exact sampling method(s) used;
- d. Date(s) laboratory analyses were performed;
- e. Name(s) of individual(s) who performed laboratory analyses;
- f. Types of analyses; and
- g. Results of analyses.

10. Monitoring Devices

- a. Continuous monitoring devices

Temperature and injection pressure shall be measured at the wellhead using equipment of sufficient precision and accuracy, as described below. All measurements must be recorded at minimum to a resolution of one tenth of the unit of measure, except temperature (e.g., injection and production rates and volumes must be recorded to a resolution of a tenth of a gallon; pressure must be recorded to a resolution of a tenth of a psi gauge (psig); injection fluid temperature must be recorded to a resolution of one degree Fahrenheit). Exact dates and times of measurements, when taken, must be recorded and submitted. Injection and production rates shall be measured at or near the wellhead. The Permittee shall continuously monitor and shall record the following parameters at the prescribed frequency:

Parameters	Frequency	Instrument
Injection rate (gpm)	continuous	digital recorder
Daily injection volume (gallons)	daily	digital totalizer
Total cumulative injection volume (gallons)	continuous	digital totalizer
Injection pressure (psig)	continuous and daily	digital recorder
Injection fluid temperature (degrees Fahrenheit)	daily	digital recorder
Production rate (gpm)	continuous	digital recorder
Daily produced fluid volume (gallons)	daily	digital totalizer
Total cumulative injection volume (gallons)	continuous	digital totalizer
Produced fluid temperature (degrees Fahrenheit)	daily	digital recorder

The Permittee must adhere to the required format below for reporting injection rate, and well head injection pressure. An identical format is required for reporting production rates but omitting the injection pressure column. An example of the required electronic data format is provided below:

<u>DATE</u>	<u>TIME</u>	<u>INJ. PRESS (psig)</u>	<u>INJ. RATE (gpm)</u>
06/27/10	16:33:16	1025.6	5.8
06/27/10	17:33:16	2075.4	10.3

Each data line shall include four (4) values separated by a consistent combination of spaces or tabs. The first value contains the date measurement in the format of mm/dd/yy or mm/dd/yyyy, where mm the number of the month, dd is the number of the day, and yy or yyyy is the number of the year. The second value is the time measurement, in the format of hh:mm:ss, where hh is the hour, mm are the minutes and ss are the seconds. Hours should be calculated on a twenty-four (24)-hour basis (e.g., 6 PM is entered as 18:00:00). Seconds are optional. The third value is the well head injection pressure in psig. The fourth column is injection rate in gpm.

b. Calibration and Maintenance of Equipment

All monitoring and recording equipment shall be calibrated and maintained on a regular basis to ensure proper working order.

G. RECORDKEEPING AND REPORTING

1. Recordkeeping

The Permittee shall retain the following records and shall have them available at all times for examination by an EPA inspector:

- a. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the permit application;
- b. Information on the physical nature and chemical composition of all injected fluids;
- c. Records and results of MITs, any other tests required by EPA, and any well workovers completed.
- d. The Permittee shall maintain copies (or originals) of all records described in paragraphs (a) through (c) above during the operating life of the well and shall make such records available at all times for inspection at the facility.
- e. The Permittee shall only discard the records described in paragraphs (a) through (c) if:
 - i. The records are either delivered to the EPA Region 9 Drinking Water Protection Section, or
 - ii. Written approval from the Regional Administrator to discard the records is obtained.

2. Reporting of Results

The Permittee shall submit, in accordance with the required schedule, accurate reports to EPA containing, at minimum, the following information:

- a. A map showing the current PTF operational status and groundwater elevation contours based on the current quarterly monitoring data.
- b. A table and graph showing daily cumulative injection flows and recovery flows in the PTF over the reporting period.
- c. A table and graphs comparing daily average head and electrical conductivity measurements in the seven (7) observation wells surrounding

the PTF well field with the same measurements in the nine (9) recovery wells.

