STRATEGIES FOR CONTAINMENT: THE U.S. FEDERAL GOVERNMENT AT THE HANFORD NUCLEAR SITE

by

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DISSERTATION ABSTRACT

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This dissertation argues that the U.S. government employs multiple rhetorical strategies to manage discourse about the Hanford Site, a nuclear site located on the Columbia River in Washington State. Hanford produced plutonium for the U.S. nuclear weapons program from 1944 until 1989 and in doing so emitted a massive amount of chemical and radioactive pollution. Today, Hanford is home to one of the largest environmental remediation projects in the world. Since the project began, journalists, advocacy groups, and whistleblowers have revealed numerous instances in which the government has mismanaged Hanford cleanup and misrepresented the Site's dangers. To counter these claims and argue that it is operating safely and transparently, the government publicizes Hanford's remediation successes, offers evidence that Site operations have been protective of nature, and invites private citizens to visit Hanford on public tours. Federal agencies adopt these rhetorical strategies to pacify private citizens, who might be concerned about Hanford's impact on the local environment and human health.

In three chapters, I argue that the government uses new and social media, wildlife preserves, historic sites, and tourism to give Hanford the appearance of order and safety.

Each chapter offers close readings of texts the government has made widely available to the public through the Internet. The first of these chapters explains how the U.S. Department of Energy (DOE), the agency that manages Hanford's waste, uses new and social media to craft a reassuring virtual image of the Site operations. This chapter investigates how the DOE has used such media to distract the public from revelations about leaking nuclear waste tanks at Hanford. The second illustrative chapter contends that the U.S. Fish and Wildlife Service (FWS), which manages the Hanford Reach National Monument, works to extend the Department of Energy's argument that Hanford operations are protective of, and not threatening to, environmental and public health. The third illustrative chapter details how federal agencies, including the DOE, FWS, and the National Park Service, are commodifying Hanford and repackaging the Site as a tourist destination. These strategies for discursive containment ultimately mislead the public and foreclose opportunities for meaningful public participation.

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For all of those working in the public interest to pursue thorough and safe cleanup of nuclear weapons sites

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

INTRODUCTION: RHETORICAL STRATEGIES

In 2011, the U.S. Department of Energy (DOE) released a series of short videos about the Hanford Site, an area of land so contaminated by World War II and Cold War nuclear weapons production that it now hosts one of the largest environmental remediation projects in the world.[1] Lockheed Martin Creative and Strategic Services produced the first chapter of the series, *The Hanford Story: Overview,* which won a Northwest Emmy for best Historical or Cultural Program or Special. The program's host introduces the Hanford Site by explaining that Hanford's history "has everything a storyteller would want, from intrigue and patriotism, to controversy and science faction." (Here, the host substitutes "faction" for "fiction" to emphasize that even Hanford science was fascinatingly controversial.) Indeed, Lockheed Martin and the DOE prove to be masterful storytellers, spinning a compelling and visually stunning narrative from carefully chosen fragments of Hanford's history.

The Hanford Story begins with an equivocation about the Site's history of environmental devastation.[2] An unidentified man sitting at a desk asserts with monumental vagueness, "A lot of people come here with a lot of questions. A lot of people come here with some concerns." The man behind the desk does not elaborate on those "concerns," which relate to Hanford's record of releasing radioactive contaminants into the air, soil, groundwater, and nearby Columbia River, as well as the government's history of avoiding questions about how those contaminants might threaten public health.

Instead, the scene shifts to what looks like the opening credits of a nature documentary. Fleeting shots of the non-human landscape around Hanford flash on the

screen. The sun rises over dim-lit grasslands as birds and insects sing. Stirring violin music begins. The camera rushes in tilting, fast motion flight over the Columbia River as a coyote gallops along the riverbank. Then, in the next scene, construction equipment smashes concrete, momentarily disrupting the tranquility of the previous scenes. Still, the spell cast by the exhilarating beauty of the natural world remains unbroken: the camera focuses on a dragonfly, lingers on the silhouettes of grazing elk, follows geese flocking over the river, and stops only momentarily on another scene of demolition. Then, the video shifts into time-lapse mode, making radiant white clouds race across a vast, open sky. Towards the end of the sequence, ominous scenes return: people in gas masks battle an unseen blaze with industrial fire hoses, and a backhoe claws the earth at a massive excavation site.

The fleeting images of humans at war with the earth are unsettling, but everything in this sequence happens under Hanford's enormous blue skies, and the vast, undeveloped expanses of land dwarf human alterations of the landscape. In this sublime portrait, even violence done to the landscape is beautiful. Machine and garden seem to be in harmony. Though the program goes on to describe Hanford's role in U.S. nuclear weapons production and to deliver sobering news about the government's effort to clean up after it—including the fact that "cleanup will never result in the complete elimination of all contamination"—the video's ending features shadows rolling over mountains, salmon bobbing underwater, geese gathering in the sky, and another high-speed flight over the river.

The video's close attention to Hanford's natural beauty serves an obvious rhetorical function for the DOE. Nature is an appealing distraction from Hanford's

dangerous, decades-long, multibillion-dollar environmental cleanup project, and it provides an attractive incentive to continue funding the Site's remediation work. Furthermore, the DOE can avoid accountability by arguing that it is cleaning up Hanford to save nature. If the agency were to admit that weapons production negatively impacts human health, citizens would undoubtedly protest and the government would be forced to pay damages to local people. Thus, instead of confronting problems, the DOE denies them and offers diversions in place of information. In *The Hanford Story: Overview*, the agency strategically denies the politics of Hanford's contested landscape and the threats it poses to public health by turning away from human impacts and towards the uncultivated landscape.

Reading the DOE's publications with a critical eye is necessary and important work, given everything the agency leaves out of its descriptions of Hanford, including the government's deliberate deceptions, missed cleanup deadlines, threats to worker and public health, and its continued colonization and ongoing pollution of an area where several Native American tribes have treaty rights. That the DOE hired a notorious weapons manufacturer, Lockheed Martin, to produce a program that foregrounds nature, when the DOE's work at Hanford is in fact focused on dangerous waste remediation, is no coincidence. Even so, *The Hanford Story*'s juxtaposition of remediation site and wild nature is both spin and reality; at Hanford, decommissioned nuclear reactors line the banks of the only stretch of the Columbia River to be designated as part of the National Wild and Scenic Rivers System, and a two-lane highway separates the irrevocably contaminated nuclear site from the Arid Lands Ecology Reserve (ALE), an area of "nearly pristine" shrub-steppe vegetation set aside for scientific use (Pacific Northwest

National Laboratory). We tend to see pristine nature and the contaminated spaces of the military-industrial complex as fundamentally different and disconnected, but Hanford's "hybrid geography" challenges us to see them as two aspects of one place (Havlick, "Disarming" 184).

These habits of thought about nature and culture allow the DOE to use Hanford's natural qualities to "green" the site and write over its history of violence. In *The Hanford Story* and other publications about the Hanford Site, the DOE and the U.S. Fish and Wildlife Service (FWS), which manages the adjacent Hanford Reach National Monument, draw on discourses of wilderness purity, patriotism, and environmentalism to cleanse Hanford of its former sins (including its production of plutonium for the bomb the U.S. dropped on Nagasaki). For instance, the agencies use the contradictions of Hanford's landscape to argue that weapons production has been beneficial to the local area. When the government built the Hanford Site in 1943, it made several hundred square miles of uncultivated land inaccessible to the public. As a consequence, native plant and animal species were inadvertently protected. Though this preservation was accidental, the DOE and FWS now suggest—implausibly—that the natural spaces around Hanford were purposefully preserved by decades of environmentally destructive militarization. This "seeming compatibility of military practices and environmental protection" is what David Havlick refers to as "ecological militarization" ("Militarization" 114).

The DOE nuclear weapons complex—which includes nuclear production, testing, waste storage, and laboratory sites across the U.S.—accounts for a large portion of federally managed public lands in the U.S., but its presence and activities are little known

except in communities dependent on it for jobs. Despite this, journalists writing for publications like *The New York Times* and *High Country News*, nonfiction authors like Rebecca Solnit and Terry Tempest Williams, and scholars from a variety of disciplines have written about the complicated relationship between nature and human culture at DOE sites across the country. Some scholars, including David Havlick, William J. Kinsella, and Joseph Masco, have written with close attention to the language used by the DOE, FWS, and other federal agencies, but few have looked at the particular characteristics of government rhetoric about the Hanford Site. This dissertation will examine how that rhetoric has been shaped by a legacy of secrecy, local conditions and politics, contemporary preservationist sentiment, the government's recent use of new and social media, and the need for long-term management of Hanford's astonishingly extensive, complex, and persistent nuclear waste problems.

This work seeks to address an array of readers: nuclear critics who work in history, anthropology, communications, and cultural geography, as well interdisciplinary scholars working on environmental issues; environmental and nuclear activists who interpret government discourse to the public and construct their own counter-narratives; and others who have a general interest in environmental remediation, Hanford, and the Atomic West. While humanistic inquiry about the U.S. nuclear weapons complex has "typically directed its attention to cases of literature, popular culture, and political discourse," my dissertation will engage in rhetorical analysis of documents that the DOE and the U.S. Fish and Wildlife Service (FWS) have made readily available to the public (Taylor and Kinsella 9). Several scholars working in the interdisciplinary field of nuclear criticism have argued that institutional discourse about nuclear technologies works to

pacify rather than engage the public (7). My work will use government documents about Hanford to test that argument.

The unique contribution of "Strategies for Containment: The U.S. Federal Government at the Hanford Nuclear Site" is an analysis of the DOE's most recent attempts to engage in "discursive containment" by controlling the meanings associated with Hanford (Kinsella, "Nuclear Boundaries" 165). William J. Kinsella notes that the DOE experienced a "discursive leakage" in the mid-1980s when thousands of pages of newly declassified documents revealed what had been going on for decades at the formerly top-secret nuclear site (164). Since that leakage, the DOE has pursued "a more complex strategy in which *information* about Hanford is far less restricted, but the *meanings* of that information and the authority to make those meanings are rhetorically contained" (164). My dissertation illuminates how the federal government makes information about Hanford more accessible and yet maintains control over how Hanford is interpreted through the use of websites, social media pages, preservation, and public tours.

Nuclear communication scholars have shown how government agencies, politicians, and contractors working in the weapons complex have shaped nuclear discourse to their ends, making it nearly impossible for the public to understand nuclear concepts and weigh in on relevant policy. In 1989—the same year the federal government agreed to begin cleanup at Hanford—Edward Schiappa published a seminal essay on nuclear discourse, "The Rhetoric of Nukespeak." Schiappa defines nukespeak as "the use of metaphor, euphemism, technical jargon, and acronyms to portray nuclear concepts in a 'neutral' or positive way" (253). Government agencies, politicians, and contractors

working in the weapons complex employ nukespeak to avoid directly addressing the realities of nuclear weapons and to prevent the public from engaging in thoughtful deliberations about them (254). They do this through two different strategies, domestication and bureaucratization. Domestication is "the use of 'friendly' *metaphors* drawn from *ordinary language* to *name* otherwise objectionable nuclear weapons, strategy, and war" (255). Domestication "normalizes extraordinary technology" (256). Bureaucratization, on the other hand, is used "either to *sanitize* [a] concept so that it appears neutral and inoffensive, or to *technologize* [a] concept by applying technical terms or acronyms that only insiders or 'experts' can 'really' understand" (256-57). This strategy is used to "*mystify—to render nuclear policy irrelevant or inaccessible to public investigation and deliberation"* (257). This atmosphere, in which the public can neither interpret nor investigate nuclear issues, has enabled the U.S. government continuously to prepare for war and to mismanage the vast quantities of nuclear waste left over from weapons production.

