

DOE/IG-0446

AUDIT
REPORT

HANFORD SITE CLEANUP
OBJECTIVES INCONSISTENT
WITH PROJECTED LAND USES



JUNE 1999

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

June 18, 1999

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman (Signed)
Inspector General

SUBJECT: INFORMATION: Audit Report on "Hanford Site Cleanup Objectives Inconsistent With Projected Land Uses"

BACKGROUND

The cleanup of the Hanford Site (Hanford) is estimated to take over 50 years at a cost close to \$100 billion. Prior reviews have shown that unrealistic land use assumptions can increase cleanup costs. Therefore, the objective of this audit was to determine if the Richland Operations Office (Richland) was cleaning Hanford consistent with projected land uses.

RESULTS OF AUDIT

Although the 200, 300, and 1100 Areas were being cleaned consistent with projected future uses, the 100 Area was not. Based on a 1995 interim Record of Decision (ROD) that was issued by the U.S. Environmental Protection Agency and the Washington State Department of Ecology, Richland was in the process of cleaning the 100 Area waste sites for unrestricted use, which would make the land suitable for residential use. Since 1992, however, projected land uses for the 100 Area were all nonresidential. Richland cost analyses showed that cleaning for nonresidential use could significantly reduce cleanup costs. Although Richland could have sought amendment of the cleanup objective specified in the interim ROD, it did not.

In April 1999, Richland issued the draft Hanford Remedial Action Environmental Impact Statement (HRA-EIS). The draft included six scenarios for the future use of the entire site. None of the scenarios included residential use. Richland anticipated issuing the HRA-EIS ROD, which would specify the Department's land use decision, in November 1999. We recommended that Richland seek to amend the 1995 interim ROD no later than November 1999, assuming the land use decision was other than residential, in order to achieve consistency between projected land use and the cleanup objective. The Department estimates that changing the cleanup objective from residential to nonresidential for just three waste sites within the 100 Area could result in a \$12 million savings. We also recommended that Richland challenge any future cleanup objectives that are inconsistent with projected land uses.

MANAGEMENT REACTION

Richland agreed with both recommendations.

Attachment

cc: Deputy Secretary
Under Secretary

HANFORD SITE CLEANUP OBJECTIVES INCONSISTENT WITH PROJECTED LAND USES

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Overview

INTRODUCTION AND OBJECTIVE

In the late 1980s, the Hanford Site's (Hanford) mission of producing nuclear materials for national defense programs ended and a transition to an environmental restoration mission began. The ultimate goal of the restoration mission is to protect public health and safety, through mitigation and remediation of soil and groundwater contaminants, which included radioactive and hazardous wastes. The cleanup of Hanford is estimated to take over 50 years and cost close to \$100 billion.

Although the Department of Energy (Department), Richland Operations Office (Richland) is steward of the Hanford lands, regulatory responsibility for the cleanup is shared with the U.S. Environmental Protection Agency (EPA) and the State of Washington, Department of Ecology (Ecology). In May 1989, these three entities entered into an Interagency Agreement, *The Hanford Federal Facility Agreement and Consent Order*, to provide a legal and procedural framework for regulatory compliance and cleanup of Hanford. As part of this framework, EPA and Ecology issue a Record of Decision (ROD) that documents the cleanup objective (that is, cleanup level) selected for an operable unit and the basis for the selection. Operable units, which are groupings of waste sites, exist within Hanford's 100, 200, 300, and 1100 Areas.

The objective of the audit was to determine whether Richland was cleaning Hanford consistent with projected land uses.

CONCLUSIONS AND OBSERVATIONS

Although the 200, 300, and 1100 Areas were being cleaned consistent with projected future uses, the 100 Area was not. Richland was in the process of cleaning the 100 Area waste sites for unrestricted use, which would make the land suitable for residential use. Since 1992, however, projected uses for the 100 Area were nonresidential, such as recreation and wildlife preservation. Cleaning for residential use, which is costly and entails applying the most stringent environmental requirements, is therefore inappropriate. For example, Richland studies showed that cleanup costs for three 100 Area waste sites could be reduced by 14.2 percent if the cleanup objective was changed from residential to nonresidential use.

Similar concerns about applying the most stringent environmental restoration requirements to Department sites have previously been expressed by the General Accounting Office (GAO) and the Office

of Inspector General (OIG). In 1994, GAO reported that EPA and the Department assumed that all of the Department's facilities would be cleaned for residential purposes, without consideration of projected land uses. In 1996, GAO testified that decisions on how much to clean up a site should be affected by forecasts of future land use, that the forecasts were crucial in estimating the potential for human exposure to contaminants, and that cleaning a site to a higher objective than required by projected land use wastes valuable cleanup funds. The OIG, in 1996, reported that the Savannah River Operations Office had entered into agreements with Federal and State regulators; the regulators assumed that the groundwater within certain Savannah River Site areas would one day be used for drinking water purposes, even though Savannah River officials stated that it was not their intention to use the areas for residential purposes (see Appendix 2).

