

**Establishing Final Action Cleanup Decisions for the
Hanford Site River Corridor – 11592**

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ABSTRACT

A major challenge in the U.S. Department of Energy (DOE) Hanford Site River Corridor is establishing final action cleanup decisions for contaminated soil and groundwater. Varying land use expectations between the current DOE owner, state and federal regulatory agencies, Native American Tribes, local city and county governments, and other trustees and stakeholders are a key element of this challenge. A unifying interest and a primary objective of the Hanford Site cleanup mission among all parties is protection of the Columbia River through remediation of contaminated soil and groundwater that resulted from its weapons production mission.

Cleanup actions in the River Corridor, a 210-square-mile are of the Hanford Site bordered to the east and north by the Columbia River, were initiated in 1994 under interim action records of decision (IARODs). The selected interim action cleanup levels established by those decisions were viewed by the DOE, EPA, and Washington State Department of Ecology (Tri-Parties) as supporting a range of potential future land uses within the River Corridor since anticipated land use expectations and decisions were not fully resolved during the decision making process. The IARODs have guided soil and groundwater cleanup in the River Corridor for more than 15 years and continue today.

In parallel with continuing interim action cleanup operations, the Tri-Parties are conducting the CERCLA remedial investigation/feasibility study (RI/FS) process to develop integrated final action cleanup decisions for the River Corridor. The reasonably anticipated land use is important in the CERCLA decision process because of its role in designing risk assessment activities and determining the appropriate degree of cleanup needed to be protective of future users.

Given the varying expectations between affected parties for reasonably anticipated future land uses in the River Corridor, the baseline risk assessment supporting the RI/FS process was designed to include multiple land-use scenarios. Nine scenarios are evaluated in the human health baseline risk assessment to cover a wide range of exposures including recreational, occupational, residential, and tribal use.

The Tri-Parties have established enforceable schedules to drive the process for developing final action cleanup decisions in the River Corridor. In accordance with the schedules, draft RI/FS reports and proposed plans to address final actions in the River Corridor must be submitted for regulatory review by December 31, 2012.

INTRODUCTION

The U.S. Department of Energy (DOE) Hanford Site is a 1,517-km² (586-mi²) federal facility located within the semiarid shrub-steppe Pasco Basin of the Columbia Plateau in south-central Washington State. The site is situated north and west of the cities of Richland, Kennewick, and Pasco, an area commonly known as the Tri-Cities. The Columbia River flows through the northern part of the Hanford Site and, turning south, forms part of the site's eastern boundary (Fig. 1).

