

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 8

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U.S. EPA REGION 8
HEARING CLERK

IN THE MATTER OF:

Kennecott North Zone Site,
Salt Lake County, Utah,

Kennecott Utah Copper LLC,
Respondent.

*Proceeding Under Sections 104, 107 and 122
of the Comprehensive Environmental
Response, Compensation, and Liability Act*

CERCLA Docket No. CERCLA-08-2026-0001

**ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR WORK AT OPERABLE
UNITS 22 AND 23 OF THE NORTH
ZONE SITE**

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (Settlement) is entered into voluntarily by the United States Environmental Protection Agency (EPA) and Kennecott Utah Copper LLC (Respondent). This Settlement provides for the performance of Work by Respondent for OU22 and OU23 of the Kennecott North Zone Site generally located in Salt Lake County, Utah.

2. This Settlement is issued under the authority vested in the President of the United States by sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), and further delegated to Regional Administrators by EPA Delegation Nos. 14-14C (Administrative Actions through Consent Orders, Jan. 18, 2017) and 14-14D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, Jan. 18, 2017). This authority was further redelegated by the Regional Administrator of EPA Region 8 to the undersigned officials.

3. EPA and Respondent recognize that this Settlement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement, the validity of the findings of facts, conclusions of law, and determinations in Sections IV (Findings of Fact) and V (Conclusions of Law and Determinations) of this Settlement. Respondent agrees not to contest the basis or validity of this Settlement or its terms.

II. PARTIES BOUND

4. This Settlement is binding upon EPA and upon Respondent and its successors. Unless EPA otherwise consents, (a) any change in ownership or corporate or other legal status of Respondent, including any transfer of assets, or (b) any transfer of the Site or any portion thereof, does not alter Respondent's obligations under this Settlement. Respondent's responsibilities under this Settlement cannot be assigned except under a modification executed in accordance with Section XX.

5. Respondent shall be responsible for ensuring that its officers, directors, employees, agents, contractors, or any other person representing Respondent perform the Work in accordance with the terms of this Settlement. Respondent shall provide notice of this Settlement to each person representing Respondent with respect to the North Zone Site or the Work. Respondent shall provide notice of this Settlement to each contractor performing any Work and shall ensure that notice of the Settlement is provided to each subcontractor performing any Work.

III. DEFINITIONS

6. Subject to the next sentence, terms used in this Settlement that are defined in CERCLA or the regulations promulgated under CERCLA have the meanings assigned to them in

CERCLA and the regulations promulgated under CERCLA. Whenever the terms set forth below are used in this Settlement, the following definitions apply:

“2014 OU23 Remedial Investigation Update Report” means Respondent’s final Remedial Investigation Update Report for OU23 dated July 25, 2013 and approved by EPA and UDEQ on March 25, 2014.

“Agencies” means the EPA and UDEQ, collectively.

“Agency Comments on Draft OU23 Refinery FFS Report” means the letters dated September 15, 2022 and February 12, 2025, from EPA and UDEQ providing comments to Respondent on the Draft OU23 Refinery FFS Report.

“CERCLA” means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

“Day” or “day” means a calendar day. In computing any period under this Settlement, the day of the event that triggers the period is not counted and, where the last day is not a working day, the period runs until the close of business of the next working day. “Working Day” means any day other than a Saturday, Sunday, or federal or State holiday.

“Draft OU23 Refinery FFS Report” means the draft Focused Feasibility Study Report for North Zone Groundwater (OU23) submitted by Respondent to EPA and UDEQ on May 29, 2020, for EPA and UDEQ review.

“Effective Date” means the effective date of this Settlement as provided in Section XXIII.

“EPA” means the United States Environmental Protection Agency.

“FFS” means the Focused Feasibility Study required under this Settlement.

“Fund” means the Hazardous Substance Superfund established under section 9507 of the Internal Revenue Code, 26 I.R.C. § 9507.

“Future Response Costs” means all costs (including direct, indirect, payroll, contractor, travel, and laboratory costs) that the United States pays after the Effective Date in implementing, overseeing, or enforcing this Settlement, including: (i) in developing, reviewing and approving deliverables generated under this Settlement; (ii) in overseeing Respondent’s performance of the Work; (iii) in assisting or taking action to obtain access; (iv) in implementing a Work Takeover; and (v) in enforcing this Settlement, including all costs paid under Section XII (Dispute Resolution) and all litigation costs.

“Including” or “including” means “including but not limited to.”

“Interest” means interest at the rate specified for interest on investments of the Fund, as provided under section 107(a) of CERCLA, compounded annually on October 1 of each

year. The applicable rate of interest will be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. As of the date EPA signs this Settlement, rates are available online at <https://www.epa.gov/superfund/superfund-interest-rates>.

“MOU” means the Memorandum of Understanding between EPA, UDEQ, and Respondent executed in September 1995.

“National Contingency Plan” or “NCP” means the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to section 105 of CERCLA, codified at 40 C.F.R. part 300, and any amendments thereto.

“North Zone ROD” means the Record of Decision dated September 26, 2002, for the North Zone Site and the South Zone Site, as modified by the 2017 Explanation of Significant Differences for the North Zone Site and the South Zone Site.

“North Zone Site” means the Kennecott North Zone Site. Attached hereto as **Appendix A** is a map with a general depiction of the Site.

“Original OU23 Remedial Investigation” means the OU23 Remedial Investigation Report completed in August 2000.

“Original OU23 Feasibility Study” means the OU23 Feasibility Study completed in June 2002.

“OU22” means the area shown in the map titled: Operable Unit 22: Great Salt Lake Wetlands (July 28, 2016) (Doc. No.: 1833398) attached hereto as **Appendix B**.

“OU23” means the area shown in the map titled: Operable Unit 23: North End Groundwater (July 28, 2016) (Doc. No.: 1833395) attached hereto as **Appendix C**.

“OU23 Refinery FFS Work Plan” means the final work plan for a focused feasibility study for OU23 submitted to EPA and UDEQ by Respondent on October 6, 2015, and approved by EPA and UDEQ on November 13, 2015.

“OU23 Refinery FFS Work Plan Addendum” means the final work plan addendum for the focused feasibility study for OU23 submitted to EPA and UDEQ by Respondent dated March 15, 2018, and approved by EPA and UDEQ on March 15, 2018.

“Paragraph” means a portion of this Settlement identified by an Arabic numeral or an upper- or lower-case letter.

“Parties” means EPA and Respondent.

“Respondent” means Kennecott Utah Copper LLC, a limited liability company organized under the laws of the State of Utah and includes Respondent’s predecessors.

“Section” means a portion of this Settlement identified by a Roman numeral.

“Settlement” means this Administrative Settlement Agreement and Order on Consent, Appendices A-E hereto, and all deliverables approved under and incorporated into this Settlement.

“Site” means the Kennecott North Zone Site. Attached hereto as **Appendix A** is a map with a general depiction of the Site.

“Special Accounts” means the special accounts, within the Fund, established for the Site and the South Zone Site by EPA under section 122(b)(3) of CERCLA.

“South Zone Site” means the Kennecott South Zone Site encompassing historic and current mining facilities in Bingham Canyon, including the Bingham Mine and areas impacted by such mining operations including groundwater contamination.

“State” means the State of Utah.

“UDEQ” means the Utah Department of Environmental Quality.

“United States” means the United States of America and each department, agency, and instrumentality of the United States.

“Waste Material” means (a) any “hazardous substance” under section 101(14) of CERCLA; (b) any pollutant or contaminant under section 101(33) of CERCLA; (c) any “solid waste” under section 1004(27) of RCRA; and (d) any “hazardous material” under State law.

“Work” means all obligations of Respondent under Sections VII (Performance of the Work) through IX (Indemnification and Insurance).

“Work Takeover” means EPA’s assumption of the performance of any of the Work in accordance with Paragraph 60.

IV. FINDINGS OF FACT

7. Mining, milling, smelting, and refining activities in the Oquirrh Mountains southwest of Salt Lake City, Utah began in approximately 1863 and continue to the present day. Mining operations for lead, zinc, silver, copper, molybdenum and gold have resulted in the release of hazardous substances including arsenic, cadmium, lead and selenium to soil, sediment, surface water and groundwater.

8. In 1994, EPA proposed listing two geographic areas in the Oquirrh Mountains on the National Priorities List (NPL), the North Zone Site and the South Zone Site, encompassing approximately 62 square miles impacted by mining operations.¹ In September 1995, EPA, UDEQ, and Respondent executed a Memorandum of Understanding (MOU). Pursuant to the MOU, Respondent agreed to implement cleanup work, EPA agreed to defer listing on the NPL,

¹ *National Priorities List for Uncontrolled Hazardous Waste Sites, Proposed Rule No. 16*, 59 Fed. Reg. 2568-2574 (Jan. 18, 1994)

and UDEQ agreed to regulate active mining operations. Respondent is the current owner of large portions of the Site and the current operator of active mining operations at the Site.

9. The Site is an industrial area at the north end of the Oquirrh Mountains and the south shore of the Great Salt Lake. The Site includes an active mine tailings impoundment, refining and smelting operations, areas historically used for milling and concentrating operations, industrial impoundments, ponds, and marshy areas, wetlands located between operational areas and the Great Salt Lake, the shoreline of the Great Salt Lake and isolated areas of impacted groundwater. The areas are interconnected with pipelines, utilities, railroad lines and vehicular road corridors.

10. The Site is organized into multiple operable units. Respondent commenced remedial investigation activities for the Site subject to EPA oversight in 1993. The Original OU23 Remedial Investigation was completed in 2000 and the Original OU23 Feasibility Study was completed in June 2002. In September 2002, EPA and UDEQ issued the North Zone ROD, which, among other things, selected remedies and remedial action objectives (RAOs) for OU22 and OU23.

11. Since 1993, Respondent and the Agencies have completed various remedial tasks, approved work plans, and approved amendments to work plans associated with OU22 and OU23 that are described in **Appendix D** attached hereto and incorporated by reference.

OU22

12. Section 7 of the North Zone ROD covers OU22 (Great Salt Lake and Associated Wetlands). OU22 is comprised of wetlands, creeks, springs, ponds, and marshes that are downgradient of the operational facilities at the Site. Table 7.1 of the North Zone ROD lists the specific facilities and features in OU22. As of May 22, 2025, the OU22 wetlands are zoned M-2 (manufacturing, heavy industrial, mining) and are used for some industrial operations, including pump stations and storage of fresh water for use at the smelter. The remainder of the wetland area is low-lying open space.

13. Section 7.F of the North Zone ROD identifies arsenic, lead, and selenium as contaminants of concern in OU22 sediments and the Great Salt Lake wetland water sources and ponds.

14. Section 7.G of the North Zone ROD identifies the RAOs for OU22:

- a. eliminate or reduce the concentrations of hazardous substances in wetland habitats to reduce exposures to wildlife; and
- b. eliminate or reduce the concentrations of hazardous substances discharged into the Great Salt Lake.

15. Section 7.H of the North Zone ROD identifies the OU22 Selected Remedy. This section describes that various direct and indirect discharges to the Great Salt Lake are now covered under a Utah Pollution Discharge Elimination System (UPDES) permit that includes

discharge limitations on selenium; from 1991 to 2001 approximately 825,040 cubic yards of contaminated sediments were removed from the ponds and the wetlands and placed in the Arthur Stepback Repository; interim measures were taken to reroute discharges to the process water circuit; and wetland restoration projects were completed. These changes reduced selenium discharges to the wetlands and the Great Salt Lake.

16. Section 7.H of the North Zone ROD also establishes an OU22 monitoring program for all North Zone wetlands. This section explains that the objectives of this monitoring program are to identify remaining sources of selenium (if any), evaluate the effectiveness of the sediment and soil removals, evaluate the effectiveness of the spring and well water diversions, and develop a site-specific water quality goal for selenium. Respondent has been monitoring water, sediment and macro-invertebrate tissue consistently since 2003 under approved work plans (dated 2003, 2008, 2014 and 2020).

17. Section 7.H of the North Zone ROD also establishes goals for the wetlands cleanup project. This section says, “[t]he goal of this project is to clean up the sediments and water sufficiently to produce macroinvertebrates (bird food) with low concentrations of selenium in accordance with Table 7.9.” Table 7.9 of the North Zone ROD classifies (1) 0-5 ppm selenium as “Acceptable” and requiring “no action” (2) 5-10 ppm selenium as “Warning” and requiring “increased monitoring frequency and number of sampling locations” and (3) >10 ppm selenium as “Unacceptable” and requiring the following action, “determine additional sources and abate sources, perform additional sediment removals, and/or provide cleaner water to the wetlands.”

18. Section 7.H explains that if a site-specific water quality goal can be developed as a part of the monitoring activities, it can be used in lieu of the macroinvertebrate selenium standards in Table 7.9 of the North Zone ROD.

19. Section 7.H also states that “[a]n acceptable alternative in this case is to change the land use from wetland habitat to upland habitat or industrial use.”

20. On June 1, 2009, Respondent submitted a work plan to EPA to remove several ponds through drain and fill measures. On October 8, 2020, Respondent submitted a memorandum to EPA that summarized the work that was completed pursuant to the June 1, 2009 work plan. On December 9, 2021, EPA and UDEQ-DERR sent Respondent a letter that acknowledged Respondent’s performance of the work to reduce potential selenium exposure risks to avian receptors which nest and forage in the North Zone wetland habitat. The letter also noted that this notice does not affect the ongoing monitoring or future potential to carry out further response work in the North Zone wetland.

21. One of the purposes of this Agreement is for Respondent to develop an OU22 short-term monitoring plan and implement this plan until the North Zone ROD is modified to incorporate OU22 long-term monitoring requirements. Respondent will then be required under this Agreement to develop and implement an OU22 long-term monitoring plan.