- d. A table showing POC and monitoring well groundwater depths and elevations, analytical results, AQLs, and ALs along with a summary narrative, plus a graphical presentation of those results since inception of monitoring for the current reporting quarter. The records should also include a discussion of any exceedances that occurred and mitigating actions taken during the reporting period.
 - e. Results of monthly analyses of organics in the lixiviant.
 - f. Results of monitoring required at Part II.F.7 (pursuant to 40 CFR 146.33(b)(1)) whenever the injection fluid is modified to the extent that previously reported analyses are incorrect or incomplete.
 - g. Results of mechanical integrity tests conducted during the reporting period.
 - h. Results of annular conductivity monitoring in the observation and multi-level sampling wells
 - i. A summary of the any plugging and abandonment activity conducted during the reporting period.
 - j. A summary of closure operations conducted during the reporting period.
 - k. A table showing the average, maximum, and minimum monthly tubing/casing annulus and injection pressures.
3. Quarterly reports shall be submitted by the dates listed below:

Reporting Period	Report Due
Jan, Feb, Mar	Apr 28
Apr, May, June	Jul 28
July, Aug, Sept	Oct 28
Oct, Nov, Dec	Jan 28

4. Copies of all reports of PTF aquifer pump testing conducted prior to beginning PTF operations shall be submitted to EPA.
5. Copies of the monitoring results and all other reports required by this permit shall be submitted to the following address:

U.S. Environmental Protection Agency, Region 9
Drinking Water Protection Section (WTR-3-2)

H. CONTINGENCY PLANS

1. Loss of Hydraulic Control

- a. The Permittee shall initiate the following actions within 24 hours of becoming aware that the volume of fluids recovered from the injection and recovery zone of the PTF during a 24-hour period is less than 110 percent of the amount of fluid injected during the same 24-hour period:
 - i. adjust the flow rate for the recovery and/or injection wells to restore the percent of recovered fluid volume to at least 110 percent of the injected volume,
 - ii. inspect the injection and recovery lines, pumps, flow meters, totalizers, pressure gages, pressure transducers and other associated instruments and facilities,
 - iii. initiate pressure testing of wells if the loss of fluids cannot be determined to be caused by a surface facility failure, and
 - iv. repair system as necessary to restore the percent of recovered fluid volume to at least 110 percent of the injected volume.
- b. A loss of hydraulic control is deemed to occur when the amount of fluid recovered during a 48-hour period is less than 110 percent of the amount of fluid injected during the same 48-hour period. Loss of hydraulic control is also defined by an inward gradient (in head differential) of less than one (1) foot or an outward gradient observed in any pair of observation/recovery wells over a 48-hour period. An inward gradient of less than (1) foot (ie, loss of hydraulic control) shall require action to restore the inward gradient to at least one (1) foot in the subsequent 24-hour period. The minimum inward flow ratio and head differentials may be adjusted during the course of the PTF operation if warranted by electrical conductivity data from observation/recovery well-pairs and head data from POC and monitoring wells, subject to EPA approval. The Permittee shall initiate the following actions within 24 hours of becoming aware of the loss of hydraulic control within the PTF for more than 48 consecutive hours, as defined above. The Permittee shall:
 - i. cease injection in one or more wells as necessary to restore hydraulic control,

- ii. operate recovery wells until the amount recovered equals an amount sufficient to restore the ratio of fluid recovered to injected during the prior 72-hour period to a minimum of 110 percent and restore all observation and recovery well pair head differentials to at least one (1) foot to verify an inward flow gradient,
 - iii. verify proper operation of all facilities within the PTF, and
 - iv. perform any necessary repairs.
- c. If action is taken under either a) or b) above, in the next quarterly report, the Permittee shall describe the causes and impacts of the loss of hydraulic control or the variance from the required recovery to injection ratio and the actions that were taken to correct the event.