Today, the DOE and the other federal agencies operating at Hanford use nukespeak to contain scandal and constrain the public's ability to participate in decision-making about the Site. In print publications about Hanford, on government-managed websites, at public meetings, and wherever else these agencies operate, they employ the strategies of domestication and bureaucratization to ensure that Hanford does not seem like a threat to the public. The DOE's "Hanford Site" *Facebook* page domesticates Hanford by making it appear as if workers are safely and even enthusiastically engaged in the Site's cleanup. In other publications, the government employs euphemisms like "long-term stewardship," which refers to the program that monitors nuclear waste after

the DOE has finished cleanup at a given site, to make its activities appear benign and even environmentalist. The ways the government has bureaucratized Hanford are innumerable. One has to learn the meaning of dozens of acronyms just to gain a basic grasp of how waste is managed at the Site.

In response to these rhetorical strategies that ultimately disenfranchise the public, communication scholars have developed the field of nuclear criticism, which is "generally concerned with understanding, evaluating, and transforming the nuclear condition" (Taylor and Kinsella 3-4). The field thus has an ethical imperative; nuclear critics operate under the assumption that "institutional discourse about nuclear weapons should be ethically evaluated in order to decenter the dominant voices of technical rationality and militarism that have historically controlled their meaning" (Taylor, "Revis(it)ing" 124). To displace those voices, one needs to examine government rhetoric about not only the nuclear weapons program but also the DOE-controlled sites where huge quantities of nuclear waste persist in the environment.

These sites require close and prolonged attention because they are home to a kind of environmental disaster that cannot be understood through our typical frames of reference. Hanford, for example, has never given rise to a spectacular disaster that could easily be sensationalized by the news media. In fact, the government has been able to maintain the appearance of order at Hanford, and that façade has convinced many people that the Site is not a significant threat to people living downwind and downstream. Because Hanford has done its damage so continuously (the Site is still actively releasing contaminants into the Columbia River even though plutonium production ended decades

ago) and so covertly, its particular type of destruction can be understood as a form of what Rob Nixon calls "slow violence":

> By slow violence I mean a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all. Violence is customarily conceived as an event or action that is immediate in time, explosive and spectacular in space, and as erupting into instant sensational visibility. We need, I believe, to engage a different kind of violence, a violence that is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales." (2)

Unlike Chernobyl, which erupted into "instant sensational visibility" (seen both in the fiery explosion and in the damaged bodies of its victims), Hanford has released its poisons quietly and gradually. Thus, we must engage with its "incremental and accretive" violence and acknowledge that, without our intervention, that violence will continue well beyond a human timescale.

The slow violence at Hanford has taken place largely without the public's knowledge. From the beginning, the Site's isolation from large population centers enabled Hanford's part in the Manhattan Project to operate in extreme secrecy. When deciding where to locate plutonium production facilities, the War Department chose Hanford for three essential qualities: its proximity to a large body of water (the Columbia River) that could be used to cool nuclear reactors, access to a massive supply of electric

power (provided by the completion in 1942 of the Grand Coulee Dam, which is 150 miles upriver of the Hanford Site), and maximum distance from large population centers. Government officials also viewed Hanford as an inexpensive place to locate a nuclear site: "The costs of condemning [the land at Hanford] and moving out the approximately fifteen hundred people living within the tract of interest, they believed, would not be prohibitive" (Gerber 23).

Of course, this estimation of potential costs took only financial costs into account, and even the amount the government paid in dollars reflected its devaluation of the land. General Leslie R. Groves, who was the head of the Manhattan Engineering District for the Army Corps of Engineers, famously dismissed the small farming communities of the 1940s Columbia Basin, saying: "I was pleased with the relatively small amount of cultivated land we would have to take over. Most of the area was sagebrush suitable only for driving sheep to and from summer pastures in the mountains" (74-75). This callous and myopic assessment—which completely disregarded Native Americans and non-indigenous settlers, who made their homes in Hanford's harsh landscape—set the tone for the U.S. government's mistreatment of the land and people of the mid-Columbia Basin for decades to come. To illustrate the loss suffered by local people, histories of Hanford often mention that, in 1943, the government forced about 2,000 Euro-American settlers out when it condemned the 670-square-mile area of land and that many of those people were given only thirty days to leave (Findlay and Hevly 20). This is to say nothing of the losses suffered by Native American people from at least six local tribes who had long-standing cultural and spiritual ties to the area as well as needs to access Hanford land for food and medicine.[3]

Groves was not alone in his condemnation of the arid lands of the western United States. Euro-Americans' perceptions of nature led white settlers and the U.S. government to view deserts as barren wastelands that could only be redeemed through irrigation and cultivation. Patricia Nelson Limerick explains how this mentality paved the way for environmental disaster at Hanford:

> Since arid land was already, in the common phrase of the nineteenth century, a wasteland, what could be more appropriate than to put it to use as a place for containing real waste, a place simply to dig a trench, dump in contaminated water, and feel comforted in the belief that there was nothing much to injure anyway in land so tough and uncompliant? (60)[4]

Manhattan Project leaders saw the Columbia Basin as desolate and dreary, and this became justification initially for government takeover and ultimately for wholesale destruction of the land.[5]

Hanford is merely one set of facilities and waste burial grounds in a toxic archipelago of nuclear sites that are spread out across the U.S. Many of these sites are clustered in the western part of the country, forming what Bruce Hevly and John Findlay have termed the "Atomic West." The U.S. federal government already owned vast tracts of land in the West prior to the development of nuclear weapons, and it "regarded the region as relatively empty," so each federal agency in charge of U.S. nuclear activities was able to acquire huge areas of land in that region (Hevly and Findlay 4). Thus, the West encompasses over a dozen sites associated with nuclear weapons production and waste disposal, including Hanford, Lawrence Livermore Lab and U.C. Berkeley in California, Idaho National Laboratory, the Nevada Test Site and nearby Yucca Mountain

in Nevada, Rocky Flats and Rocky Mountain Arsenal in Colorado, the Pantex Plant in Texas, and Los Alamos National Laboratory, the Waste Isolation Pilot Plant, and the Trinity Site in New Mexico.[6] Each of these sites has been subject to transformations in the U.S. nuclear economy, which—like other boom-bust economies in the West—has expanded and contracted in response to political and economic conditions (Limerick 60). Many communities that grew up around the weapons complex (such as eastern Washington's Tri-Cities, which are just downriver from Hanford) have benefited financially from expansions in the nuclear economy and they therefore embrace nuclear technologies. This economically motivated optimism is enabled by the invisibility of radiation and the difficulty of tracing its effects on human health and the environment.

Though Manhattan Project leaders could not have predicted the scope of the contamination that would one day permeate the Hanford Site, they knew that nuclear production presented a risk to local people and the environment. At the end of WWII, the War Department acknowledged that it had understood the dangers of plutonium processing when the Manhattan Project began. Military leaders claimed that Hanford was selected for its "'isolation [. . . because] at that time [late 1942], it was conceivable that conditions might arise under which a large pile might spread radioactive material over a large enough area to endanger neighboring centers of population'" (qtd. in Gerber 25). The site's supposedly "remote" location did not protect Hanford workers or nearby inhabitants, let alone the local ecosystem or future generations. Radioactive and chemical contaminants did their invisible work on people and landscapes as military leaders labored to conceal Hanford's operations from the American public and the press.

Maintaining secrecy required not only a remote, well-guarded location but also elaborate and well-coordinated deceit. After Pearl Harbor was attacked in December of 1941, U.S. journalists were subject to a "Code of Wartime Practices for the American Press," issued on January 15, 1942. The code gave specific instructions about which types of news could be reported, and the government relied on the patriotism of journalists, who were expected to adhere to it. Reporting about Hanford was no exception; indeed, the Manhattan Project's secrets were guarded more closely than those of any other aspect of the war effort. When workers began to build the production facilities, military officers from Hanford paid visits to all of the major newspapers in the Pacific Northwest to inform editors of their patriotic duty not to leak information about the Site. If a Northwest newspaper planned to print an article that discussed Hanford's mission, it had to consult with the Army.

For example, in April of 1944, the *Seattle Times* wanted to print a story about the military's rush to build housing in Richland, Washington for scientists and managers working at Hanford. Colonel Franklin T. Matthias, an Army Corps engineer who presided over construction at Hanford, blocked the story, arguing that though the *Times* "'article is not specifically objectionable in the material included, it is bad in that it emphasizes the speed and importance of the project'" (qtd. in Williams 88). Even high-ranking politicians were not to inquire about what was going on at Hanford. Harry Truman—who was still a senator in 1943—became well known for investigating profiteering during WWII. When he tried to advocate on behalf of Hanford area residents who were displaced by the nuclear site, Secretary of War Henry Stimson convinced him that secrecy was fundamental to Hanford's mission. It was only after President

Roosevelt's death and Truman's ascent to the presidency that the former senator was briefed about the Manhattan Project. Project leaders were concerned that questioning would slow down or even halt their efforts, and they were determined not only to build an atomic bomb before the Communists could do the same but also to use the bomb before the end of the war.

Hanford's mission was revealed on August 6, 1945 when the U.S. dropped the first atomic bomb on Hiroshima. On that day, the cover of the Richland, Washington paper *The Villager* read, "It's Atomic Bombs: President Truman Releases Secret of Hanford Product." Only then did the majority of workers at the Hanford plant learn that they were building atomic bombs and that their labor had altered the course of history. The U.S. government had conducted the entire operation—the extent of which covered much of the U.S., from sites in Tennessee to New Mexico to Washington State—in secret and thus without the consent of the American public. The extreme classification of information at Hanford is merely one instance of the secrecy maintained across the nuclear weapons complex.

That secrecy had a profound impact on the way the Department of Energy operated when it was created, and it continues to influence the way it operates today. Though the DOE is the current manager of Hanford, the agency did not exist when the nuclear weapons complex began to take shape in the 1940s. After WWII, President Truman signed an act that transferred the nuclear weapons program from military to civilian control. This created the Atomic Energy Commission (AEC), which was ordered to supervise the development of nuclear energy during peacetime. By the mid 1970s, Congress decided that the regulatory and promotional functions of the AEC should be

divided. The Energy Reorganization Act of 1974 created the Nuclear Regulatory Commission (NRC)—which still regulates the U.S. nuclear industry today—and the Energy Research and Development Administration (ERDA), which was created to oversee energy research and development as well as nuclear weapons. Shortly after this shift in management, the energy crisis of the 1970s led to passage of *The Department of Energy Reorganization Act of 1977*, which essentially combined the Federal Energy Administration and ERDA to create the U.S. Department of Energy.