OU23

22. In 2000, Respondent conducted the Original OU23 Remedial Investigation (RI) that defined the nature and extent of the OU23 groundwater contamination and investigated some of the contaminated soils at OU13 (smelter) and OU14 (refinery), which are the primary sources of groundwater contamination at OU23. However, the Original OU23 Remedial Investigation did not include sampling of the soils and groundwater underneath the smelter and refinery facilities. In accordance with Sections 4 and 5 of the North Zone ROD, the land underneath the smelter (OU13) and refinery (OU14) facilities will be characterized and contaminated soils removed following facility closure and demolition.

23. Section 8 of the North Zone ROD covers OU23 (North End Groundwater). Section 8.C.5 of the North Zone ROD identifies arsenic, selenium, and sulfate as contaminants of concern in the OU23 groundwater plumes.

24. Section 8.G of the North Zone ROD identifies the RAOs for OU23:

- a. minimize or remove the potential for on-site (wetlands and Great Salt Lake) ecological risk to receptors of concern by limiting the migration and uptake of constituents of concern in excess of risk-based concentrations for sensitive species;
- b. minimize or remove the potential for on-site human risk via ingestion by limiting exposure to groundwater containing constituents of concern exceeding risk-based concentrations for human health or drinking water MCLs;
- c. minimize or remove the potential for on-site ecological risk via artesian flow and springs into the Garfield wetlands to receptors of concern by limiting the migration of constituents of concern in excess of risk-based concentrations for sensitive species.

25. Section 8.G.2 of the North Zone ROD identifies the following OU23 remedial action levels:

- a. In order to achieve human health protection, the typical action level for groundwater with the potential to be used for culinary purposes are the MCLs. In this case, culinary use is not anticipated, and these levels would not apply;
- b. In order to achieve ecological protection for the Great Salt Lake, the current discharge limit in the UPDES permit for selenium is 54 ug/L, which includes a mixing factor of 2, and a suggested water quality goal of 27 ug/L. To achieve full protection of the Great Salt Lake, the remedial action level for selenium in any groundwater or treated groundwater discharged to the Great Salt Lake should not exceed 27 ug/L.
- c. In order to achieve ecological protection of the Garfield wetlands, the surface waters in the wetlands should not produce microinvertebrates with concentrations

of selenium exceeding 5-10 mg/kg (dry weight), as monitored during nesting season for the birds. Additional risk information may be later used to develop limits on microinvertebrates for other COCs.

- d. If during the course of the wetlands monitoring, a water quality goal can be derived which sets a concentration level in the water which produces microinvertebrate selenium concentrations less than 5 mg/Kg, this water quality goal can be used as a limit for discharge of groundwater or treated groundwater to the wetlands (see Chapter 7, wetlands). The interim groundwater treatment goal is 5 ug/L selenium which may be modified when the wetlands monitoring program produces this site-specific standard.

26. Section 8.K of the North Zone ROD identifies the OU23 Selected Remedy. The remedy selected for OU23 is Alternative 4B (management of groundwater by in-situ biological treatment) coupled with Alternative 3A (collection and beneficial reuse as process water) during operations and Alternative 4B (management of groundwater by in-situ biological treatment) coupled with 3B (collection and beneficial use - treatment ex-situ) post closure if needed.

27. The OU23 Selected Remedy during operations (Alternative 4B coupled with Alternative 3A) includes the following elements:

- a. Maintain source control measures, including:
 - (1) Low permeability caps on the footprint of the electrolyte purification pond, the former refinery electrolyte purification building and former refinery precious metals buildings to reduce the leaching of selenium in the soils present there into the groundwater; and
 - (2) Asphalt caps over the footprint of the Acid Plant #7 site, and the Acid Plant #8 site to reduce the leaching of acids and arsenic into the groundwater.
- b. Pump the smelter wells installed immediately downgradient of the source areas to remove highest concentrations of leachates;
- c. Monitor migration of the ground water plumes and the surface waters;
- d. Management of land and groundwater use in the area until the plumes naturally attenuate to ensure contact with contaminated groundwater is prevented.
- e. Design and installation of a well field composed of injection wells and monitoring wells with particular emphasis on the locations of highest selenium concentrations in the groundwater;
- f. Determine optimum conditions for survival and selenium reduction efficiency for the microbes;

- g. Develop a plan for injection of microbes and injections of necessary nutrients to sustain their selenium reduction capacity at near maximum efficiency;
- h. Monitor progress of selenium reduction and make operations adjustments as needed;
- i. While the mining and milling facilities remain operational and the process water circuit is available, collect and convey contaminated seep, spring and artesian well waters to the process water circuit. Overflows of the process water circuit which are discharged via UPDES Outfall 012 currently have discharge limit for selenium. This discharge limit must be achieved or the selenium-tainted waters must be treated separately;
- j. The performance standard for the treated waters is 27 ug/L selenium for discharge directly into the Great Salt Lake. As an interim goal treated water may be discharged into the wetlands only if the concentration of selenium is 5 ug/L selenium or less, until a site-specific water quality goal can be established; and
- k. Establish a monitoring program to evaluate the progress of remediation of selenium in the aquifer, determine if overflows of the process water circuit to the Great Salt Lake continue to achieve the discharge limits in the UPDES permit, and determine if any ex situ bioreactor treatment of seeps and springs achieve discharge limits and or performance standards for discharge into the Great Salt Lake (or wetlands).

28. Section 8.H.3.d of the North Zone ROD states that “[r]esearch has indicated that when the arsenic and selenium tainted waters enter the process water circuit and are then mixed with tailings in the mill, 49% of the selenium and 97% of the arsenic are precipitated or absorbed to the tailings and settle out in the tailings pond. Therefore, all the waters collected from the artesian wells and springs are ‘treated’, albeit unconventionally.”

29. In 2008, EPA and UDEQ agreed to terminate the use of Alternative 4B (management of groundwater by in-situ biological treatment) due to concerns regarding the technical impracticability of this treatment technology at OU23, including, the lack of hydraulic interconnectedness in the bedrock aquifer where the largest mass of aqueous selenium occurs.

30. Respondent has continued to implement Alternative 3A (collection and beneficial reuse as process water) at OU23, including ongoing assessment of seeps and springs, and capture and control of groundwater when it surfaces by diversion to the Respondent’s process water circuit.

31. According to Respondent’s annual water quality monitoring, concentrations of selenium and arsenic did not decline as rapidly as predicted in the Original OU23 Feasibility Study. Recognizing this, Respondent conducted an OU23 RI update in 2010-2012 (“2014 OU23 RI Update”) to: (i) more fully understand the nature, extent, and fate and transport of selenium and arsenic in the Refinery area; and; (ii) reevaluate the effectiveness of remedial actions

performed as part of the original remedy. The principal objectives of the 2014 OU23 RI Update were to:

- a. Identify the potential sources and release/transport mechanisms that may control ongoing selenium and arsenic loading to groundwater;
- b. Better understand the distribution, nature, and extent of selenium and arsenic within North Zone groundwater;
- c. If necessary, refine the conceptual model of the groundwater flow system and the understanding of mechanisms that transport contaminants to the wetlands; and
- d. Reevaluate the potential for contaminant migration to the Great Salt Lake.

32. The 2014 OU23 RI Update concluded that the vadose zones beneath and proximal to the former Precious Metals Building (PM Building) and Electrolyte Purification Pond (EP Pond) are ongoing sources of selenium, and to a lesser extent arsenic, to the underlying groundwater. Mobilization of residual selenium in the soil proximal to the former PM Building and EP Pond is the principal reason for the discrepancy between observed conditions compared to the predicted decrease in concentrations.

33. During the 2014 OU23 RI Update it was discovered that laboratory analytical interferences had resulted in erroneous and falsely elevated concentrations of arsenic in water samples with elevated selenium. Therefore, the revised extent of the arsenic plume is markedly smaller than that previously understood during the Original OU23 Remedial Investigation and Original OU23 Feasibility Study.

34. In July 2013, Respondent submitted the 2014 OU23 Remedial Investigation Update Report to EPA and UDEQ, which was accepted by the Agencies on March 25, 2014.

35. Respondent submitted to EPA and UDEQ a final OU23 Refinery FFS Work Plan on October 6, 2015, which was accepted by the Agencies on November 13, 2015. As described in the OU23 Refinery FFS Work Plan, the FFS was intended to identify remedial alternatives and to evaluate the feasibility and effectiveness of implementing those remedial alternatives. The FFS was restricted to the Refinery source areas specified in the 2014 OU23 RI Update, specifically the areas beneath and proximal to the former PM Building and the former EP Pond.

36. Respondent submitted to the Agencies a final OU23 Refinery FFS Work Plan Addendum on March 15, 2018, which was approved by the Agencies on March 15, 2018.

37. On May 29, 2020, Respondent submitted the Draft OU23 Refinery FFS Report to EPA and UDEQ for review. On September 15, 2022, EPA and UDEQ provided Respondent with the Agency Comments on Draft OU23 Refinery FFS Report. On July 3, 2023, Respondent responded to the Agencies' September 15, 2022 comments on the Draft OU23 Refinery FFS Report. On February 12, 2025, EPA and UDEQ provided Respondent with the Agency Comments on Draft OU23 Refinery FFS Report.

38. The Parties are no longer pursuing completion of the Draft OU23 Refinery FFS Report. Alternatively, under this Agreement, Respondent will perform an OU23 Remedial Investigation (RI) Update to collect additional data at both the refinery and the smelter for the purpose of evaluating the effectiveness of the OU23 Selected Remedy. Based on the results of the OU23 RI Update, EPA will determine if Respondent is required to develop an OU23 FFS for the refinery and the smelter.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

39. Based on the Findings of Fact in Section IV and the administrative record, EPA has determined that:

- a. The North Zone Site is a “facility” as defined by section 101(9) of CERCLA.
- b. The contamination found at the North Zone Site, as identified in the Findings of Fact above, includes “hazardous substances” as defined by section 101(14) of CERCLA.
- c. The Respondent is a “person” as defined by section 101(21) of CERCLA.
- d. The Respondent is a responsible party under section 107(a) of CERCLA as the “owner or operator” of the facility, as defined by section 101(20) of CERCLA and within the meaning of section 107(a)(1) of CERCLA.
- e. The conditions described in the Findings of Fact constitute an actual and/or threatened “release” of a “hazardous substance” from the facility as defined by sections 101(14) and 101(22) of CERCLA.
- f. The actions required by this Settlement are necessary to protect the public health or welfare or the environment, are in the public interest, are consistent with CERCLA and the NCP, and will expedite effective remedial action and minimize litigation, in accordance with sections 104(a)(1) and 122(a) of CERCLA.
- g. EPA has determined that Respondent is qualified to conduct the Work within the meaning of section 104(a) of CERCLA and will carry out the Work properly and promptly, in accordance with sections 104(a) and 122(a) of CERCLA if Respondent complies with the terms of this Settlement.

VI. ORDER AND AGREEMENT

40. Based upon the Findings of Fact, Conclusions of Law, and Determinations set forth above, and the administrative record, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement.

VII. PERFORMANCE OF THE WORK

41. Performance of the Work.

- a. **Quality Assurance.** All work conducted by the respondent will be consistent with the most recent versions of EPA's *Environmental Information Quality Policy* (CIO 2105), EPA's *Environmental Information Procedure* (CIO 2105-P-01), and *Quality MGMT Systems for Environmental Information & Tech.* (ASQ/ANSI E-4).
- b. **Quality Management Plan.** Within 30 days of the Effective Date, Respondent shall submit to EPA for review and approval a Quality Management Plan developed in accordance with EPA's *Quality Management Plan Standard* (CIO 2105-S-01). This QMP shall include a completed EPA R8 QMP Crosswalk.
- c. **OU22.** Respondent shall perform the following tasks for OU22 in accordance with the schedule set forth in Paragraph 66.
 - (1) **OU22 Short-Term Monitoring SAP/QAPP.** Within 90 days of the Effective Date, Respondent shall submit to EPA for review and approval an OU22 Short-Term Monitoring SAP/QAPP in the UFP-QAPP format (Optimized UFP-QAPP Worksheets, 2012) developed in accordance with the most recent versions of EPA's *Quality Assurance Project Plan Standard* (CIO 2105-S-02), EPA's *Guidance for Quality Assurance Project Plans* (EPA/240/R-02/009), EPA's *Guidance on Systematic Planning Using the Data Quality Objectives* (EPA/240/B-06/001), EPA's *Guidance on Environmental Data Verification and Data Validation* (EPA/240/R-02/004), and any other relevant data quality guidances. This SAP/QAPP shall include, at a minimum:
 - i. A completed EPA Region 8 CERCLA Optimized UFP-QAPP Crosswalk;
 - ii. Collection of collocated water, sediment, and macroinvertebrate tissue samples, as outlined in the 2003 OU22 Monitoring Plan (as modified in 2008, 2014, and 2020);
 - iii. Data Quality Objectives, including but not limited to monitoring goals, performance criteria, and analytical approach.
 - iv. Enhanced biomonitoring of bird eggs, fish tissue, and other opportunistic species detected, as outlined in the 2008 OU22 Enhanced Biological Monitoring Plan (as modified in 2014 and 2022); including utilization of literature-based bird egg standard of 12.5 microgram per kilogram bird egg selenium established by UDEQ Gilbert Bay UAC R317-2-14 (UDEQ Bird Egg Standard);

- v. Continuation of the Bird Use Survey as prescribed in the 2008 OU22 Enhanced Biological Monitoring Plan (as modified in 2014 and 2022);
 - vi. A trend analysis of selenium concentrations in bird eggs based on the UDEQ Bird Egg Standard; and
 - vii. A trend analysis of arsenic and selenium in water, sediment, and macroinvertebrate samples.
- (2) Respondent shall implement the final OU22 Short-Term Monitoring SAP/QAPP approved by EPA in accordance with the schedule set forth therein.
- (3) **OU22 Long-Term Monitoring SAP/QAPP.** Within 90 days following any modifications to the North Zone ROD (e.g., ROD Amendment or Explanation of Significant Differences), or as otherwise requested by EPA, Respondent shall submit to EPA for review and approval an OU22 Long-Term Monitoring SAP/QAPP in the UFP-QAPP format (Optimized UFP-QAPP Worksheets, 2012) developed in accordance with the most recent versions of EPA's *Quality Assurance Project Plan Standard* (CIO 2105-S-02), EPA's *Guidance for Quality Assurance Project Plans* (EPA/240/R-02/009), EPA's *Guidance on Systematic Planning Using the Data Quality Objectives* (EPA/240/B-06/001), EPA's *Guidance on Environmental Data Verification and Data Validation* (EPA/240/R-02/004), and any other relevant data quality guidances. This SAP/QAPP shall include, at a minimum:
- i. A completed EPA Region 8 CERCLA Optimized UFP-QAPP Crosswalk;
 - ii. All OU22 monitoring and analysis requirements identified in the North Zone ROD;
 - iii. An analysis of the representativeness of the selenium data in bird eggs;
 - iv. An analysis of trophic transfer ratios and causal effects preventing the development of such ratios; and
 - v. Data Quality Objectives, including but not limited to monitoring goals, performance criteria, and analytical approach.
- (4) Respondent shall implement the final OU22 Long-Term SAP/QAPP approved by EPA, in accordance with the schedule set forth therein.
- (5) **OU22 Monitoring Reports.** Commencing on December 31 following the Effective Date, and until EPA provides notice of completion in accordance

with Paragraph 65, Respondent shall submit an OU22 Monitoring Report to EPA on an annual basis. The contents of these reports shall be outlined in the approved OU22 Short-Term Monitoring SAP/QAPP and the approved OU22 Long-Term Monitoring SAP/QAPP.