Cleaning the 100 Area consistent with projected land use would aid the Department in achieving several objectives shown in the 1997 Strategic Plan and the Revised 1999 Final Performance Plan. For example, the Department has the Environmental Quality objective of reducing the life-cycle costs of environmental cleanup. Corporate Management objectives include maximizing resources and strengthening land management to ensure cost effective operations. By expending only the resources needed to clean the land for its projected use, Richland will have contributed to achieving these objectives.

In our opinion, the matters discussed in this report represent material internal control weaknesses within the Department that should be considered when preparing the yearend assurance memorandum on internal controls.

(Signed)
Office of Inspector General

100 Area Cleanup Objective Inconsistent With Projected Land Uses

Cleanup For Residential Use Is Inconsistent With Projected Land Uses

Richland was generally cleaning the Hanford Areas to their projected future uses. However, the 100 Area was being cleaned for "residential use," which was defined as continuous occupancy of the land and consumption of local plants, animals, and home-garden products. Land-use planning documents had never envisioned such use.

As early as 1992, land use documents described only nonresidential uses for the 100 Area. The 1992 report prepared by the Hanford Future Site Uses Working Group (Working Group) projected only four uses of the 100 Area, all of which were nonresidential: Native American uses, such as fishing and hunting; limited recreation; B Reactor Museum; and wildlife and recreation. Although one section of the report called for ultimately achieving unrestricted use of the land, such use went unmentioned as draft Comprehensive Land Use Plans (Use Plan) began to be published. The first draft Use Plan, published in 1996, recommended controlled access and recreation along the river and restricted open space for the balance of the land. Nonresidential use continued to be shown in the 1998 and 1999 draft Use Plans, which stated the preferred land uses for the 100 Area to be grazing for vegetation management, recreation, and preservation.

Since only nonresidential uses were described in the Working Group's report and subsequent land Use Plans, the 100 Area should be cleaned for nonresidential use to be consistent with projected land use.

Cleanup Should Be Consistent With Projected Land Use

The premise that cleanup should be consistent with projected land use has been recognized repeatedly. In 1991, for example, the Advisory Committee on Nuclear Facility Safety recommended to the Secretary of Energy that cleanup be based on projected future land use. The committee stated that it was widely understood that taxpayers could not afford to return all of the Department's contaminated land to pristine conditions. In November 1991, EPA, Ecology, and Richland declared their agreement with this premise by stating, in the Hanford Past-Practice Strategy document, that "past-practice cleanup actions are to be compatible with projected future land uses" and "cleanup requirements will result from selection of remedial alternatives, based on foreseeable uses of the land." In 1994, the GAO reported that EPA and the Department had assumed that all Department facilities would be cleaned for residential purposes. In response to GAO's report, EPA issued a directive indicating that cleanup decision-making should reflect "reasonably anticipated future land use" and that this could lead to

more expedited, cost effective cleanups. More recently, EPA and Ecology stated, in the 1995 interim ROD issued for the 100 Area waste sites, that a key component to identifying the extent of cleanup necessary is the determination of "potential future land use." Thus, the premise that cleanup should be consistent with projected land use was agreed to by Richland, EPA, Ecology, and others.

**Richland Has Not
Challenged The
Cleanup Objective
In The 1995 Interim ROD**

Nevertheless, EPA and Ecology continued to insist that the 100 Area sites be cleaned to an unrestricted state, and Richland has not challenged the 1995 interim ROD that specified such cleanup. Importantly, the interim ROD stated that cleanup goals would be re-evaluated if land use determinations were inconsistent with the goals presented in the interim ROD. As land use plans were clarified and continued to focus on nonresidential uses, Richland could have sought to amend the interim ROD to achieve consistency between cleanup levels and land use. Richland did not do so because it believed that a re-evaluation of the interim ROD should wait until the land use decision was finalized.

Richland will have an excellent opportunity to seek amendment of the interim ROD when it issues the Hanford Remedial Action Environmental Impact Statement (HRA-EIS) ROD. This ROD will contain the Department's land use decision. The April 1999 draft HRA-EIS included six scenarios for the use of the entire Site. None of the scenarios included residential use. More specifically, the Department's recommended scenario for the 100 Area continued to be one of recreation, conservation, and preservation. Richland anticipates issuing the HRA-EIS ROD in November 1999.

