

Competing Visions for the Future of Hanford



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ABOUT COLUMBIA RIVERKEEPER

Columbia Riverkeeper's mission is to protect and restore the water quality of the Columbia River and all life connected to it, from the headwaters to the Pacific Ocean. Representing over 16,000 members and supporters, Columbia Riverkeeper works to restore a Columbia River where people can safely eat the fish they catch and where children can swim without fear of toxic exposure. For more information, go to columbiariverkeeper.org.

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THE FUTURE OF HANFORD: COMPETING VISIONS

How will people use the Hanford Nuclear Site in 25 years, 100 years, and beyond? When the federal government's multi-decade cleanup ends, will Hanford remain the most toxic waste site in North America or will the site become a vibrant landscape where people can live, work, hunt, and fish?

This report examines how competing visions for Hanford's future—from the perspectives of tribal nations, the federal government, and the states of Oregon and Washington—will determine Hanford's nuclear legacy. The U.S. Department of Energy's (Energy) assumptions about how people will use Hanford in the future guide the agency's decisions today about whether to remove radioactive soil or clean up polluted groundwater.

The goal of this report is two-fold. First, the report reveals that Energy does not account for tribal nations' future use of Hanford in cleanup decisions, failing to honor treaty rights and the guaranteed uses of resources unique to treaty tribes. Second, the report highlights how Washington and Oregon dispute Energy's assumptions about how the general public will use Hanford in the future. Overall, the report shows how Energy's plans to leave radioactive and toxic pollution at Hanford that could endanger tribal people's health and restrict use by the general public. The report offers recommendations to address Energy's controversial vision for the future of Hanford and information on how people can get involved.

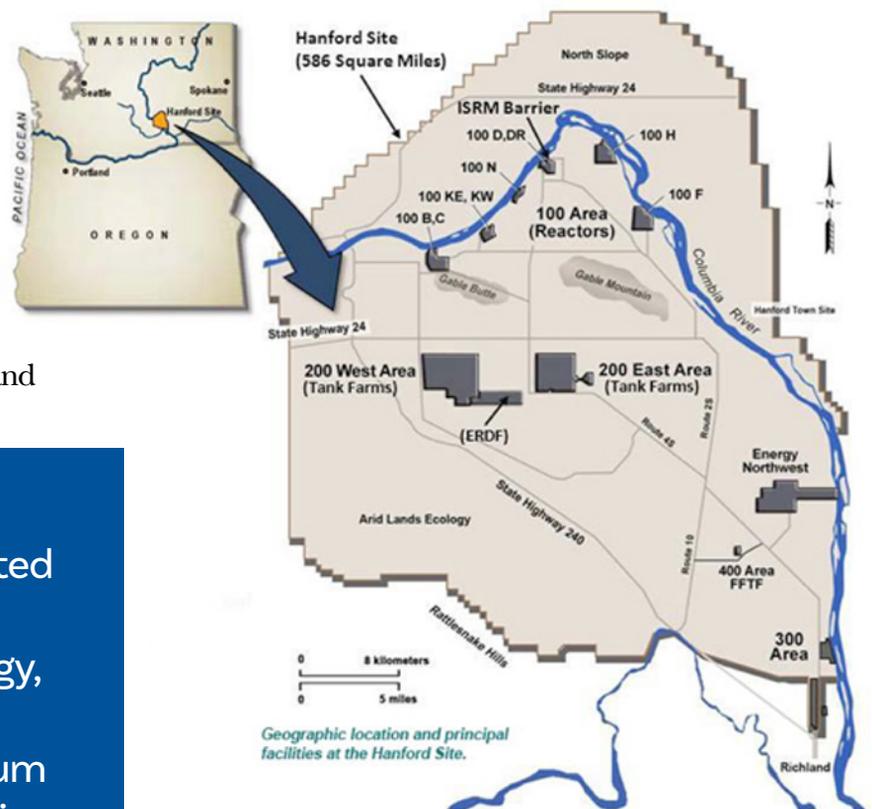
More than 60 square miles of groundwater at Hanford is polluted above safe levels.³ According to the Oregon Department of Energy, "chromium, nitrate, uranium, technetium, tritium, and strontium have all reached the Columbia River. These materials can be harmful to people and the environment."⁴

"When cleanup is finished, if radioactive waste remains to the extent that anxiety exists about the potential risks, some may choose to move away. We cannot."¹

- Dr. Russell Jim, founder of Yakama Nation's program to oversee Hanford cleanup and restoration

WHY HANFORD CLEANUP MATTERS

The U.S. government chose the Hanford area for the Manhattan Project during World War II. For over 40 years, the United States produced plutonium for nuclear weapons, and released hundreds of billions of gallons of liquid chemical and radioactive waste into the soil and groundwater.⁴



Additionally, contaminated groundwater upwells into the Columbia River in multiple places at Hanford, polluting the river with both toxic and radioactive contaminants.⁵ According to

monitoring data, some radioactive pollution from Hanford is detectable in the City of Richland’s water intake at levels below drinking water standards.⁶ Now, Energy is responsible for one of the largest nuclear cleanup efforts in the world.