These organizational changes made the DOE responsible for the nuclear weapons complex, which has colonized an enormous area of land and employed hundreds of thousands of people. The complex is massive and has spent billions of dollars preparing for war: it consists of

> seventeen primary sites occupying 3,900 square miles in thirteen states, as well as approximately 300 smaller sites contributing to an elaborate, dispersed network of activities including research and development, industrial production, and testing [. . .]. By 1992, this system had employed approximately 650,000 people, spent approximately $370 billion, and produced more than 70,000 nuclear weapons. (Taylor and Kinsella 14-15)

Despite being charged with the monumental task of managing this complex and its nuclear activities, the DOE also works on energy conservation, energy-related research, and domestic energy production as well as high-profile scientific programs like the Human Genome Project.

The DOE's creation story explains several things about how the agency operates today. At its moment of inception, the DOE became responsible for nuclear sites that already had deeply entrenched wartime cultures characterized by secrecy, rash decision-making, and reckless use of federal funds. While the military no longer controlled the weapons complex (in name) after WWII, the agencies in charge of the complex during the Cold War—a period that served as justification for an unprecedented level of weapons-building activity—were similarly secretive and wasteful. Despite the benefit of many years of reflection on the costs of nuclear production to human health and the environment, the government ramped up production after WWII. During the Cold War, the government built six new nuclear reactors at Hanford (bringing the total number of reactors at the site to nine) as well as many other new processing facilities. A culture of deception grew up around this effort, and that culture ultimately prevented the public from learning about the pollution at Hanford until decades after the facility was built. The DOE had inherited a tendency to emphasize production over safety, and it was only in the late 1980s when a citizen group used the Federal Freedom of Information Act to pressure the DOE that the agency released thousands of pages of previously classified documents that revealed decades of abuse at Hanford.[7] These documents created a widespread sense of betrayal, especially among people living near the Site. Similar events occurred at other nuclear sites throughout the country.

An examination of the DOE's origins also reveals that several transfers of power ultimately made the agency responsible for both the nuclear weapons complex and the development and promotion of nuclear energy (as well as other types of energy). This tension between the DOE's contradictory roles as cleanup engineer, nuclear stockpile

steward, and nuclear energy advocate is still obvious today. Robert Alvarez, a former senior official in the DOE's Office of Policy and a senior policy adviser to former Secretary of Energy Bill Richardson, highlights the immense challenges created by this tension and offers his view on giving one agency control over so many critical government programs:

> The Energy Department maintains the U.S. nuclear arsenal and protects its nuclear secrets while remaining responsible for the largest concentration of radioactivity in the world, which requires stewardship for hundreds of centuries. Perhaps no single agency should have so many missions and be in charge of solving so many different problems and running so many programs. (34)

The complexities of the DOE's innumerable missions, the inefficiency with which the agency has carried out those missions, and its decaying infrastructure have led some to call for its dismantlement, but Alvarez notes that before the U.S. could redistribute the DOE's duties to different agencies, the U.S. would have to answer pressing questions about what we are going to do with the country's "backlog" of nuclear waste and spent nuclear fuel, how we are going to clean up and close down sites that are threatening the environment and public health, and how the country is going to deal with the "human health legacy" of the nuclear age (35). The current structure for decision making in the nuclear weapons complex is ill equipped for dealing with these questions, which require examination of the weapons complex's history and negotiation of competing values.

The DOE has been forced to deal with those legacies, but it has also assiduously avoided blame for them. The agency's ability to trace the birth of the nuclear weapons

complex back to the Army Corps and the War Department (who managed the Manhattan Project) allows the DOE to dissociate itself from the early years of Hanford's weapons production activities. What the DOE does not emphasize is that it took charge during the Cold War, when the majority of the nuclear waste at Hanford was produced. The DOE is implicated in the environmental crimes it is now charged with rectifying; still, the agency expresses a paradoxical mixture of faith in its own innocence and pride in its descent from the Manhattan Project.

The DOE rarely admits to these tensions, and it seldom engages in critical analysis of its own history. Instead, the agency emphasizes the nuclear weapons complex's patriotic accomplishment of its WWII and Cold War missions and ignores its most disastrous consequences. As of July 2013, *Energy.gov*—the DOE's website—hosts a series of pages about the DOE's relationship to the Manhattan Project.[8] On a page devoted to interpretation of the Manhattan Project, the DOE Office of Management explains that the agency "traces its origins to World War II and the Manhattan Project effort to build the first atomic bomb" ("Manhattan"). Though the DOE was not created until 1977 and though it today engages in a variety of non-nuclear activities, it still portrays itself as a "direct descendent of the Manhattan Engineer District." The agency attempts to imbue the Manhattan Project with mythological qualities and then use that myth to establish its own credibility.

And yet, not everyone shares the DOE's interpretations of the Manhattan Project. On the same webpage, the DOE claims that the country was unified behind the development of nuclear weapons: "the Manhattan Project is the story of some of the most renowned scientists of the century combining with industry, the military, and tens of

thousands of ordinary Americans working at sites across the country to translate original scientific discoveries into an entirely new kind of weapon." In this description, the DOE proposes to define what the Manhattan Project has meant for Americans. It artfully suggests that the scientists, military personnel, and "ordinary Americans" working on the bomb were engaged in a voluntary, collaborative effort that united the nation. The DOE offers this inspiring account of the Manhattan Project despite two central facts: first, most of the "ordinary Americans" building nuclear weapons had no idea what they were building and, second, the government manufactured and used the Bomb with neither the knowledge nor the consent of the American people.

Everything about the agency's portrayal of the Manhattan Project is strikingly sanguine. The agency ignores the most obvious and devastating consequences of the nuclear weapons program (which have materialized in landscapes and bodies at Hiroshima, Nagasaki, and a host of nuclear sites across the U.S.) in order to depict the bomb as a scientific achievement that saved American lives and created a thriving national scientific culture. Though the DOE may be more familiar with the immense financial, health-related, and environmental costs of nuclear weapons production than any other organization, the agency still insists that the creation of the bomb was a triumph for twentieth-century science:

> The legacy of the Manhattan Project is immense. The advent of nuclear weapons not only helped bring an end to the Second World War but ushered in the atomic age and determined how the next war, the Cold War, would be fought. In addition, the Manhattan Project became the organizational model behind the remarkable achievements of American

> "big science" during the second half of the twentieth century. Without the Manhattan Project, the Department of Energy, with its national laboratories—the jewels in the crown of the nation's science establishment, would not exist as it does in its present form. ("Manhattan")

According to this narrative, the Manhattan Project can be justified by its contributions to the country's "science establishment." The Manhattan Project offered science an "organizational model," bestowed the DOE with national laboratories, and provided the conditions necessary for the flourishing of "big science." It is not surprising that the DOE employs the language of empire ("jewels in the crown") here; like an enormous empire feeding on the wealth of its colonies, the Manhattan Project made use of valuable resources provided by the nuclear weapons complex (including raw materials like uranium, vast quantities of clean water, human knowledge, and labor). The patriotic mission, nearly unlimited sums of money, and the vast tracts of appropriated land were already there—scientists just had to make use of them.

Scientists and managers working in the DOE complex today still exploit those resources, though much of that wealth is today being used to clean up after WWII and the Cold War. In 1989, the DOE, U.S. Environmental Protection Agency, and Washington State Department of Ecology signed the Tri-Party Agreement, which set legal milestones for environmental remediation at Hanford.[9] Though this type of cleanup agreement would have been "unthinkable twenty years earlier," Congress and the voting public had applied enough pressure to convince the DOE to pursue better practices (Findlay and Hevly 257). Hanford historians have also pointed out that shifting its focus to health and safety was also "pragmatic" for the DOE; in the late 1980s, DOE officials "were receptive to

cleanup in large part because doing so was the only way they could continue to operate their facilities and produce more nuclear weapons" (257). In other words, cultivating the appearance of a change in mission allowed the agency to continue preparing for nuclear war without the public's knowledge.

In part because the government is not fully committed to cleanup, the nuclear weapons complex has been in chaos for decades. Bryan C. Taylor offers an abbreviated list of crises the weapons complex has been "rocked" by in recent years: "by repeated shutdowns of its aging and contaminated plants, by EPA fines levied against its waste-management programs, by widely-publicized allegations of fraud, mismanagement and harassment of whistleblowers, and by litigations involving liability for birth defects, illnesses, and deaths of plant workers, military personnel and local civilian residents" ("Revis(it)ing" 120). Hanford has seen all of these crises and more. Today, the Site's most serious emergencies include leaks in underground waste tanks holding 56 million gallons of liquid radioactive waste, problems with construction of the Waste Treatment Plant being built to stabilize that liquid waste, and worker exposure to toxic vapors from the waste tanks. Despite the fact that Hanford poses an active threat to the region, most people are completely unaware of its existence because the DOE works so effectively to contain scandal. To examine how the agency hides a 586-square mile nuclear site from public scrutiny, this dissertation examines some of the micro-moments in the DOE's recent publications as well as its large-scale strategies for containment, which include both preservation and tourism.

Hanford provides a useful case study for examination of the government's practice of discursive containment because the DOE and the other agencies that manage

Hanford lands are so actively working to control the discourse about Hanford. While the DOE has been able to clean up and shut down several sites in the nuclear weapons complex (such as Fernald in Ohio), Hanford is permeated by such an enormous amount of chemical and radioactive contamination that it now hosts the largest environmental cleanup project in the world. In order to manage the discourse about that project and Hanford's nuclear history, the government is constantly generating new promotional materials about the Site. Those materials will be the subjects of this dissertation.

Each of the three main chapters of the dissertation performs rhetorical analysis of texts that shape the discourse about Hanford. Chapter II, "Discursive Containment in the Information Age: The Department of Energy at Hanford," examines the DOE's recent attempts to shape public perceptions of Hanford through new and social media. In the last few years, the agency and its contractors have reduced Hanford's active cleanup area, invested in new remediation technologies to address the Site's most intractable waste problems, and begun preparing the public for the transition away from cleanup and towards new land uses. As those changes have occurred at the local level, the new Presidential administration (which took office in 2008) has transformed the Department of Energy at the national level. Besides reshaping energy policy, the Obama administration has changed the way the DOE communicates with the public. *Energy.gov* now hosts *Hanford.gov*, and both websites have been revamped. The new Hanford website now clearly explains different periods in the nuclear site's history, describes dozens of facilities located within the site, and catalogs hundreds of documents related to environmental cleanup. To some, these changes to the website—as well as Hanford's

recently acquired *Facebook*, *Twitter*, and *YouTube* accounts—represent an increase in transparency at a nuclear site that was long shrouded in secrecy.

Chapter II analyzes these new developments in the way the DOE communicates with the public and asks whether the Obama administration's commitment to pursuing "open government" via web communication has increased transparency or given the DOE a new platform for disseminating easily accessible propaganda about Hanford. New forms of web communication should be a significant area of study since they make government documents easily accessible to the public, and they may therefore either increase public participation or create the illusion of it. Moreover, such documents are ephemeral; the DOE can alter the information it has posted or make it disappear forever. In light of these aspects of web communication, Chapter II looks at how the Hanford website has changed over time, how the DOE interacts with the public on *Facebook*, and how the agency shapes viewer beliefs about the Site via videos posted on *YouTube*.

