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Supplement Analysis for the Disposition of Mixed Low-Level Waste and Low-Level Waste from the Advanced Mixed Waste Treatment Project at Commercial Facilities

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**Prepared by the Department of Energy's
Idaho Operations Office**

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DOE (Department of Energy) 1999, Advanced Mixed Waste Treatment Project Final Environmental Impact Statement, DOE/EIS-0290, Idaho Operations Office, Idaho Falls, Idaho, January.

DOE (Department of Energy) 1997, Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste, DOE/EIS-0200-F, Office of Environmental Management, Washington, DC, May.

Introduction

The Department of Energy (DOE) has prepared this Supplement Analysis (SA) in accordance with Council on Environmental Quality (CEQ) and DOE implementing regulations under the National Environmental Policy Act [40 CFR § 1502.9 (c) and 10 CFR § 1021.314]. Section 1502.9(c) of the CEQ regulations requires agencies to prepare supplements to final EISs if: "(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns" or "(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."

In cases where it is unclear whether a supplemental or final EIS is warranted, DOE regulations at 10 CFR 1021.314 require the Agency to prepare an SA. The preparation of an SA will assist the Agency in determining whether a change in a proposed action is "substantial" or its impacts are "significant," pursuant to 40 CFR 1502.9(c).

This SA evaluates whether a proposed action to use commercial facilities to dispose of low-level waste (LLW) and treat and dispose of mixed low-level waste (MLLW) from the Advanced Mixed Waste Treatment Project (AMWTP) warrants additional review of the Environmental Impacts Statements (EIS) described below.

Prior NEPA Review

In 1999, DOE issued the Advanced Mixed Waste Treatment Project Final Environmental Impact Statement (AMWTP EIS) (DOE 1999) to identify and evaluate options to treat, package, and ship 65,000 m^3 of transuranic waste (TRUW) and MLLW stored at the Idaho National Laboratory (INL) Radioactive Waste Management Complex (RWMC). The Agency also evaluated the facility to process up to an additional 120,000 m^3 of waste, including LLW, from INL and other DOE sites, for a total of 185,000 m^3. The AMWTP EIS indicated DOE would construct a facility capable of treating and packaging the waste in preparation for shipment to an off-site disposal facility.

Section 5.1 of the AMWTP EIS states that the transportation of waste to and from the INL is analyzed in other National Environmental Policy Act (NEPA) documents such as the 1997 Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (WM PEIS) (DOE 1997). The AMWTP EIS did not contemplate shipment of MLLW for off-site treatment.

DOE addressed the use of multiple DOE facilities to treat and dispose of various wastes to accomplish DOE's mission in the WM PEIS. DOE issued the associated Record of Decision pertaining to MLLW and LLW in February 2000. In the WM PEIS, DOE examined the potential environmental impacts across the DOE complex of managing various waste types, including TRUW, MLLW, and LLW at DOE facilities. The decision in the Record of Decision (ROD) pertained only to using DOE facilities for

treatment and disposal of MLLW and LLW, but the decision also did not specifically preclude the use of commercial treatment and disposal facilities, consistent with current DOE orders and policy.

The WM PEIS analyzed the impacts of packaging, transporting, treating, and disposing of all Environmental Management (EM) waste within DOE complex, including the four basic waste types: MLLW, LLW, TRUW, and hazardous waste (HW). The WM PEIS analyzed 35,000 m^3 of MLLW and 105,000 m^3 of LLW at the INL. The WM PEIS analysis took into account the physical characteristics of the waste and sorts by treatability groups. The treatability groups are as follows:

1. Aqueous liquids – Primarily water with organic content less than 1% (such as process waste water).
2. Organic liquids – Liquids and slurries with organic content greater than 1% (such as solvents).
3. Organic and inorganic sludge and particulates – Solid and semisolid material other than debris (such as sludge from treatment plants, resins, and solids less than 2.5 inch diameter particle size).
4. Soils – Contaminated soils.
5. Debris – Solid material exceeding 2.5 inch diameter particle size that is either (1) manufactured, or (2) plant or animal matter, or (3) discarded natural or geological material (such as cobblestones).