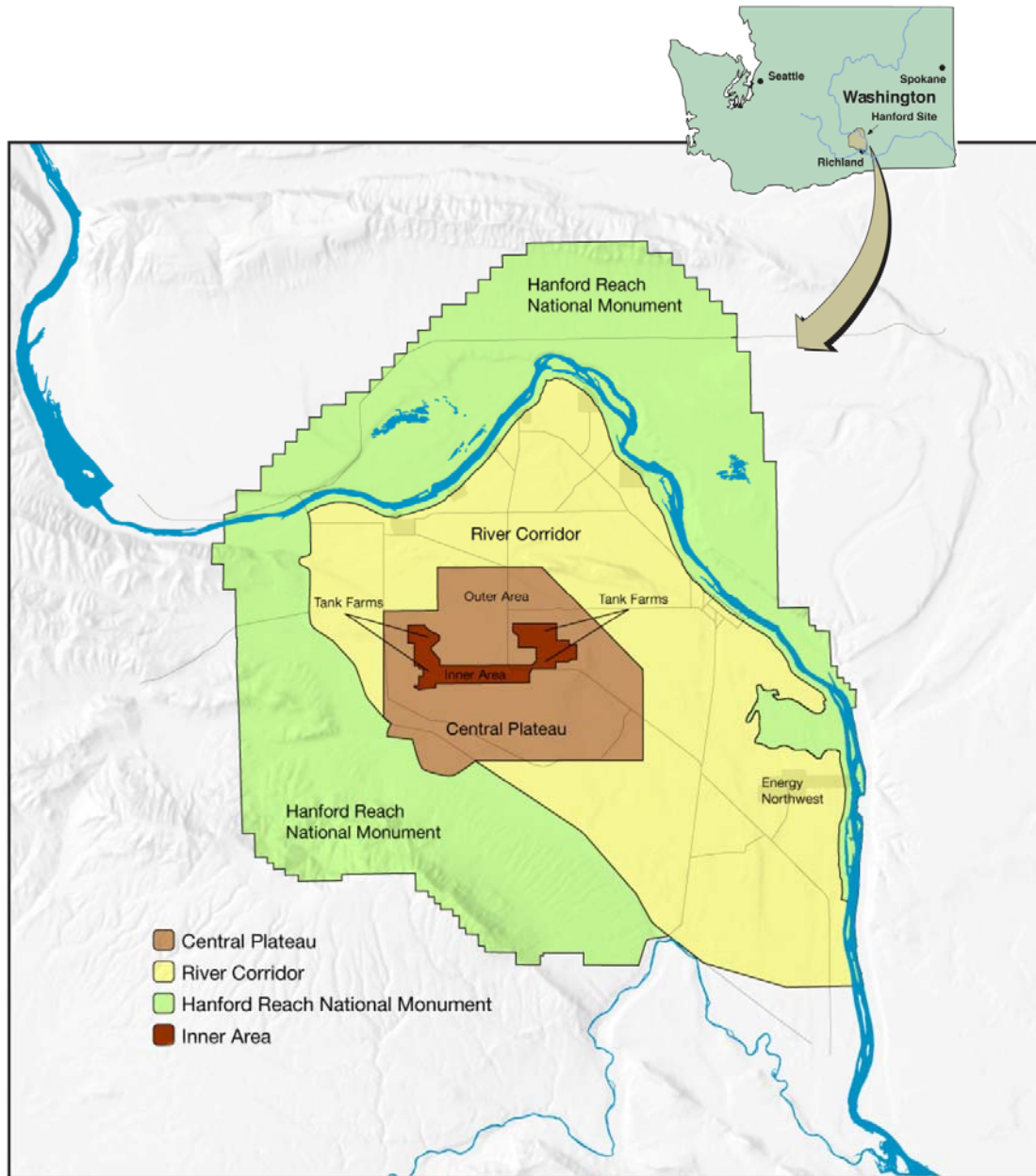


Fig. 1. Principal Components of Hanford Site Cleanup Completion Framework - River Corridor, Central Plateau, and Tank Waste (Note: River Corridor Cleanup includes the south shore of the river that is part of the Hanford Reach National Monument.)

Past nuclear production and processing at the Hanford Site released hazardous substances to the environment and resulted in areas of contaminated soil and groundwater that pose a risk to human health and the environment. Cleanup of the Hanford Site releases is a complex and challenging undertaking that has been organized into three major components – River Corridor, Central Plateau, and Tank Waste. The River Corridor consists of more than 569 km² (220 mi²) of the Hanford Site adjacent to the Columbia River (Fig. 1).

Cleanup of the River Corridor has been a top priority for the Hanford Site since the early 1990s. This urgency is due to the proximity of hundreds of waste sites to the Columbia River, recognizing it as a critical resource for the people and ecology of the Pacific Northwest. As one of the largest rivers in North America, its waters support a multitude of uses that are vital to the economic and environmental well being of the region and it is particularly important in sustaining the culture of Native Americans. The 50-mile stretch of the river known as the Hanford Reach is the last free flowing section of the river in the U.S.

Remedial actions in the River Corridor are expected to restore groundwater to drinking water standards and to ensure that the aquatic life in the Columbia River is protected by maintaining ambient water quality standards in the river. It is intended that these objectives be achieved, unless technically impracticable, within a reasonable time frame. In those instances where remedial action objectives are not achievable in a reasonable time frame, or are determined to be technically impracticable, programs will be implemented to contain the plume, prevent exposure to contaminated groundwater, and evaluate further risk reduction opportunities as new technologies become available. River Corridor cleanup work also removes potential sources of contamination, which are close to the Columbia River, to the Central Plateau for final disposal. The intent is to shrink the footprint of active cleanup to within the 75-square-mile area of the Central Plateau by removing excess facilities and remediating waste sites. At the conclusion of cleanup actions, the federal government will retain ownership of land in the River Corridor and will implement long-term stewardship activities to ensure protection of human health and the environment.

HISTORICAL USE OF THE RIVER CORRIDOR AREA

The Hanford Site area is culturally rich, experiencing a history of multiple occupations by both Native and non-Native Americans. For thousands of years Native American peoples have inhabited the lands both within and around the Hanford Site [1, 2]. The Hanford Reach was a seasonal home to a large group of Native Americans prior to the arrival of Euro-Americans in the early 1800s. When the U.S. government established treaties in 1855, lands comprising the present day Hanford Site were ceded either by the Confederated Tribes of the Umatilla Indian Reservation or the Yakama Nation. Today, many descendants of these indigenous peoples retain traditional, cultural, and religious ties to the Hanford Site. Some native plant and animal foods found on the Hanford Site are used in ceremonies performed by tribal members. Prominent landforms such as Rattlesnake Mountain, Gable Mountain, and Gable Butte, as well as various sites along and including the Columbia River, remain sacred to these peoples.