In addition to examining the new forms the DOE's communication with the public has taken, Chapter II analyzes what the agency says and fails to say about Hanford. The DOE has demonstrated the unique ability to make the deserts of the Atomic West "take on the appearance of pristine possibility" by engaging in a "continual emptying out of dystopian realities," including "nuclear weapons, waste, and war" (Masco, "Desert"). In this dissertation, I analyze the DOE's discourse about the Hanford Site—its emphasis on engineering feats, contributions to the local economy, and environmental stewardship—and what it consistently avoids mentioning—engineering failures, the billions of federal dollars it spends every year, and threats to public health. In this way, the DOE's work represents a type of environmental discourse John Dryzek

calls, "administrative rationalism." According to Dryzek, this discourse—often employed by government agencies—suggests that, "environmental problems are serious enough to warrant attention, but not serious enough to demand fundamental changes in the way society is organized. Thus the rhetoric combines a mixture of concern and reassurance" (88). The DOE employs this discourse throughout its publications by registering distanced concern, approaching Hanford with a rational, scientific tone, and reassuring the public that the Site's wastes can be contained. Chapter II examines how the government has used these strategies to control the discourse about Hanford as new revelations have been made about waste tank leaks at the Site.

Chapter III, "Nature-Induced Amnesia: The Hanford Reach National Monument," examines the rhetoric of preservation: how the FWS justifies its management of the lands within the Hanford Reach National Monument (HRNM) to the public. Bill Clinton established the Monument by Presidential Proclamation in 2000, ending protracted political battles about what should be done with Hanford's former security buffer zone. Though many locals thought the HRNM's lands—which were seized by eminent domain when construction of the Hanford Engineer Works began in 1943—should be returned to civilians for agriculture and development, the government found it more pragmatic to create a nature reserve there. Hanford is not the only military site to have been redesignated as a monument or wildlife refuge. In the last few decades, the Departments of Defense and Energy have transferred over a million acres of former military sites to FWS for conservation and preservation of native and rare species. In some cases, species that formerly inhabited these sites returned once military activities ceased, and in other

cases, native flora and fauna were accidentally preserved by the initial creation of a military or nuclear site.

My study, which is especially concerned with texts that are most accessible to the public, seeks to track how agencies have characterized Hanford over time. Thus, I analyze three iterations of FWS's Hanford Reach website (one that was live from 2006 through 2009, another that was live from 2009 through 2013, and the one that is currently online). Each version of the site uses different rhetorical strategies to explain how the Monument came to be managed by FWS, but all three interpret preservation as a way to redeem the U.S. for its former nuclear activities. In this chapter, I examine the explicit and implicit connections the agency makes between war and preservation.

The transformation of post-nuclear sites like Hanford into state-controlled wildlife refuges presents what Joseph Masco calls a "uniquely modern contradiction": lands that will be contaminated far into the future are also preserved by the government "for future generations" ("Mutant" 532). To smooth over this contradiction and legitimize the protection of wildlife at nuclear sites, the government employs the FWS, an agency that preserves and enhances habitat at hundreds of sites across the country and can therefore employ an apolitical, naturalist discourse more persuasively than can the DOE. By depicting Hanford Reach as "pristine" habitat for native plants and wildlife, FWS extends the DOE's claims about the effectiveness of cleanup and conceals the continued colonization of Hanford lands by hiding it under the guise of environmental protection. Though the FWS characterizes Hanford Reach as a wildlife refuge, the area continues to serve as a buffer between Hanford's deadly wastes and surrounding communities. This chapter analyzes how FWS has—not coincidentally—increased its online interpretation

of Hanford Reach in recent years, further constraining discourse about the Site at a time when multiple waste-related emergencies might otherwise convince the public that Hanford is an unmitigated disaster.

Chapter IV, "Denial and Commodification: Nuclear Tourism at Hanford," explores how the government has used historic preservation and nuclear tourism to maintain control over the discourse about Hanford and other sites in the nuclear weapons complex. The DOE and its predecessors have been engaged in interpretation of U.S. nuclear sites since the first atomic museum was established in 1949, and these DOE-supported museums have always advanced a pronuclear narrative. Nuclear tourism, on the other hand, is a relatively new phenomenon. The U.S. government is opening sites like the Nevada Test Site and Hanford to the public, partially because the commodification of nuclear disaster serves a rhetorical purpose. The DOE offers tours to create the illusion of transparency even as it uses them to placate the public with propaganda about Hanford's role in WWII and the Cold war and the DOE's current cleanup work at the Site.

Even outside the DOE-sponsored tour program, there has been a remarkable growth in the number of interpretive sites at Hanford. Since the creation of the Hanford Reach National Monument in 2000, the government has designated the Site's B Reactor—the world's first, full-scale nuclear reactor—as a National Historical Landmark and funded exhibits at the Hanford Reach Interpretive Center, a natural and cultural history museum currently under construction. In addition, Congress is considering a bill that would establish a multi-site Manhattan Project National Historical Park at Los Alamos, Oak Ridge, and Hanford. This frenzy of preservationist activity—some of which

has been initiated by Hanford boosters in the Tri-Cities—has provided cover for the DOE, which has been trying to manage a variety of scandals associated with its underground waste tanks and vitrification plant (some of which will be described in Chapter II).[10] Indeed, all the transformations in online communication, preservation, and tourism at Hanford have come about in direct response to the DOE's need to distract and appease the public.

Several scholars writing about the nuclear weapons complex, including Rebecca Solnit and Joseph Masco, have argued that Americans exhibit "national amnesia" about the country's nuclear weapons program. These writers show how, during the long years of the Cold War, "U.S. citizens seemed to forget or repress the implications of living within a national nuclear complex" (Masco, "Mutant" 523). The nation remembers that its military dropped two atomic bombs on Japan in 1945 but forgets that a much larger number of nuclear weapons have been manufactured and tested here at home. Many would blame the voting public for its apathy, but the truth is that the U.S. government has carefully cultivated Americans' indifference to nuclear weapons, waste, and war. This dissertation will investigate the government's rhetorical strategies and show how they have helped the nation forget Hanford, a disaster that will never end.

Notes

[1] Hanford produced plutonium for the U.S. nuclear weapons program from 1944 through 1989. Since the Department of Energy began environmental cleanup in 1989, it has uncovered a tremendous amount of contamination: "The Energy Department and its

contractors have identified more than 1,900 distinct waste sites at Hanford, ranging from small areas of surface contamination to hundreds of solid waste burial grounds. When the cleanup began 25 years ago, there were about 500 contaminated buildings (including the nine reactors), five chemical processing buildings, and multiple laboratories and research facilities. Site workers dumped an estimated 444 billion gallons of contaminated liquid into the soil, causing extensive contamination of Hanford's soil and groundwater" (Niles 38).

[2] The capitalized word "Site" refers in my text to the Hanford Site.

[3] The Hanford project removed Native people and contaminated land, water, and food to which they have traditional ties and treaty rights. Affected groups include the Yakama, Colville, Warm Springs, Umatilla, Wanapum, and Nez Perce tribes. Sources that offer in-depth information about Hanford's impact on local Native American tribes can be difficult to locate, and no single publication documents all of the impacts. This is due, in part, to the U.S. government's efforts to cover up Hanford's effects on human and ecosystem health and in part to the effects of institutionalized racism on government funding for large-scale studies. For more information on how the nuclear weapons complex has impacted Native American tribes, see References Cited for works by Churchill and LaDuke, Kuletz, LaDuke, and Ortiz. For specific details on Hanford's impacts on local tribes, see the films *Tribal Perspectives on the Hanford Nuclear Site* and *Arid Lands*, the latter of which features an interview with Russell Jim, an outspoken advocate for Hanford cleanup who works for the Environmental Restoration and Waste Management program of the Yakama Nation.

[4] Limerick argues that Hanford created something new in the world, but that its story fits neatly into the American West's history of colonization, boom-bust expansion, and resource extraction: "the explosion of the first bomb near Alamogordo—with Hanford plutonium—did, in truth, inaugurate a whole new era in human history. And yet, in other ways, the story of Hanford makes a firm and close match with the basic configurations of western expansion" (58).

[5] This phenomenon of destruction justifying further destruction persists today when the federal government proposes to store more nuclear waste or reprocess spent nuclear fuel at sites like Hanford that are already *de facto* waste storage sites (despite the fact that the government has made a legal commitment to remediate Hanford rather than pollute it further).

[6] This list is not exhaustive, and it does not include all the sites where the U.S. has mined and milled uranium for weapons production.

[7] The Hanford Education Action League (HEAL) and Robert Alvarez from the Environmental Policy Institute in Washington, D.C. filed a Freedom of Information Act (FOIA) request for information about waste released at Hanford. In response to pressure from HEAL, bad press, and whistleblowers' accounts of waste releases at the Site, the DOE released nineteen thousand pages of documents in 1986 (Brown 290-1).

[8] Since the DOE sporadically moves or alters its web pages, I note which pages were still available online in early July 2013, when I was working on this portion of the Introduction.

[9] Cleanup still operates according to guidelines established by the Tri-Party Agreement, though the DOE regularly misses legally mandated deadlines for particular cleanup operations.

[10] The Hanford Vitrification (Vit) Plant, also known as the Tank Waste Treatment and Immobilization Plant (WTP), is currently under construction near the center of the Hanford Site. If completed, the WTP will be the "world's largest radioactive waste treatment plant." Waste from Hanford's tanks will be pumped to the WTP, separated into different waste streams, blended with "glass-forming materials," heated, and then poured into stainless steel canisters. The goal is to stabilize the waste in glass rods that can be shipped to a deep geological repository. Bechtel, the country's biggest construction and engineering firm, is designing and constructing the plant under the supervision of the DOE (Bechtel).

CHAPTER II

DISCURSIVE CONTAINMENT IN THE INFORMATION AGE: THE DEPARTMENT OF ENERGY AT HANFORD

The nuclear weapons complex, which the U.S. government once tried to conceal from the world, now publicizes itself online. Like many other government agencies, the U.S. Department of Energy (DOE) now communicates directly with the public through an extensive website, *Energy.gov*, as well as social media sites like *Facebook* and *Twitter*. The DOE also maintains websites for individual facilities within the U.S. nuclear weapons complex, including the Hanford Site in southeastern Washington State. Whereas most DOE documents describe the former plutonium processing facility with alienating technical jargon, *Hanford.gov* and Hanford's *Facebook* and *Twitter* pages use language that makes the complicated environmental remediation projects at Hanford appear intelligible to the public. Occasionally, on these pages, accessible language becomes surprisingly informal. For example, when the DOE uses *Facebook* (*FB*) to communicate about recent events at Hanford, the agency frequently employs the excessively positive, truncated form of the typical *FB* status update. Thus, on July 13, 2012, to take just one example, the Hanford Site *FB* page posted: "A big high five to Hanford workers for their high rad moves!! They moved the first high-rad sludge off the Columbia River today (from a facility near the river)." This was followed by a link to a DOE news release and three comments from readers of the Hanford Site *FB* page: "nice," "Hanford High-Five!" and "Good work!" Supportive comments like these often come from Hanford insiders who are involved with the work being discussed. (See Figure 1.)

