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D.1 Introduction

This Attachment D has been prepared in support of an 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, to be located at the Florence Copper Project property in Pinal County, Arizona. As required for Attachment D of USEPA Form 7520-6, this Attachment includes maps and cross sections that depict the vertical limits of all underground sources of drinking water (USDWs) within the Area of Review (AOR) defined in Attachment A of this Application. Figures D-1 and D-2 show the location of regional and site scale cross sections, respectively. Figures D-3 and D-4 are regional scale cross sections. Figures D-5, D-6, D-7, D-8 and D-9 are site scale cross sections depicting the FCP property. Pink shading depicted on cross sections D-3 through D-9 indicates the extent of USDWs outside of the AOR and Aquifer Exemption boundary.

Figure D-10 is a map showing the location of cross sections through the PTF well field. Figures D-11 and D-12 are cross sections through the PTF well field. Blue shading in Figures D-11 and D-12 indicates the extent of USDWs outside of the AOR and Aquifer Exemption boundary.
**PROPOSED PTF INJECTION AND RECOVERY AREA**

**KEYMAP**

- **WELL FIELD**
- **PROPERTY BOUNDARY**
- **GILA RIVER**
- **FLORENCE COPPER PROPERTY**

**LEGEND**
- **UPPER BASIN FILL ALLUVIAL UNIT**
- **MIDDLE FINE-GRAINED UNIT**
- **LOWER BASIN FILL ALLUVIAL UNIT**
- **BEDROCK**
- **VERTICAL LIMITS OF USDWs**
- **INFERRED EXTENT OF MIDDLE FINE-GRAINED UNIT**

**NOTES:**
- **BEDROCK SURFACE TOPOGRAPHY COMPILED BY BROWN AND CALDWELL FROM EXISTING WATER WELL LOGS, EXPLORATORY COREHOLE LOGS AND REGIONAL GRAVITY SURVEYS (BHP COPPER INC. APP APPLICATION, VOLUME II FIGURES 3.4-2 (II) AND 3.4-3 (II), 1996).**
- **WELLS BIA-9 AND BIA-10B WILL BE PLUGGED AND RELOCATED PRIOR TO COMMERCIAL OPERATIONS. UNIT CONTACTS DASHED WHERE INFERRED.**
- **ADAPTED FROM BROWN AND CALDWELL 2012.**

**SCALE:** AS SHOWN

**FIGURE D-3**

**FLORENCE COPPER, INC. FLORENCE, AZ**

**GENERALIZED REGIONAL GEOLOGIC CROSS SECTION A-A'**

**VERTICAL SCALE: 1" = 1,000'**

**4X VERTICAL EXAGGERATION**

**TOTAL DEPTH OF BOREHOLE**

**APPROXIMATE WELL LOCATION GENERALLY PROJECTED INTO CROSS SECTION**

**SCREENED INTERVAL (WHERE DATA IS AVAILABLE)**

**HORIZONTAL SCALE: 1" = 4,000'**

**4,000 8,000**

**0 4,000 8,000**

**HORIZONTAL LIMITS OF USDWs INFERRED EXTENT OF MIDDLE FINE-GRAINED UNIT**
**LEGEND**

- **UPPER BASIN FILL ALLUVIAL UNIT**
- **MIDDLE FINE-GRAINED UNIT**
- **LOWER BASIN FILL ALLUVIAL UNIT**
- **BEDROCK**
- **VERTICAL LIMITS OF USDWs**
- **INFERRED EXTENT OF MIDDLE FINE-GRAINED UNIT**

**APPROXIMATE WELL LOCATION**

- **SCREENED INTERVAL (WHERE DATA IS AVAILABLE)**
- **TOTAL DEPTH OF BOREHOLE**

**NOTES**

- BEDROCK SURFACE TOPOGRAPHY COMPILED BY BROWN AND CALDWELL FROM EXISTING WATER WELL LOGS, EXPLORATORY COREHOLE LOGS AND REGIONAL GRAVITY SURVEYS (BHP COPPER INC. APP APPLICATION, VOLUME II FIGURES 3.4-2 (II) AND 3.4-3 (II), 1996).
- WELL BIA-10B WILL BE PLUGGED AND RELOCATED PRIOR TO COMMERCIAL OPERATIONS.
- MIDDLE FINE-GRAINED UNIT SHOWN AT WELLS (5-9)8DBD, (5-9)10BBB AND (4-9)32CDA ESTIMATED FROM ADWR WELL REPORTS.
- UNIT CONTACTS DASHED WHERE INFERRED.

