

**SCOPE OF WORK FOR
REYNOLDS METALS SUPERFUND SITE
AUGUST 2005**

I. PURPOSE

This Scope of Work (SOW) addresses the remedial design and remedial action for groundwater contamination as set forth in the Record of Decision (ROD) for the Reynolds Metals Superfund Site (Site), dated September 30, 2002. This SOW is included as an attachment to the Unilateral Administrative Order (UAO or Order), U.S. EPA Docket No. CERCLA 10-2006-0012 issued by EPA to the Respondents, Reynolds Metals Company (RMC) and Alcoa Inc. (Alcoa), regarding Remedial Action and Remedial Design for the Site. The Respondents shall follow the UAO, ROD, this SOW, the approved Work Plan(s), US EPA Remedial Design and Remedial Action Guidance and any additional guidance provided by U.S. EPA in submitting deliverables for designing and implementing this work at the Site.

II. DESCRIPTION OF THE WORK

The following components of the remedial action selected in the ROD included in this SOW are as follows:

Install extraction wells in the east potliner and scrap yard areas to remove and contain groundwater contaminated with high levels of fluoride;

Modify the operation of existing production wells to limit the further spread of fluoride in the groundwater;

Discharge groundwater from the combined production wells/focused extraction system to the Columbia River;

Monitor groundwater to evaluate the effectiveness of source removal and focused extraction.

These components are referred to in this SOW as the Groundwater Focused Extraction/Production Well Optimization System (FE/PWO System) and are further described below:

Install and operate extraction wells to remove and contain groundwater contaminated with high levels of fluoride

Two extraction wells will be installed in the upper gray sands horizon of aquifer in the south plant area near the east potliner area and the scrap yard area, respectively. An estimated 20 gpm

from each well will be pumped to extract contaminated groundwater. The extracted groundwater will be combined with production well water and discharged to the Columbia River via the existing NPDES permitted outfall.

The fluoride concentration in the extracted groundwater was estimated in the ROD to be 75 mg/l. Based on the estimated flow of 40 gpm and 75 mg/l fluoride concentration, which will be combined with the production well water estimated at 1200 gpm and an estimated 2 mg/l fluoride concentration, the combined flow will be below 5 mg/l at the point of discharge to the Columbia River.

Modify and operate production wells to limit the further spread of fluoride in the groundwater

Production Wells No PW 07 and PW 08 (and/or production wells as approved by EPA) will be operated to provide hydraulic containment of the fluoride plumes in the south plant area. The estimated initial pumping rates will be approximately 600 gpm each.

Discharge groundwater from the combined production well and focused extraction system to the Columbia River

The combined flow from the production wells and focused extraction wells will be discharged directly to the Columbia River. The point of compliance will be at discharge to the Columbia River, the same as the location of the NPDES compliance point for the previous discharges under the NPDES permit for RMC.

Monitor groundwater to evaluate the effectiveness of source removal and focused extraction

The FE/PWO system will be monitored on a regular basis and its performance will be evaluated. Operation and monitoring shall commence and continue to maintain hydraulic control of the contaminated plume. Some adjustments of the extraction system may be needed to enhance remedy performance, including adjusting the rate of extraction or installing additional groundwater extraction wells. If the measured concentration of fluoride from the focused extraction wells is significantly higher than the predicted concentrations, EPA will re-evaluate whether the focused extraction water can be effectively treated to reduce fluoride concentrations.

Groundwater monitoring will also address the effectiveness of mass removal in reducing fluoride contamination in groundwater, fluoride capture and mass removal, intermediate and deep zone water quality performance in meeting MCLs.

III. PERFORMANCE STANDARDS

Contaminated groundwater will be addressed by hydraulic containment through production well operation and enhanced focused extraction of contaminated groundwater in the south plant area. The combined flow from the production wells and focused extraction wells will be discharged to

the Columbia River. The ROD established 5 mg/l as the standard for fluoride discharge for this action.

The beneficial use of the aquifer is as a source of water for industrial uses and for drinking. Groundwater extracted from the deep portions of the aquifer has been used for this purpose both on and off-site. The goal of the groundwater remedial action is to restore beneficial uses in the intermediate and deep portions of the aquifer and significantly reduce the mass of fluoride in a reasonable time frame. The cleanup goal for fluoride in intermediate and deep groundwater is the MCL (4 mg/l). In addition, the remedial action will provide hydraulic containment to ensure that the plume is effectively contained and does not migrate to the Sandy River.