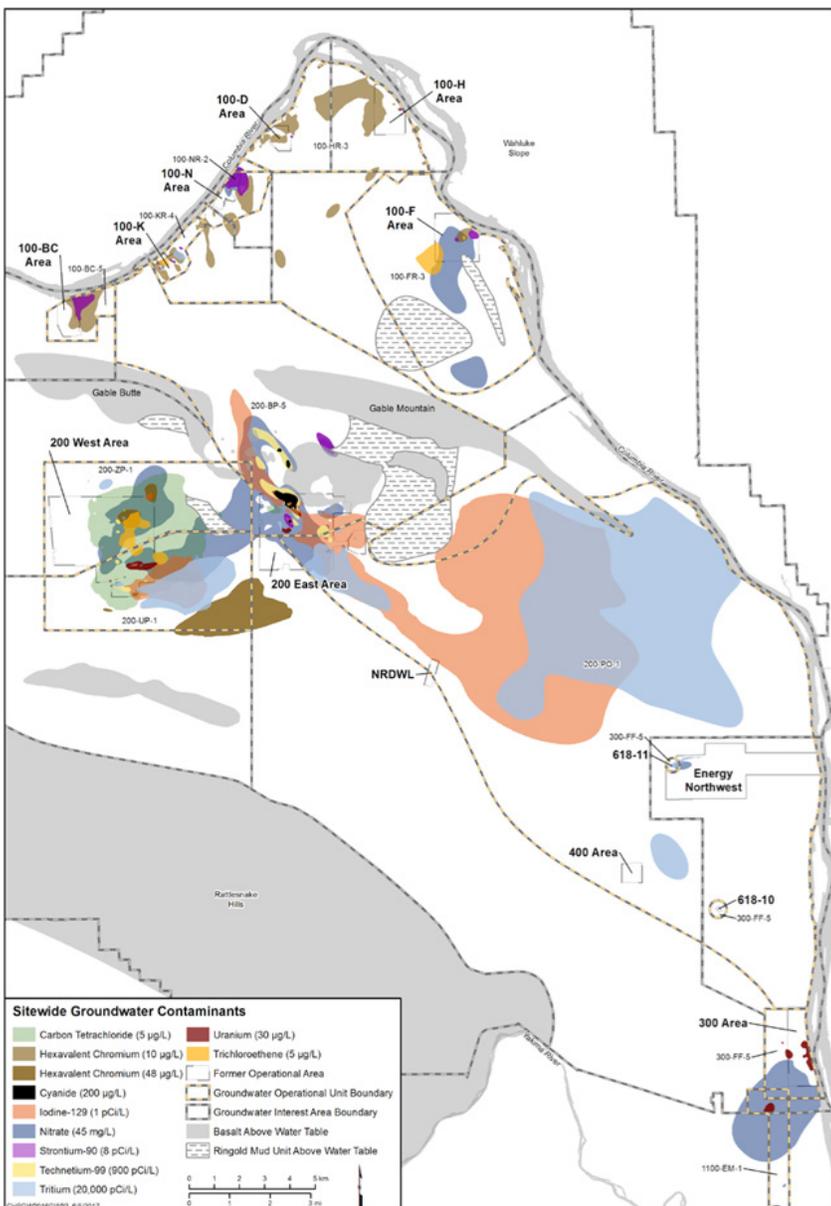
There is a lot riding on Hanford cleanup. The Columbia River provides drinking water to downstream communities, irrigation water for nearby farms, process water for local industry, and the best mainstem spawning habitat for Chinook salmon in the entire Columbia River Basin. Without robust cleanup, radioactive and chemical waste in groundwater will continue to pollute the Columbia River.

The region also includes high-value fish, wildlife, and bird habitat in the adjacent Hanford Reach National Monument, as well as a 50-mile free-flowing stretch of the Columbia River. Cleanup is also important to tribal nations because the nuclear site encompasses a large area within culturally significant lands of the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Nez Perce Tribe, and the Wanapum people. The nuclear site and National Monument contain important Native American cultural resources. In fact, this area is one of the most culturally rich areas in the Columbia Plateau. Due to access restrictions since the mid-1940s, many resources remain intact.

TRIBAL NATIONS’ VISION OF HANFORD’S FUTURE

Columbia River tribes offer a vision for Hanford that involves people fishing, hunting, and living along the Hanford Reach. To attain this vision, the tribes advocate for a cleanup that protects tribal people from pollution. In the early 1940s, the United States removed Native Americans from Hanford to construct top-secret nuclear reactors for the Manhattan Project. Except for this 80-year forced absence, native people have used the Hanford area since time immemorial to hunt, fish, gather food, trade, and live. This area has great traditional and religious significance to Columbia Plateau tribes and is home to multiple traditional cultural properties, traditional use areas, as well as significant ceremonial sites.