- d. **OU23.** Respondent shall perform the following tasks for OU23 in accordance with the schedule set forth in Paragraph 66.
- (1) **OU23 Remedial Investigation Update Work Plan Outline.** Within 30 days of the Effective Date, Respondent shall submit to EPA for review and approval an OU23 Remedial Investigation (RI) Update Work Plan Outline for the arsenic and selenium plumes underlying the refinery and smelter. This Outline shall be developed in accordance with EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, OSWER Directive 9355.3-01.
 - (2) **OU23 Remedial Investigation Update Work Plan.** Within 60 days of EPA's approval of the OU23 RI Update Work Plan Outline, Respondent shall submit to EPA for review and approval an OU23 Remedial Investigation (RI) Update Work Plan for the arsenic and selenium plumes underlying the refinery and smelter developed in accordance with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, Interim Final, OSWER Directive 9355.3-01. When developing this Work Plan, Respondent shall consider Agency Comments on the Draft OU23 Refinery FFS Report. This Work Plan shall include, at a minimum, the following:
 - i. A Quality Assurance Project Plan (QAPP) in the UFP-QAPP format (Optimized UFP-QAPP Worksheets, 2012) consistent with EPA Quality Assurance Project Plan Standard (CIO 2105-S-02);
 - ii. A completed EPA Region 8 CERCLA Optimized UFP-QAPP Crosswalk;
 - iii. An evaluation of the health, safety, environmental, operational, and technical constraints for sampling underneath the OU23 operating facilities;
 - iv. A comprehensive description of the RI work to be performed, including the scope, methodologies, and schedule for completion;
 - v. A comprehensive description of any strategies to avoid major disruptions to the operating facilities, including any proposed sampling approaches based on Respondent's evaluation of the health, safety, environmental, operational, and technical constraints for sampling underneath the OU23 operating facilities;

- vi. Data Quality Objectives, including but not limited to monitoring goals, performance criteria, and analytical approaches; and
- vii. Plans for data collection that supports the following:
 - (a) an update of the Conceptual Site Model (CSM);
 - (b) an assessment of current potentiometric surfaces of the impacted aquifer;
 - (c) an assessment of the arsenic and selenium flux in groundwater;
 - (d) an updated assessment of the past and current redox conditions in the impacted aquifer;
 - (e) an assessment of the efficacy of the smelter arsenic extraction well;
 - (f) an assessment of the ongoing need for the smelter arsenic extraction well, based on the predicted cleanup time in the Original OU23 Feasibility Study;
 - (g) an updated evaluation of past and current nature and extent, including a fate and transport assessment for arsenic and selenium; and
 - (h) an evaluation of Respondent's progress towards achieving the OU23 RAOs identified in the North Zone ROD.
- (3) Respondent shall implement the final OU23 RI Update Work Plan approved by EPA, in accordance with the schedule set forth therein.
- (4) **OU23 Drill Investigation Plan.** Within 60 days of EPA approval of the OU23 RI Update Work Plan, Respondent shall submit to EPA for review and approval a Drill Investigation Plan. This Plan will, at a minimum, identify the proposed locations for new monitoring wells, specify construction details for each new monitoring well, specify the type of data that will be collected at each new monitoring well, and identify the specific data gaps that will be addressed by each new monitoring well. This Plan will also include cross references to any applicable UFP-QAPP worksheets.
- (5) **OU23 Remedial Investigation Update Report.** Within 180 days of Respondent's completion of its obligations under the OU23 RI Update Work Plan, Respondent shall submit to EPA for review and approval an OU23 RI Update Report developed in accordance with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under*

CERCLA, Interim Final, OSWER Directive 9355.3-01. This Report shall include, at a minimum, a summary of all OU23 monitoring data collected since 2018 and all data collected pursuant to the OU23 RI Update Work Plan.

- (6) **OU23 Conceptual Site Model Update.** Within 90 days of EPA's approval of the OU23 RI Update Report, Respondent shall submit to EPA for review and approval an update of the OU23 Conceptual Site Model (CSM) that includes both the smelter and refinery plumes (CSM Update). When developing the CSM Update, Respondent shall consider EPA's September 2019 letter with comments on the OU23 CSM and the Agency Comments on the Draft OU23 Refinery FFS Report.
- (7) **OU23 Focused Feasibility Study Meeting.** Within 60 days of EPA's approval of the OU23 CSM Update, Respondent shall meet with EPA to discuss the need for an OU23 FFS based on the findings of the approved OU23 RI Update Report and the approved updated CSM (OU23 FFS Meeting). Specifically, EPA and Respondent will discuss:
 - i. Whether the OU23 RI Update Report and the updated CSM support Respondent's continued use of existing technologies (i.e., Alternative 3A in Section 8.K of the North Zone ROD) to limit the migration and uptake of the OU23 COCs in accordance with the OU23 RAOs;
 - ii. Whether EPA will, based on the findings of the approved OU23 RI Update Report and the approved updated CSM, require Respondent to prepare an OU23 FFS to develop, screen, and evaluate remedial alternatives to limit the migration and uptake of OU23 COCs in accordance with the OU23 RAOs;
 - iii. If EPA determines that an OU23 FFS is needed, based on the findings of the approved OU23 RI Update Report and the approved updated CSM, whether Respondent should conduct any treatability studies to support the OU23 FFS.
- (8) **OU23 Focused Feasibility Study Determination Letter.** Within 30 days of the OU23 FFS Meeting, EPA will provide Respondent with written notice specifying whether or not Respondent is required to develop an OU23 FFS. If EPA determines that Respondent is required to develop an OU23 FFS, then EPA will recommend the types of technologies (e.g., containment technologies or treatment technologies) that Respondent should include in the OU23 FFS (OU23 FFS Determination Letter).
- (9) **OU23 Focused Feasibility Study Outline.** If EPA determines that Respondent is required to develop an OU23 FFS, then within 30 days of Respondent's receipt of the OU23 FFS Determination Letter, Respondent

shall submit to EPA for review and approval an OU23 FFS Outline developed in accordance with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, Interim Final, OSWER Directive 9355.3-01. When developing this Outline, Respondent shall consider the Agency Comments on the Draft OU23 Refinery FFS Report.

- (10) **OU23 Focused Feasibility Study Work Plan.** If EPA determines that Respondent is required to develop an OU23 FFS, then within 90 days of EPA's approval of the OU23 FFS Outline, Respondent shall submit to EPA for review and approval an OU23 Focused Feasibility Study (FFS) Work Plan developed in accordance with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, Interim Final, OSWER Directive 9355.3-01. When developing this Work Plan, Respondent shall consider the Agency Comments on the Draft OU23 Refinery FFS Report.
 - (11) Respondent shall implement the final OU23 FFS Work Plan approved by EPA, in accordance with the schedule set forth therein, including any interim deadlines.
 - (12) **OU23 Focused Feasibility Study Report.** Within 180 days of Respondent's completion of its obligations under the OU23 FFS Work Plan, Respondent shall submit to EPA for review and approval an OU23 FFS Report. This Report shall be developed in accordance with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, Interim Final, OSWER Directive 9355.3-01. When developing this Report, Respondent shall consider the Agency Comments on the Draft OU23 Refinery FFS Report.
 - (13) **OU23 Monitoring Reports.** Commencing on March 1 following the Effective Date, and until EPA provides notice of completion in accordance with Paragraph 65, Respondent shall submit to EPA on an annual basis, or as otherwise requested by EPA, an OU23 Monitoring Report. This report shall cover all OU23 monitoring and sampling identified in the North Zone ROD, including, but not limited to, groundwater monitoring data for both arsenic and selenium plumes at the refinery and smelter.
- e. All deliverables (including work plans, reports, samples taken and analyses conducted, electronic data (including monitoring data, quality assurance data, spatial data and metadata)) required to be submitted by Respondent under this Settlement shall be performed and prepared consistent with applicable EPA guidance. Respondents will assure that field personnel used by Respondents are properly trained in the use of field equipment and in chain of custody procedures. Respondents shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)"

(EPA/240/B-01/002. March 2001) or equivalent documentation as determined by EPA.

- f. **Required Updates for QMP and QAPPs.** Respondent shall review the Quality Management Plan (“QMP”) and the Quality Assurance Project Plans (“QAPPs”) annually to determine if any updates are needed. Respondent shall document each annual review using the applicable EPA Region 8 Crosswalk and submit the documentation to EPA for review and approval. If Respondent determines that updates are needed to the QMP and/or QAPPs, Respondent shall submit the updated QMP and/or QAPP, including the applicable EPA Region 8 Crosswalk, to EPA for review and approval. At a minimum, Respondent shall update the QMP and QAPPs every five years and submit the updated QMP and QAPPs, including the applicable EPA Region 8 Crosswalk, to EPA for review and approval.

42. **Modifications to the Work.** EPA may modify the Work under this Settlement if it determines that additional data are needed or that, in addition to tasks defined in the initially approved work plans, other additional work may be necessary to accomplish the objectives of the Work to be performed at OU22 and OU23 and such modification is consistent with the North Zone ROD. EPA shall notify Respondent of any modification needed under the foregoing sentence. Respondent may also request modification of the approved work plans or other deliverables. Upon receipt of notice from EPA and subject to its right to initiate dispute resolution under Section XII, Respondent shall, within 90 days thereafter, submit revised work plan(s) and other deliverables as necessary to EPA for approval.

43. **Compliance with Applicable Law.** Nothing in this Settlement affects Respondent’s obligations to comply with all applicable federal and state laws and regulations. The activities conducted in accordance with this Settlement, if approved by EPA, will be deemed to be consistent with the NCP as provided under section 300.700(c)(3)(ii).

44. **Progress Reports.** Commencing on either June 30 or December 31 following the Effective Date, whichever comes first, and until EPA provides notice of completion in accordance with Paragraph 53, Respondent shall submit progress reports to EPA on a semi-annual basis, or as otherwise requested by EPA (Progress Reports). The Progress Reports shall describe:

- a. All Work that took place during the reporting period;
- b. All actions that have been taken under this Settlement during the reporting period;
- c. All Work planned for the next two months;
- d. All problems encountered during the reporting period in complying with the requirements of this Settlement;
- e. Any anticipated problems, any actual or anticipated delays during the reporting period;

- f. Any solutions developed and implemented to address any actual or anticipated problems or delays during the reporting period; and
- g. Any modifications to the work plans or other schedules Respondent has proposed or that have been approved by EPA during the reporting period.

45. **Notice of Schedule Changes.** If the schedule changes for any activity described in the Progress Reports pursuant to Paragraph 44.c, Respondent shall notify EPA of such change at least seven days before it performs the activity.

46. **Investigation Derived Waste.** Respondent may ship Investigation Derived Waste (IDW) from the North Zone Site to an off-site facility only if it complies with section 121(d)(3) of CERCLA, section 300.440 (Off-Site Rule) of the NCP, and EPA's Guide to Management of Investigation Derived Waste, OSWER 9345.3-03FS (Jan. 1992). Wastes shipped off-site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 C.F.R. § 261.4(e) shipped off-site for treatability studies, are not subject to section 300.440 of the NCP.

47. **Permits.** As provided in CERCLA § 121(e), and section 300.400(e) of the NCP, no permit is required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. Respondent may seek relief under the provisions of Section XI (Force Majeure) of the Settlement for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval required for the Work, provided that they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals. Nothing in the Settlement constitutes a permit issued under any federal or state statute or regulation.

48. **Work Takeover**

- a. If EPA determines that Respondent: (1) has ceased to perform any portion of the Work; (2) is seriously or repeatedly deficient or late in performing the Work; or (3) is performing the Work in a manner that may cause an endangerment to public health or welfare or the environment, EPA may issue a notice of Work Takeover to Respondent, including a description of the grounds for the notice and a period of time ("Remedy Period") within which Respondent shall remedy the circumstances giving rise to the notice. The Remedy Period will be 30 days, unless EPA determines in its unreviewable discretion that there may be an endangerment, in which case the Remedy Period will be 10 days.
- b. If, by the end of the Remedy Period, Respondent does not remedy to EPA's satisfaction the circumstances giving rise to the notice of Work Takeover, EPA may notify Respondent and, as it deems necessary, commence a Work Takeover.

- c. EPA may conduct the Work Takeover during the pendency of any dispute under Section XII but shall terminate the Work Takeover if and when: (1) Respondent remedies, to EPA's satisfaction, the circumstances giving rise to the notice of Work Takeover; or (2) upon the issuance of a final determination under Section XII that EPA is required to terminate the Work Takeover.