2. Water Quality Exceedances at POC and other Monitoring Wells

The following describes contingency plans to be followed after the verification of a federal AL or AQL exceedance in a POC or other monitoring well during the approximate two (2)-year PTF life and during the five (5)-year Post-Closure period:

- a. AL exceedance during operational PTF Life
 - i. The Permittee shall collect a verification sample within fourteen (14) days after becoming aware of an exceedance of a federal AL listed in Table 1 or Table 2 of Part II.F.2.
 - ii. Within five (5) days after receiving the results of verification sampling from the laboratory, the Permittee shall notify the director if the results indicate an exceedance.
 - iii. If the results of verification sampling indicate that an AL has not been exceeded, the Permittee shall notify EPA of the results and assume that no exceedance has occurred. No further action is required until the next scheduled monitoring round.
 - iv. Within thirty (30) days of receiving the laboratory results verifying that an AL has been exceeded, the Permittee shall do the following:
 - (A. Submit a written report to EPA providing an evaluation of the cause, impacts, or mitigation of the discharge responsible for the AL exceedance, or

- (B. Submit a written report to EPA which definitively demonstrates that the AL exceedance resulted from an error(s) in sampling, analysis, or statistical evaluation.
 - v. Upon review of the report documenting the AL exceedance, the Director may require additional monitoring and/or action beyond those specified in this permit.
- b. AQL Exceedance during operational PTF Life, Closure, and Post-Closure period.
 - i. The Permittee shall collect a verification sample within fourteen (14) days of becoming aware of an exceedance of a federal AQL listed in Table 1 or Table 2 of Part II.F.2.
 - ii. Within five (5) days of receiving the results of verification sampling from the laboratory, the Permittee shall notify the Director of the results, regardless of whether the results are positive or negative.
 - iii. If the results of verification sampling indicate that an AQL has not been exceeded, the Permittee shall assume that no exceedance has occurred and no further action is required until the next scheduled monitoring round.
 - iv. Within thirty (30) days of receiving the laboratory results verifying that an AQL has been exceeded, the Permittee shall do the following:
 - (A. Submit a written report to EPA providing an evaluation of the cause, impacts, or mitigation of the discharge responsible for the AQL exceedance, or
 - (B. Submit a written report to EPA which definitively demonstrates that the AQL exceedance resulted from an error(s) in sampling, analysis, or statistical evaluation.
 - v. Upon review of the report documenting the AQL exceedance, the Director may require additional monitoring and/or action beyond those specified in this permit.
- c. Verification Sample Requirements

The verification sample shall be collected only from the well in which an exceedance was detected and shall be analyzed for the constituents of Table 1 of Part II.F.2. If the constituent that exceeded an AL or AQL is

one that is listed in Table 2 of Part II.F.2 but not in Table 1, the verification sample shall be analyzed for all constituents listed in Table 1 and only for constituent(s) from Table 2 that exceed the AL or AQL

I. RESTORATION and PLUGGING & ABANDONMENT

Pursuant to 40 CFR Parts 146.10 and 144.12, the Permittee shall comply with the Closure and Post-Closure Plan in Appendix F and the Plugging and Abandonment Plan in Appendix C in accordance with the schedule for aquifer restoration, ground water monitoring, and plugging and abandonment activities to ensure adequate protection of USDWs:

1. Closure
 - a. Constituents with primary MCLs: Within 60 days after completing copper recovery operations in the injection and recovery zone, the Permittee shall commence restoration activities for the zone. The groundwater in the injection and recovery zone shall be restored to concentrations which are less than or equal to primary MCLs defined at 40 CFR 141, or to pre-operational background concentrations if the pre-operational background concentrations exceed MCLs. The Permittee shall follow the procedure detailed at (c), below.
 - b. Constituents without primary MCLs: In addition to constituents with primary MCLs, the Permittee shall ensure that constituents which do not have primary MCLs do not impact USDWs in a way that could adversely affect the health of persons.
 - c. Closure and Plugging & Abandonment Procedure: The Permittee will commence closure operations in the injection and recovery zone after copper recovery operations have been completed. During closure operations, the Permittee will cease injection of lixiviant and initiate rinsing of the injection and recovery zone by injection/recovery or recovery operations. At all times during injection and recovery zone rinsing, the Permittee shall maintain inward hydraulic gradients (ie, maintaining hydraulic control) of the injection and recovery zone. The Permittee will monitor the rinsing progress by analyzing water recovered from well-field manifolds for sulfate concentration. When levels of sulfate in the manifolds have declined below 750 (mg/L) , the Permittee will sample manifold discharges for all Level 2 constituents defined at Part II.F of this permit. If results of the Level 2 sampling show that one or more compounds are above primary MCLs and the pre-operational background concentrations, rinsing operations will continue until all compounds are below primary MCLs or the pre-operational background concentrations if pre-operational background concentratons exceed MCLs. The sulfate concentration at or below which all primary MCLs or pre-

operational background concentrations are met will serve as an indication for acceptable closure for the PTF, subject to the following well sampling protocol.