Figure 1. Status update posted by Hanford public affairs officers on Hanford Site's *Facebook* page July 13, 2012.[1]

Though the DOE would like us to imagine Hanford employees as scientists, engineers, and skilled tradespeople who are making efficient use of tax dollars to "clean up" the Site, the carefully crafted Hanford Site *FB* page makes it clear that another category of workers labors behind the scenes to shape public perceptions of the government's work at Hanford. (The capitalized word "Site" refers in my text to the Hanford Site rather than the Hanford website.) In the curiously enthusiastic status update quoted above, Hanford public affairs officers (who maintain the Hanford Site *FB* page) attempt to allay concern about the dangers of nuclear waste by offering a "high five" to

the workers who moved highly radioactive sludge from an area near the Columbia River to dry storage near the center of the Site.[2] The status update conveys no information about how or why the radioactive waste was moved. Instead, it distracts readers from the dangers of transporting waste by shortening "radioactive" to "rad," strategically confusing a word that signifies extreme hazard with slang for something impressive.[3] *FB* status updates like this one give readers the false impression that the public has real-time access to major events at Hanford and that the DOE holds itself accountable to the public via social media. In fact, the DOE offers very little substantive information about the state of the Site's major environmental threats.

Instead of using social media to achieve transparency or encourage productive conversation about how to address Hanford's most pressing challenges, the DOE uses them to pacify the public. The agency routinely offers manic reassurances that workers are achieving extraordinary remediation feats at the Site. In its exuberant praise of workers in the status update above, the DOE accomplishes two sleights of hand: first, it emphasizes progress rather than the long-term problem inherent in simply moving waste from one area to another. Second, it rallies readers on behalf of industrious employees who risk their lives to handle radioactive waste at Hanford, displacing attention from the work to the workers. Rhetorical moves like these are typical for the DOE, which does two contradictory things when representing Hanford to the public: it acknowledges the tremendous hazards created by radioactive waste at the Site in order to continue receiving federal money for cleanup and yet downplays those hazards to avoid inviting public scrutiny.

The Hanford DOE's current practice of updating its *FB* status every few days represents a significant departure from the Site's former security policies, which were very effective at keeping the Site hidden from public view. Because Hanford was considered to be a crucial part of the war effort during WWII, and its plutonium production activities required secrecy, the War Department blocked any potential revelations about the Site by maintaining firm control of employees and appealing to the patriotism of politicians and the press. Such regulation was relaxed toward the end of the Cold War when Hanford's mission switched from weapons building to environmental remediation. The tremendous change in the personal freedom of a typical Hanford worker exemplifies this shift: whereas Hanford employees were forbidden from talking about their jobs during WWII and the Cold War, today, they can invite their friends and family members to visit the Site on an official DOE tour.[4] These changes came about not only with the transition from production to cleanup but also with the DOE's relatively recent adoption of "open government" policies that are intended to increase both transparency and democratic involvement in decision making at the site. The DOE claims that it is more transparent about operations at Hanford than it was during the WWII and Cold War eras, but the agency has actually developed more sophisticated means of discursively containing the scandals at Hanford. Through new communication tools, the DOE has worked to maintain its controlling narratives, thereby ensuring the perpetuation of the slow violence unfolding within the U.S. nuclear weapons complex.

The DOE is required by law to inform the public about proposed waste cleanup and storage actions and to give people the chance to deliver comments at open meetings, by email, and by mail.[5] Thus, public meetings and comment periods provide the most

meaningful opportunities for exchange between the DOE and the public. But the DOE engages in other forms of communication that are less about dialogue and more about constructing an image of Hanford that counters the public's negative perceptions. In this chapter, I will discuss three forms of electronic communication that the DOE uses to convey information about Hanford: *Hanford.gov* (the Hanford DOE's homepage), the "Hanford Site" *Facebook* page, and the *Hanford Story* video series (the latter of which is posted at *Hanford.gov* and on the Hanford *YouTube* Channel).[6] These three means of web communication are intended to legitimize the DOE's work at Hanford, and so they ignore much of the bad press about the Site, thereby creating an alternative reality (or at least an alternative Hanford) that is free from scandal. By using several different means of online communication, the agency appeals to a variety of audiences—those who would seek out an official website to learn about Hanford, those who get their news through *Facebook*, and those who are looking for a visual narrative to explain Hanford's history and remediation projects. These three means of communication also establish three different kinds of authority. First, *Hanford.gov* appears to be an official, authoritative source of information about Hanford that also invites public participation and input. In its upgraded form, this website offers more detailed information on the Site than it did in the past, and that information is neatly organized and intelligible to a non-expert audience. Second, in contrast, the "Hanford Site" *FB* page offers fragments of news delivered in a casual tone as well as thousands of photos that depict both the beauty of the natural world at Hanford and visible signs that the agency is making progress on waste cleanup. Through *Facebook*, the DOE broadcasts frequent updates on its work to other *FB* users who subscribe to its page. The third part in this trio of web publications, *The Hanford Story*,

differs from both *Hanford.gov* and the Hanford Site *FB* page in its lack of immediacy. At over an hour in length, the seven-part video series requires more attention than today's typical Internet offering. Since many people are only familiar with the Site from occasional news reports, *The Hanford Story* fulfills the need for a coherent narrative about Hanford's past, present, and future.

All three of these forms of communication present the DOE with the opportunity to convey substantive news about Hanford's seemingly endless succession of crises, but all three instead divert attention away from events that require the most explanation and context. This chapter was written as several disasters and scandals unfolded at Hanford, the most significant of which was the detection of multiple leaks in tanks containing high-level chemical and radioactive waste. Even as cleanup advocacy organizations revealed details about these incidents, *Hanford.gov* and the Hanford Site *FB* page essentially ignored them, and *The Hanford Story* continued to be available on the web despite the fact that its claims have become increasingly untenable. The DOE's proposed solutions to Hanford's waste problems have become less viable in the last few months and years, and many people have lost faith in the agency. Still, the DOE clings to the absurdly optimistic projections it makes in *The Hanford Story,* and it continues posting to *Hanford.gov* and the Hanford Site *FB* page as if it were oblivious to criticism. In one sense, these three forms of web communication function as sleek diversions by using popular forms of new and social media to make the DOE appear to be operating transparently even as it withholds information from the public. In another sense, the DOE has merely been compelled by present-day customs to use such web communication, and it has done so clumsily, with the assumption that the public will not be able to see

through its propaganda. Fortunately for the DOE, many of its web-based blunders will be erased from the historical record. Though the Internet seems to archive some things forever, many web artifacts simply disappear. Much of Hanford's web communication will be intentionally or accidentally lost. This chapter will record and examine some of the micro-moments in that communication with the intention of elucidating how the DOE uses the web to neutralize public concern and stall effective containment of the Site's hazardous wastes.

To begin, I will trace how the public's knowledge and perceptions of Hanford have been shaped by the tone and content of revelations made about the nuclear weapons complex in the 1980s and 90s and how the DOE has worked to maintain control over Hanford's story by continually intensifying its claims to transparency. Before the Internet and before the government's large-scale disclosures about the nuclear weapons complex, Hanford's story was communicated in classified blueprints, technical reports, and memos. Beginning in the 1990s, it was told in activists' mailings, memoirs, academic articles, and books. Over the decades, the government has been able to define and contain conversation about the nuclear weapons complex by guarding the complex's secrets. Even when those secrets have been revealed and thus opened to new interpretations, traces of the government's narrative have lingered.

Indeed, the government's account of Hanford has influenced even scholars who have revealed the extent of the Site's contamination. A crucial example of this is Michele Gerber's *On the Home Front: The Cold War Legacy of the Hanford Nuclear Site,* the first book written about Hanford's pollution and scientific culture for a popular audience. Writing in the late 1980s, Gerber tackled Hanford's thorny history only a few years after

the DOE had, in 1986, released roughly 19,000 pages of previously classified documents about Hanford's early days, including detailed information about contaminants that had been discharged into the soil, air, and water. Gerber wrote *On the Home Front* in response to these "newly available primary sources" about Hanford, thereby creating "a narrative for understanding Hanford that had no real counterpart for other major plants devoted to the manufacture of nuclear weapons" (Findlay v).

Because most accounts of the nuclear weapons complex written prior to Gerber's were celebratory, had not dealt with the Cold War period (from which the U.S. emerged less triumphant than it did after WWII), and did not include much technical information (because it was still classified), John Findlay argues that the publication of *On the Home Front* represented a new era of writing about the U.S. weapons program and its environmental legacy (v). Gerber was the first to interpret and synthesize thousands of pages of "environmental monitoring surveys, engineering reports, office memoranda and correspondence, and other miscellaneous pieces of the historical record" for the public (Gerber 2-3). Using these recently declassified documents and Freedom of Information Act requests, she made surprising discoveries about Hanford's reckless disposal of contaminants. Thus, her narrative became foundational, and it remains one of only a couple of scholarly books on Hanford's pollution.[7]

And yet, despite the book's extended focus on the staggering amounts of radioactive and chemical wastes left behind by weapons production, as well as the difficulty of removing that waste, Gerber describes the work of Hanford scientists, engineers, and military personnel in apologetic terms. Immediately after describing the content of the declassified documents, Gerber appears to defend the government's

rationale for creating so much pollution: "In his memoirs, General Leslie Groves, the MED [Manhattan Engineering District] chief, pointed to a partial explanation [for the wastes at Hanford]: 'Not until later would it be recognized that chances would have to be taken that in more normal times would be considered reckless in the extreme [. . .]. While normally haste makes waste, in this case haste was essential'" (3). In passages like these, Gerber offers a justification for irresponsible waste handling at Hanford without interrogating that justification, which makes this semi-official history read as an "authorized exposé" (Gray 46).[8]

Though she aims to be impartial, Gerber's account is heavily influenced by the U.S. government's narrative about the nuclear weapons complex. This is especially evident when she frames the construction of the bomb as a spectacular achievement. When recounting Hanford's role in building the bombs that were dropped at Trinity and Nagasaki, Gerber insists that these events "represented pioneering technological achievements and the largest scale-up in the history of the engineering craft. They instigated whole new fields of scientific inquiry. They also changed national defense strategy and altered the course of global politics and world history for the last two generations" (2).[9] Gerber's ostensibly neutral descriptions of nuclear weapons production are similar to those offered by the DOE, and yet they create more dissonance for the reader, since Gerber prizes the magnitude of the Manhattan Project even as she paints a damning portrait of Hanford's waste practices. She remains curiously impressed with Hanford science even as she details the life-threatening substances it produced.

Throughout *On the Home Front*, Gerber marvels at Hanford's "pioneering" efforts, despite their devastating consequences, both local and global. Because of this,

one reviewer notes that "the book's most serious weakness is the spin it puts on the Hanford story—mostly by glossing over the systematic official deception that began at Hanford 50 years ago and continues to this day" (Gray 46). Indeed, Gerber implicitly argues that the "systematic official deception" was justified not only by the need for national security but also by the degree to which Hanford's operations advanced nuclear physics, chemical engineering, and environmental sciences.