Non-Native American presence in the mid-Columbia began in 1805 with the arrival of the Lewis and Clark Expedition along the Columbia and Snake Rivers. Other visitors included fur trappers,

military units, explorers, and miners who traveled through the Hanford Site on their way to lands up and down the Columbia River and across the Columbia Basin. In the late 19th and early 20th centuries, non-native people began intensive settlement on the Hanford Site, establishing an early settler and farming landscape.

Farmstead communities existed from 1880 to 1943, and their locations within the River Corridor are known from historic and current aerial photographs, real estate records, historic documents, personal interviews, and field walkdowns. The farmsteads are located primarily in the upland environment adjacent to the Columbia River. From 1880 to 1905 self-subsistence farming on small farms was the primary pursuit. The area became one of the premier orchard regions in the state following formation of the Hanford Irrigation and Development Company in 1905. Farms were primarily family-operated and ranged in size from under 2 ha (5 ac) to over 16 ha (40 ac). In 1913, development was bolstered by the construction of rail lines that enabled the farmers to move from local to national-based markets by providing a means to ship fruit and other produce to either regional or more distant locations. The farming life in Hanford and White Bluffs came to an abrupt halt in 1943 when the U.S. government took possession of the land.

GOVERNMENT USE OF THE RIVER CORRIDOR AREA

In 1943, the Hanford Site became a federal facility when the U.S. Government took possession of the land to produce weapons-grade plutonium as a part of the Manhattan Project during World War II. Between 1943 and 1963, nine plutonium-production reactors were built in the northern part of the Hanford Site along the Columbia River in six areas identified as the 100-B, 100-K, 100-N, 100-D, 100-H, and 100-F Areas. Large construction camps were established near the Hanford townsite in the central area of the River Corridor to support construction of the reactors. In the southern area of the River Corridor, the 300 Area was developed to support fuels fabrication and research and development activities.

During five decades of Hanford Site operations and nuclear material production, large quantities of by-products were released to the environment. Liquid effluents from plutonium production reactors were discharged to retention ponds and trenches or directly to the Columbia River. Disposal of solid waste and debris occurred in unlined burial grounds/landfills or in surface dumps. In addition, plumes of contaminated groundwater developed in portions of the Hanford Site as a result of waste disposal practices and subsequent contaminant migration through the soil. Some of these contaminated groundwater plumes have reached the Columbia River, discharging as springs along the shoreline and upwelling through the river bottom. The Hanford Site production mission continued until the late 1980s, when the mission changed to cleaning up the radioactive and hazardous wastes that had been generated during production in the previous decades.

CLEANUP ACTIONS IN THE RIVER CORRIDOR

Nuclear production and processing operations at the Hanford Site released hazardous substances to the environment and resulted in areas of contaminated soil and groundwater that pose a risk to human health and the environment. Between 1985 and 1988, preliminary assessment/site

inspection activities were completed to identify waste sites and prioritize the relative hazards. Waste disposal information was collected through exhaustive reviews of historical process records and maps, employee interviews, and visual inspections. Results were organized and sites were ranked with respect to potential environmental impacts. The results from this process provided information to support addition of the Hanford Site on the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) [3] National Priorities List (NPL). The River Corridor contains two of the four Hanford Site NPL sites - the 100 Area (includes the nine former plutonium production reactors along the Columbia River) and the 300 Area (includes reactor fuel fabrication plants as well as many research and development sites).

In 1989, the DOE entered into the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) [4] with the U.S. Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology) (collectively called the Tri-Parties), thereby establishing the legal framework and schedule for cleanup of the Hanford Site. In order to allow cleanup to begin as soon as possible, the Tri-Parties developed a “bias for action” approach to the CERCLA process in 1991. This approach, known as the *Hanford Past-Practice Strategy* (HPPS) [5], streamlined the remedial investigation/feasibility study (RI/FS) process to enable early application of cleanup dollars on actual remediation of contaminated waste sites.

Early cleanup decisions were established through CERCLA interim action records of decision (IARODs) that specified cleanup goals for achieving protectiveness of potentially exposed receptors, groundwater, and the Columbia River. The IARODs were based on existing knowledge of the waste sites (e.g., site types, processes, contaminants) as supplemented by limited amounts of characterization and qualitative risk assessments that provided a basis for action. In 1994, cleanup actions were initiated focusing on removal of contaminated soil and debris from waste sites with the highest potential to impact groundwater and the Columbia River. Actions to cleanup existing plumes of groundwater contamination were also initiated with the objective of addressing principal threats to the Columbia River.