In 1855, the Yakama Nation, Warm Springs, CTUIR, and Nez Perce, signed treaties ceding millions of acres of their lands to the United States, but reserved important rights. According to a landmark case upholding the tribes’ treaty rights, “[The treaties] reserved rights . . . to every individual Indian, as though named therein.”⁷ The Columbia River Inter-Tribal Fish Commission (CRITFC) explains, “Many of these



Credit: U.S. DOE



A deer observes a Yakama Nation cultural resource crew as they survey the Hanford Site along the Columbia River. Photo by Dana Miller.

terms involved the reservation of particular rights that were guaranteed to continue after their treaty was signed.” CRITFC emphasizes that these are “not rights that the treaty granted, but rights the tribes had prior to the treaty that . . . they continue to have.”⁸ One was the right to harvest fish in all the tribes’ “usual and accustomed areas,” which includes the Columbia River.

Today, three tribal nations are active in Hanford cleanup decisions. These tribes approach cleanup through the frame of how tribal people used and will use Hanford in the future: for hunting, fishing, gathering, sweat lodges, and other activities. These uses bring people in close contact with soils, water, air, plants, wildlife, and fish at Hanford.⁹ Tribal nations also point out that, unlike non-tribal recreational users, tribal people may live at and near Hanford year-round, and use resources far more extensively than recreational or non-resident people.

YAKAMA NATION

The Yakama Nation’s spiritual and cultural connection to the Hanford area is based in their ancestral use of the area: the language, resources, landscape, and traditional knowledge born from the area, passed down through generations, and used today. The tribe’s unique way of life is forever linked to the Hanford area.¹⁰ Therefore, the Yakama Nation envisions a future where its people can fully embrace, utilize, and inhabit their homelands, which includes the area now called Hanford.

With the leadership of Dr. Russell Jim, the Yakama Nation fought to ensure that Energy would be held responsible for Hanford’s cleanup and restoration, including using the United States court system to protect Yakama Nation’s interests.

Yakama Nation developed a detailed explanation of how Yakama members will use the site in the

Dr. Russell Jim, founder of Yakama Nation's program to oversee Hanford's cleanup and restoration, stated:

Since time immemorial, we have lived in this region. Before the immigrants came, more than one quarter of what is now the State of Washington was governed by, and under the sovereign control of, the Confederated Tribes and Bands of the Yakama Nation.

The sun rose over this land for millennia, and the sun set each day, [land] that remained in pristine condition. The tremendous abundance and diversity of natural resources sustained our people. In turn, the Yakama followed laws which require that all resources be cared for and respected, each with their own indispensable role. The cultural experience of the Yakama knew nothing other than pure skies and water, abundant fish, wildlife, roots and berries. Until recently, that was [all] that existed in the entire region.

The Treaty of 1855 between the Yakama Nation and the United States was signed not far from here, to the east, over a century and a half ago. In legal context of the United States, the Treaty is considered the Supreme Law of the Land, and it is fully in effect today.

We are all acquainted with the concept of the letter of the law, and the spirit of the law. One involves strict interpretations of words, the other, intent. This matter before us, I believe, involves both. The intent of the hazardous waste cleanup laws surely came from a desire and intent to return the land and resources to their unpolluted conditions, as nearly as possible. The term protectiveness involves the need for safety and security from harm, but only makes sense in the context of how people might reasonably live in the future.

You will see that there is a clear connection between our Treaty rights at Hanford, and the CERCLA statute [i.e., the Superfund law] and our natural resources.

[O]nce again consider the letter of the law, in light of its spirit, to understand the connections of cleanup to the Treaty reserved rights of the Yakama Nation, whom have fought for years to uphold its half of the Treaty of 1855 with the United States. At times, we have to uphold the United States' half as well.¹¹

future, and how people could come into contact with Hanford’s pollution if the U.S. government fails to clean up radioactive and toxic pollution. The Yakama Nation Exposure Scenario offers Energy a starting point for considering the impacts of Hanford’s pollution.¹² According to Yakama Nation, “[t]he cleanup actions must achieve cleanup goals that are protective based on the exposure parameters and lifestyle described in the Yakama Nation exposure scenario The cleanup actions must be protective of all ecological resources that have been or may be affected by Hanford releases and activities.”¹³

The Yakama Nation’s vision for Hanford requires cleanup decisions that fully protect the health and traditional foods of Yakama tribal members, both living and unborn. The Yakama Nation takes the position that cleanup standards and waste management decisions at Hanford meet the goal of restoring what has been lost, as well as protecting the future resource uses reserved by the treaty.