Gerber also portrays Hanford's study of the local environment as visionary, which is ironic given the Site's deplorable environmental legacy. (In this way, Gerber's narrative anticipates the rhetoric of today's DOE, which consistently congratulates itself for environmental remediation well done.) Rather than questioning the government's decision to pour toxins directly into the environment, Gerber praises Hanford for what she sees as its groundbreaking system of record keeping: "In addition to brilliant breakthroughs in reactor physics and chemical technologies, the Hanford Site pioneered the science of environmental monitoring" (2). She writes this without noting that the sciences of weapons production and the environmental monitoring done at Hanford are both predicated on large-scale destruction; reactor physics and chemical technologies generate a massive waste stream while monitoring merely records data about that stream.

Indeed, Gerber emphasizes the "pioneering" efforts made to measure and analyze pollution at Hanford, as if quantifying radioactive and chemical contamination somehow counteracts its destructive effects. Indeed, Gerber portrays Hanford as an environmental steward: "The Hanford Site was unique for measuring contamination levels in stack gases, vegetation, river water, fish and ducks, and groundwater. Hanford's environmental records were among the most complete ones in the world" (2). In praising what she

frames as the environmental prescience of Hanford workers, Gerber neglects the fact that the science of monitoring would not be necessary without the existence of large-scale, persistent pollution. In these passages, Gerber hints at, but fails to analyze, the contradiction that has always been at the core of Hanford operations: the curious manner in which environmental devastation and environmental concern—seemingly incompatible pursuits—align in the name of scientific discovery. Accounts of Hanford like Gerber's have worked to normalize this contradiction. Both Gerber and the DOE are invested in maintaining a narrative in which Hanford's "dazzling scientific accomplishments" justify or at least overshadow its damage to people and the environment (218).

On the Home Front was first published in 1992, a year before the DOE launched an official Openness Initiative that increased transparency about the very issues Gerber was reporting on, including waste releases and threats to public health. Several years before, in the mid-1980s, the DOE moved rapidly from "secrecy to sincerity" in its communication with the public (Kinsella 178). During that time, a series of Secretaries of Energy responded to public concern about the nuclear weapons complex by releasing a large volume of previously classified materials. The DOE itself noted that this "backlog of secret documents" was "monumental, roughly equivalent to a column of paper 3 miles high" (U.S. DOE EM, *Closing* 82).[10] Because of the revelations that came from this large-scale declassification, by the early 1990s, there was a clear mandate from the public for the DOE to be more transparent about its operations. In 1993, then-Secretary of Energy Hazel O'Leary announced the Openness Initiative, which she described as

"coming clean with our past and opening many of our files to the public" (U.S. DOE EM, *Closing* 82).

Two years later, as part of this initiative, the DOE Office of Environmental Management (EM) published a document called *Closing the Circle on the Splitting of the Atom: The Environmental Legacy of Nuclear Weapons Production in the United States and What the Department of Energy is Doing About It.*[11] The report described, in accessible language, how the nuclear weapons program had harmed the environment at each stage of production and at dozens of sites across the U.S.[12] The hundred or so photographs included in the report were especially striking since they offered detailed portraits of a previously off-limits nuclear weapons complex and depicted examples of the careless dumping that occurred during the war years. To describe why it published this information under the title *Closing the Circle*, EM claimed that "The task of Environmental Management is to begin to close the circle on the splitting of the atom for weapons production through sustained efforts to understand the whole problem as well as its parts" (9). EM meant to communicate that the weapons complex's problems require holistic thinking. However, the metaphor of "closing the circle" suggests not a remedy of closure through disclosure and cleanup (which the report as a whole advocates) but rather an eternal cycle in which waste escapes its containment and the DOE responds with further remediation. Indeed, nearly two decades later and despite its promises, the DOE is still caught in a vicious circle of leakage and cleanup that operates in both the material and discursive realms.

The majority of *Closing the Circle* described the types and extent of waste left over from weapons production, but the report also announced the DOE's intention

radically to transform how it handled information. The report acknowledged that this would mean pushing for a change of culture within the agency: "To fulfill its new missions successfully, the Department must itself undergo a major institutional transformation. It must institute fundamentally different operating practices from those historically used to produce nuclear weapons" (80). This is one of the few places where the DOE has admitted the need to alter its way of thinking in order to move forward with cleanup. The report further claimed that the agency needed to improve "operating practices" by encouraging public participation, which could "be meaningful only with significant openness" on the part of the DOE (81). And yet despite focusing on the agency's hopes of encouraging "informed and constructive citizen involvement," the report still contradictorily insisted that "secrecy remains essential to maintaining the nuclear weapons stockpile" (81).

While the report was vague on the topic of citizen involvement (perhaps because it was such a novel concept in 1995), it did outline a new policy intended to give employees of the DOE and its contractors a voice in cleanup operations. The report claimed that a key aspect of the openness initiative involved "encouraging 'whistleblowers' to report lack of compliance with regulations, mismanagement, inefficiencies, fraud, and other problems" (82). This commitment to supporting whistleblowers could have represented a major shift for the nuclear weapons complex, where employees labored along mostly uninformed in a "need-to-know" context and had little say in how operations should be conducted. However, the DOE's support of socially responsible employees did not last long, and the agency would go on to mistreat scores of

whistleblowers in the decades following *Closing the Circle*'s publication (Payne and Ring).

Though the DOE declared that it needed to begin a new chapter in its history by instituting new management practices, *Closing the Circle's* opening "Letter from the Secretary" (again, O'Leary) relied on the narrative of patriotism and unyielding faith in scientific progress that was foundational to its former practices:

> The United States built the world's first atomic bomb to help win World War II and developed a nuclear arsenal to fight the Cold War. How we unleashed the fundamental power of the universe is one of the great stories of our era. It is a story of extraordinary challenges brilliantly met, a story of genius, teamwork, industry and courage. (v)

By claiming the splitting of the atom as an American achievement and identifying it as "one of the great stories of our era," O'Leary glorified weapons production and justified the waste it left behind. Because she could not afford to admit wrongdoing or alienate political allies who worked within the complex, O'Leary took pains to acknowledge the successes of the nuclear weapons program. Her loyalty to the status quo did not square with her professed belief in the necessity of change:

> We are now embarked on another great challenge and a new national priority: refocusing the commitment that built the most powerful weapons on Earth towards the widespread environmental and safety problems at thousands of contaminated sites across the land. We have a moral obligation to do no less, and we are committed to producing meaningful results. (v)

O'Leary's doublespeak is subtle but powerful. She claims that changing environmental and safety practices in the nuclear weapons complex will require only "refocusing the commitment" that built thousands of weapons and poisoned people in the U.S. and abroad. Indeed, many of the same devoted workers who created and produced the bomb at factories across the country have had to turn their knowledge to a new mission: environmental remediation. O'Leary suggests—in talking about transparency and environmental practices—that the DOE has a "moral obligation" to change, but her admiration of the science that built the bomb undermines her obligation to the morality of environmental cleanup. Thus, the report initiated less material change than promised; nevertheless, *Closing the Circle* signaled a revision in the stated mission of the nuclear weapons complex from that era forward.[13]

Though transparency continued to be elusive (since the government and its contractors still conducted much of their business in secret), O'Leary's openness initiative helped to revolutionize public access to information about the nuclear weapons complex. Some files remained (and still remain) classified, but the openness initiative gave the public new points of entry into the nuclear weapons complex:

> Under this new approach public access to information on past and current problems has increased substantially. Previously, access to such information typically required prolonged legal efforts and the surmounting of multiple bureaucratic hurdles, when possible at all. Now, the Department releases information routinely via newsletters, reports, and other documents distributed to extensive mailing lists; in voluminous environmental impact studies; at public involvement meetings that accompany the annual budget

> development cycle; and at frequent meetings of citizen advisory boards that provide formal advice on management and cleanup issues. (Kinsella 178-79)

Before this period, U.S. citizens had little access to information about—let alone a say in—the practices of the nuclear weapons complex. Today, people can raise issues with DOE's waste management plans by participating in the legal processes that govern environmental cleanup or apply for a seat on one of the DOE's citizen advisory boards, which provide significant judgment and guidance to the DOE at eight sites within the nuclear weapons complex.[14]

And yet, ironically, given the long list of ways the DOE communicates with the public, there is now almost too much information for the public to digest. Just keeping up with new phases in long-term cleanup plans and interpreting the different alternatives the DOE presents to the public (about how and to what extent sites should be cleaned up, how contamination should be monitored, and how remediated lands should be used in the future) can overwhelm environmental, public health, and labor advocacy organizations working to protect the public interest. People can only make sound decisions if they have all the available information, but the technical complexity and sheer volume of data coming from the DOE can make it difficult for outsiders to decipher and synthesize the agency's disclosures.

Despite these challenges, the DOE claims to be providing more and better information, and each new Presidential administration and Secretary of Energy influences how the agency pursues accountability. In recent years, the Obama administration has affirmed its commitment to open government by using new and social media to advance

its transparency goals. Thus, the DOE's website—like that of many other federal agencies—has been expanded under Obama. Though *Energy.gov* emphasizes the DOE's less controversial work (in renewable energy and energy efficiency, for example), it also links to web pages hosted by individual sites within the nuclear weapons complex. Thus, *Energy.gov* links to *Hanford.gov*, a website managed by the Hanford DOE. *Hanford.gov* links, in turn, to the Site's *Facebook* and *Twitter* pages as well as its *YouTube* channel. The DOE uses each of these outlets to communicate information about what is currently happening at Hanford and, in some cases, what it is planning for the future.

While the Internet offers unparalleled access to the nuclear weapons complex, it also conceals inconsistencies and gaps in the information the DOE offers to the public. Early in 2012, Dawn Stover, a contributing editor of *Bulletin of the Atomic Scientists*, brought this to light in a critique of recent changes to the DOE's website. Stover refers to *Energy.gov* as a place "where information goes to die," arguing that the DOE's recent redesign of its website altered or blocked access to a large (and ultimately unknown) number of documents that were previously accessible via the web. The DOE touts the efficiency of the redesign, but the changes actually retract information that was once easy to find:

> Last August, the U.S. Energy Department proudly announced a "comprehensive website reform, making Energy.gov a cutting-edge, interactive information platform and saving taxpayers more than $10 million annually." In short, the government eliminated 12 separate department program sites and merged them into one (with plans to add many more), upgraded the content-management system, and streamlined

> information into the cloud. In theory, Energy.gov is now the "cutting-edge" go-to site for information on everything from home weatherization to nuclear research. In practice, however, it's more often a black hole. (Stover)

Offering one example of how information disappears into this "black hole," Stover describes her frustrated search for previously accessible documents on Yucca Mountain, the government's now-defunct deep geological repository in Nevada.[15] She finds that searching *Energy.gov* is an inefficient process that fails to yield the documents she was previously able to access through the Office of Civilian Management's Yucca Mountain website (which was removed when the federal government shut down the Yucca project).