Operation of the FE/PWO system shall continue until remedial design/remedial action is implemented based on the final ROD for this Site.

Containment of the fluoride plume will be confirmed by sampling of monitoring wells, including new wells that will be installed to assess progress. The effectiveness of groundwater extraction will be determined by future monitoring and evaluation. Changes to the groundwater extraction system, including increasing pumping rates, adding more wells and pretreatment of contaminated groundwater may be needed based on future evaluations.

IV. SCOPE OF REMEDIAL DESIGN

Task 1: Draft Design

Respondents shall submit a Draft Design for the FE/PWO System, including piping alignment, connections and layout, process & instrumentation, and discharge basin. The Respondents shall submit the Design in accordance with Section VII of this SOW.

Task 2: Final Design

Respondentw shall submit a Final Design, which includes detailed plans and specifications within thirty (30) days of receipt of EPA's comments on the Draft Design.

V. SCOPE OF REMEDIAL ACTION

The Remedial Action shall consist of three tasks. All plans are subject to EPA approval.

Task 1: Groundwater FE/PWO Work Plan

Task 2: Groundwater FE/PWO Installation and Start-up Operation

Task 3: Groundwater Operation and Monitoring Work Plan

Task 1: Groundwater FE/PWO System Work Plan

The Respondents shall submit a Groundwater FE/PWO System Work Plan which includes a description of construction activities for the FE/PWO system, start-up operation, and groundwater monitoring. The Work Plan shall, at a minimum, include the methodologies, plans, and schedules for the FE/PWO system, including well installation, pump and pipe connections, start-up testing and operation. The Work Plan shall also include a project schedule for each major activity and submission of deliverables, including the Groundwater FE/PWO Operation and Monitoring Plan. The Respondents shall submit the Work Plan in accordance with Section VI of this SOW.

Task 2: Groundwater FE/PWO System Installation and Start-up Operation

The Respondents shall implement the installation of the FE/PWO System as detailed in the approved Design and Work Plan. The following activities shall also be completed in constructing the FE/PWO System:

Prefinal inspection:

Within 20 days after Respondents make preliminary determinations that construction is complete, the Respondents shall notify U.S. EPA and the State for the purposes of conducting a prefinal inspection for the groundwater extraction system. The inspection is to determine whether the system construction is complete and consistent with the FE/PWO design. Any outstanding construction items discovered during the inspection shall be identified and noted. The prefinal inspection report shall outline the outstanding construction items, actions required to resolve items, completion date for these items, and a proposed date for final inspection.

Final Inspection:

A final inspection may be conducted by EPA and the State to confirm the completion of any outstanding construction items that were noted in the prefinal inspection.

Task 3: Groundwater FE/PWO System Operation and Monitoring Plan

Respondents shall submit an operation and monitoring plan that describes the operation and monitoring of the system to meet the established performance standards. The Operation and Monitoring Plan will address the effectiveness of mass removal in reducing fluoride contamination in groundwater, fluoride capture and mass removal, intermediate and deep zone water quality performance in meeting MCLs, and compliance with the discharge limits. The plan will include evaluation of system performance and

provisions for adjustments to the system that may be needed to enhance performance, including adjusting the rate of extraction or installing additional groundwater extraction wells.

In order to obtain EPA certification of completion of this work, Respondents shall submit a report documenting that the project is consistent with design specifications, and that the action has been completed. The report shall include, but not be limited to, the following items:

Project Summary and certification of the design and construction;

Explanation of any modifications to the plans and why these were necessary;

Results of start-up monitoring, indicating the system is capable of meeting the established performance criteria.

VI. SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

	<u>Submission</u>	<u>Due Date</u>
1.	Groundwater FE/PWO System Work Plan	Fourteen (14) days after effective date of Order
2.	Draft Design	Fourteen (14) days after effective date of Order
3.	Final Design	Thirty (30) days after receipt of EPA comments on draft design
4.	Initiate Construction	As approved by EPA in the Work Plan
5.	Draft Operation, Maintenance and Monitoring Plan	As approved by EPA in the Work Plan
6.	Start-up/Operation	As approved by EPA in Work Plan
7.	Final Report	120 following completion of construction