49. **Community Involvement.** As requested by EPA, Respondent shall participate in and/or conduct community involvement activities, including participation in (a) the preparation of information for dissemination to the public and/or the Site's Technical Review Committee, and (b) public meetings and the Site's Technical Review Committee meetings that may be held or sponsored by EPA to explain activities at or relating to the Site.

50. **Health and Safety Plan.** Within 180 days of the Effective Date, Respondent shall submit to EPA an OU22 and OU23 Health and Safety Plan (HASP). The HASP shall describe all activities to be performed to protect on-site personnel from physical, chemical, and all other hazards posed by the field sampling. The HASP shall: (a) be prepared in accordance with EPA's Emergency Responder Health and Safety Manual and Occupational Safety and Health Administration ("OSHA") requirements under 29 C.F.R. §§ 1910 and 1926; and (b) shall address the Work and include contingency planning. EPA does not approve the HASP but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

51. **Emergency Response and Reporting.** If any event occurs during performance of the Work that causes or threatens to cause a release of hazardous substances, pollutants or contaminants on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Respondent shall: (a) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (b) immediately notify the EPA Remedial Project Manager (as specified in Paragraph 105); and (c) take such actions in consultation with the EPA Remedial Project Manager in accordance with all applicable provisions of the HASP and any other deliverable approved by EPA. Upon the occurrence of any event during performance of the Work that Respondent is required to report pursuant to sections 103 and 111(g) of CERCLA, or section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA), Respondent shall immediately notify the EPA Remedial Project Manager.

52. **Deliverables**

- a. **General Requirements for Deliverables.** Respondent shall submit deliverables for EPA approval or for EPA comment by the deadlines set forth in Paragraph 54. Concurrent with submittal to EPA, Respondent shall also submit deliverables to UDEQ. Respondent shall submit all deliverables in electronic form. Respondent shall not submit deliverables to EPA that are marked as "copyright," "trademark," or "confidential", as the deliverables are part of the administrative record for the North Zone Site and as such are available to the public.
- b. **Data Format Specifications.** Sampling, analytical and monitoring data shall be submitted in an Excel spreadsheet file format. Respondent shall coordinate with

the EPA Remedial Project Manager on the organization and titling of the data columns. A portable document format (PDF) copy of the data sheets may be submitted along with the Excel file to serve the purpose of a secured recording of the data as originally submitted by the Respondent. Spatial data, including spatially-referenced data and geospatial data, shall be submitted: (1) in the Environmental Systems Research Institute (ESRI) File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions shall include the collection method(s). Projected coordinates may optionally be included but shall be documented. Spatial data shall be accompanied by metadata, and such metadata shall be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor, complies with these FGDC and EPA metadata requirements and is available at <https://www.epa.gov/geospatial/epa-metadata-editor>. Each file shall include an attribute name for each North Site unit or sub-unit submitted. Consult <https://www.epa.gov/geospatial/geospatial-policies-and-standards> for any further available guidance on attribute identification and naming. Spatial data submitted by Respondents does not, and is not intended to, define the boundaries of the Site. If other data is to be submitted, such as raster (e.g., imagery), mapping projects/finished maps, etc., Respondent shall inquire with the EPA Remedial Project Manager for guidance on the submission of such.

- c. **Certification.** All deliverables that require compliance with Paragraph 52 must be signed (which may include electronically signed) by Respondent's project coordinator, or other responsible official of Respondent, and shall contain the following statement:

I certify under penalty of perjury that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

- d. Approval of Deliverables.

- (1) Initial Submissions. After review of any deliverable that is required to be submitted for EPA approval under this Settlement, after a reasonable opportunity for UDEQ comment, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any

combination of the foregoing. EPA also may modify the initial submission to cure deficiencies in the submission if EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work or if previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

- (2) **Resubmissions.** Upon receipt of a notice of disapproval under Paragraph 64(d)(1)(iii) above, (Initial Submissions), or if required by a notice of approval upon specified conditions under Paragraph 52(d)(1)(ii), Respondents shall, within 30 days or such longer time as agreed to by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (i) approve, in whole or in part, the resubmission; (ii) approve the resubmission upon specified conditions; (iii) modify the resubmission; (iv) disapprove, in whole or in part, the resubmission, requiring Respondents to correct the deficiencies; or (v) any combination of the foregoing.

- e. **Implementation.** Upon approval, approval upon conditions, or modification by EPA of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the Settlement; and (2) Respondent shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under Paragraph 52(d)(1) or 52(d)(2) does not relieve Respondents of any liability for stipulated penalties under Section XIII (Stipulated Penalties) of the Settlement. Notwithstanding the receipt of a notice of disapproval, Respondent shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by EPA. In the event that EPA takes over some of the tasks, Respondent shall incorporate and integrate information supplied by EPA into those reports. Respondent shall not proceed with any activities or tasks dependent on the following deliverables until receiving EPA approval, approval on condition, or modification of such deliverables: OU22 Short-Term Monitoring SAP/QAPP, OU22 Long-Term Monitoring SAP/QAPP, OU23 RI Update Work Plan, and OU23 FFS Work Plan. While awaiting EPA approval, approval on condition, or modification of these deliverables, Respondent shall proceed with all other tasks and activities that may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement.
- f. **Material Defects.** If an initially submitted or resubmitted plan, report, or other deliverable contains a material defect, and the plan, report, or other deliverable is disapproved or modified by EPA due to such material defect, Respondent shall be deemed in violation of this Settlement for failure to submit such plan, report, or other deliverable timely and adequately. Respondent may be subject to penalties for such violation as provided in Section XIII (Stipulated Penalties) of the Settlement.

53. **Notice of Completion of Work.** When EPA determines that all Work has been fully performed in accordance with this Settlement, with the exception of any continuing obligations required by this Settlement, including payment of Future Response Costs and Record Retention, EPA will provide written notice to Respondent. If EPA determines that any Work has not been completed in accordance with this Settlement, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent correct such deficiencies. Respondent shall correct such deficiencies in accordance with the EPA notice.

54. **Schedule.** All deliverables and tasks required under this Settlement shall be submitted or completed by the deadlines or within the time durations set forth below. Respondent may submit proposed revised schedules for EPA approval.

Description	Reference	Deadline
OU22 Short-Term Monitoring SAP/QAPP	Paragraph 41(c)(1)	Respondent shall submit to EPA for review and approval within 90 days of the Effective Date
OU22 Long-Term Monitoring SAP/QAPP	Paragraph 41(c)(3)	Respondent shall submit to EPA for review and approval within 90 days following any modifications to the North Zone ROD
OU22 Monitoring Reports	Paragraph 41(c)(5)	Respondent shall submit to EPA on an annual basis; December 31
OU23 RI Update Work Plan Outline	Paragraph 41(d)(1)	Respondent shall submit to EPA for review and approval within 30 days of the Effective Date
OU23 RI Update Work Plan	Paragraph 41(d)(2)	Respondent shall submit to EPA for review and approval within 60 days of EPA's approval of the Ou23 RI Update Work Plan Outline
OU23 Drill Investigation Plan	Paragraph 41(d)(4)	Respondent shall submit to EPA for review and approval within 60 days of EPA approval of the RI Update Work Plan

Description	Reference	Deadline
OU23 RI Update Report	Paragraph 41(d)(5)	Respondent shall submit to EPA for review and approval within 180 days of Respondent's completion of its obligations under the OU23 RI Update Work Plan
OU23 CSM Update	Paragraph 41(d)(6)	Respondent shall submit to EPA for review and approval within 90 days of EPA's approval of the OU23 RI Update Report
OU23 FFS Meeting	Paragraph 41(d)(7)	Respondent shall meet with EPA within 60 days of EPA's approval of the OU23 CSM Update
OU23 FFS Determination Letter	Paragraph 41(d)(8)	EPA shall send Respondent the OU23 Determination Letter within 30 days of the OU23 FFS Meeting.
OU23 FFS Outline	Paragraph 41(d)(9)	Respondent shall submit to EPA for review and approval within 30 days of Respondent's receipt of the OU23 FFS Determination Letter
OU23 FFS Work Plan	Paragraph 41(d)(10)	Respondent shall submit to EPA for review and approval within 90 days of EPA's approval of the OU23 FFS Outline
OU23 FFS Report	Paragraph 41(d)(12)	Respondent shall submit to EPA for review and approval within 180 days of Respondent's completion of its obligations under the OU23 FFS Work Plan

Description	Reference	Deadline
OU23 Monitoring Reports	Paragraph 41(d)(13)	Respondent shall submit to EPA on an annual basis; March 1
Progress Reports	Paragraph 44	Respondent shall submit to EPA on a semi-annual basis; June 30 and December 31

VIII. PROPERTY REQUIREMENTS

55. If any property where access is needed to implement this Settlement, is owned or controlled by Respondent, Respondent shall, commencing on the Effective Date, provide EPA and UDEQ and their representatives, including contractors, with access at all reasonable times to such property for the purpose of conducting any activity related to this Settlement. Where any action under this Settlement is to be performed in areas owned or controlled by someone other than Respondent, Respondent shall use best efforts to obtain all necessary agreements for access, enforceable by Respondent and EPA. Respondent shall provide a copy of each agreement required under this Paragraph to EPA.

56. As used in this Section, “best efforts” means the efforts that a reasonable person in the position of Respondent would use to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements, as required by this Section. If Respondent cannot accomplish what is required through “best efforts” in a timely manner, it shall notify EPA, and include a description of the steps taken to achieve the requirements. If EPA deems it appropriate, it may assist Respondent, or take independent action, in obtaining such access and/or use restrictions.

57. Notwithstanding any provision of the Settlement, EPA retains all of its access authorities and rights, as well as all of its rights to require land, water, or other resource use restrictions, including enforcement authorities related thereto under CERCLA, RCRA, and any other applicable statute or regulations.

IX. INDEMNIFICATION AND INSURANCE

58. Indemnification

- a. EPA does not assume any liability by entering into this Settlement or by virtue of any designation of Respondent as EPA’s authorized representative under section 104(e)(1) of CERCLA. Respondent shall indemnify and save and hold harmless EPA and its officials, agents, employees, contractors, subcontractors, and representatives for or from any claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any

persons acting on Respondent's behalf or under its control, in carrying out activities under this Settlement, including any claims arising from any designation of Respondent as EPA's authorized representatives under section 104(e)(1) of CERCLA. Further, Respondent agrees to pay EPA all costs it incurs including attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against EPA based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under its control in carrying out activities under this Settlement. EPA may not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities under this Settlement. The Respondent and any such contractor may not be considered an agent of EPA.

- b. EPA may give Respondent notice of any claim for which EPA plans to seek indemnification in accordance with this Section, and shall consult with Respondent prior to settling such claim.

59. Respondent covenants not to sue and shall not assert any claim against EPA for damages or reimbursement or for set-off of any payments made or to be made to EPA, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of Work or other activities on or relating to the Site, including claims on account of construction delays. In addition, Respondent shall indemnify and save and hold EPA harmless with respect to any claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of work at or relating to the Site, including claims on account of construction delays.

60. **Insurance.** Respondent shall secure, by no later than 15 days before commencing any on-site Work, the following insurance: (a) commercial general liability insurance with limits of liability of \$1 million per occurrence; (b) automobile liability insurance with limits of liability of \$1 million per accident; and (c) umbrella liability insurance with limits of liability of \$5 million in excess of the required commercial general liability and automobile liability limits. The insurance policy must name EPA as an additional insured with respect to all liability arising out of the activities performed by or on behalf of Respondent under this Settlement. Respondent shall maintain this insurance until the first anniversary after EPA's issuance of the Notice of Completion of Work under Paragraph 53. In addition, for the duration of this Settlement, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement.

X. PAYMENTS FOR RESPONSE COSTS

61. Payments by Respondent for Future Response Costs

- a. **Periodic Bills.** On a periodic basis, EPA will send Respondent a bill for Future Response Costs, including a standard cost summary listing direct costs paid by EPA, its contractors, and subcontractors and related indirect costs. Respondent

may initiate a dispute under Section XII regarding a Future Response Costs billing, but only if the dispute relates to one or more of the following issues: (1) whether EPA has made an arithmetical error; (2) whether EPA has included a cost item that is not within the definition of Future Response Costs; or (3) whether EPA has paid excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. If Respondent submits a Notice of Dispute, Respondent shall within a 30-day period, also as a requirement for initiating the dispute, pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 61(b). The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XII shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse EPA for its Future Response Costs. Respondent shall specify in the Notice of Dispute the contested costs and the basis for the objection.

- b. **Payment of Bill.** Respondent shall pay the bill, or if it initiates dispute resolution, the uncontested portion of the bill, if any, within 30 days after receipt of the bill. Respondent shall pay the contested portion of the bill determined to be owed, if any, within 30 days after the determination regarding the dispute. Each payment for: (1) the uncontested bill or portion of bill, if late, and; (2) the contested portion of the bill determined to be owed, if any, must include an additional amount for Interest accrued from the date of receipt of the bill through the date of payment. Respondent shall make payment at <https://www.pay.gov> using the "EPA Miscellaneous Payments Cincinnati Finance Center" link, and including references to the Site/Spill ID number listed in Paragraph 93 and the purpose of the payment. Respondent shall send notices of this payment to EPA.

62. **Deposit of Payments.** EPA may, in its unreviewable discretion, deposit the amounts paid under this Section X (Payments of Response Costs) in the Fund, in the Special Accounts, or both. EPA may, in its unreviewable discretion, retain and use any amounts deposited in the Special Accounts to conduct or finance response actions at or in connection with the Site and the South Zone Site, or transfer those amounts to the Fund.

XI. FORCE MAJEURE

63. "Force majeure," for purposes of this Settlement, means any event arising from causes beyond the control of Respondent, of any entity controlled by Respondent, or of Respondent's contractors that delays or prevents the performance of any obligation under this Settlement despite Respondent's best efforts to fulfill the obligation. Given the need to protect public health and welfare and the environment, the requirement that Respondent exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or increased cost of performance.