I had a similar experience while teaching a class on the Hanford Site and the Atomic West. When I initially taught the course in 2009, my students could explore a website devoted specifically to Yucca Mountain. By the time I taught the class again in summer of 2011—after the Obama administration had tabled Yucca Mountain—the website had disappeared, and I was unable to locate any of the documents or maps about Yucca that I had used two years earlier. Documents about Yucca Mountain are not the only ones that have become difficult or impossible to locate through *Energy.gov*:

> Documents of all sorts have simply disappeared from public view as a result of website consolidation and reorganization, and this has repercussions not just for the general public and independent researchers but also for federal employees and contractors who use the Energy Department website and are no longer able to refer to historic

> documents—such as loan guarantees for nuclear power plants or Environmental Impact statements for energy projects. (Stover)

It may seem like these documents would be available elsewhere after disappearing from the web, but some are only available through Freedom of Information Act requests, which require writing letters that may never receive responses (Stover).

One problem is that the federal government does not set specific standards for web-based transparency. As Stover notes, every government agency interprets "open government" in a different way: "For some departments, 'open government' means a serious effort to make information easier to find. For others, it simply means summer interns scanning documents into PDFs with poorly worded tags, posting newsy articles with attractive photos, and opening *Twitter* and *Facebook* accounts." Without guiding principles or regulations, agencies can share information until it no longer suits them to do so. Documents can easily be altered, moved, or deleted without penalty. Though these practices square with neither the DOE's Openness Initiative nor the Obama administration's rhetoric about open government, they generally go unnoticed and create little controversy.

Still, many of the Obama administration's new media officials pride themselves on making information widely available to the public, and so five days after Stover's piece appeared online at the *Bulletin*, the DOE answered with a blog post at *Energy.gov*. Cammie Croft—who was named the DOE's Senior Advisor and Director of New Media and Citizen Engagement in May 2010—responded to Stover's critiques (without linking to Stover's article, thereby avoiding further circulation of the *Bulletin* piece) and defended the DOE's informational practices: "One of the biggest challenges for federal

websites—including Energy.gov—is managing the millions of PDFs the government has online. That challenge existed before our redesign and still exists today." The government's effort to organize and tag millions of documents is undoubtedly cumbersome work, but Croft insists that *Energy.gov's* redesign made it possible "quickly [to] elevate additional Yucca Mountain documents, update their metadata and make them more findable," all "within a couple days of the concern being raised."[16] Throughout her blog post, Croft maintains that changes to the DOE website have made the government more—not less—responsive to the public. She closes her post with an optimistic assessment of the Department's online work: "At the Energy Department, we're striving each day to make Energy.gov better and achieve the principles of Open Government: transparency, participation, and collaboration."

What Croft's answer misses is that every change in the location or overall availability of crucial information about the weapons complex amounts to a new form of redaction. Once activists brought an end to the era of weapons production in the U.S. and the federal government released thousands of documents about what had gone on there, some of those documents were still partially redacted. In other words, key elements were literally blacked out. In an era when U.S. citizens still have much to learn about the history of the nuclear weapons complex and much to decide about its fate, any change in the availability of information—regardless of whether the intention is to contain scandals (like the $10 billion spent on construction of a waste repository that may never be used) or simply to reorganize information—may be a step backwards. Government secrecy and deliberate attempts to erase institutional memory of what has happened within the nuclear weapons complex have obstructed prolonged conversation about its waste problems. The

Internet makes it possible for information to last practically forever, but it also allows information effectively to disappear into that vast "forever" without a trace and without an explanation. If the DOE genuinely wants to cultivate openness and transparency via the web, it will have to take care not to bury, alter, or remove documents.

While Croft insists—somewhat vaguely—that the "*Energy.gov* of today [. . .] is much better than what was offered before," the DOE's recent moves to present and reorganize information on the web represent a new phase in the agency's attempts to control discourse about Hanford more thoroughly. William J. Kinsella explains that the principle of containment that operated during the Cold War has affected numerous areas of American life and has "served to constrain, contain, and discipline public policy discourse," including discourse generated by the DOE (163). Kinsella uses Hanford as a case study since it is a setting "in which containment operates visibly in both the material and discursive domains" (164). In other words, there are obvious efforts at Hanford both physically to contain radioactive waste and discursively to contain knowledge about the Site. He describes two periods in Hanford's history of containment. During the first period, which lasted from 1943 through the mid-1980s, the DOE instituted a "regime of secrecy" that cloaked the weapons complex from public view. Since the mid-1980s, the DOE has implemented

> a more complex strategy in which *information* about Hanford is far less restricted, but the *meanings* of that information and the authority to make those meanings is rhetorically contained (by the Department of Energy) and contested (by other federal and state agencies, activists,

> environmentalists, local and regional communities, and Native American tribes). (164-65)

The remainder of this chapter will show how the DOE has made formerly secret information more readily available but simultaneously intensified its efforts to control the public's interpretation of that information. This has become increasingly necessary for the agency, given that public interest organizations can now make information available to the public in a matter of minutes via their own web pages and social media sites. Organizations like Hanford Challenge—which "exists to transform Hanford's nuclear legacy into a model of safe and effective cleanup"—consistently dispute the narrative provided by the DOE. Thus, the Department has tried "to manage its discursive environment" in more complex ways, through the use of new and social media.

"Word [about Hanford] is getting out… to more people than ever before"—or so says the title of a January 2013 post on the Hanford Blog. The post describes how "Hanford's story—history, present cleanup mission, and plans for the future—are being communicated to a larger, younger, and more diverse audience through the use of new and innovative methods" ("Word"). Indeed, the Hanford DOE now communicates with the public through its blog, a frequently updated website, *Facebook* posts, a *Twitter* feed, and videos posted on *YouTube*. While this may seem like an unremarkable phenomenon, the blog post mentioned above suggests that there is something at stake for the DOE not only in how many people they are actually contacting but also in being able to claim that they are reaching a large and diverse audience. The more people the agency reaches, the more it is able to shape public understanding of Hanford. The more it publicizes its

attempts to involve the public, the more it can build trust with stakeholders, appear as though it has earned public consent, and move forward with controversial cleanup plans.[17]

This strategy is especially evident at *Hanford.gov* (accessible at www.hanford.gov), which functions as a clearinghouse for information that the Hanford DOE makes available to the public. Through this website, the DOE crafts a reassuring virtual image of Hanford that belies internal problems with project delays, worker safety, unsafe technologies, and the agency's inability to prevent waste from spreading across the Site and into the local environment. These problems have long plagued Hanford, but they have received more attention in recent months and years for two related reasons: first, advocacy groups have intensified their efforts to ensure safe cleanup at Hanford, and, second, those same advocacy groups—often in partnership with Native American tribes and Hanford whistleblowers—have brought troubling revelations about the DOE's waste management practices and reporting to light. In other words, Hanford is now subject to public dialogue (in a way that it was not during the era of secrecy), and if the DOE wants to maintain its credibility, it must try to frame the terms of that dialogue, a point Kinsella makes: "information about the practices of nuclear institutions is now widely available [, so] the key discursive problem today is the meaning of that information. Through claims of expertise, nuclear institutions now seek to define and contain these meanings within a single, technocratic narrative which would restore the stability of the earlier discursive regime" (189). Today, the DOE cannot completely limit the public's access to information about Hanford, but it can try to shape the public's understanding of the Site's history and cleanup. *Hanford.gov*—which the DOE has

expanded in recent years—accomplishes this by weaving new knowledge about Hanford into the larger technocratic narrative about nuclear safety and filtering news about the Site.

As stories of Hanford's mismanagement have received more attention from the media, the public's trust in the DOE has diminished.[18] In response, the DOE has attempted to cultivate an image of openness and transparency via the Internet. The DOE revamped *Hanford.gov* in early 2010, shortly after the American Recovery and Reinvestment Act of 2009 (ARRA) injected billions in federal funding into Hanford cleanup. The new website allowed the agency to report on cleanup progress made as a result of ARRA. Before the overhaul, *Hanford.gov* offered only basic information about Hanford and did little to emphasize the Site's relationship to the DOE and the wider nuclear weapons complex. Up until early 2010, the homepage differentiated between the Richland Operations Office and the Office of River Protection, the two offices that oversee remediation efforts at Hanford. The website represented these offices with large photographs of workers—often in layers of protective clothing—interacting directly with plutonium gloveboxes, waste tanks, and other extremely hot (i.e., radioactive) objects. Other photos on the homepage captured the beauty of Hanford Reach (the stretch of the Columbia River that runs through the Site), sparkling and blue in the sun. Together, these photos ensured that visitors to *Hanford.gov* would see the dangerous labor that goes on at Hanford as well as the motivation (a clean, beautiful environment) for that work. Both served to justify the billions of dollars in federal money that are spent at the Site every year. (See images of *Hanford.gov* from 2002 and 2005, respectively, in Figures 2 and 3 below.)

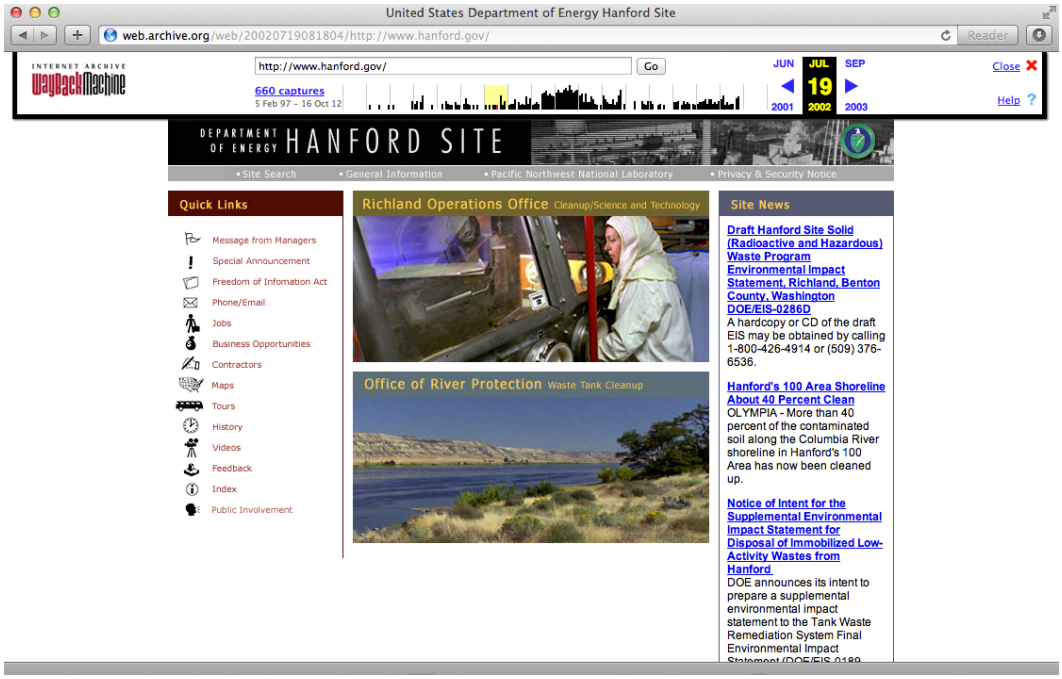

Figure 2. Image of www.hanford.gov captured on July 19, 2002 and posted on the Internet Archive: Wayback Machine, web.archive.org.