The Permittee will sample all wells in the PTF undergoing closure to determine if the sulfate concentrations are less than or greater than the PTF's indicator sulfate concentration. If the sulfate concentration in a well is below the indicator sulfate concentration, the Permittee may discontinue rinsing that well until the end of the thirty (30)-day period described below. If the sulfate concentration in a well exceeds the indicator sulfate concentration, the Permittee shall continue rinsing operations until such time that the sulfate concentration in the well is less than the indicator concentration for the PTF.

When all individual well concentrations within the injection and recovery zone are below the PTF indicator sulfate concentration, hydraulic control for all wells within the injection and recovery zone will be discontinued for thirty (30) days. At the end of the thirty (30)-day period, the wells will be re-sampled and if sulfate concentrations remain below the PTF indicator sulfate concentration in all wells, the Permittee may cease all rinsing and monitoring activities for the wells in the injection and recovery zone. The Permittee shall document the results of the closure operation in the subsequent quarterly monitoring report and notify EPA of the schedule for plugging and abandonment operations at least thirty (30) days in advance of commencing plugging and abandonment operations. The Permittee shall submit with the notification the closure report and an updated Plugging and Abandonment Plan for EPA approval. The wells shall be abandoned in accordance with the Plugging and Abandonment Plan (Appendix C) and the Closure and Post-Closure Plan in Appendix F unless modified for individual well conditions.

2. Post-Closure:

Monitoring at POC and other monitoring wells: To ensure that the restoration required at (1), above, accomplished the objective of returning the injection and recovery zone to primary MCLs (or pre-operational background concentrations) and thereby providing adequate protection to surrounding USDWs, the Permittee shall comply with the Post-Closure Monitoring Program at Part II.F.4. and the AQL exceedance contingency plan established in Part II.H.2.b of this permit. The Permittee shall submit a post-closure notification and report, with documentation, to EPA within 30 days following completion of the post-closure plan.

J. POST-CLOSURE AUDITS

The Permittee shall verify that the pollutant fate and transport are behaving as predicted. During the third (3), fifth (5), and seventh (7) years after the commencement of PTF

operations, the Permittee shall conduct a post-closure audit of the computer modeling which predicted the fate and transport of pollutants discharged by the Florence Copper PTF operations. For each audit, the Permittee shall submit a report to EPA describing the post-closure audit as well as any changes in the conceptual model, any model redesign, and any changes in predicted post-closure conditions.

K. DURATION OF PERMIT

The duration of this Class III permit shall include the approximate two (2) year PTF operational and closure period and the five (5) year post-closure monitoring period unless terminated under the conditions set forth in Part III, Section B.1 of this permit.

L. FINANCIAL RESPONSIBILITY

1. Demonstration of Financial Responsibility

The Permittee is required to demonstrate and maintain financial responsibility and resources sufficient to meet the restoration and plugging and abandonment requirements established at Part II, Section I of this permit and described in the Plugging and Abandonment Plan (Appendix C) and the Closure and Post Closure Plan (Appendix F) and consistent with 40 CFR §144.52(a)(7) and Subpart F, which the Director has chosen to apply.

- a. The Permittee shall demonstrate adequate financial responsibility. Authority to construct, inject and operate the wells under the authority of this permit will be granted only after the demonstration of financial responsibility is made and approved by EPA.
- b. The level and mechanism of financial responsibility shall be reviewed and updated periodically, upon request of EPA. The Permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by EPA prior to the change.
- c. EPA may require the Permittee to estimate and to update the estimated restoration, plugging, and/or post-closure activity costs periodically. Such estimates shall be based upon costs that a third party would incur to carry out the required restoration activities, properly plug and abandon the wells, and post-closure monitoring activities, including materials, equipment, mud and disposal costs, and labor with appropriate contingencies.