The process for establishing cleanup goals during development of the IARODs considered residential and industrial exposure scenarios to evaluate risks from contaminants in soil and groundwater. Interim action Cleanup levels in the 100 Area of the River Corridor are based on a residential exposure scenario, whereas the 300 Area cleanup levels are based on a mix of residential and industrial exposure scenarios. Remedial action goals related to radiation dose were developed using the RESidual RADioactivity (RESRAD) computer code [6]. Remedial action goals related to chemical cancer risk and hazards were based on screening models of the Model Toxics Control Act (MTCA) in the 1996 Washington Administrative Code (WAC) Part 173-340 [7]. Use and application of the interim action cleanup levels was viewed by the DOE, EPA, and Washington State Department of Ecology (Tri-Parties) as supporting a range of reasonably anticipated future land uses within the River Corridor. However, it was recognized that final cleanup requirements would be established when final action RODs were issued.

Waste site and groundwater cleanup actions in the River Corridor have continued from 1995 to the present. During that time, about 10.2 million tons of contaminated soil and debris have been removed from nearly 300 waste sites in the River Corridor and disposed of at authorized facilities, primarily within the Hanford Site Central Plateau at the environmental restoration

disposal facility. At each waste site where remediation has occurred, the goals and objectives of the IARODs have been met as demonstrated by verification documentation that has been completed and approved by the DOE and the regulatory agencies. In addition, removal of contaminated soil and debris from waste sites, more than 2 billion gallons of contaminated groundwater has been processed through pump-and-treat systems.

STRATEGY FOR FINAL ACTION CLEANUP DECISIONS

Cleanup actions in the River Corridor are not complete. Many waste sites and groundwater plumes that have been identified for cleanup actions in the IARODs have yet to be addressed. Consequently, waste site and groundwater cleanup actions in the River Corridor will continue for several years. In parallel with continuing the cleanup actions outlined in the existing IARODs, the Tri-Parties have established a strategy to develop final action cleanup decisions for the River Corridor. These decisions are necessary to determine whether past cleanup actions in the River Corridor are protective of human health and the environment and to identify any course corrections that may be needed to ensure that ongoing and future cleanup actions are protective.

In accordance with the strategy developed by the Tri-Parties, the River Corridor has been divided into six geographic areas to achieve source and groundwater remedy decisions. The strategy to pursue six records of decision (RODs) was based on organizing the development and review processes into manageable pieces that are generally aligned with an operational function or historical use (e.g., reactor areas). Final remedy RODs will be developed for the areas listed in Table I and depicted in Fig. 2:

Table I. River Corridor Decision Areas for Remedy Selection.

Decision Area	Reactors/Operations	Source Operable Units	Groundwater Operable Units
100-B/C Area	B reactor C reactor	100-BC-1, 100-BC-2	100-BC-5
100-D/H Area	D reactor DR reactor H reactor	100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2,	100-HR-3
100-K Area	KE reactor KW reactor	100-KR-1, 100-KR-2,	100KR-4
100-F & IU-2/6 Area	F reactor	100-FR-1, 100-FR-2, 100-IU-2, 100-IU-6	100-FR-3
100-N Area	N reactor	100-NR-1	100-NR-2
300 Area	Fuels Fabrication, research & development	300-FF-1, 300-FF-2	300-FF-5