The use of commercial facilities was not specifically analyzed in the WM PEIS but was discussed briefly in Section 1.7.4. The WM PEIS did not analyze alternatives that involve extensive use of commercial facilities. At the time the WM PEIS was produced, DOE's use of commercial facilities was limited, and the potential for expanding use in the future was unclear. The WM PEIS stated that DOE does not anticipate making programmatic decisions regarding commercial facilities to manage LLW and MLLW. Instead, each DOE site will decide the extent to which it will use commercial facilities.

Proposed Action

AMWTP has the capability to treat and package a variety of MLLW and LLW. The use of commercial treatment facilities in conjunction with on-site treatment is required, as some of the MLLW cannot be treated and packaged for disposal at the Nevada National Security Site (NNSS) within the required AMWTP project schedule. With treatment by both on-site and off-site facilities, more waste can be treated and shipped in the same timeframe, increasing the potential for completion of the AMWTP project by the end of the current contract. In addition, there are some waste streams that AMWTP does not currently have the capability to treat (non-debris waste streams) on-site.

AMWTP's contractor, the Idaho Treatment Group, LLC (ITG), proposes to ship MLLW wastes off-site for treatment and disposal from the following treatability groups beginning in fiscal year fiscal year 2013:

- Debris: Approximately 6,000 m^3 to EnergySolutions (Clive, UT), EnergySolutions Bear Creek Facility (Oak Ridge, TN), and/or Perma-Fix Northwest (Richland, WA) with subsequent disposal at EnergySolutions (Clive, UT) or NNSS .

- Inorganic particulates / solids: Approximately 2,000 m^3 to EnergySolutions (Clive, UT), EnergySolutions Bear Creek Facility (Oak Ridge, TN), and/or Perma-Fix Materials and Energy Corporation (M&EC) (Oak Ridge, TN) with subsequent disposal at EnergySolutions (Clive, UT) or NNSS .

- Organic Liquid (Oil): Approximately 30 m^3 to Perma-Fix Diversified Scientific Services, Inc. (DSSI) (Kingston, TN), with subsequent disposal of any residual at EnergySolutions (Clive, UT) or NNSS.

As part of this project, AMWTP also proposes to ship for disposal approximately 12,000 m^3 of debris and inorganic solid LLW to Energy Solutions (Clive, UT) or NNSS beginning in fiscal year 2013.

The EnergySolutions Clive Facility is permitted, licensed, and authorized to receive, treat, and dispose of LLW and MLLW. The EnergySolutions Bear Creek Facility, Perma-Fix Northwest, Perma-Fix M&EC, and Perma-Fix DSSI are all permitted, licensed, and authorized to receive, treat, and ship LLW and MLLW.

All off-site shipments of hazardous and radioactive materials, substances, and wastes would be made in accordance with the U.S. Department of Transportation, the Nuclear Regulatory Commission (NRC), and Environmental Protection Agency (EPA) regulations to non-DOE facilities that comply with all applicable Federal, State, and local requirements and have the necessary permits, licenses, and approvals for specific wastes.

Analysis and Discussion

DOE evaluated the AMWTP EIS and WM PEIS to determine whether the proposed action represents a substantial change to either the AMWTP EIS or the WM PEIS or whether there are new circumstances or information relevant to environmental concerns that bear on the proposed action.

Although the WM PEIS did not analyze the impacts of using commercial facilities, it also did not preclude the use of commercial facilities. In fact, the WM PEIS states that sites may be able to incorporate aspects of the analyses in the WM PEIS in other NEPA reviews. The WM PEIS analyzed the potential transportation impacts associated with shipment of MLLW and LLW. The analysis applied to representative routes and was based on the amounts of waste involved, the number and distance of shipments through

representative communities, and the radiological or chemical profile of the waste. Therefore, the transportation analyses in the WM PEIS are applicable to some shipments between DOE sites and commercial facilities.