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION (CTUIR)

CTUIR advocates for cleanup to “assure that the Hanford Nuclear Reservation is managed in such a way that it releases no more pollutants, its wastes are properly cleaned up and disposed of, and the natural resources of the region are restored to tribal use.”¹⁴ To guide government cleanup decisions at Hanford, CTUIR developed its own detailed pollution exposure scenario to account for how tribal people will use Hanford in the future. CTUIR explains:

- ▶ The exposure scenario includes “residence, because permanent year-round fishing villages with resident CTUIR members were present along the Hanford Reach when Hanford was established.”
- ▶ The tribal people scenario “is not a visiting scenario like a recreational scenario.”
- ▶ The tribal exposure scenario includes a forager that “may obtain a site-specific percentage of his and her food from an irrigated garden to supplement the native plants in his or her diet.”

- ▶ CTUIR also accounts for how tribal people are exposed to radioactive and toxic pollution from “a well and/or seep and/or river for drinking water, sweat lodge water, and irrigation.”^{15 16}

Like other Columbia River tribes, the CTUIR envision a future where tribal people intensively use the Hanford site, and CTUIR seeks a cleanup that will support these uses.

NEZ PERCE TRIBE

The Nez Perce Tribe is deeply involved in Hanford cleanup, and it advocates for similar long-term cleanup goals to Yakama Nation and the CTUIR. The Nez Perce Tribe Executive Committee explains, “The Nez Perce Tribe believes that the Endstate Vision of the Hanford Site should allow for Nez Perce Tribal members to utilize the area in compliance with the Usual and Accustomed treaty rights reserved and guaranteed in the 1855 treaty between the United States Government and the Nez Perce Tribe.”¹⁷ According to the Nez Perce End State Vision, “The Nez Perce Tribe believes that the ultimate goal of the Hanford cleanup should be to restore the land to uncontaminated pre-Hanford conditions for unrestricted use.”¹⁸ In the Nez Perce Tribe’s view, tribal members, ecological resources, and cultural resources within Usual and Accustomed areas “should not be exposed to any potential adverse risk about that which has always existed for the tribe prior to the establishment of the federal government projects and facilities at Hanford in 1942[.]”¹⁹ Like Yakama Nation and

“Tribal oral histories tell that we have utilized the natural resources of the Hanford region since time Immemorial. Archeological records indicate use and occupancy of more than 11,000 years.”

– Nez Perce Tribe, Hanford Website

Signs and Fences Don't Equal Cleanup

Energy plans to leave pollution in place by relying on so-called institutional controls. According to EPA, “Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.”²⁶ At Hanford, institutional controls could include warning signs, fencing, and restrictions on the use of water in areas where contamination remains after Energy completes cleanup.

CTUIR, the Nez Perce Tribe’s vision of Hanford’s future requires a cleanup that restores soil, groundwater, and other resources rather than leaving pollution behind that could harm future generations.

THINKING AHEAD

In 2017, the State Tribal Government Working Group, of which Nez Perce, CTUIR, Yakama Nation, and the states of Oregon and Washington are members, published a report, “Closure for the Seventh Generation.” The report addresses long-term risks and stewardship of all the nuclear weapons research and production facilities, including Hanford. Notably, the report makes 23 recommendations that could shape Hanford’s future, as well as other nuclear waste sites. Among the recommendations, the tribal nations and states urge Energy to:

- ▶ “Consider tribal treaty rights and fulfill Energy’s trust responsibility and related access rights for tribes prior to transfer of land ownership or management authority[.]”
- ▶ “Emphasize protection of cultural resources as part of Energy’s mission.”²⁰

By following these recommendations and others, discussed below, Energy could begin to resolve the disconnect between its vision for Hanford’s future and the visions of Columbia River Treaty Tribes.

U.S. DEPARTMENT OF ENERGY’S VISION FOR HANFORD

Energy’s vision for Hanford leaves dangerous waste in place for thousands of years, preventing

people from fully using the land, river, and groundwater at Hanford. Energy’s approach rests on a short-sighted analysis of how people may use Hanford in the future, and it fails to anticipate how people will come into contact with Hanford’s pollution in hundreds or thousands of years.

Energy’s plans for how people will use Hanford in the future influence its cleanup investments today. The government asks the following key question when determining how much pollution to clean up: “How will people use the contaminated land in the future?”²¹ Then, the government develops cleanup plans based in part on whether people will use the land for farming, industry, housing,



The discoloration of this groundwater sample shows high levels of hexavalent chromium in groundwater near the Columbia River. Photo by U.S. DOE (2013).

recreation, or other uses. In turn, Energy’s assumptions about how people will use Hanford in 50, 100, or 1000 years influences cleanup decisions today.

