

US EPA ARCHIVE DOCUMENT

**FLORENCE COPPER, INC.
UIC PERMIT APPLICATION
FLORENCE COPPER PROJECT – PRODUCTION TEST FACILITY**

**ATTACHMENT O – PLANS FOR WELL FAILURES
(CONTINGENCY PLAN)**

Table of Contents

Table of Contents	1
O.1 Introduction.....	2
O.2 Operational Environment	3
O.3 Contingency Plan Elements	3
O.3.1 Well Failures.....	4
O.3.1.1 Demonstrating Mechanical Integrity: Part I	4
O.3.1.2 Demonstrating Mechanical Integrity: Part II.....	5
O.3.1.3 Other Well Failures	7
O.3.2 Replacement Wells.....	7
O.3.3 Loss of Hydraulic Control.....	7
O.3.4 Water Quality Exceedances at POC Wells	8
O.3.5 Reporting Requirements	8
O.3.5.1 Reporting Requirements Related to Mechanical Integrity.....	9
O.3.5.2 Requirements for Recordkeeping and Reporting.....	9
O.3.5.3 24-Hour Reporting.....	9
O.3.5.4 Reporting Requirements for Changes and Workovers	10

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O.1 Introduction

This Attachment O has been prepared in support of an application (Application) by Florence Copper, Inc. (Florence Copper) to the United States Environmental Protection Agency (USEPA) for issuance of an Underground Injection Control Class III (Area) Permit (UIC Permit) for the planned Production Test Facility (PTF), to be located at the Florence Copper Project (FCP) in Pinal County, Arizona. Florence Copper is submitting this Application so that it may proceed with the development of the PTF to demonstrate the feasibility of a future full scale in-situ copper recovery (ISCR) facility. Consistent with 40 Code of Federal Regulations (40 CFR) 146.34(a)(14), this Attachment describes “Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water.” Wells subject to the requirements of 40 CFR 146.34(a)(14) include all PTF wells (injection wells, recovery wells, observation wells, multi-level sampling wells, operational monitoring wells, and supplemental monitoring wells). Drawings M-1 and M-2 of Attachment M of this Application include diagrams of the typical construction of injection and recovery well head completion details, respectively. Drawings M-3, M-4, and M-5 show details of observation, multi-level sampling, and supplemental and operational monitoring well construction, respectively.

The PTF will include the installation and operation of an array of 24 injection, recovery, observation, and multi-level sampling wells, one operational monitoring well, seven supplemental monitoring wells, pilot-scale test facilities, and a pilot scale solvent extraction/electrowinning (SX/EW) plant. The PTF is described in greater detail in Attachment K of this Application. There is no difference between the PTF described in the Temporary Aquifer Protection Permit (APP) application submitted to Arizona Department of Environmental Quality (ADEQ) and the PTF described in Attachment K of this Application.

The PTF has been designed as a pilot-scale facility to (1) develop information needed to confirm and advance information developed by BHP Copper regarding the maintenance of hydraulic control and the characteristics of ISCR solutions; (2) develop data for permits authorizing commercial-scale ISCR operations; (3) optimize design parameters for recovery of copper from the ISCR solutions; (4) evaluate options to treat and manage water for commercial-scale operations; and (5) evaluate additional design elements as necessary to ensure compliance with applicable requirements of ADEQ and USEPA. The requirements of 40 CFR 146.34(a)(14) apply to both the PTF and future ISCR wells.

The location of the PTF well field and ancillary facilities is shown on Figure B-1 of Attachment B of this Application. The PTF well field will be located on Arizona State Mineral Lease No. 11-26500 (State Land Lease). The State Land Lease is surrounded on three sides by property owned by Florence Copper; the western edge of the State Land Lease borders undeveloped private land.

In communications with USEPA, it has been noted that perimeter wells are not proposed for the PTF for demonstration of hydraulic control. The PTF will use the outer recovery wells coupled with observation wells to demonstrate hydraulic control, similar to the previous hydraulic control test completed in 1997-1998. The use of perimeter wells may be proposed for future commercial operations, and are therefore not applicable to this permit application.