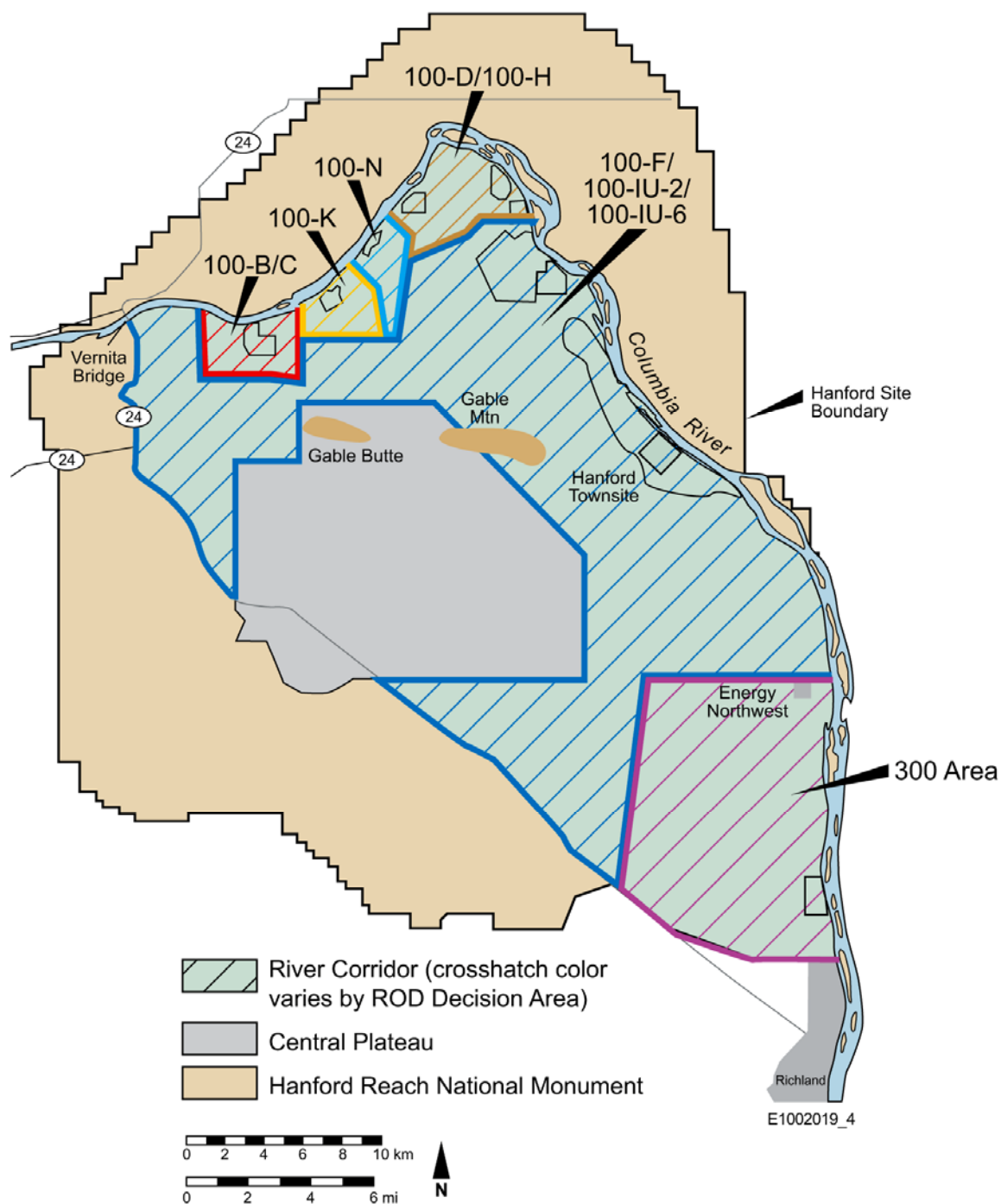


Fig. 2. River Corridor Cleanup Decision Areas.

The RODs that are produced from this effort will establish the final remedial goals and objectives and any associated actions required to complete the CERCLA process for the River Corridor 100 Area and 300 Area NPL sites. Each of the six final remedy RODs will be integrated to address both source and groundwater remedial actions. These decisions will provide comprehensive coverage for all areas within the River Corridor and will incorporate

ongoing interim action cleanup activities. Cleanup levels will be established that support the current and reasonably anticipated future land uses of conservation and preservation for most of this area and industrial use for the 300 Area. At the conclusion of cleanup actions, the federal government will retain ownership of land in the River Corridor and will implement long-term stewardship activities to ensure protection of human health and the environment.

Another element of strategy being implemented by the Tri-Parties is conducting a remedial investigation of Hanford Site releases to the Columbia River. The information gathered during the RI process for the Columbia River is intended to provide the information needed to evaluate impacts to the river in the context of the proposed source and groundwater remedial actions. If contamination resulting from Hanford Site releases requires remedial action in the river, it will be addressed by DOE in a cleanup decision. Depending on the source and location of such contamination, the cleanup decision may be associated with one or more of the River Corridor decision areas or it may be a separate action specific to the river.

ROLE OF LAND USE IN THE CLEANUP DECISION PROCESS

The following information summarizes key points from EPA guidance pertaining to the role of land use decisions in the CERCLA remedy selection process and identifies how land use is addressed within the State of Washington *Model Toxics Control Act Cleanup Regulation* [7].

Land Use Considerations in CERCLA Remedy Selection

The reasonably anticipated future land use is important under CERCLA in determining the appropriate extent of remediation. Land use affects the types and frequency of exposures that could occur to any residual contamination, thereby indicating the degree of cleanup necessary. The primary EPA guidance pertaining to the role of land use determinations in the CERCLA process is embodied in two directives:

- “Land Use in the CERCLA Remedy Selection Process” [8]
- “Reuse Assessments: A Tool To Implement The Superfund Land Use Directive” [9]

The EPA itself does not establish future land use at CERCLA sites. Instead, EPA relies on determinations by appropriate land use authorities. The EPA land use guidance states that, to the extent possible, readily available information is to be used in assessing future land use. The guidance also identifies that alternative land use scenarios are not necessary in cases where the future land use is relatively certain. At sites where land use decisions have already been determined and documented, a review to confirm the land use may be adequate. By contrast, a range of reasonably anticipated future land uses may need to be considered in developing remedial action objectives in cases where future land use is highly uncertain. The EPA guidance acknowledges the potential conflict between a desired future land use versus cost-effective and practicable cleanup remedies.