2. Insolvency of Financial Institution

The Permittee must submit an alternate instrument of financial responsibility acceptable to EPA within sixty (60) days after either of the following events occurs:

- a. The institution issuing any bond or other financial instrument that is secured to demonstrate financial responsibility in accordance with section II.L.1. of this permit files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.

Failure to submit an acceptable financial demonstration may result in the termination of this permit pursuant to 40 CFR §144.40(a) (1).

3. Insolvency of Owner or Operator

An owner or operator must notify EPA by certified mail of the commencement of voluntary or involuntary proceedings under U.S. Code Title 11 (Bankruptcy), naming the owner or operator as debtor, within ten (10) business days. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

M. NATIONAL HISTORIC PRESERVATION ACT

EPA considered the potential effects of this permit on historic properties eligible for inclusion in the National Register of Historic Places in compliance with the Section 106 process of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR Part 800. EPA determined that the undertaking had the potential to cause adverse effects on historic properties, subject to the criteria in 36 CFR § 800.5(a). The permittee shall carry out stipulations as agreed to in the attached Memorandum of Agreement (MOA) in Appendix G in order to resolve the adverse effects on historic properties from the FCP.

PART III. GENERAL PERMIT CONDITIONS.

A. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by 40 CFR §144.3 and 146.3) into USDWs (as defined 40 CFR §§144.3 and 146.3).

Any underground injection activity not specifically authorized in this permit is prohibited. The Permittee must comply with all applicable provisions of the Safe Drinking Water Act (SDWA) and 40 CFR Parts 124, 144, 145, and 146. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. § 300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

B. PERMIT ACTIONS

1. Modification, Revocation and Reissuance, or Termination

EPA may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR §§124.5, 144.12, 144.39, and 144.40. The permit is also subject to minor modifications for causes as specified in 40 CFR §144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance by the Permittee, does not stay the applicability or enforceability of any permit condition. EPA may also modify, revoke and reissue, or terminate this permit in accordance with any amendments to the SDWA if the amendments have applicability to this permit.

2. Transfers

This permit is not transferable to any person unless notice is first provided to EPA and the Permittee complies with requirements of 40 CFR §144.38. EPA may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR §§2 and 144.5, any information submitted to EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in 40 CFR §2 (Public Information). Claims of confidentiality for the following information will be denied:

1. Name and address of the Permittee, or
2. Information dealing with the existence, absence, or level of contaminants in drinking water.

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee shall comply with all applicable UIC Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with 40 CFR 144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such noncompliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

2. Penalties for Violations of Permit Conditions

Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. Need to Halt or Reduce Activity not a Defense

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from noncompliance with this permit.

5. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

6. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

7. Duty to Provide Information

The Permittee shall furnish to EPA, within a time specified, any information which EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to EPA, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry

The Permittee shall allow EPA, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;

- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

9. Signatory Requirements

All applications, reports, or other information submitted to EPA shall be signed and certified by a responsible corporate officer or duly authorized representative according to 40 CFR § 144.32.

10. Additional Reporting Requirements

- a. **Planned Changes** - The Permittee shall give notice to EPA as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated Noncompliance**-The Permittee shall give advance notice to EPA of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted to EPA no later than thirty (30) days following each schedule date.
- d. **Twenty-four Hour Reporting.**
 - i. The Permittee shall report to EPA any noncompliance which may endanger health or the environment. The following Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.
 - (A. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; and
 - (B. Any noncompliance with a permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs.

- ii. A written submission of all noncompliance as described in paragraph (i) shall also be provided to EPA within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 - e. Other Noncompliance - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of noncompliance not otherwise reported. The Permittee shall submit the information listed in Part III, Section E.10.d of this permit.
 - f. Other Information - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application, or submitted incorrect information in the permit application or in any report to EPA, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.
11. Continuation of Expiring Permit
- a. Duty to Reapply - If EPA requires the permittee to continue an activity regulated by this permit past the expiration date of this permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this permit expires.
 - b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
 - i. The Permittee has submitted a timely and complete application for a new permit; and
 - ii. EPA, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.