The well design for injection and recovery wells for the proposed PTF includes a steel casing that will be grouted 40 feet into bedrock to facilitate drilling through unconsolidated alluvial materials. The well design for the operational monitoring and supplemental monitoring wells includes a steel casing with polyvinyl chloride (PVC) well screen. The well design for the observation wells and the multi-level sampling wells does not include a steel casing grouted to bedrock, but will be constructed of fiberglass reinforced pipe (FRP). Specific design details for each of the proposed well types are described in Attachment M of this Application. Regardless of use designation, all Class III injection, recovery, observation, multi-level sampling, operational monitoring, and supplemental monitoring wells will be required to pass Part I and Part II mechanical integrity tests prior to entering service.

In this Attachment, Florence Copper describes the proposed operational environment that will ensure that in-situ solutions do not migrate to underground sources of drinking water (USDWs). The contingency plan for managing well failures is also described in this Attachment.

0.2 Operational Environment

The primary operational mechanism for preventing the migration of in-situ solutions (or “fluid” as defined at 40 CFR 146.3) to USDWs is hydraulic control. As explained in Attachment K of this Application, PTF operations will be conducted to ensure that hydraulic control is maintained at all times in all portions of the oxide zone undergoing injection and recovery.

Hydraulic control will be maintained from the time that injection of lixiviant (dilute sulfuric acid solution used to dissolve mineralized copper from the oxide bedrock) commences until after all economically-viable copper has been extracted and groundwater has been restored to a quality that meets criteria specified in the UIC Permit and in the related Aquifer Protection Permit (APP) No. 106360.

Hydraulic control is achieved when the amount of in-situ solution and groundwater pumped during each 24-hour period exceeds the amount of lixiviant injected. This will be accomplished by pumping at the recovery wells at a rate that exceeds the rate of injection.

At the PTF well field, hydraulic control will be monitored by comparing water levels in selected well pairs located equidistant around the perimeter of the operational unit boundary. At least four well-pairs will be installed. Each pair will consist of an observation well paired with a nearby recovery well. The recovery wells will be located along the edge of the PTF well field. The observation wells will be located outside of the PTF well field. The paired wells will be screened over the same interval in which injection and recovery is occurring.

Pressure transducers installed at each well pair will be used to continuously measure and record groundwater levels. At least once every 24 hours, the groundwater levels in each well pair will be reviewed. Injection rates will be decreased and/or recovery rates will be increased to create and maintain an inward hydraulic gradient if the groundwater level in the recovery or perimeter well, whichever is applicable, is equal to or higher than the groundwater level in the observation well.

The contingency plan described below is based on the premise that all PTF wells will be constructed to the same basic design as described in Attachments L and M of this Application, although the equipment inside the wells will vary according to each well’s use. Each injection well will have an injection tube conveying injected solutions from the well head to the interval in the oxide zone where injection is occurring. Each recovery well will have tubing connecting a submersible pump to the well head. To protect the well’s functionality, the pump will be located at a depth below the anticipated maximum drawdown level.

0.3 Contingency Plan Elements

This contingency plan describes proposed responses to shut-ins (wells removed from service) and well failures. It does not apply to wells that are closed as part of permanently closing the PTF well field in accordance with the restoration provisions of the UIC Permit and the Plugging and Abandonment Plan included as Attachment Q of this Application. It also does not apply to wells undergoing normal operations, maintenance, or repairs such as the installation and removal of pumps, clearing the well, or other activities that do not result in changes to the well casing, depth, cement seals, or to the length or size of the well screens.

Florence Copper proposes several responses to a variety of contingency conditions for PTF operations. In general, wells will be removed from service promptly following the detection of a well failure. Each failed well removed from service will be promptly evaluated to determine whether the well should be repaired or abandoned. If it is determined that the well should be abandoned, the well will be abandoned in accordance with the Plugging and Abandonment Plan included as Attachment Q of this Application. If the well can be repaired, it will be repaired and placed back into service.

Contingency conditions, responses, and proposed follow-up actions are summarized in Table 1 of Exhibit K-2 in Attachment K.

O.3.1 Well Failures

Well failures may occur as a result of loss of mechanical integrity of a well, clogged or damaged screens, or a failure in well equipment. The potential for well failure will be monitored by the system controls described in the Operations Plan included as Exhibit K-2 in Attachment K of this Application. The potential for well failure may be identified by significant changes in injection pressure, injection or recovery flow rates, annular conductivity measurements as described in Attachment P of this Application, or water levels measured to verify hydraulic control. Contingency responses are described in this section and in the Operations Plan.