Land Use Considerations Under the Model Toxics Control Act Cleanup Regulation

The *Model Toxics Control Act Cleanup Regulation* stipulates use of the reasonable maximum exposure (RME) in the selection of cleanup actions [10]. The RME scenario must consider both current and future site land use conditions. WAC 173-340 contains default formulae for calculating cleanup levels for two land use scenarios: residential use and industrial use. Other land uses may not be used as a basis for establishing a “cleanup level” (i.e., the concentration level which a media must be remediated in some manner). However, the actual action to be taken is selected through the remedy selection process. The regulation allows for consideration of other land uses in assessing the protectiveness of the selected remedy [10]. Agricultural, recreational, and commercial land uses are specifically mentioned as examples of alternative land uses. At CERCLA sites, public participation provisions under CERCLA would operate in lieu of similar provisions of WAC 173-340.

CURRENT AND FUTURE LAND USE IN THE RIVER CORRIDOR

Current land use in the River Corridor consists of waste management, environmental monitoring, soil and groundwater remediation, and conservation and restoration activities. Present-day exposure is limited primarily to Hanford Site employees and contractors and is controlled by access restrictions to the Hanford Site and to individual work areas within it.

Authority to make future use plans at Department of Energy facilities was assigned to the Secretary of the DOE by Congress in Public Law 104-201, which required development of a future use plan for Hanford. The DOE’s reasonably anticipated future land use is predominantly conservation/preservation in the River Corridor 100 Area. The likely human receptors in these areas are part time users of the land and could include recreational users, tribal users, and monument workers. Industrial land use is anticipated by DOE for the 300 Area, with likely receptors including industrial workers.

The Tri-Parties have participated in multiple discussions with the many affected parties regarding reasonably anticipated future land use. That land use planning input, including advice from the Hanford Advisory Board, and other considerations presented in EPA’s OSWER Directive 9355.7-04, *Land Use in the CERCLA Remedy Selection Process* [8], will be considered by the Tri-Parties in selecting final cleanup decisions.

The Hanford Comprehensive Land-Use Plan (CLUP) [11] also provides information on reasonably anticipated future land use. Consistent with CERCLA guidance regarding the importance of community involvement in making land use decisions, development of the Hanford CLUP included an extensive public participation effort involving the general public in addition to nine cooperating agencies (including local city and county planning entities) and consulting Tribal governments. The 1992 report *The Future for Hanford: Uses and Cleanup – The Final Report of the Hanford Future Site Uses Working Group* [12] was submitted to DOE as a formal scoping document for the land use planning effort, with additional input supplied from (among other stakeholder groups) the Hanford Tank Waste Task Force and the Hanford Advisory Board. Fig. 3 shows reasonably anticipated future land use as designated by the CLUP.