Increased Costs

Continuing to support cleanup objectives that are inconsistent with projected land uses unnecessarily increases restoration costs. In 1994, for example, the Department's Assistant Secretary for Environmental Management stated that incorporating realistic land use assumptions in the cleanup process could save the Department in the range of \$200 million to \$600 million annually. At Richland, the combined results of two cost analyses showed that changing the cleanup objective from residential to industrial for just three waste sites within the 100 Area would reduce the cleanup cost from \$85.5 million to \$73.4 million, a 14.2 percent reduction. Other cost reductions are also possible. If Richland actively supported nonresidential cleanup objectives for

future RODs, for instance, it might avoid the costs that would be incurred for public review and comment of selected remedies when land use is finalized and cleanup goals are re-evaluated. Also, reducing the cleanup level of the 100 Area to that compatible with projected land use would result in the removal of less soil and, thereby, save additional funds by reducing the need to expand the Environmental Restoration Disposal Facility.

RECOMMENDATIONS

We recommend that the Manager, Richland Operations Office:

1. seek to amend the 1995 interim ROD in order to achieve cleanup levels that are consistent with land use decisions, no later than issuance of the HRA-EIS ROD in November 1999; and,
2. challenge future RODs having cleanup objectives that are inconsistent with projected land uses.

MANAGEMENT REACTION

Richland concurred with the recommendations. Upon issuance of the HRA-EIS ROD, Richland will seek to amend, where necessary, the interim ROD in order to achieve cleanup levels that are consistent with adopted land use. Richland will also continue to challenge future cleanup objectives that are inconsistent with projected land uses.

AUDITOR COMMENTS

Management comments are responsive to the recommendations. If there is a delay in issuing the HRA-EIS ROD, however, we recommend that Richland seek an amendment to the interim ROD on the basis of the land use projected in the draft HRA-EIS. Otherwise, Richland will continue to clean the 100 Area waste sites to a level exceeding the projected land use.

Appendix 1

SCOPE

The audit was performed from August 12, 1998 through April 30, 1999, at Richland's offices; the Richland offices of EPA and Bechtel Hanford, Inc., the environmental restoration contractor; and Ecology's Kennewick, Washington, office.

METHODOLOGY

To accomplish the audit objective, we:

- interviewed Richland, EPA, Ecology, and contractor personnel;
- reviewed laws, regulations, the 1995 interim ROD, land use plans, and contractual requirements;
- reviewed budgets and expenditures;
- evaluated rationales for cleanup objectives; and,
- evaluated Richland and contractor efforts to minimize cleanup cost.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Accordingly, we assessed management controls to ensure cleanup objectives were consistent with projected land uses. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not conduct a reliability assessment of computer-processed data because only a very limited amount of such data was used during the audit. There were no performance measures applicable to the audit objective. We held an exit conference with Richland's Director, Restoration Projects on May 21, 1999.

Appendix 2

Related Office Of Inspector General And General Accounting Office Reviews

This review concerned the consistency of Richland's cleanup of Hanford waste sites with projected land uses. Prior OIG and GAO reviews related to similar issues are listed below.

- *Audit of Groundwater Remediation Plans at the Savannah River Site*, ER-B-96-02, June 11, 1996

The Savannah River Operations Office had agreed to decrease groundwater contamination to levels that would allow human consumption, although it was unlikely that anyone would live above the groundwater or drink it.

- *SUPERFUND—More Emphasis Needed on Risk Reduction*, GAO/T-RCED-96-168, May 8, 1996

EPA's decisions on whether and how much to clean up a site were affected by the agency's forecast of how the site would be used in the future. EPA was criticized for assuming too often that sites would be used for residential purposes, thereby driving up cleanup costs unnecessarily.

- *ENVIRONMENTAL PROTECTION—Issues Facing the Energy and Defense Environmental Management Programs*, GAO/T-RCED/NSIAD-96-127, March 21, 1996

The Department usually assumed that all of its facilities would be cleaned up so that their use would be unrestricted; however, many facilities were so contaminated that unrestricted use was unlikely.

- *NUCLEAR CLEANUP—Completion of Standards and Effectiveness of Land Use Planning Are Uncertain*, GAO/RCED-94-144, August 26, 1994

Incorporating more realistic land use assumptions into the selection process for a cleanup remedy under the Comprehensive Environmental Response, Compensation, and Liability Act could result in significant cost savings--from \$200 million to \$600 million annually, according to the Department's Assistant Secretary for Environmental Management.

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