Subsections O.3.1.1 and O.3.1.2, below describe Part I and Part II mechanical integrity test requirements. These Sections conform with the USEPA Region 9 policy that (1) cement bond logs will be run on all Class III wells regardless of the type of casing (steel, FRP, or PVC) and regardless of the outcome of the recorded volume, and (2) temperature logs or radioactive tracer surveys (RTS) will be conducted in the event that the cement bond log is inconclusive. Section O.3.1.2 reflects Florence Copper's proposal to use steel casing from the surface to at least 40 feet below the upper surface of the oxide zone for all wells that will be used for injection and recovery. Steel casing will also be used for construction of the operational monitoring and supplemental monitoring wells. Because the annular conductivity device (ACDs) cannot be used on steel casing, Section O.3.1.2 notes that ACDs will be placed in wells with PVC and FRP casings (i.e., observation and multi-level sampling wells in the PTF well field).

O.3.1.1 Demonstrating Mechanical Integrity: Part I

Pursuant to 40 CFR 144.51(q), a permittee must establish and maintain mechanical integrity prior to commencing injection in any well. The permittee must demonstrate mechanical integrity for all Class III wells (injection wells, recovery wells, observation wells, multi-level sampling wells, and supplementary monitoring wells) subsequent to their initial installation and at least once every five years thereafter, unless abandonment or closure occurs prior to that time. Mechanical integrity must also be demonstrated any time that a well change or workover occurs.

Proposed permit language provided below details a specific method for conducting a mechanical integrity test to verify that there are no significant leaks in a well casing, tubing, or packer in accordance with the requirements of 40 CFR 146.8(a)(1). Florence Copper operators will conduct the Part I mechanical integrity test in accordance with the proposed permit language presented below:

Well Operation, Mechanical Integrity, Methods for Demonstrating Mechanical Integrity:

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

- (i) 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 operational wellhead injection pressure, but not exceeding the calculated allowable wellhead injection pressure, will be applied. This test shall be for a minimum of thirty (30) minutes. A well passes the mechanical integrity test 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 pressure applied during the mechanical integrity test. For wells with multiple screened intervals, the packer used to conduct the mechanical integrity test shall be placed immediately above the highest screened interval.*
- (ii) An alternative method provided that the alternative method has been approved under 40 CFR 146.8(d).*

After performing mechanical integrity tests, the following steps will be taken:

1. Information regarding the test results will be compiled for inclusion in the quarterly report submitted to USEPA under the UIC Permit.
2. If the test results indicate mechanical integrity of the well, no further Part I testing will be conducted; the test will be repeated in five years, or sooner if operational monitoring indicates a potential for well failure.

3. If the test results indicate that mechanical integrity has not been demonstrated, a decision will be made to abandon or repair the well.
4. If the decision is made to repair the well, an advance notice will be submitted to USEPA within five business days and the well will be retested for mechanical integrity after the repairs have been completed.
5. If the decision is made to abandon the well, a report will be submitted to USEPA in the next quarterly reporting period. The abandonment and related reporting will proceed in accordance with the Plugging and Abandonment Plan and a decision to replace the abandoned well will be made in accordance with Section O.3.2 of this Attachment.

The requirements of this Section O.3.1.1 apply to all Class III wells, whether their casings are steel, PVC, or FRP.

O.3.1.2 Demonstrating Mechanical Integrity: Part II

The permit language proposed below addresses the requirements of 40 CFR 146.8(a)(2): mechanical integrity testing relating to the detection of significant fluid movement into a USDW through vertical channels adjacent to the injection well bore. Florence Copper will comply with the methods for demonstrating Part II mechanical integrity as presented below:

Well Operation, Mechanical Integrity, Methods for Demonstrating Mechanical Integrity:

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:

- (i) Maintenance of cementing records to demonstrate adequate filling of the annulus between the borehole wall and well casing with cement, and*
- (ii) A cement bond log, or a temperature log and radioactive tracer survey if a cement bond is inconclusive, or*
- (iii) monitoring program as defined in the UIC Permit designed to verify the absence of significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.*

Or, instead of (i), (ii), and (iii) above,

- (iv) An alternative method, provided that the alternative method is a method listed in 40 CFR 146.8(c)(1), or is a method that has been approved by the Director as providing results equivalent to any of the methods listed in 40 CFR 146.8(c)(1).*

Florence Copper operators will conduct the Part II mechanical integrity test in the following manner, including contingency steps to be taken in the event that Part II mechanical integrity cannot be demonstrated.