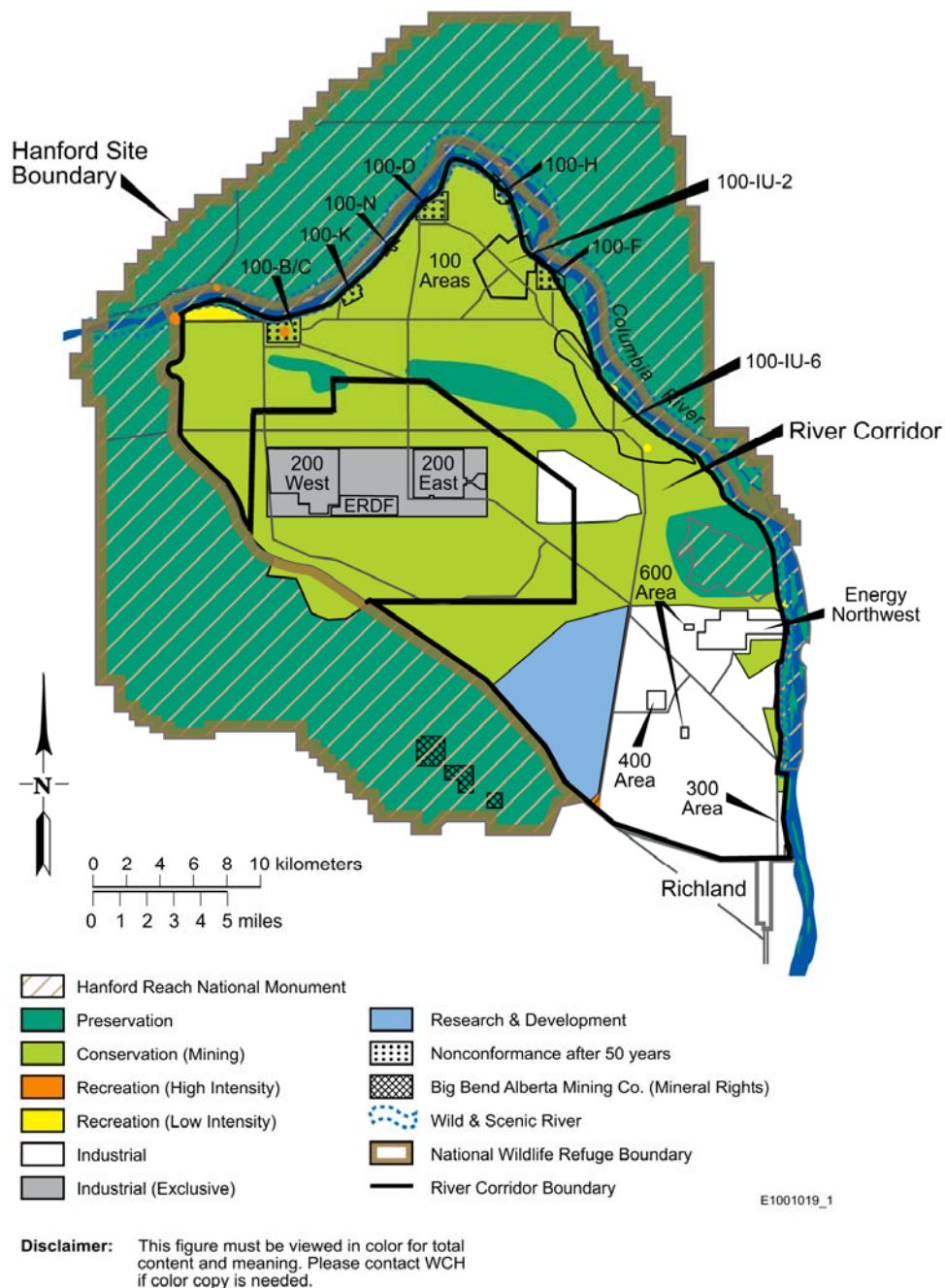


Fig. 3. National Monument Boundaries and Future Land Use Designated by the Comprehensive Land-Use Plan.

National Monument Designation

The stretch of the Columbia River flowing through the Hanford Site is referred to as the Hanford Reach. In 1994, the National Park Service completed the *Hanford Reach of the Columbia, Comprehensive River Conservation Study and Environmental Impact Statement* [13]. The associated ROD recommended designating the Hanford Reach and approximately 41,279 ha

(102,000 ac) of adjacent lands as a National Wild and Scenic River and a National Wildlife Refuge, respectively [14]. In 2000, Presidential Proclamation 7319 was signed, creating the Hanford Reach National Monument to be managed by the FWS and DOE [15]. The Monument was established to protect the biological, historic, and scientific objects contained within.

The Monument encompasses approximately 793 km² (306 mi²) of lands already owned by the federal government that had previously been designated for preservation or conservation under the CLUP (Fig. 3)[11]. To support continued protection of natural and cultural resources, the proclamation stated that the Monument would not be developed for residential or commercial use in the future [15]. The majority of the Monument is managed by the FWS through a Permit and Memorandum of Understanding granted by DOE in 2001. The portion of Monument lands that are managed by the FWS are included in the *Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement* [16]. The remaining Monument lands that are managed by DOE are undergoing or supporting environmental cleanup.

ROLE OF BASELINE RISK ASSESSMENT IN THE CLEANUP DECISION PROCESS

A key element to establishing final cleanup decisions for the River Corridor is the completion of baseline risk assessment to provide risk managers with an understanding of the current and potential future risks posed by a site. The *River Corridor Baseline Risk Assessment (RCBRA)* [17] is being conducted part way through cleanup actions. Results of the baseline risk assessment will be used to provide a basis for action and support development of RI/FS reports, proposed plans, and final action RODs, which will establish the final cleanup objectives and any associated actions required to complete the CERCLA process for the River Corridor.

Discussions on expectations for future land use in the River Corridor are ongoing. Consequently, a broad range of exposure scenarios were developed and are evaluated in the RCBRA to assess risks related to a variety of potential land uses. The nine exposure scenarios evaluated in the RCBRA range in intensities from recreational users occasionally visiting the site to scenarios where individuals live on site and consume food items that are predominantly grown or raised on site. Scenarios are listed below grouped according to general types of land use and associated exposure intensity.