To unpack Energy’s vision for Hanford’s future, we consider two case studies: the Hanford Comprehensive Land Use Plan and recent River Corridor cleanup plans. Together, the case studies arrive at similar conclusions. Energy’s planning horizon—in some cases only 50 or 100 years—ignores long-lived impacts of radioactive and toxic pollution.

CASE STUDY 1: ENERGY’S COMPREHENSIVE LAND USE PLAN

Energy’s Comprehensive Land Use Plan (Land Use Plan) is important: it guides current and future cleanup decisions. The Land Use Plan designates the River Corridor, a 220-square mile area bordering the Columbia River, for recreation, conservation (which includes mining), and preservation. For the Central Plateau, a large inland portion of Hanford containing some of Hanford’s most dangerous waste, the Land Use Plan allows for continued waste management operations and designates the Inner Area of the Central Plateau as “Industrial (Exclusive).”²²

The Land Use Plan determines how people will use the site for the next 50 years and acknowledges that so-called institutional controls—signs, fences, and restrictions in land deeds—may be necessary for up to 100 years in some areas. Beyond 100 years, the Land Use Plan does not address potential uses by tribal nations, tribal people, and the general public. In turn, the Land Use Plan stops short of addressing land uses over the lifetimes of long-lived radioactive and toxic pollutants like iodine-129, plutonium-239, and technetium-99. The half-lives of these cancer-causing contaminants are 15,700,000, 24,000 and 211,000 years, respectively. And, as explained in Energy’s 2013 Cleanup Completion Framework, the federal government expects to leave large amounts of contamination in Hanford’s Central Plateau.²³ Because of this contamination, Energy projects that the federal government will control the Inner Area “for the foreseeable future,” although the Land Use Plan does not directly address these very long timelines.²⁴

Notably, the Land Use Plan does not address tribal people fishing, hunting, gathering, living, and using sweat lodges in the River Corridor. Energy describes its vision as allowing “unrestricted access to the River Corridor lands for recreational activities,”²⁷ but ignores how tribal people could use the site for hunting, fishing—including consuming locally-caught fish—and gathering roots and berries. In addition, Yakama Nation and other tribes have questioned whether industrial uses and other activities might impact important tribal cultural resources.²⁸ The Land Use Plan does not adequately address the tribal nations’ input.



A worker drains a pipe containing chromium added to cooling water used in Hanford reactors to prevent corrosion. A cocooned nuclear reactor, located in the 100 Area, looms in the background. Photo by U.S. DOE (2015).

Tribes and the public have argued that Energy must account for people living or staying at Hanford for prolonged periods of time, if not permanently. However, Energy’s 2015 Supplemental Analysis for the Land Use Plan asserts that “limited public and tribal access is consistent with resource conservation, recreation, and preservation land-use designations in the CLUP [Comprehensive Land Use Plan].”²⁹ Despite concerns raised by tribes and the public, Energy has relied on the Land Use Plan to justify cleanup to industrial standards rather than unrestricted use standards. For example, in Hanford’s 300 Area, Energy chose to leave uranium contamination in soils and groundwater based on an assumption that future generations

would use the area for industry.³⁰ By narrowing potential future uses, Energy uses the Land Use Plan to justify leaving pollution in Hanford’s soil and groundwater.

Overall, the Land Use Plan demonstrates how Energy’s vision could limit future uses of Hanford. In turn, the Land Use Plan justifies less cleanup in areas where Energy would prefer not to fully remediate Hanford’s pollution.

CASE STUDY 2: ENERGY’S RIVER CORRIDOR CLEANUP PLANS

Energy’s plans for the River Corridor provide another example of how Energy’s vision restricts future uses and leaves contamination in place that could impact future generations. Energy targeted the River Corridor for extensive cleanup during the last decade, removing over 18 million tons of contaminated soils from the 100 Area, located within the River Corridor.³¹ Energy made significant progress removing nuclear fuel from the shoreline, excavating and treating contaminated soils and structures, and reducing hexavalent chromium pollution entering the Columbia. However, both toxic and radioactive pollution remain in the 100 Area’s soils, groundwater, and remaining buildings.³²

Energy’s recent plans and cleanup decisions for the River Corridor assume restrictions on future uses. In 2016, Energy released a River Corridor Integrated Land Planning Document. The purpose: build on the Comprehensive Land Use Plan and provide more detail on how people will use the River Corridor in the future.