1. The volume of cement used to completely fill the annulus during well construction will be recorded and compared to the volume calculated to be required to fill the annulus. The volume will be based on a caliper log run prior to the installation of the well casing. The volume of cement used to completely fill the annulus must be equal to or greater than the calculated volume. The volume of cement is an important indicator demonstrating that the well has been constructed as designed, but alone is not a sufficient demonstration of Part II mechanical integrity without a cement bond log (CBL) or other confirmatory logs.
2. A CBL will then be run. If the CBL and variable density log responses show adequate bonding over an acceptable interval as determined by USEPA, the Part II mechanical integrity will have been demonstrated. The CBL evaluation is subject to USEPA review and approval.

3. If the CBL shows a less than acceptable bond, the permittee may either conduct one or more additional tests as provided in the following paragraph 4 to demonstrate adequate bonding, or may have the well repaired or abandoned. If the well is repaired, it must be retested and demonstrate Part I and Part II mechanical integrity compliance before it may be placed into operation.
4. A temperature log and/or RTS may be run to further evaluate the adequacy of a bond if the USEPA determines the CBL is inadequate or inconclusive. If the USEPA determines the temperature log and/or the RTS fail to demonstrate adequate bonding, the permittee may have the well repaired or abandoned. If the well is repaired, it must be retested and Part I and Part II mechanical integrity must be demonstrated before it may be placed into operation.
5. If USEPA determines the temperature log and/or the RTS demonstrate adequate bonding, Part II of the mechanical integrity requirements will be deemed to have been fully satisfied and no further action will be required for wells that are equipped with steel casings from the ground surface to at least 40 feet below the top surface of the oxide zone. Wells equipped with PVC or FRP casing will be required to conduct quarterly monitoring of ACDs as described in the following paragraphs 6 and 7.
6. If USEPA determines that a well equipped with PVC or FRP casing has passed the CBL, the temperature log or the RTS, a baseline of conductivity readings will be established for the ACD embedded in the well's annular space before the well is used for observation or sampling during the injection or recovery of in-situ solutions.
7. After a well with PVC or FRP casing is brought online, annular conductivity measurements will be collected on a quarterly basis. If a conductivity device indicates a significant increase in conductivity over the last period of measurement, the measurements will be verified. If the verification measurements verify a significant increase in conductivity, the well will be removed from service until mechanical integrity is demonstrated, as described below.
 - A Part I mechanical integrity test will be performed as described in Section O.3.1.1 above.
 - If Part I mechanical integrity is not demonstrated, the well will either be repaired and the Part I test repeated until Part I mechanical integrity is demonstrated, or the well will be abandoned.
 - If Part I mechanical integrity is demonstrated, a CBL will be performed to demonstrate Part II mechanical integrity.
 - If the cement bond is less than 80 percent, a temperature log or RTS may be run to determine whether the well must either be abandoned or be repaired and retested to demonstrate Part II mechanical integrity. If USEPA determines that the log and survey provide sufficient evidence of adequate bonding, Part II mechanical integrity will be deemed to have been demonstrated and the well may be returned to service with quarterly monitoring of the annular conductivity device.

In accordance with the monitoring component of the Part II mechanical integrity test, Florence Copper will undertake the following actions to document and record Part II test activities.

1. All information regarding the cement volumetric tests will be compiled for inclusion in the quarterly report submitted to USEPA, and all annular conductivity monitoring information will be compiled for inclusion in the next quarterly report.
2. If the test results indicate that mechanical integrity has not been demonstrated, a decision will be made to abandon or repair the well, or to test mechanical integrity according to an approved alternative method.

3. If the test results with the alternative method indicate that mechanical integrity has been demonstrated, no further testing will be conducted; the test will be repeated in five years, or sooner if operational monitoring indicates a potential for well failure.
4. If the decision is made to repair the well, an advance notice will be submitted to the USEPA as soon as possible, the well will be retested after the repairs have been completed, and the results of the repair and retest will be included in the next quarterly report.
5. If the decision is made to abandon the well, a report will be submitted to USEPA, the abandonment and related reporting will proceed in accordance with the Plugging and Abandonment Plan, and a decision to replace the abandoned well will be made in accordance with Section O.3.2 of this Attachment.