- **Broad-Area Exposure Scenarios**
 - Recreational Use scenarios: Avid Hunter, Avid Angler, and Casual User
 - Nonresidential Tribal scenario
- **Local-Area Exposure Scenarios - Occupational**
 - Industrial Worker scenario
 - Resident Monument Worker scenario
- **Local-Area Exposure Scenarios - Residential**
 - Subsistence Farmer scenario
 - Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Native American Resident scenario
 - Yakama Nation Native American Resident scenario.

Broad-Area Exposure Scenarios

The broad-area exposure scenarios evaluate potential risks for receptors that may engage in activities where they are exposed to soil, sediment, and surface water throughout the River Corridor, including the areas within and outside of waste sites. The Recreational Use scenarios address child and adult exposures for different types of activities in the upland (Avid Hunter), riparian (Casual User), and shoreline (Avid Angler) environments. The Nonresident Tribal scenario is focused on adults and children engaged in a subsistence lifestyle who reside off the Hanford Site but who use the River Corridor for traditional tribal activities including fishing, hunting, gathering plants, and participating in sweat lodges using river water.

Local-Area Exposure Scenarios – Occupational

The Industrial Worker scenario and the Resident Monument Worker local-area exposure scenarios evaluate potential risks for receptors that may be exposed to soil from individual River Corridor waste sites in an occupational setting. This exposure assumption is consistent with the way in which risks were assessed for the IARODs. Receptors for these scenarios are limited to adult workers. The Industrial Worker lives offsite and is assumed to work 40 hours per week at a building located on a remediated waste site. The Resident Monument Worker is assumed to live in a residence constructed on a remediated waste site and work outdoors in other portions of the River Corridor. The residential part of the exposure for the Resident Monument Worker scenario is based on remediated waste site exposure, and the occupational part of the exposure (40 hours per week) is based on broad-area exposure.

Local-Area Exposure Scenarios – Residential

The Subsistence Farmer and Native American Resident scenarios describe exposures related to residential land-use assumptions that include home-produced foods. The Native American Resident scenarios included separate scenarios submitted by the CTUIR and the Yakama Nation. The residential receptors are assumed to spend all of their time in the area around a residence located on a remediated waste site.

PATH FORWARD AND SCHEDULE

Over the past several years there has been extensive discussion regarding future land use in the River Corridor and how those determinations would be reflected in upcoming cleanup decisions. While the Tri-Parties have yet to reach agreement on a common expectation regarding future land use for the Hanford Site River Corridor, the DOE believes it is possible to consider the differing perspectives in the upcoming decision documents and reach resolution on cleanup decisions that will address the interests of the Tri-Parties.

Historical information, ongoing site clean-up and monitoring results, risk assessment results for a range of exposure scenarios, and remedial investigation data will be integrated into RI/FS reports for each of the six decision areas in the River Corridor. A proposed plan that summarizes the remedial investigation and identifies the preferred remedial alternative will be developed for each decision area and issued to the public for review and comment. Following completion of

the review cycle, final action RODs for each decision area will be developed and approved by the Tri-Parties. These decisions will incorporate remedial actions completed under the existing interim action RODs. The final action remedies will then be implemented, including any land management controls and monitoring requirements that are identified.

The schedule for establishing final action decisions in the River Corridor has been largely driven by a suite of consent order milestones established by the Tri-Parties. Milestones for submittal of draft RI/FS work plans were achieved in 2009 and led to subsequent approvals of documents in 2010 and 2011 to address each of the six River Corridor decision areas. Field investigation activities outlined in the work plan documents were initiated in early 2010 and are ongoing, with anticipated completion throughout 2011. A suite of upcoming target milestones that range from late 2011 into mid 2012 establish the schedule objectives for submittal of draft RI/FS reports and proposed plans associated with the individual decision areas, with an enforceable major milestone to complete the RI/FS and proposed plans for all of the decision areas by December 2012.

Following the completion Hanford Site cleanup actions identified by the upcoming final action RODs, there may be areas of the River Corridor that require long-term management activities. DOE-RL has established a Hanford Long-Term Stewardship Program to ensure continued protectiveness of cleanup remedies, as defined by CERCLA and RCRA cleanup decision documents, and to ensure protection of natural resources, the environment, and human health. Long-term stewardship will include monitoring and maintenance activities to ensure continued protectiveness.

DOE is committed to maintaining the protection of human health and the environment and to meeting its long-term, post-cleanup obligations in a safe and cost-effective manner. The completion of cleanup and the transition to long-term stewardship are approaching. Therefore, cleanup actions are being considered and taken to mitigate natural resource concerns and ensure long-term stewardship considerations are incorporated into the cleanup decisions.

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