Highlights include:

- ▶ Energy plans to restrict future land use in the River Corridor through institutional controls.³³
- ▶ Energy proposes long-term restrictions on certain activities such as irrigation and deep excavation because Energy plans to leave radioactive and toxic waste in soils, groundwater, and contaminated structures close to the Columbia River.³⁴

Even in areas very close to the Columbia River, Energy proposes restrictions for hundreds of years

on “deep excavation,” which the agency defines as soil disturbance more than 15 feet below the ground surface. For example, Energy’s Draft Final Proposed Plan for the 100-B/C Area would restrict deep soil excavation for hundreds of years because contaminants are either long-lived or present at levels that would pose a risk to people and the environment. In a few areas, institutional controls would extend more than 10,000 years into the future in sites close to the Columbia River.³⁵

Also in the 100-B/C Area, Energy proposes to allow strontium-90, a cancer-causing radioactive pollutant, to persist for decades in groundwater at concentrations above drinking water standards. Energy also plans to allow hexavalent chromium, a cancer-causing toxic chemical, to remain in groundwater entering the Columbia River at levels dangerous to juvenile salmon.³⁶ In this case, EPA has not objected to Energy’s plan to impose long-lived restrictions on deep excavation and decades-long restrictions on groundwater use. EPA and Energy expect groundwater to enter the Columbia River shoreline at levels exceeding toxic standards for juvenile salmon for the next 60 years.³⁷

In some areas of the River Corridor, Energy is still developing plans to address strontium and other contamination. For example, in Hanford’s 100-N Area, strontium pollution continues to enter the Columbia River. While Energy has used apatite, a naturally occurring mineral, to capture and immobilize strontium pollution, it continues to reach the Columbia River through seeps and contaminated groundwater at levels that exceed drinking water standards. Like other areas of the River Corridor, Energy’s plans for addressing the presence of cancer-causing strontium-90 will depend on its expectations for how tribal members and other people will use Hanford’s shoreline in the future. The 100-N Area is a particularly dramatic example because groundwater very close to the Columbia River contains strontium contamination at a concentration of 12,600 picocuries per liter—more than 1500 times greater than the drinking water standard of 8 picocuries per liter.³⁸

Energy’s future plans for Hanford impact how it cleans up other areas of the River Corridor downstream from the 100 Area, as well. For example, Energy’s 300 Area Final Cleanup Plan proposed to leave uranium in soils and groundwater near the Columbia River. Despite concerns raised by Yakama Nation and others that the cleanup plan fails to protect other potential uses of the area—tribal activities, conservation, and recreation—Energy relies on cleanup methods that leave uranium and other wastes in place.³⁹ Energy’s rationale: under the agency’s Comprehensive Land Use Plan, Energy designated the future land use as “industrial.”

Even as it releases final cleanup decisions for areas near the Columbia River, Energy makes the unsubstantiated claim that long-lived pollution in Hanford’s Central Plateau will have little impact on future groundwater resources near the

Columbia River. Energy’s Cleanup Completion Framework asserts, “Cleanup decisions and actions for the Central Plateau . . . are anticipated to prevent additional plumes from reaching the River Corridor area above drinking water standards; therefore, future plumes from the Central Plateau do not need to be considered in River Corridor decisions.”⁴⁰ Energy makes this claim despite having observed long-lived pollution such as iodine-129, with a half-life of 15.7 million years, migrating from the Central Plateau to the River Corridor, a problem that Energy’s models say may recur hundreds of years into the future.⁴¹ By assuming that the River Corridor will be immune from groundwater pollution originating in the Central Plateau, Energy justifies leaving more waste in Hanford’s soils.

Energy’s final decisions for the River Corridor—decisions that leave chemical and radioactive



waste in Hanford’s soils and groundwater—may foreclose safe use of the Columbia River shoreline and other areas close to the Columbia. To date, EPA and Ecology have supported Energy’s plans to impose institutional controls in some areas of the River Corridor.⁴² Notably, the Hanford Advisory Board—a government-authorized public advisory board—disputes Energy’s plans to rely on long-term institutional controls, and advocates for “unrestricted use” of the River Corridor.⁴³ The Board expresses skepticism that future generations will tolerate signs and fences close to the Columbia River for over 100 years—or that warnings will remain effective over hundreds or thousands of years.

WASHINGTON AND OREGON’S VISIONS FOR HANFORD

Washington and Oregon play an active role in Hanford cleanup oversight and frequently take issue with Energy’s vision for Hanford’s future. Washington enforces environmental protection laws in cleanup at Hanford, and it is a member of the Tri-Party Agreement. The Tri-Party Agreement is a formal agreement between Energy, EPA, and Washington state. The Tri-Party Agreement establishes the expectations and schedule for cleanup. The State of Oregon engages in Hanford cleanup as a member of the Natural Resources Trustee Council and an expert reviewer of Energy’s proposed cleanup plans. The Oregon Hanford Cleanup Board, authorized by the Oregon Legislature in 1987, provides input on Energy’s cleanup decisions along with the Oregon Department of Energy (ODOE). According to Ken Niles, Director of Oregon’s Nuclear Safety Division, “Oregon’s vision for successful cleanup of Hanford centers around protection of the Columbia River—now and forever.”⁴⁴

Examples of Washington and Oregon’s vision of Hanford’s future differing from Energy’s include:

▶ **Containing Pollution in Glass.** Ecology and ODOE differ with Energy on potential plans to dispose of very long-lived radioactive waste in Hanford’s Central Plateau, urging Energy to use durable waste forms to prevent releases

to groundwater. Ecology and ODOE envision a future for Hanford where low-activity radioactive waste is left in the Inner Area of the Central Plateau, but the waste remains encased in glass to prevent it from entering the soil.⁴⁵ ODOE wrote in 2017, “DOE’s [Energy’s] analysis through the decade-long Tank Closure and Waste Management Environmental Impact Statement demonstrated that grout (a type of cement) would not sufficiently hold certain long-lived mobile radionuclides, such as technetium-99 and iodine-129. The contaminated groundwater would eventually pose a threat to the Columbia River.”⁴⁶ ODOE also urges Energy to consider additional measures to remove pollution in Hanford’s soils that remains underneath high-level waste tanks. This position contrasts with Energy’s preference to fill empty tanks with engineered grout and construct caps over the structures to prevent the intrusion of moisture that could drive contamination into groundwater.

▶ **Limiting Size of Control Areas.** ODOE and Ecology urge Energy to limit institutional controls to the smallest areas possible. ODOE has supported Hanford Advisory Board advice that seeks unrestricted use of the River Corridor. Similarly, Ecology wrote in 2007,

“Land use control areas...should only be as large as absolutely necessary. Consideration should be given to the minimization of both the number and size of areas that require such restrictions to support this goal. This is a goal that the Tri-Parties have agreed to...and is important to the public, stakeholders, Tribes and trustees.”⁴⁷

Both agencies also urge Energy to limit its reliance on very long-lived institutional controls, particularly those extending beyond 100 years. After 100 years, institutional controls are more likely to fail. Additionally, Ecology acknowledges that open-ended institutional controls could impinge on tribal rights.⁴⁸

▶ **Cleaning Up Rather Than Capping, Where Possible.** ODOE and Ecology have expressed a strong preference for active cleanup rather than leaving waste in Hanford’s soils. Where technically possible, the states urge Energy to

opt for removal and treatment of dangerous and long-lived radioactive waste. In 2007, Ecology wrote,

“There should be a presumption of Remove-Treat-Dispose (RTD) for shallow, long-lived contaminants...Caps may be used without RTD in limited circumstances, such as for waste sites in the vicinity of canyons or tank farms where the waste sites are limited in size and easily covered by the caps for those facilities.”

Similarly, ODOE has urged Energy to consider using caps only where necessary, and to consider removing more contamination from soil where possible to prevent long-lived contamination from reaching groundwater.

Washington and Oregon’s visions for Hanford dispute Energy’s approach to cleanup by opting for more proactive, protective, and durable actions to treat and contain Hanford’s radioactive and chemical waste.



Credit from top left to bottom right: Matt McCormick, U.S. FWS, Sara Quinn, U.S. FWS

RECOMMENDATIONS TO PROTECT PEOPLE & THE COLUMBIA RIVER FROM HANFORD'S POLLUTION

This report shows that Energy's vision for Hanford's future largely ignores the visions of Columbia River Treaty Tribes and the states of Oregon and Washington. Overall, Energy's cleanup plans rely on:

- ▶ Restricting future uses at Hanford.
- ▶ U.S. government control over how people use Hanford for hundreds—if not thousands—of years.
- ▶ Hanford's soils and groundwater remaining isolated from people, animals, fish, and the Columbia River for hundreds or thousands of years.

Energy's vision for Hanford's future matters because important cleanup decisions remain. Energy's vision, however, is disconnected from the vision of tribal nations, states, and other stakeholders. Energy should take the following steps to address this disconnect.

- 1. Change the Comprehensive Land Use Plan.** Energy should re-open and amend the Comprehensive Land Use Plan for Hanford to fully address concerns raised by tribes and other stakeholders. Energy should not rely on the Land Use Plan's outdated analysis to justify limitations in cleanup.
- 2. Develop Cleanup Plans that Comply with Treaties.** Energy should develop cleanup plans that comply with the Treaties of 1855. This is particularly important in the River Corridor, where upcoming final decisions are poised to leave dangerous, long-lived waste close to the Columbia River, creating unacceptable risk levels for tribal uses and/or consumption of Treaty-protected and traditional resources.

3. Adopt 2017 Working Group

Recommendations. Energy should carefully review and adopt the 23 recommendations of the State and Tribal Government Working Group 2017 Report, "Closure for the Seventh Generation," which include:

- Consider tribal treaty rights and fulfill Energy's trust responsibility and related access rights for tribes prior to transfer of land ownership or management authority.
- Improve justifications for decisions to select long-term remedies that may include institutional controls and demonstrate how federal trustee responsibilities to tribes—including those for treaty rights and resources—are incorporated into long-term stewardship plans and activities.
- Expand tribal people's access to Energy sites for cultural, subsistence, religious or ceremonial purposes for all areas not undergoing cleanup or not directly affected by ongoing operations.
- Emphasize protection of cultural resources as part of Energy's mission.⁴⁹

- 4. Invest in Active Cleanup.** Energy should invest in active cleanup rather than reliance on long-lived institutional controls that impinge on tribes' and the general public's potential future use of Hanford.