64. If any event occurs for which Respondent will or may claim a force majeure, Respondent shall notify EPA's Remedial Project Manager by email. The deadline for the initial notice is 5 days after the date Respondent first knew or should have known that the event would likely delay performance. Respondent shall be deemed to know of any circumstance of which any contractor of, subcontractor of, or entity controlled by Respondent knew or should have known. Within 5 days thereafter, Respondent shall send a further notice to EPA that includes: (a) a description of the event and its effect on Respondent's completion of the requirements of the Settlement; (b) a description of all actions taken or to be taken to prevent or minimize the adverse effects or delay; (c) the proposed extension of time for Respondent to complete the requirements of the Settlement; (d) a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health or welfare or the environment; and (e) all available proof supporting their claim of force majeure. Failure to comply with the notice requirements herein regarding an event precludes Respondent from asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite late or incomplete notice, is able to assess to its satisfaction whether the event is a force majeure under Paragraph 63 and whether Respondent has exercised its best efforts under Paragraph 63, EPA may, in its unreviewable discretion, excuse in writing Respondent's failure to submit timely or complete notices under this Paragraph.

65. EPA will notify Respondent of its determination whether Respondent is entitled to relief under Paragraph 64, and, if so, the duration of the extension of time for performance of the obligations affected by the force majeure. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. Respondent may initiate dispute resolution under Section XII regarding EPA's determination within 15 days after receipt of the determination. In any such proceeding, Respondent shall have the burden of proving that it is entitled to relief under Paragraph 64 and that their proposed extension was or will be warranted under the circumstances.

66. The failure by EPA to timely complete any activity under the Settlement is not a violation of the Settlement, provided, however, that if such failure prevents Respondent from timely completing a requirement of the Settlement, Respondent may seek relief under this Section.

XII. DISPUTE RESOLUTION

67. Unless otherwise provided in this Settlement, Respondent shall use the dispute resolution procedures of this Section to resolve any dispute arising under this Settlement.

68. A dispute will be considered to have arisen when EPA or Respondent sends a written notice of dispute ("Notice of Dispute") to EPA. A notice is timely if sent within 30 days after receipt of the EPA notice or determination giving rise to the dispute or within 15 days in the case of a force majeure determination. Disputes arising under this Settlement must in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations may not exceed 20 days after the dispute arises, unless EPA otherwise agrees. If the Parties cannot resolve the dispute by informal negotiations, the position advanced by EPA is binding unless Respondent initiates formal dispute resolution under Paragraph 69. By

agreement of the Parties, mediation may be used during this informal negotiation period to assist the Parties in reaching a voluntary resolution or narrowing of the matters in dispute.

69. **Formal Dispute Resolution**

- a. **Statement of Position.** Respondent may initiate formal dispute resolution by serving on EPA, within 30 days after the conclusion of informal dispute resolution, an initial Statement of Position regarding the matter in dispute. EPA's responsive Statement of Position is due within 30 days after receipt of the initial Statement of Position. All statements of position must include supporting factual data, analysis, opinion, and other documentation. A reply, if any, is due within 20 days after receipt of the response. If appropriate, EPA may extend the deadlines for filing statements of position and may allow the submission of supplemental statements of position.
- b. **Formal Decision.** The Director of the Superfund & Emergency Management Division, EPA Region 8, will issue a formal decision resolving the dispute ("Formal Decision") based on the statements of position and any replies and supplemental statements of position. The Formal Decision is binding on Respondent.

70. The initiation of dispute resolution procedures under this Section does not extend, postpone, or affect in any way any requirement of this Settlement, except as EPA agrees. Stipulated penalties with respect to the disputed matter will continue to accrue, but payment is stayed pending resolution of the dispute, as provided in Paragraph 69.

XIII. STIPULATED PENALTIES

71. Unless the noncompliance is excused under Section XI (Force Majeure), Respondent is liable to EPA for the following stipulated penalties:

- a. for any failure: (1) to pay any amount due under Section X; and (2) to submit the following timely or adequate deliverables, the OU22 Short-Term Monitoring SAP/QAPP; OU22 Long-Term Monitoring SAP/QAPP; OU23 RI Update Work Plan; OU23 RI Update Report; OU23 FFS Work Plan; or the OU23 FFS Report:

Period of Noncompliance	Penalty Per Noncompliance Per Day
1st through 14th day	\$1,000
15th through 30th day	\$2,000
31st day and beyond	\$4,000

- b. for any failure to submit timely or adequate deliverables required by this Settlement other than those specified above:

Period of Noncompliance	Penalty Per Noncompliance Per Day
1st through 14th day	\$500
15th through 30th day	\$1,000

31st day and beyond	\$2,000
---------------------	---------

72. **Work Takeover Penalty.** If EPA commences a Work Takeover, Respondent is liable for a stipulated penalty in the amount of \$50,000.

73. **Accrual of Penalties.** Stipulated penalties accrue from the date performance is due, or the day a noncompliance occurs, whichever is applicable, until the date the requirement is completed or the final day of the correction of the noncompliance. Nothing in this Settlement prevents the simultaneous accrual of separate penalties for separate noncompliances with this Settlement. Stipulated penalties accrue regardless of whether Respondent has been notified of their noncompliance, and regardless of whether Respondent has initiated dispute resolution under Section XII, provided, however, that no penalties will accrue as follows:

- a. with respect to a submission that EPA subsequently determines is deficient, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; or
- b. with respect to a matter that is the subject of dispute resolution under Section XII, during the period, if any, beginning on the 21st day after the later of the date that EPA's responsive Statement of Position is received or the date that Respondent's reply thereto (if any) is received until the date of the Formal Decision.

74. **Demand and Payment of Stipulated Penalties.** EPA may send Respondent a demand for stipulated penalties. The demand will include a description of the noncompliance and will specify the amount of the stipulated penalties owed. Respondent may initiate dispute resolution under Section XII within 30 days after receipt of the demand. Respondent shall pay the amount demanded or, if they initiate dispute resolution, the uncontested portion of the amount demanded, within 30 days after receipt of the demand. Respondent shall pay the contested portion of the penalties determined to be owed, if any, within 30 days after the resolution of the dispute. Each payment for: (a) the uncontested penalty demand or uncontested portion, if late; and (b) the contested portion of the penalty demand determined to be owed, if any, must include an additional amount for Interest accrued from the date of receipt of the demand through the date of payment. Respondent shall make payment at <https://www.pay.gov> using the link for "EPA Miscellaneous Payments Cincinnati Finance Center," including references to the Site/Spill ID number listed in Section XVIII (Notices and Submissions), and the purpose of the payment. Respondent shall send a notice of this payment to EPA. The payment of stipulated penalties and Interest, if any, does not alter any obligation by Respondent under the Settlement.

75. Nothing in this Settlement limits the authority of EPA: (a) to seek any remedy otherwise provided by law for Respondent's failure to pay stipulated penalties or Interest; or (b) to seek any other remedies or sanctions available by virtue of Respondent's noncompliances with this Settlement or of the statutes and regulations upon which it is based, including penalties under section 122(l) of CERCLA, and punitive damages pursuant to section 107(c)(3) of CERCLA, provided, however, that EPA may not seek civil penalties under section 122(l) of CERCLA or punitive damages pursuant to section 107(c)(3) of CERCLA for any noncompliance

for which a stipulated penalty is provided for in this Settlement, except in the case of a willful noncompliance with this Settlement.

76. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued under this Settlement.

77. No action or decision by EPA pursuant to this Settlement gives rise to any right to judicial review, except as set forth in section 113(h) of CERCLA.

XIV. COVENANTS BY EPA

78. **Covenants for Respondent.** Subject to Paragraph 80, EPA covenants not to sue or to take administrative action against Respondent under sections 106 and 107(a) of CERCLA regarding the Work and Future Response Costs.

79. The covenants under Paragraph 78: (a) take effect upon the Effective Date; (b) are conditioned on the complete and satisfactory performance by Respondent of the requirements of this Settlement; (c) extend to the successors of Respondent but only to the extent that the alleged liability of the successor of the Respondent is based solely on its status as a successor of the Respondent; and (d) do not extend to any other person.

80. **General Reservations.** Notwithstanding any other provisions of this Settlement, EPA reserves, and this Settlement is without prejudice to, all rights against Respondent regarding the following:

- a. liability for failure by Respondent to meet a requirement of this Settlement;
- b. liability for performance of response actions other than the Work;
- c. liability arising from the past, present, or future disposal, release or threat of release of Waste Material outside of the Site;
- d. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments; and
- e. criminal liability.

81. Subject to Paragraphs 78 and 79, nothing in this Settlement limits any authority of EPA to take, direct, or order all appropriate action to protect public health and welfare and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or to request a Court to order such action.

XV. COVENANTS BY RESPONDENT

82. Covenants by Respondent

- a. Subject to Paragraph 83, Respondent covenants not to sue and shall not assert any claim or cause of action against the United States under CERCLA, RCRA

§ 7002(a), the United States Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, the State Constitution, State law, or at common law regarding the Work or Future Response Costs.

- b. Subject to Paragraph 83, Respondent covenants not to seek reimbursement from the Fund through CERCLA or any other law for costs of the Work or Future Response Costs.

83. **Respondent's Reservation.** The covenants in Paragraph 82 do not apply to any claim or cause of action brought, or order issued, after the Effective Date by the United States to the extent such claim, cause of action, or order is within the scope of a reservation under Paragraph 80(a). through 80(d).

XVI. EFFECT OF SETTLEMENT; CONTRIBUTION

84. The Parties agree that: (a) this Settlement constitutes an administrative settlement under which each Respondent has, as of the Effective Date, resolved its liability to the United States within the meaning of sections 113(f)(2), 113(f)(3)(B), and 122(h)(4) of CERCLA; and (b) Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by sections 113(f)(2) and 122(h)(4) of CERCLA, or as may be otherwise provided by law, for the "matters addressed" in this Settlement. The "matters addressed" in this Settlement are the Work and Future Response Costs, provided, however, that if the United States exercises rights against Respondent under the reservations in Paragraphs 80(a) through 80(d), the "matters addressed" in this Settlement do not include those response costs or response actions that are within the scope of the exercised reservation.

85. Respondent shall, with respect to any suit or claim brought by it for matters related to this Settlement, notify EPA no later than 60 days prior to the initiation of such suit or claim. Respondent shall, with respect to any suit or claim brought against it for matters related to this Settlement, notify EPA within 10 days after service of the complaint on Respondent. In addition, Respondent shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial.

86. **Res Judicata and Other Defenses.** In any subsequent administrative or judicial proceeding initiated against Respondent by EPA or by the United States on behalf of EPA for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, claim preclusion (res judicata), issue preclusion (collateral estoppel), claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case.

87. Nothing in this Settlement diminishes the right of the United States under sections 113(f)(2) and (3) of CERCLA to pursue any person not a party to this Settlement to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to section 113(f)(2) of CERCLA.

XVII. RECORDS

88. Retention of Records and Information

- a. Respondent shall retain, and instruct its contractors and agents to retain, the following documents and electronically stored data (“Records”) until 10 years after the Notice of Completion of the Work under Paragraph 53 (“Record Retention Period”):
 - (1) All records regarding Respondent’s liability under CERCLA regarding the Site;
 - (2) All reports, plans, permits, and documents submitted to EPA in accordance with this Settlement, including all underlying research and data; and
 - (3) All data developed by, or on behalf of, Respondent in the course of performing the Work.
- b. At the end of the Record Retention Period, Respondent shall notify EPA that it has 90 days to request the Respondents’ Records subject to this Section. Respondent shall retain and preserve its Records subject to this Section until 90 days after EPA’s receipt of the notice. These record retention requirements apply regardless of any corporate record retention policy.

89. Respondent shall provide to EPA, upon request, copies of all Records and information required to be retained under this Section. Respondent shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

90. Privileged and Protected Claims

- a. Respondent may assert that all or part of a record requested by EPA is privileged or protected as provided under federal law, in lieu of providing the record, provided that Respondent complies with Paragraph 90.b, and except as provided in Paragraph 90.c.
- b. If Respondent asserts a claim of privilege or protection, it shall provide EPA with the following information regarding such record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a record, Respondent shall provide the record to EPA in redacted form to mask the privileged or protected portion only. Respondent shall retain all records that it claims to be privileged or protected until EPA has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in Respondent’s favor.

- c. Respondent shall not make any claim of privilege or protection regarding: (1) any data regarding the Site, including all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological or engineering data, or the portion of any other record that evidences conditions at or around the Site; or (2) the portion of any record that Respondent is required to create or generate in accordance with this Settlement.

91. **Confidential Business Information Claims.** Respondent is entitled to claim that all or part of a record submitted to EPA under this Section is Confidential Business Information (“CBI”) that is covered by section 104(e)(7) of CERCLA and 40 C.F.R. § 2.203(b). Respondent shall segregate all records or parts thereof submitted under this Settlement which it claims are CBI and label them as “claimed as confidential business information” or “claimed as CBI.” Records that a submitter properly labels in accordance with the preceding sentence will be afforded the protections specified in 40 C.F.R. part 2, subpart B. If the records are not properly labeled when they are submitted to EPA, or if EPA notifies the submitter that the records are not entitled to confidential treatment under the standards of section 104(e)(7) of CERCLA or 40 C.F.R. part 2, subpart B, the public may be given access to such records without further notice to the submitter.

92. Notwithstanding any provision of this Settlement, EPA retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XVIII. NOTICES AND SUBMISSIONS

93. All agreements, approvals, consents, deliverables, modifications, notices, notifications, objections, proposals, reports, waivers, and requests specified in this Settlement must be in writing unless otherwise specified. Whenever a notice is required to be given or a report or other document is required to be sent by one party to another under this Settlement, it must be sent as specified below. All notices under this Section are effective upon receipt, unless otherwise specified. In the case of emailed notices, there is a rebuttable presumption that such notices are received on the same day that they are sent. Any party may change the method, person, or address applicable to it by providing notice of such change to all Parties.