The sites proposed to be used for treatment and disposal of MLLW and LLW in this SA are all approximate to DOE sites that were analyzed in the WM PEIS. The EnergySolutions Bear Creek Facility and Perma-Fix M&EC are located near Oak Ridge, Tennessee while Perma-Fox DSSI is located in nearby Kingston, Tennessee. All three of these facilities are in close proximity to Oak Ridge National Laboratory. Perma-Fix Northwest is near the Hanford Site in Richland, Washington. The EnergySolutions Clive, Utah facility is located approximately 430 miles north of NNSS, but is along the route that would be taken if waste was sent to NNSS. In analyzing the route from INL to Clive, Utah in comparison from INL to NNSS, the Clive route is approximately 300 miles shorter with only 80 miles not directly along the route that was analyzed in the WM PEIS. Therefore, the analysis of the transportation routes in the WM PEIS are representative of using the transportation routes to the commercial facilities proposed in this SA.

Transportation of MLLW to commercial facilities for treatment and disposal was evaluated using the truck transportation impacts, which include estimated fatalities from vehicular accidents and exposure to radiation, and fuel emissions based on 10,990 truck shipments (Table 6.4-17, Regionalized Alternative 3). AMWTP intends to make 640 shipments for treatment and disposal at commercial facilities. The INL has made 1,627 shipments of MLLW since the development of the WM PEIS. Therefore, the impacts of the proposed shipments are encompassed by the analysis in the WM PEIS.

The quantity of MLLW analyzed in the WM PEIS that would be sent off-site for treatment and/or disposal from the INL Site was 35,000 m^3. DOE forecasts approximately 8,000 m^3 of MLLW would be sent off-site over the remaining life of the AMWTP. To date, the INL has shipped approximately 24,000 m^3 of MLLW for treatment and disposal to off-site facilities from all INL Site activities since the development of the WM PEIS. Therefore, the environmental impacts of treating and disposing of the proposed additional 8000 m^3 of MLLW from AMWTP to commercial facilities are encompassed by the analysis in the WM PEIS.

The radiological profile of the MLLW proposed to be shipped to commercial facilities does not exceed 1 millirem per hour at 1 meter from the shipping container and thus fits within the limits analyzed in the WM PEIS. The chemical profile of the MLLW contains a small concentration of several Resource Conservation and Recovery Act (RCRA) constituents that were not specifically analyzed in WM PEIS, but these represent less than 1% of the RCRA constituents in the MLLW and 0.0001% of the MLLW by weight.

The action and associated impacts of the off-site disposal of 12,000 m^3 of LLW from AMWTP have been evaluated within the AMWTP EIS, as well as the WM PEIS.

Conclusion

The AMWTP EIS was developed to analyze the impacts of constructing and operating a facility on the INL to treat, package, and ship MLLW and LLW for off-site disposal. Although the AMWTP EIS did not specifically address shipment of MLLW for off-site treatment, the impacts of transporting MLLW off-site for treatment are analyzed in the WM PEIS, and that transportation analysis is referenced in the AMWTP EIS. The environmental impacts of sending 640 shipments of MLLW consisting of approximately 8000 m^3 for off-site treatment are encompassed by the analyses in the WM PEIS. Additionally, the environmental impacts of sending 12,000 m^3 of LLW have been addressed in the AMWTP EIS, as well as the WM PEIS, and do not constitute a substantial change or present significant environment impacts to warrant an amendment to either the AMTWP EIS or the WM PEIS.

Determination

DOE performed this SA on the AMWTP EIS and WM PEIS, in accordance with 40 CFR § 1502.9 (c) and 10 CFR § 1021.314, for the proposal to ship approximately 8000 m^3 of MLLW for off-site treatment and disposal and 12,000 m^3 of LLW off-site for disposal. Based on this analysis, DOE has determined the environmental impacts of the proposed action are encompassed in the existing analysis contained in the WM PEIS and does not represent substantial changes in either the WM PEIS or the AMWTP EIS that are relevant to environmental concerns. There are no new circumstances or information relevant to environmental concerns that bear on the proposed action or its impacts that would warrant additional NEPA Analysis. In addition, even though DOE indicated in the AMWTP ROD that all wastes would be treated at the AMWTP before off-site disposal, the decision to send a small percentage of total potential waste quantities analyzed in the AMWTP EIS off-site for treatment is not a substantive change to the initial decision that would require a revised ROD.

Approved

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