These recommendations may be more cost-effective—and realistic—than relying on the federal government to restrict access and uses of large areas of Hanford for hundreds or thousands of years.

GET INVOLVED

People across the Pacific Northwest have changed the course of history at Hanford. Even before Hanford cleanup began in earnest in 1989, tribal nations, state leaders, and public watchdog groups successfully persuaded Energy to transition Hanford's mission away from the production of plutonium for nuclear weapons. Tribes and activists in the Northwest also prevented Hanford from becoming a high-level nuclear waste storage facility for waste from around the country.⁵⁰ In 2016, Energy rejected Hanford as a disposal site for so-called Greater Than Class C waste, a proposal that would have increased shipments of radioactive waste into the Hanford Site. And state, local, and tribal governments objected to Hanford becoming the disposal site for storage of 11,000 tons of mercury, a toxin already prevalent in Columbia River fish.⁵¹ Public pressure plays a major role in Hanford's future.

Every year, Energy, Ecology, and EPA invite the public to weigh in on cleanup decisions at Hanford. Your voice matters. To get involved:

- 1. STAY INFORMED:** Sign up for Columbia Riverkeeper action alerts at columbiariverkeeper.org/take-action.
- 2. LEARN & SHARE:** Connect with Columbia Riverkeeper to learn more about visiting the Hanford Reach, one of the jewels of the Columbia River. And follow us to learn about recent developments in Hanford cleanup. Help spread the word by sharing what you learn through social media.
- 3. SPEAK UP:** Join us at an upcoming hearing or event to share your thoughts and concerns about Hanford. You don't have to be an expert. You just have to care about the future of Hanford and the Columbia River!



Tank Farm Workers
Photo by DOE

- 1 Cascadia Times. 2004. "Sacrifice Zone." http://www2.clarku.edu/mtafund/prodlib/hanford/Sacrifice_Zone.pdf
- 2 Oregon Department of Energy. 2018. "Hanford Groundwater." ("An estimated 444 billion gallons of contaminated liquid was dumped into the soil, causing extensive contamination of Hanford's groundwater. The most hazardous of the liquid waste was pumped to 177 underground storage tanks.").
- 3 Washington Department of Ecology, <https://ecology.wa.gov/Waste-Toxics/Nuclear-waste/Hanford-cleanup/Protecting-air-water/Groundwater-monitoring>
- 4 Oregon Department of Energy, <http://www.oregon.gov/energy/facilities-safety/safety/Pages/Hanford-Groundwater.aspx>
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QUICK GUIDE TO MAJOR POLLUTION PROBLEMS AT HANFORD

The River Corridor

- ▶ The River Corridor covers 220 square miles of the Hanford Site.⁵²
- ▶ The 100 Area, located within the River Corridor, includes six nuclear reactor areas with nine plutonium production reactors, which operated for decades near the Columbia River.⁵³
- ▶ Major pollution challenges include radioactive sludge near the K Reactors, hexavalent chromium in soils and groundwater, and high levels of strontium near the shoreline in the B/C, D/H, and N Areas.
- ▶ Eight of the nine plutonium reactors are in “interim safe storage,” which means the government closed the reactor buildings and monitors their status. The reactors will remain in this state for 75 years while radioactive decay reduces the risks for final cleanup.⁵⁴
- ▶ Cleanup in the 300 Area, which once contained testing facilities, is complicated by the fast movement of contaminants like uranium through soils and groundwater towards the Columbia River.⁵⁵

The Central Plateau

- ▶ The Central Plateau houses Hanford’s most dangerous high-level waste in 177 underground tanks, some containing more high-level waste than water inside an Olympic swimming pool.⁵⁶
- ▶ During Hanford’s operation, the government discharged nuclear waste to soil, unlined trenches, and other rudimentary waste dumps.
- ▶ Energy devotes a significant portion of Hanford’s cleanup budget to the Waste Treatment Plant, a facility intended to convert 56 million gallons of high-level tank waste into glass logs for deep geologic disposal.⁵⁷
- ▶ The Central Plateau contains millions of curies of radioactive pollution—both shorter-lived, highly dangerous ionizing radiation and very long-lived contaminants capable of moving through the environment over thousands of years.
- ▶ Energy divides the Central Plateau into the “Inner” and “Outer” areas. Energy expects to leave more pollution in the Inner Area.



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Photo by Matt McCormick.