As to EPA: *via email to:*
Douglas Bacon
EPA Remedial Project Manager
bacon.douglas@epa.gov
Re: Site/Spill ID # 084B

Maggie Ogden
EPA Remedial Project Manager
maggie.ogden@epa.gov
Re: Site/Spill ID # 084B

As to the Regional *via email to:*
Financial Management Davionn Johnson
Officer: johnson.davionn@epa.gov
Re: Site/Spill ID # 084B

As to UDEQ: *via email to:*
Mazie Cox
UDEQ Project Manager
maziecox@utah.gov

As to Respondent: *via email to:*
Cassady Kristensen
General Manager HSESC Kennecott
4700 West Daybreak Parkway
South Jordan, Utah 84009
cassady.kristensen@riotinto.com

Damon Sheumaker
Principal Advisor – Remediation
4700 West Daybreak Parkway
South Jordan, Utah 84009
damon.sheumaker@riotinto.com

XIX. APPENDIXES

94. Appendix A is a map of the Site and is attached to and incorporated into this Settlement.

95. Appendix B is a map of OU22 of the Site and is attached to and incorporated into this Settlement.

96. Appendix C is a map of OU23 of the Site and is attached to and incorporated into this Settlement.

97. Appendix D is a thorough list of OU22 and OU23 documents, approved work plans, and their amendments and is attached to and incorporated into this Settlement.

98. Appendix E is a flowchart describing the sequence and timing of the performance of Work for OU22 and OU23 and is attached to and incorporated into this Settlement.

XX. MODIFICATIONS TO SETTLEMENT

99. Except as provided in Paragraph 42 (Modifications to the Work), both non-material and material modifications to the Settlement must be in writing and are effective when signed (including electronically signed) by the Parties.

XXI. SIGNATORIES

100. The undersigned representative of EPA and the undersigned representative of Respondent certifies that he or she is authorized to enter into the terms and conditions of this Settlement and to execute and legally bind such party to this Settlement.

XXII. INTEGRATION

101. This Settlement constitutes the entire agreement among the Parties regarding the subject matter of the Settlement and supersedes all prior representations, agreements, and understandings, whether oral or written, regarding the subject matter of the Settlement embodied herein.

XXIII. EFFECTIVE DATE

102. This Settlement is effective when EPA issues notice to Respondent that the Regional Administrator or his delegatee has signed the Settlement.

Signature Page for Administrative Settlement Agreement regarding the Kennecott North Zone Superfund Site.

IT IS SO AGREED AND ORDERED:

**BY THE U.S. ENVIRONMENTAL
PROTECTION AGENCY:**

Dated

Aaron Urdiales, Division Director
Superfund and Emergency Response Division
Region 8

Dated

Kenneth C. Schefski, Regional Counsel
Office of Regional Counsel
Region 8

Signature Page for Administrative Settlement Agreement regarding the Kennecott North Zone Superfund Site.

FOR

9/30/25

Dated

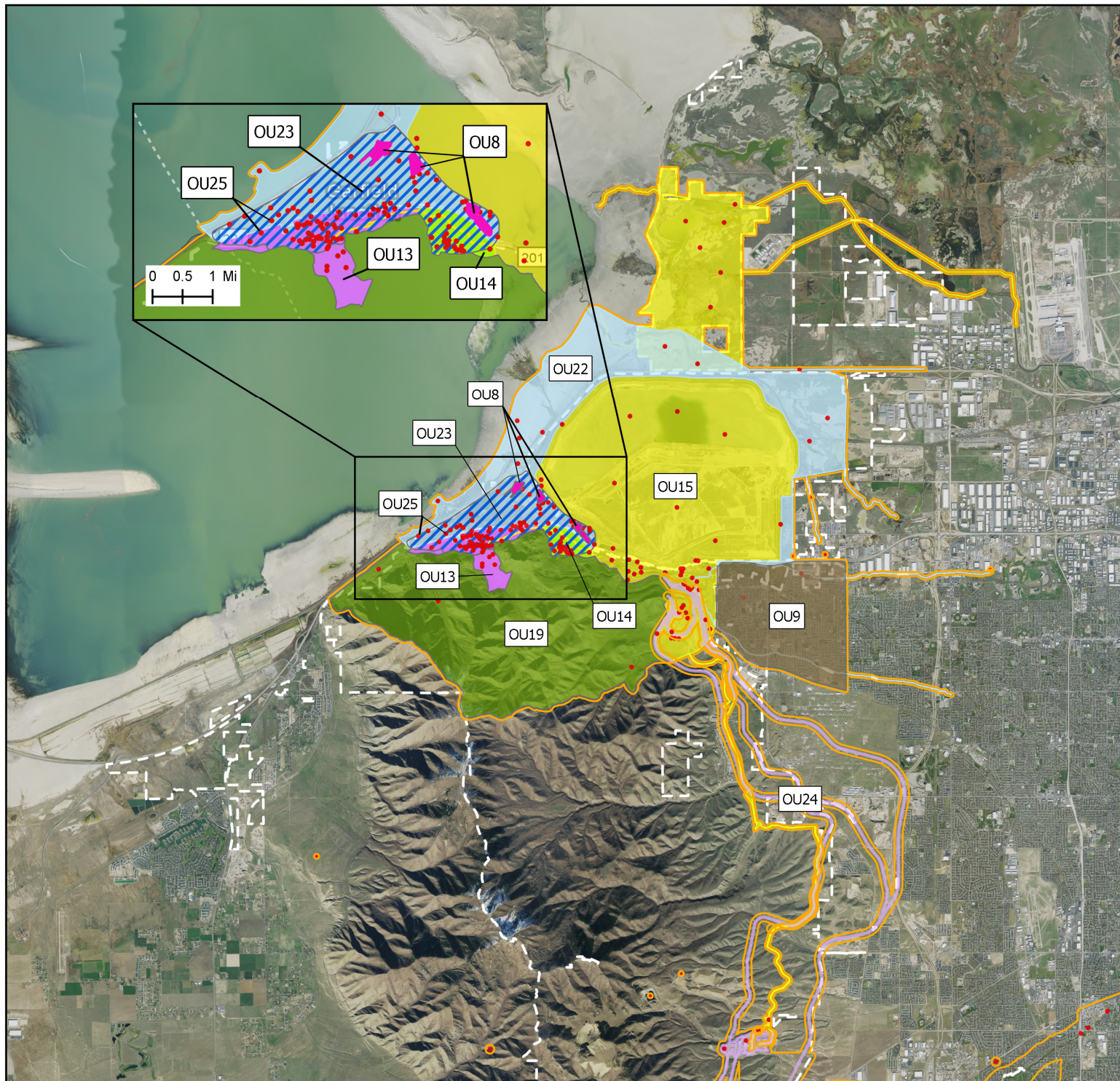
A handwritten signature in black ink, appearing to read 'Nate Foster', written over a horizontal line.

Nate Foster

Rio Tinto Kennecott Managing Director
4700 West Daybreak Parkway
South Jordan, Utah 84009

Appendix A

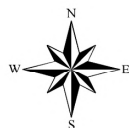
Map of the Kennecott North Zone Site



Kennecott North Zone

MAGNA, UTAH | APRIL 2025

- OU8 Waste Water Treatment Plant and Sludge Ponds
- OU9 Magna Soils
- OU13 Smelter and Acid Plants
- OU14 Refinery
- OU15 Mills and Tailings Pond
- OU19 Smelter Fallout
- OU22 Great Salt Lake Wetlands
- OU23 North End Groundwater
- OU24 Precipitation Plant
- OU25 Historic Facilities
- Kennecott Site Boundary
- Kennecott Property Boundary



0 1 2 3 4 Miles

Spatial Reference:

WGS 1984 Web Mercator Auxiliary Sphere

Data Sources: U.S. EPA

Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.



Area Enlarged



Appendix B

Map of Operable Unit 22 (OU22)



Kennecott North Zone
Salt Lake County, Utah
Operable Unit 22: Great Salt Lake Wetlands



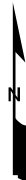
**OU 22 Great Salt Lake
Wetlands**

Map Date: July 28, 2016

Map Projection: UTM, Meters, 12 North, NAD83

Data Sources: *Operable Unit Boundary* - Rio Tinto (2016)
Imagery - Microsoft Bing web service (2016)

***Boundaries are based on the nature and extent of contamination
and are subject to change.**



0 5,000 10,000 Feet



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Geographic Society, i-cubed

Utah

Appendix C

Map of Operable Unit 23 (OU23)



Kennecott North Zone
Salt Lake County, Utah
Operable Unit 23: North End Groundwater



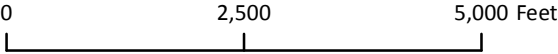
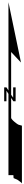
**OU 23 North End
Groundwater**

Map Date: July 28, 2016

Map Projection: UTM, Meters, 12 North, NAD83

Data Sources: *Operable Unit Boundary* - Rio Tinto (2016)
Imagery - Microsoft Bing web service (2016)

**Boundaries are based on the nature and extent of contamination
and are subject to change.*



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Appendix D

List of OU22 and OU23 Documents, Work Plans, and Amendments

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
Kennecott North Zone Site & Kennecott South Zone Site						
1	Kennecott North and South Zone National Priority List (NPL) Listing	EPA	January 18, 1994	N/A	N/A	National Priorities List for Uncontrolled Hazardous Waste Sites, Proposed Rule No. 16, 59 Fed. Reg. 2568-2574 (Jan. 18, 1994) EPA Region 8 proposed the Kennecott North Zone Site and the Kennecott South Zone Site for inclusion on EPA's NPL.
2	EPA/State/KUC Memorandum of Understanding (MOU)	EPA/State/KUC	September 27, 1995	N/A	1857126	Agreement between EPA, Utah Department of Environmental Quality (UDEQ), and Kennecott Utah Copper (KUC). EPA agreed to: (1) Take no further action on listing North and South Zone Sites on NPL unless KUC fails to perform the agreed-upon cleanup activities, (2) Proceed to withdraw sites from NPL proposal list after KUC's completion of its commitments, (3) Consider KUC's operational needs in scheduling studies and cleanups, (4) Keep UDEQ informed and timely provide UDEQ with documents for review, (5) Work with UDEQ to avoid duplicate oversight costs. UDEQ agreed to: (1) Maintain jurisdiction over KUC's efforts to control discharges from the Bingham Canyon Mine waste rock and other KUC facilities covered by state groundwater permits, (2) Participate in the review and guidance of cleanup and study work, while avoiding to the extent practicable duplicative oversight costs. KUC agreed to: (1) Complete RI/FS on South Zone groundwater, (2) Complete removal of WWTP sludge ponds and smelter and refinery soils for placement in a repository; (3) Complete South

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
						Jordan Evaporation Pond (SJEP) cleanup, (4) Start RI/FS on North Zone groundwater originating at Refinery and Smelter, (5) Continue groundwater source control at Mine waste rock repositories, (6) Complete environmental assessments on historic facilities and associated wastes and conduct cleanup of those wastes if shown necessary by the human health and ecological risk assessments, (7) Complete eco-risk assessment studies and develop recommendations.
3	Kennecott North Zone & South Zone Record of Decision for OUs 8, 9, 13, 14, 15, 18, 19, 20, 22, 23, & 24	EPA/State	September 26, 2002	N/A	2004003	This ROD identifies the remedial action objectives (RAOs), remedial action levels, and the selected remedies for OUs 8, 9, 13, 14, 15, 18, 19, 20, 22, 23, and 24.
4	Kennecott Site Specific Enforcement Agreement (SSEA)	EPA/State	2007	N/A	1918697	An agreement between EPA Region 8 and UDEQ that establishes the roles and responsibilities of each agency with regard to KUC's implementation of selected remedies and operations and maintenance activities (O&M) pursuant to the following four consent decrees: (1) the Bingham Creek CD (Civil Action No. 2:99-CV-043.7K) that covers OUs 1,4,5,10,11 and 17; (2) the Herriman CD (Civil Action No. 2:02-CV-1228DAK) that covers OUs 3,6, and 7; (3) the OU2 CD (Civil Action No. 2:07-cv-00485-DAK); and (4) a future North Zone CD that covers OUs 8,9,13-15,18,19 and 22-24. Any future amendments or modifications will be implemented in accordance with Article XI (AMENDMENT OR MODIFICATION) of the SSEA, and any amended or modified SSEA will be the operative SSEA under this Agreement. Nothing in this Agreement changes KUC's rights to

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
						challenge the amended or modified SSEA, should any such legal rights exist.
5	Kennecott North Zone and South Zone Explanation of Significant Differences (ESD)	EPA	August 11, 2017	N/A	100001093	This ESD: (1) clarifies the Institutional Controls (ICs) for all OUs in the North and South Zone Sites; (2) summarizes site specific action levels; and (3) summarizes mapping requirements. Specific to OU22 and OU23, this ESD did not revise the selected remedies listed in the 2002 ROD.
6	Kennecott North Zone Five Year Review (FYR)	EPA	June 17, 2014	N/A	1719982	In the 2014 FYR, EPA stated that a Protectiveness Determination for the selected remedies at OU22 and OU23 cannot be made at this time until further information is obtained. EPA noted that additional information is required to clarify both active and passive remedies to protect human health and ecological receptors.
7	Kennecott North Zone Five Year Review (FYR)	EPA	August 19, 2019	N/A	1924144	In the 2019 FYR, the Protectiveness Determination for OU22 and OU23 was “Protectiveness Deferred.” In the Protectiveness Statement, EPA stated that it is not possible to make a conclusive protectiveness determination for the remedies at OU22 and OU23 until remedy and performance criteria are further refined. EPA also noted that additional information is necessary to clarify both active and passive remedies to protect human health and the ecological receptors and that these refinements are planned for completion under an ongoing focused feasibility study.
8	Kennecott North Zone Five Year Review (FYR) Addendum	EPA	October 25, 2022	N/A	100012242	On October 25, 2022, EPA issued an Addendum to 2019 FYR. In this addendum, EPA revised the Protectiveness Determination for OU22 and OU23 based on new information and/or actions taken since the 2019 Five-Year Review. In the 2022 Five Year Review Addendum, the Protectiveness