If mechanical integrity cannot be demonstrated according to the methods described above, Florence Copper may choose to test mechanical integrity using an alternative method, subject to approval by the USEPA.

O.3.1.3 Other Well Failures

Except as provided below, a significant change in injection pressure in a well occurring during normal operating conditions shall be reported to USEPA in quarterly reports:

1. If it is determined that a well failure has occurred and that the well will be repaired, a report will be submitted as soon as possible, of any planned physical alterations or additions to the permitted injection wells. Any changes in well construction (i.e., a well workover as described in Section O.3.5 below) will require prior approval by the USEPA and will be treated as a minor modification under 40 CFR 144.41. Following a well workover, a demonstration of mechanical integrity shall be performed prior to resuming injection activities in accordance with the UIC Permit.
2. If it is determined that the well must be abandoned, a report will be submitted in the next quarterly reporting period. The abandonment and related reporting will proceed in accordance with the Plugging and Abandonment Plan and a decision to replace the abandoned well will be made in accordance with Section O.3.2.

However, failures related to clogged screens or filter packs and failures related to well equipment will be evaluated as they are detected, and in-plant maintenance orders will be issued and tracked to ensure timely repairs. Such failures and related responses are considered part of normal operations and are not subject to reporting requirements unless the result is workover of the affected well.

Any equipment failure in an observation well and/or a recovery well paired to an observation well that affects the ability to monitor hydraulic control will be repaired as soon as possible.

O.3.2 Replacement Wells

If a well is abandoned, a replacement well may be installed if the failed well was to serve as an injection or recovery well. If the failed well was to serve as an observation well for monitoring hydraulic control, it will be physically replaced unless the need for that particular well can be substituted by a new well to complete the pair (or new set of well pairs), subject to the new well(s) passing the mechanical integrity tests and being in a location approximately equidistant with other well pairs along the boundary of the PTF well field. The decision to replace or substitute observation wells will be reported to USEPA in quarterly reports.

O.3.3 Loss of Hydraulic Control

In the event of a loss of hydraulic control, contingency response actions will be implemented within 24 hours of becoming aware of the loss of hydraulic control. If the loss of hydraulic control is due to equipment failure, the response actions will be implemented if the repair cannot be completed within 48 hours following the detection of the equipment failure.

Florence Copper proposes the following specific permit language regarding contingency plans in response to loss of hydraulic control:

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 injected into ~~an active mine block operational unit~~ the PTF well field during a 24-hour period exceeds the amount of fluid recovered during the same 24-hour period:*
1. *adjust the flow rate for the recovery and/or injection wells,*
 2. *inspect the injection and recovery lines, pumps, flow meters, flow totalizers, pressure gages, pressure transducers and other associated instruments and facilities,*
 3. *initiate pressure testing of wells if the loss of fluids cannot be determined to be caused by a surface facility failure, and*
 4. *repair system as necessary.*
- (b) *The permittee shall initiate the following actions within 24-hours of becoming aware of the loss of hydraulic control within ~~an active mine block operational unit~~ the PTF well field for more than 48-consecutive hours. A loss of hydraulic control occurs when the amount of fluid injected during a 48-hour period exceeds the amount of fluid recovered during the same 48-hour period. Loss of hydraulic control is also indicated by a flat or outward gradient observed in any pair of observation wells over a 48-hour period. The permittee shall:*
1. *cease injection in the affected area,*
 2. *operate recovery wells until the amount of fluid injected in excess of the amount recovered during the ~~72~~48-hour period is recovered,*
 3. *verify proper operation of all facilities within the operational unit, and*
 4. *perform any necessary repairs.*
- (c) *In the next quarterly report, identify the loss of control and describe the causes and impacts of the loss of hydraulic control and the actions that were taken to correct the event.*

O.3.4 Water Quality Exceedances at POC Wells

Florence Copper requests that USEPA consider adopting key subsections of the contingency requirements for Alert Levels (ALs) and Aquifer Quality Limits (AQLs) as set forth in Section 2.6.2 of APP No. 106360 to ensure consistency between the two permits.