**ADAPTED FROM BROWN AND CALDWELL 2012.**

**VERTICAL LIMITS OF USDws**

**INFERRED EXTENT OF MIDDLE FINE-GRAINED UNIT**

**FLORENCE COPPER, INC.**

**FLORENCE, AZ**

**GENERALIZED REGIONAL GEOLOGIC CROSS SECTION B-B’**

**SCALE AS SHOWN**

**FIGURE D-4**
GEOLOGIC CROSS SECTION B"-B'"
QUARTZ MONZONITE PORPHYRY

MCC-542

ALLUVIUM

LEGEND

DIAGRAM MAPPING

DIAGRAM MAPPING

INTERPRETED UNCONFORMITY

LEGEND

SAND AND GRAVEL

SILT AND CLAY

ALLUVIUM

BASALT

SAND, BOULDERS AND CLAY

SAND, GRAVEL AND BOULDERS

SAND, GRAVEL AND CLAY

WATER LEVEL ELEVATION

VERTICAL LIMITS OF USDWs

KEYMAP

NOTE: UNIT CONTACT AND GEOLOGY WAS DEVELOPED BY BHP COPPER 1995 AND BASED ON COREHOLE DATA.
ADAPTED FROM BROWN AND CALDWELL 2012
Drawing Name: Operator Name:

ELEVATION (FEET AMSL)

1100
1300
1400
1500

-600
-500
-300
-200

-400
-600
-800
-1000

-1200
-1400
-1600
-1800

-2000

LEGEND

MONZONITE
QUARTZ
ALLUVIUM

M24-O
LBFU
UBFU

464MF
474MF
135MF

ADAPTED FROM BROWN AND CALDWELL 2012

UNIT CONTACT AND GEOLOGY WAS DEVELOPED BY BHP COPPER (1995) AND IS BASED ON COREHOLE DATA.

NOTES:

* DUE TO PROJECTION (CONFINING FORMATION)

CROSS-SECTION

SAND, GRAVEL AND CLAY
SAND AND GRAVEL
SAND, BOULDERS AND CLAY

ALLUVIUM

TYPICAL WELL SHOWN

POC WELL

GRANODIORITE PORPHYRY
EXISTING COREHOLES

CONOCO UNDERGROUND

DACITE
ANDESITE
GRANODIORITE

SCREENED IN POC WELL

OXIDE/SULFIDE CONTACT

VERTICAL LIMITS OF USDWs (DASHED WHERE INFERRED)

FIELD

FAULT ZONE

GEOLOGIC FLORENCE, ARIZONA

1269.56'

CROSS-SECTION B''- B'''

D'
D

WEST
EAST

100'
200'
300'
400'
500'
600'
700'
800'
900'
1000'
1100'
1200'
1300'
1400'
1500'
GEOLOGIC CROSS SECTION F-F'

SAND, SILT AND CLAY
SILT AND CLAY
ALLUVIUM
MONZONITE
QUARTZ MONZONITE PORPHYRY
GRANODIORITE PORPHYRY
EXISTING COREHOLES
LBFU/OXIDE CONTACT
LBFU
UBFU
MFGU
SAFETY LEVEL ELEVATION (MEASURED SEPTEMBER 2011)
NOTE: UNIT CONTACT AND GEOLOGY WAS DEVELOPED BY BHP COPPER (1995) AND IS BASED ON COREHOLE DATA.
ADAPTED FROM BROWN AND CALDWELL 2012

MFGU
UBFU
LBFU
ALLUVIUM
MONZONITE
QUARTZ

VERTICAL LIMITS OF USDws

LEGEND

DASHED WHERE INFERRED

PTF WELL
FIELD

NOTE: HRT CONTACT AND UNIT DATA DASHED WHERE INFERRED MANUSCRIPT, MFGU IS MANUSCRIPT OUTSIDE OF FORM, BHP-5}

LEGEND

NOT DRAWN TO SCALE
WATER LEVEL ELEVATION

SCALE: AS SHOWN

450'
300'
200'
100'
50'
0'

100'
50'
0'

HORIZONTAL
VERTICAL

450'
300'
200'
100'
50'
0'

100'
50'
0'

HORIZONTAL
VERTICAL
Cross-section lines
Property line
State mineral lease
PTF wellfield
Groundwater Flow Direction

Explanation

General Notes
1. For illustrative purposes only. Not to scale
2. Coordinates shown are Arizona Central State Plane (ft.)

References
1. Cross-Section locations by SRK
REFERENCES