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
						Determination for OU22 and OU23 was “Not Protective.”
9	Kennecott North Zone Five Year Review	EPA	September 30, 2024	N/A	100016220	In the 2024 FYR, the Protectiveness Determination for OU22 and OU23 was “Not Protective.”
Operable Unit 22						
10	OU22 Baseline Ecological Risk Assessment (BERA) Work Plan	KUC	September 5, 1995		Cover Letter (SEMS #2027160) Paper copy located at EPA Records Center	Amended KUC Ecological Risk Assessment Work Plan One of the objectives of this work plan was to evaluate ecological risks of selenium in the OU22 wetlands. The BERA identified selenium (Se) as potentially causing risk to shorebirds in OU22 wetlands. The relationship between selenium concentrations in water, sediments, macroinvertebrates, and bird eggs was unclear.
11	Administrative Order on Consent (AOC) for North Facility Soils WWTP	EPA & KUC	1996	N/A	1993920	Administrative Order on Consent, Respondent Kennecott Utah Copper Corporation, CERCLA-VIII-95-04. This AOC included OU22. Under this North Facilities Soils AOC, KUC removed wastewater treatment plant sludge in surface impoundments, removed contaminated soils and debris; constructed the Arthur Stepback Repository (ASR); and demolished some of the North Facility structures.
12	OU22 Selenium Fate Transport Study, Work Plan and Appendices, and Report	KUC	August 15, 1996	August 21, 1996	1857945 and 1857944 and 100017907	FINAL SELENIUM FATE AND TRANSPORT STUDY, SAMPLING AND ANALYSIS PLAN FOR THE KENNECOTT UTAH COPPER SOUTHSORE WETLANDS This study was initiated to improve understanding of various factors (dissolved oxygen, redox

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
						potential, pH, TOC, DOC, ionic composition, grain size, selenium speciation) that can influence selenium fate and transport within Wetlands. This Report preliminarily documented selenium fate and transport mechanisms.
13	OU22 Ecological Risk Assessment Southshore Wetlands Final Report for Kennecott Utah Copper	KUC	January 1997		194391 and 100017789	Prepared by Parametrix and EPT (Ecological Planning and Toxicology). The report presented the results of KUC's assessment of the possible effects of metals and metalloids to wetland wildlife. This report presents the following conclusions: (1) Wildlife in Kennecott Wetlands are not at risk from metallic contaminants of concern (CoCs) or arsenic, (2) Selenium poses elevated risks to successful reproduction of some shorebirds that feed in the wetlands near the slag pile; (3) CoC concentrations in Wetlands Mitigation Sites currently do not pose a risk to wildlife, and the newly created ponds are not likely to do so in future, (4) None of CoCs pose a risk to migratory birds that use the wetlands for short periods during spring and fall migrations.
14	OU22 Ecological Risk Assessment Great Salt Lake Final Report for Kennecott Utah Copper	KUC	June 9, 1998		100017887	Final Report on The Ecological Risk Assessment of Great Salt Lake And Response To Comments From The Epa, UDEQ And USFWS Pertaining To A Review Of The Draft Ecological Risk Assessment Of The Great Salt Lake For Kennecott Utah Copper (May 1998). This report presented an assessment of the risks to the Great Salt Lake ecosystem from several potential contaminants namely, arsenic, cadmium, copper, lead, selenium and zinc.

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15	OU22 Monitoring Plans (2003-Present)	KUC	May 2, 2003		2025137	North Zone Wetlands Monitoring Plan Draft, Version C The purpose of this plan is to document a monitoring program that complies with the OU22 Selected Remedy outlined in the 2002 Record of Decision. The objectives of the plan include: (1) Determine concentrations of Selenium, Arsenic, Cadmium, Copper, Lead, and Zinc in surface water, sediments, and macroinvertebrates; (2) Evaluate the effectiveness of the various soil and sediment cleanups; (3) evaluate the effectiveness of the spring and well water diversions; (4) Ensure that migratory birds are not at risk from selenium.
			May 3, 2004		2025155	Memorandum – Proposed Changes to Wetlands Monitoring Program and supporting document. KUC proposed changes to the 2004 Monitoring Program in light of the 2003 monitoring results that did not show expected declines in tissue selenium concentrations. KUC included as supporting documents, KUC’s presentation to the North Zone Technical Review Committee and KUC’s Data Management Plan (Ver A).
			May 8, 2008 & April 22, 2008		100017859 and 100016438	Work Plan for Enhanced North Zone Wetlands Biota Monitoring, Spring 2008 Request no further action for Ponds 9C 12A 12B 12C 12D, sampling procedure modification, and one-time supplemental monitoring (CH2M 2008). (1) Agencies granted NFA for ponds listed, (2) Agencies agreed with separating sediments into mineral soils and floc and add TOC to the analytical parameters for 2008, (3) Agencies granted CH2M one-time monitoring to include bird

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						use, bird egg, taxa-specific macroinvertebrate, and fish selenium concentrations, (4) Agencies agreed that the proposed modifications to work plan would be part of the O&M plan for the future consent decree.
						Draft Technical Memorandum: Evaluation of North Zone Wetlands Selenium Data This Tech Memo notes that Selenium concentrations in the tissues of aquatic invertebrates in the North Zone Wetlands have declined over time but remain high relative to ROD-specified goals for invertebrates at selected locations.
			January 24, 2011		1239142	Draft Final Technical Memorandum, Proposed Egg Selenium Monitoring Threshold Concentration for North Zone Wetlands, by Ch2MHill for KUC The purpose of this technical memorandum was to provide documentation that would support a proposed egg selenium monitoring threshold concentration to be used for monitoring of the North Zone wetlands. RTK recommended a mean concentration of 12.5 mg/kg as a threshold concentration for monitoring of the North Zone wetlands (based on an effects concentrations (EC) 10 value for mallards).
			May 2014		100017860	2014 Work Plan for Bird Egg Sampling North Zone Wetlands The purpose of this work plan is to describe the background and rationale, goals and objectives, and methods for sampling bird eggs in 2014 as a supplement to Rio Tinto Kennecott Copper's (RTKC) ongoing monitoring program at the North

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						Zone Wetlands. The existing RTKC monitoring program at the site includes sampling and assessment of groundwater, surface water, sediment, and aquatic invertebrate tissues for concentrations of selenium (Se) (and selected other constituents). This work plan only addresses bird egg sampling.
			May 8, 2017		100017908	OU22 Work Plan for Enhanced North Zone Wetlands Biota Monitoring, Spring 2017 KUC, EPA, UDEQ, and members of the Biological Technical Advisory Group (BTAG) recommended: (1) Avian species for bird egg collection have a small foraging range, (2) Collect at least five eggs of each species to assess geometric mean, (3) focus on Pond 8 and eggs collected biennially, (4) discussed reasonable benchmarks of 9.8 - 12.4 mg/kg Se to decrease exposure, > 12.5 mg/kg Se expedite action plan, (5) Add site-site specific 90 µg/L for As-D in surface water to revised remedy pending for OU22.
			January 23, 2018		100017898	OU22 Technical Memo: Recommended Monitoring Approach for Bird Eggs in North Zone Wetland This technical memorandum reviewed the utility of eggs for monitoring exposure and potential effects from arsenic in birds, summarized the recommendations from the CH2M (2011) Draft Final Technical Memorandum relative to selenium, supplemented those recommendations with additional information relative to selenium effect levels for blackbirds, and then briefly summarized information for the other constituents of concern for monitoring in the North Zone Wetlands (cadmium, copper, lead, and zinc).

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			January 23, 2018		100017898	OU22 Technical Memo: Trophic Transfer Factors from Diet to Bird Egg Invertebrates collected during the 2017 monitoring of the Rio Tinto Kennecott Copper (RTKC) North Zone Wetlands had relatively high concentrations of selenium in relation to the selenium concentrations. This apparent disparity raised questions about the low trophic transfer factors (TTFs) from invertebrates representative of the birds' diet to their eggs in the North Zone wetlands. This technical memorandum provided a summary of representative laboratory and field studies of birds in which the selenium concentration in eggs and diet could be reasonably related to derive trophic transfer factors for use in modeling and selenium assessment.
			March 30, 2018		100017903	OU22 Technical Memo: Risk Based Sediment and Dietary Concentrations of Selected Metals/Metalloids for Birds, Garfield Wetlands, Kennecott North Zone Site OU22 This Technical Memorandum presented the methods, assumptions, input parameters, and risk-based concentrations (RBCs) for sediment and dietary (invertebrate tissues), for the metals/metalloids: arsenic, cadmium, copper, lead, and zinc, for selected receptors. In addition, uncertainties and/or limitations associated with the RBCs and recommendations for their use were reported.
			April 20, 2018		100017909	OU22 Enhanced North Zone Wetlands Monitoring Program 2018 The purpose of this work plan amendment was to describe the background and rationale, goal and

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						objectives, key questions to be addressed, and field and laboratory methods for enhancements of the Rio Tinto Kennecott (RTK) North Zone wetlands monitoring program for the 2018 monitoring year. The proposed enhanced monitoring program for 2018 was proposed to largely duplicate the 2017 enhanced monitoring effort but included refinements in the mineral sediment and organic floc sample collection methods and focused on only sampling sites with surface water.
			April 16, 2020	April 21, 2020 (SEMS # 100017862)	100017861	Request for Amendment to 2003 North Zone Wetlands Monitoring Plan and 2008 North Zone Wetlands Monitoring Plan Modification KUC requests approval from EPA and UDEQ to amend the NZW Monitoring Plan (2020 NZW Work Plan Amendment). The proposed changes include the elimination of monitoring locations where habitat has changed, resulting in reduced risk for selenium exposure to avian receptors.
		KUC	April 13, 2022 April 3, 2023 September 2023	Agency comments: February 16, 2023 (SEMS# 100013289); April 26, 2023, (SEMS# 100013291)	100017918	OU22 Draft Long-Term North Zone Sampling and Analysis Plan and Quality Assurance Project Plan (SAP/QAPP), and Agencies communications. In 2022, KUC initiated an effort to develop a long-term sampling and analysis plan (SAP) and quality assurance project plan (QAPP) for the North Zone Wetlands which in part was to replace the existing monitoring plan. The draft long-term SAP/QAPP was intended to address concerns about data gaps in the monitoring data to date.

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16	OU22 Monitoring Reports	KUC	2003 Report (dated August 20, 2004)		2045736	Final North Zone Wetlands, 2003 Monitoring Results This report summarized the results for: water, sediment, and macroinvertebrate samples. The Report also compared the 2003 data to historical data reported in the January 1997 Ecological Risk Assessment for the South Shore Wetlands and the June 1998 Ecological Risk Assessment for the Great Salt Lake.
			2004 Report (dated May 31, 2005)		100017910	OU22 North Zone Wetlands Monitoring Report, 2004 This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected.
			2005 Report (dated July 7, 2006)		100017911	OU22 North Zone Wetlands Monitoring Report, 2005 This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected.
			2006 Report (dated January 2, 2007)		100017912	OU22 North Zone Wetlands Monitoring Report, 2006 This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected.
			2008 Report (dated January 2009)		100016437	Draft Final, Biological Monitoring Program for the KUCC North Zone Wetlands: 2008 Enhanced Sampling Program Results for Selenium This report presented the analytical results for the macroinvertebrate tissue, water, sediment, fish, and bird egg samples collected. This report also provided the bird use survey results with

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						observances on species individual totals, observed activity, and nest conditions based on the established survey locations in the North Zone Wetlands.
			2009 Report		100017892 and 100017904	Kennecott OU22 Monitoring Report for 2009 - Soil, Water, and Tissue Data Kennecott OU22 Monitoring Report for 2009 - Models The 2009 report is comprised of three spreadsheets which document the data for the macroinvertebrate tissue, water and sediment samples collected.
			2010 Report (dated March 25, 2011)		100017893	Kennecott OU22 Monitoring Report - Selenium, Soil, Water, and Tissue Data The 2010 report is comprised of three spreadsheets which document the data for the macroinvertebrate tissue, water and sediment samples collected.
			2011 Report (dated April 2012)		100017894	Kennecott OU22 Monitoring Report for 2011- Selenium, Water, Macro, and Water Data The 2011 report is comprised of three spreadsheets which document the data for the macroinvertebrate tissue, water and sediment samples collected.
			2014 Report (comprised of three documents) (dated October 2014, December 2014, and March 2015)		100017863	North Zone Wetlands 2014 Monitoring Report, March 11, 2015 This report (consisting of a cover letter and spreadsheets) presented the 2014 analytical results for the macroinvertebrate tissue, water, sediment samples collected and the historical data results from the same sampling locations.