O.3.5 Reporting Requirements

Notice will be given to USEPA if a well fails a mechanical integrity test, loss of mechanical integrity becomes evident during operations, or if there is a significant change in injection pressure during normal operating conditions. Advance notice will be provided and USEPA approval sought for proposed well changes or workovers (i.e., any physical alteration or addition to a well that results in a change in the composition, diameter, or depth of the well casing, or a change in the cement in the outer annulus). Wells abandoned due to loss of mechanical integrity are also subject to the same reporting requirements. If a shut-in well is repaired, the repairs may be subject to reporting requirements if the repairs are considered a change or workover, as described above, and the well also may be required to undergo mechanical integrity testing before it is put back into service.

Florence Copper considers that some actions are not subject to USEPA reporting requirements. For example, actions involving the clearing of wells and actions involving the installation, replacement, repair, or removal of well equipment such as transducers, pumps, and gauges are considered part of routine maintenance and are not subject to reporting requirements. These actions are also not considered subject to the reporting requirements associated with loss of mechanical integrity, results of mechanical integrity tests, annular conductivity monitoring, or well abandonment activities.

O.3.5.1 Reporting Requirements Related to Mechanical Integrity

Florence Copper proposes specific permit language regarding the reporting requirements related to mechanical integrity as shown below. The proposed language reflects that included in UIC Permit No. AZ396000001 under the heading – *Well Operation: Loss of Mechanical Integrity*. Florence Copper will comply with those requirements as presented.

Well Operation, Well Integrity

(c) Loss of Mechanical Integrity

If (1), a well fails to demonstrate mechanical integrity during a test, or (2), a loss of mechanical integrity becomes evident during operation, or (3), a significant change in the injection pressure occurs during normal operating conditions and requires a mechanical integrity test, the permittee shall notify the Director in accordance with ~~Part H.G.~~ of this permit. Furthermore, for new wells, injection shall not commence, and for operating wells, injection shall be terminated and 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 (a), above.

O.3.5.2 Requirements for Recordkeeping and Reporting

Florence Copper proposes specific permit language regarding the reporting requirements related to mechanical integrity as shown below. The proposed language reflects that included in UIC Permit No. AZ396000001 under the heading *Recordkeeping and Reporting*.

Recordkeeping and Reporting, Reporting of Results

- (b) A table and graph showing daily cumulative injection flows and extraction flows in ~~each active mine block operational unit~~ PTF well field over the quarterly reporting period.*
- (c) A table and graphs comparing daily average head in the four observation wells surrounding ~~each active mine block operational unit~~ the PTF well field with that of the four adjacent extraction wells.*
- (g) Results of mechanical integrity tests conducted during the quarterly reporting period.*
- (h) Results of quarterly annular conductivity monitoring.*
- (i) A summary of the well and corehole plugging and abandonments conducted during the quarterly reporting period.*
- (j) A summary of closure operations conducted during the quarterly reporting period.*

O.3.5.3 24-Hour Reporting

In accordance with 40 CFR 144.51(l)(6), Florence Copper will report within 24 hours of becoming aware of any noncompliance of PTF operations which may endanger health or the environment including:

1. Any monitoring or other information which indicates that any contaminant may cause endangerment to a USDW; or
2. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs. The notification will initially be provided orally, followed up by a report describing the noncompliance, its cause, the period of noncompliance, and the time frame and steps for corrective actions. The follow-up report will be submitted within five days of becoming aware of the noncompliance.

O.3.5.4 Reporting Requirements for Changes and Workovers

Florence Copper proposes the permit language shown below to clearly describe what constitutes a change or a workover and the corresponding need for reporting. Florence Copper will provide advance notice and seek approval for all well workovers, as required by USEPA.

Well Construction

Proposed Changes and Workovers

The permittee shall give advance notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted injection wells. Any changes in well construction will require prior approval by EPA and will be treated as a minor modification under 40 CFR 144.41. Following a well workover, a demonstration of mechanical integrity shall be performed prior to resuming injection activities, in accordance with ~~Part H, Section E.2~~ of this permit. A well workover is any physical alteration or addition to an existing well that results in a change in the composition, diameter, perforations, or depth of the well casing; or a change in the cement in the outer annulus. The following activities are not subject to the requirements of ~~Part H.C.5~~ this part or to the reporting requirements in other parts of this Permit: the installation and removal of equipment such as pumps, tubing or pressure transducers necessary for the conversion of a well from one use to another use; moving injection and recovery from one screened interval to another interval in wells equipped with multiple screened intervals; clearing the well; or other activities that do not result in changes to a well's casing, depth, cement seals, or to the length or size of the well's screens.