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					100016440	Technical Memorandum, North Zone Wetlands Egg Sampling Results 2014, December 1, 2014 This report presented the analytical results for the bird egg samples collected and compared such to the bird egg analytical data collected in 2008.
					1570606	Final Report, Avian Survey Monitoring Report, October 2014 This report provides the bird use survey results with observances on species individual totals, observed activity, and nest conditions based on the established survey locations in the North Zone Wetlands.
			2015 Report		100017895 and 100017905	Kennecott OU22 Monitoring Report for 2015 - Arsenic, Selenium, Soil, Water, and Tissue Data This report included a cover letter, and spreadsheets which document the analytical results for the macroinvertebrate tissue, water and sediment samples collected. This report also compares the raw data from 2003 through 2015.
			2016 Report		100017906	Kennecott OU22 Monitoring Report for 2016 - Arsenic, Selenium, Soil, Water, and Tissue Data This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected. This report also compares the raw data collected from 2004 up to 2016.
			2017 Report (dated September 16, 2018)		100016441	Draft Tech Memo: 2017 Enhanced Monitoring Program Results - Biological Monitoring Program for the KUCC North Zone Wetlands, This report presented the analytical results for the macroinvertebrate tissue, water, organic sediment floc, mineral sediments, plant, fish and bird egg

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						samples collected. Speciation of selenium in the surface water was performed on a single location per pond. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations.
			2018 Report (dated March 2019)		100017896 and 100017896	Kennecott OU22 Monitoring Report for 2018 - Soil, Water, and Macros Data OU22 Enhanced Monitoring Program Results, 2018 This report presented the analytical results for the macroinvertebrate tissue, water, sediment, fish, and bird egg samples collected. This report also provided the bird use survey results with observances on species individual totals, observed activity, and nest conditions based on the established survey locations in the North Zone Wetlands.
			2019 Report		100017915	OU22 Monitoring Program Results, 2019 This report presented the analytical results for the macroinvertebrate tissue, water, sediment, fish, and bird egg samples collected. This report also provided the bird use survey results with observances on species individual totals, observed activity, and nest conditions based on the established survey locations in the North Zone Wetlands.
			2020 Report (dated February 1, 2021)		100016442	Final Biological Monitoring Program for the RTK North Zone Wetlands 2020 Monitoring Program Results

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						This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations
			2021 Report (dated December 2021)		100017897	OU22 North Zone Wetlands 2021 Biological Monitoring Report – Draft This report presented the analytical results for the macroinvertebrate tissue, water and sediment samples collected. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations
			2022 Report (dated February 3, 2023)		100016443	OU22 North Zone Wetlands 2022 Biological Monitoring Report - Draft This report presented the analytical results for the macroinvertebrate tissue, water, sediment, fish, and bird egg samples collected. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations
			2023 Report (dated January 1, 2024)		100016444	OU22 North Zone Wetlands 2023 Monitoring Report - Draft This report presented the analytical results for the macroinvertebrate tissue, water, sediment, tadpole, and bird egg samples collected. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations.

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			2024 Report (dated January 1, 2025)		100016445	OU22 North Zone Wetlands 2024 Monitoring Report – Draft This report presented the analytical results for the macroinvertebrate tissue, water, sediment, fish, tadpole, and bird egg samples collected. The report also provided the result of the bird surveys documenting the species individual totals, activity by the adults, nest conditions, and habitat observations
17	OU22 Natural Resources Damages (NRD) Consent Decree	US Fish and Wildlife Agency (USFW) and KUC	2008	N/A	N/A	This Consent Decree between KUC and the US Fish and Wildlife Agency (USFW) addressed KUC’s natural resource damage (“NRD”) liability related to the alleged injury to migratory birds and their habitat due to releases of selenium and other hazardous substances at Kennecott North Zone Site facilities. Under the CD, KUC agreed to convey approximately 617 acres of land and certain water rights to The Nature Conservancy to be permanently preserved and managed as wetlands and associated upland habitats.
18	Proposal and Request for Approval of a Response Plan for Persistent Elevated Selenium in Macroinvertebrates in Portions of the Kennecott North End Wetlands (OU22)	KUC	June 1, 2009		100017880	In this Plan, KUC proposed habitat conversion work including reducing the available open water habitat in the Pond 4 area, converting Pond 5 to upland habitat, and facilitating increased drainage for the Pond 6 and 7 areas. This work was proposed in response to persistently elevated concentrations of selenium in the macroinvertebrate community in an effort to control dietary uptake by the avian community. This work was completed in 2009 and the U.S. Army Corps of Engineers provided KUC with acceptance of the wetland mitigation credit deduction in 2025.

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
	OU22 Response Plan for Persistent Elevated Selenium in Macroinvertebrates in Portions of the Kennecott North End Wetlands	KUC	October 8, 2020	December 9, 2021 (SEMS #100017879)	100017891	Memorandum – Proposal and Request for Approval of a Response Plan for Persistent Elevated Selenium in Macroinvertebrates in Portions of the Kennecott North End Wetlands (OU22)" on October 8, 2020. This memo was in response to the 2009 Drain & Fill memo providing details on the remedial activities and specifying the process to engage with the USACE to retire 20.7 acres of equivalent banked mitigation credits KUC received DERR & EPA response to the 2009 Drain & Fill project on December 9, 2021 (ERRC-172-21). The Agencies accepted the remedial work performed to reduce potential selenium exposure risks to avian receptors and will close the project once KUC completes the retirement of the 20.7 banked mitigation credits with USACE.
19	OU22 Arsenic risk evaluation for birds	EPA	January 1, 2013	N/A	100011267	Tech Memo Revision C Final Kennecott Arsenic Risk Evaluation for Birds Salt Lake County, Utah; prepared by TechLaw for EPA Region 8; January 2013 The evaluation focused on the surface water, sediment, and invertebrate Arsenic (As) data to assess the potential for ecological risk to birds that may feed on aquatic plants and invertebrates in these habitats. The evaluation then considered a suitable bird species to determine what a protective arsenic concentration in surface water would be based on the evaluated dietary risk pathways.

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
Operable Unit 23						
20	OU23 Final Draft Remedial Investigation Report for Kennecott Utah Copper North Facilities, Version B	KUC	August 4, 2000		22311690 Appendix A (SEMS # 22311691) Appendix B (SEMS # 22311692 and 22311693) Appendix C (SEMS # 22311694) Appendix D (SEMS # 22311695) Appendix E (SEMS # 22311696) Appendix G (SEMS # 22311697) Appendix H (SEMS # 22311698) Appendix I (SEMS # 22311699)	The original OU23 RI intended to characterize the nature and extent of contaminant releases to groundwater, surface water, and wetland sediments related to Refinery and Smelter facilities operations. This Report concluded: (1) that the Refinery and Smelter operations were sources, with the selenium in the Refinery groundwater plume being of most concern, (2) a conceptualized selenium transport model, (3) that selenium contaminated groundwater does not discharge to the GSL, and (4) given that removals and control measures at former PM Building and EP pond were successful, the plume would return to selenium background levels within 30 years.

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					Appendix J (SEMS # 22311700) Appendix K (SEMS # 22311701) Appendix L (SEMS # 22311702)	
21	OU23 Kennecott North Facilities Feasibility Study, Version B	KUC	June 1, 2002		22311689	Under the original OU23 FS, KUC developed and evaluated remedial alternatives to address groundwater and surface water contamination related to activities at the Refinery and Smelter facilities. The FS assumed that drinking water is not an issue, so receptors of concern were determined to be the ecological receptors in the North Zone Wetlands. The FS proposed and as a result KUC implemented: (1) the removal of contaminated source material to the extent possible, (2) capping residual source areas, (3) the collection of contaminated groundwater as it discharges at the surface, and (4) the abandonment or repair of leaking artesian wells that discharge
22	OU23 Kennecott Utah Copper Technical Memorandum - Practicability of In Situ Selenium Remediation at Kennecott North Zone Site	KUC	February 2008		100017851	This memorandum documented KUC's concerns regarding the technical impracticability of the in situ treatment technology at OU23, including, the lack of hydraulic interconnectedness in the bedrock aquifer where the largest mass of aqueous selenium occurs.

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
23	OU23 Remedial Investigation (RI) Update Work Plan	KUC	October 1, 2010	January 26, 2011	1573736	Draft North Zone Groundwater (OU23) Remedial Investigation Update Work Plan (prepared by Kennecott Utah Copper Corporation Environmental Restoration Group) This Work Plan notes: “Since completion of the Remedial Investigation/Feasibility Study (RI/FS) for Operable Unit 23 (OU23) of the Kennecott North Zone Site in 2002, water-quality monitoring has indicated that concentrations of selenium and arsenic have not declined as rapidly as predicted by geochemical and groundwater flow and transport modeling performed as part of the original RI/FS. Consequently, Kennecott Utah Copper (KUC) believes that site conditions at OU23 may be more complex than the understanding in 2002, and believes it is important to 1) more fully understand the nature, extent, and fate and transport of contaminants, particularly selenium and arsenic in the Refinery area, and 2) reevaluate the effectiveness of remedial actions performed as part of the original RI/FS.”
24	OU23 Remedial Investigation (RI) Update Report	KUC	July 1, 2013	EPA Comments: March 25, 2014	1919616 and 1919617	This report noted: (1) that the soils underneath and near the former PM Building and EP pond areas are ongoing sources of selenium and arsenic to groundwater; (2) although elevated, the source-area groundwater selenium concentrations are significantly lower than the historic concentrations; (3) elevated aqueous arsenic was still detected; and (4) arsenic concentrations and occurrence were found to be reduced due to improvement in analytical techniques (i.e., historical and pre-April 2012 data incorrectly reported high levels of arsenic contamination).

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25	OU23 Refinery Focused Feasibility Study (FFS) Work Plans	KUC	October 6, 2015 (SEMS #1719770)	November 13, 2015 (SEMS # 100017482)	1719770 and 100017482	North Zone OU23 Focused Feasibility Study (FFS) Work Plan (Final) w/ attached transmittal letter (SEMS #1719770) Agencies' acceptance of Final North Zone Groundwater OU3 Focused Feasibility Study Work Plan Kennecott North Zone Site (SEMS # 100017482) This FFS Work Plan provided background information and summarized the FFS approach. Additionally, this FFS Work Plan outlined the additional investigations including site investigation locations, rationale, and methods KUC intended to undertake at the OU23 area to support the FS process and address remaining uncertainties and data gaps in the conceptual site model (CSM) as noted in the Agencies approval of the RI Update Report. Specifically, the 2015 FFS Work Plan outlined field investigations necessary to address data gaps, including: (1) the investigation of caps at the former PM building and EP pond footprints, (2) the investigation of soils beneath and proximal to the former PM building and EP pond footprints, (3) the sampling of vadose zone porewater beneath the PM building and EP pond footprints, (4) the installation and sampling of nested monitoring wells beneath the former EP pond footprint; (5) the measurement of redox conditions in groundwater; and (6) the measurement of arsenic concentrations in groundwater with multiple analytic methods.
			March 31, 2016		1924647	Transmittal Letter re: North Zone OU23 Focused Feasibility Study (FFS) Proposed Modifications to Work Plan Final.

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
						KUC requested modifications to the studies to be performed under the FFS work plan and that the schedule for work be modified to allow fieldwork to continue into 2017.
			November 23, 2016 (Report) December 19, 2016 (Transmittal Letter)		1919655	North Zone Groundwater (Ground Water) (OU23) Focused Feasibility Study, 2016 Data Summary Report As noted from the introduction, “The purpose of this [Data Summary] report is to summarize the Stage 1 FFS field and laboratory programs (2016 field investigation). This includes a presentation of data and results of the field and laboratory programs completed in 2016. This report also presents discussions of potential arsenic and selenium interferences associated with laboratory methods and an evaluation of data quality for all results, including quality assurance/quality control (QA/QC) results.
			March 15, 2018	March 15, 2018 (SEMS # 100017885)	100017484	Revised North Zone Groundwater (OU23) Focused Feasibility Study Work Plan, Kennecott North Zone Site The 2018 revised FFS Work Plan notes: KUC would prefer to eliminate the remaining tasks of the originally proposed field investigation as discussed in meetings with the EPA and UDEQ on June 28, 2017 and August 31, 2017 as there is a strong likelihood that a preferred alternative can be determined with the data collected to date. The tasks that KUC proposed to eliminate were the: (1) the installation of nested wells at EP Pond footprint, and (2) the further characterization of soil under the former PM building and the former EP Pond footprints.

No.	Document Title	Author	Date	Agency Approval Date	EPA Document ID	Notes
26	OU23 Refinery Focused Feasibility Study (FFS) Reports	KUC	May 29, 2020	Agency Comments: September 15, 2022 (SEMS # 100017494)	100017493	Draft for Agency Review - Focused Feasibility Study for North Zone Groundwater (OU23) Kennecott Utah Copper LLC by Golder Associates Inc. (SEMS #100017493) Agency Letter dated September 15, 2022 re: Review and comments on the Kennecott document entitled Focused Feasibility Study for North Zone Groundwater (OU23) dated May 2020 (SEMS # 100017494)
			July 3, 2023	Agency Comments: February 12, 2025 (SEMS #100017886)	100013961	Rio Tinto Kennecott's 7.03.2023 Response to Agencies' September 15, 2022 Comments on Draft Focused Feasibility Study for North Zone Groundwater (OU23) dated May 29, 2020
27	OU23 Conceptual Site Model (CSM)	KUC	April 5, 2018	Agency Comments: May 21, 2018 (SEMS #100017916)	100017923	Draft North Zone Groundwater (OU23) Focused Feasibility Study (FFS) 2018 Updated Conceptual Site Model
			August 18, 2018	Agency Comments: July 19, 2019 EPA Approval: September 19, 2019	100017485	Agencies' acceptance of OU23 - Rio Tinto Kennecott Copper's (RTKC) Revised Interim Conceptual Site Model for the Refinery Selenium and Arsenic impacted groundwater (dated June 2018) plus Comments (SEMS #100017485)
			November 25, 2019	September 19, 2019 (Accepted with Comments)	100017488	North Zone Groundwater (OU23) Focused Feasibility Study; 2018 Updated Conceptual Site Model Kennecott North Zone Site
			November 27, 2019		100017486	Rio Tinto Kennecott Copper's (RTKC) Final Interim Conceptual Site Model (CSM) for the North Zone Groundwater (OU23) Focused Feasibility Study (dated November 2019), and

Kennecott North Zone Site – OU22 and OU23 ASAOC – Appendix D (9/30/2025)

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						Letter including KUC's response to Agency comments provided in Sept. 2019. The final interim CSM presented the data collected in 2016 (collected as part of the RI update and FFS work plan) to present the conditions of the impacted aquifers under the Refinery facility.

Appendix E

Flowchart for OU22 and OU23 Work

Appendix E: Flow Diagram of Performance of Work