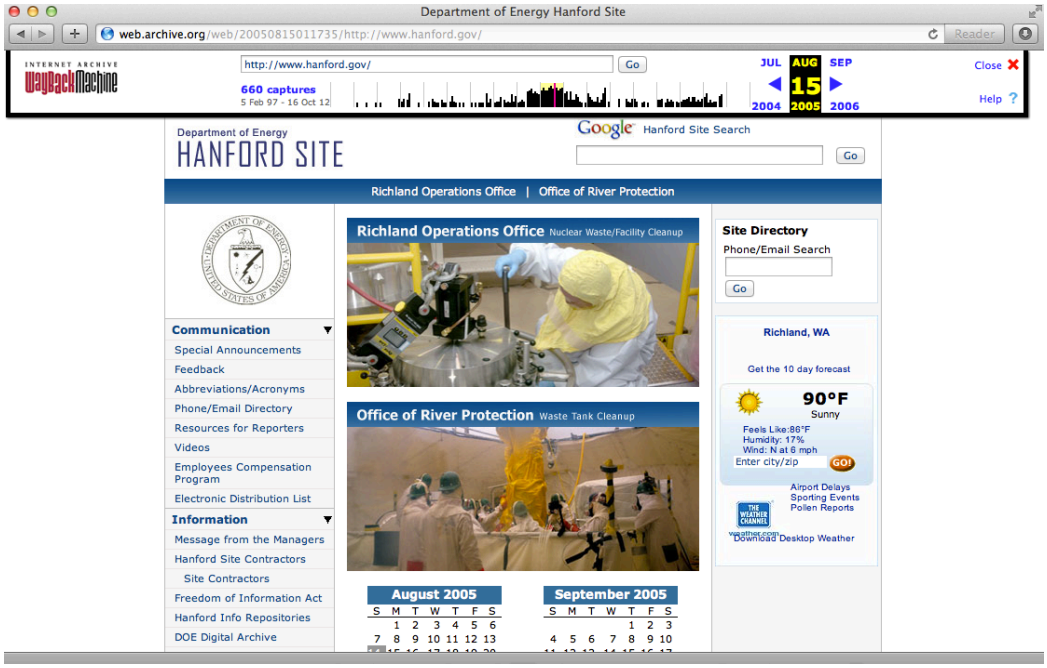

Figure 3. Image of www.hanford.gov captured on August 15, 2005 and posted on the Internet Archive: Wayback Machine, web.archive.org.

On a superficial level, the *Hanford.gov* of today presents a sleeker and more bureaucratic face to the public than it did in the early 2000s. The new website emphasizes its own status as a routinely updated text that gives the public direct access to Hanford operations. While the old version of the website gave prominence to photos of workers interacting with radioactive waste, the current version of *Hanford.gov* features text-heavy links and flashing notices about the availability of new legal documents that the DOE is required to make available to the public. A large panel on the website's main page revolves between recent news items and notices about ways the public can get involved in cleanup (such as Site tours and participation in surveys). This version of *Hanford.gov* is easier to navigate, has linked pages with detailed descriptions of projects and initiatives happening across the Site, is updated more frequently than the former versions of the website, and is, generally, directed at the public (as evidenced by its emphasis on public involvement). (See Figure 4.)

Figure 4. Image of www.hanford.gov captured (by the author) on June 26, 2013.

Nevertheless, *Hanford.gov* does not exist to make the public aware of major events at the Site; quite the contrary, its primary purpose is to divert attention from the many scandals unfolding there. While the Hanford website gives anyone with an Internet connection access to an unprecedented amount of information about the Site's history and operations, that information is manipulated to reassure readers that the DOE is a fiscally and environmentally responsible agency that holds itself accountable to the public. Two changes to the appearance of the *Hanford.gov* homepage facilitate this redirection. First, the DOE no longer features photos of hazmat-suited workers on the website's front page. This may signal the agency's reluctance to represent itself with images of employees who are visibly endangered by their close contact with radioactive waste (though the DOE certainly posts many photos of workers handling waste on its *Facebook* page, where it uses such images as evidence of progress on specific cleanup projects). Another change to the appearance of the *Hanford.gov* homepage appears to invite the public to learn about Hanford, but it leads to a dead end. Though online registration for "Hanford Public Site Tours" (four-hour bus tours of former production areas and remediation projects) generally closes within hours of being offered to the public, the announcement for tours continues to rotate on the *Hanford.gov* home page for the entire year.

Other pages of *Hanford.gov* appear to present neutral background on the Site but actually work to normalize Hanford's decades of plutonium production, its ongoing cleanup (which has no definitive end date), and its continued colonization of a massive area of land. In the "About Us" section of the website under "Hanford Cleanup," the DOE portrays Hanford as a factory like any other and casts doubt on those who would contradict that view: "For more than forty years, reactors located at Hanford produced

plutonium for America's defense program. The process of making plutonium is extremely 'inefficient' in that a massive amount of liquid and solid waste is generated while only a small amount of plutonium is produced" ("Hanford Cleanup"). By observing that Hanford made plutonium for over four decades, the agency suggests that everything operated normally during that period. It then effectively undermines critics' claims that Hanford was an especially dirty enterprise. The agency concedes that "the process of making plutonium is extremely 'inefficient'" but also questions that claim by placing the word "inefficient" in quotation marks. By simultaneously addressing and disputing facts about Hanford's waste, the DOE leaves readers feeling uncertain about what to believe. The agency pursues a similar strategy when discussing groundwater contamination:

> The liquid waste that had been poured onto the ground or held in ponds or trenches has long since evaporated or soaked into the soil on the Site. In doing so, the waste did contaminate some of the soil and is thought to have also created underground "plumes" of contaminants. A "plume" is kind of like an underground river where the contaminants join with the water that exists beneath the surface of the Earth. Many of these plumes move in varying speeds and move toward the Columbia River. ("Hanford Cleanup")

This passage illustrates the delicate dance of admission and denial that is characteristic of the DOE's rhetoric about Hanford. When the agency says "the waste did contaminate some of the soil," the word "did" suggests that this passage is responding to an oblique conversation in which the agency must begrudgingly admit that Hanford polluted "some" of the soil. The DOE makes a similarly reluctant admission when describing underground

contamination at Hanford. While the existence of contaminant plumes at Hanford is well established, the DOE creates doubt around the science by saying that waste "is thought to have created" underground plumes. Even the word "plume" is placed in scare quotes, as if the DOE wants to question whether these underground rivers of contaminants are real. Emphasizing the word "plume" is a strategy for questioning the accuracy of claims that outside groups have made about the mobility of Hanford's pollution. Even when the agency confesses that Hanford has a waste problem, it immediately insists that all of the contamination at the Site has been contained and that "precautions have been taken" to prevent pollution from spreading ("Hanford Cleanup").

Despite underemphasizing the danger of Hanford's ever-moving contaminants, *Hanford.gov* presents a long list of cleanup operations that will proceed without definitive end dates. The DOE has legal agreements to meet certain deadlines for cleanup, but those deadlines are regularly broken.[19] Furthermore, the DOE claims that it must maintain a presence at Hanford even after cleanup actions are complete, given that many portions of the Site will never be fit for other uses. At least ten associated but separate pages of *Hanford.gov* are devoted to explaining what the DOE calls "long-term stewardship" (LTS), a program that includes "all activities necessary to ensure protection of human health and the environment following completion of cleanup, disposal, or stabilization of a site" ("LTS Fact Sheets"). All of these pages highlight the "protection" of health and environment; none of them is specific about how long Hanford's contaminants will persist (plutonium has a half-life of 24,000 years, but this is not mentioned). Indeed, LTS distorts the traditional meaning of "stewardship," given that the

program protects natural resources not by conserving them but by guarding them from deadly wastes.

The story told by the pages of *Hanford.gov* fits into a larger technocratic narrative that encourages the public to trust the recommendations of nuclear scientists and engineers. This is the same narrative that led to the other slow-motion catastrophes happening across the nuclear weapons complex as well as the large-scale disasters at Three Mile Island, Chernobyl, and Fukushima. In the U.S., the government labors to convince the public that scientists can both ensure national security through weapons production and deliver us from the toxic byproducts of those weapons. To do this, the government employs a way of talking about environmental problems that John Dryzek calls "administrative rationalism," a "problem-solving discourse which emphasizes the role of the expert rather than the citizen or producer-consumer in social problem solving, and which stresses social relationships of hierarchy" (75). It insists that experts have everything under control, but "combines a mixture of concern and reassurance" to assuage the public (88).

When Hanford Challenge revealed evidence of a double-shell waste tank leak at Hanford in August 2012, the DOE addressed it in the neutral tone of administrative rationalism. A leak in a double-shell tank is dangerous in itself, but it also raises concerns about the DOE's approach to waste storage, given that the agency is relying on double-shell tanks as the best technology available for containing 56 million gallons of liquid waste until it can one day be stabilized in glass logs at the Waste Treatment Plant. The discovery of the leak has generated much concern from public interest organizations and

politicians, but the DOE's initial response to the event was neutral and distanced. In a press release available at *Energy.gov*, the DOE said,

> The Department of Energy's Office of River Protection (ORP), working with its Hanford tank operations contractor Washington River Protection Solutions, has determined that there is a slow leak of chemical and radioactive waste into the annulus space in Tank AY-102, the approximately 30-inch area between the inner primary tank and the outer tank that serves as the secondary containment for these types of tanks. This is the first time a double-shell tank (DST) leak from the primary tank into the annulus has been identified. There is no indication of waste in the leak detection pit outside the DST, which means that no waste has leaked out of the annulus and into the environment. ("Office of River Protection")

The claim that no waste had leaked out of the annulus was later proven false and would also come to seem disingenuous given revelations that the DOE knew about the leak for more than a year before it disclosed information about it. The press release illustrates administrative rationalism's mix of restrained concern and science-based reassurance. Like other Hanford DOE press releases, it attempts to communicate that the agency has total control over its most dangerous waste, and it works to convince readers that cleanup is proceeding on schedule and according to an established legal process. This impression of control is the basis for Hanford's expert culture, which dictates that only Hanford insiders can understand problems at the Site (and therefore only insiders should make decisions about how cleanup proceeds). It is, in fact, challenging for outsiders to

understand the complex problems at Hanford, partially because the DOE frequently withholds crucial information.

Though there are lingering questions about the future of the Waste Treatment Plant and about how the DOE will store liquid waste if more tanks leak, *Hanford.gov* continues to avoid controversy and to focus on remediation activities the agency characterizes as successful. For example, the "Hanford News" on the front page of *Hanford.gov* (as of late August 2013) announces two recent milestones: "Hanford Site Treating Record Amount of Groundwater" and "Hanford Landfill Reaches 15 Million Tons Disposed." These are, of course, dubious accomplishments: they celebrate the achievements of treating billions of gallons of groundwater and moving millions of tons of soil, two feats that signal the reduction and relocation—but not elimination—of risk. Still, the DOE links to lengthy descriptions of these two milestones, whereas it offers only a paragraph about the leaking double-shell tank (and nothing about a possible tank leak detected the night of August 21, 2013 that caused workers to evacuate the C Tank Farm).[20] *Hanford.gov* appears to be a definitive source on Hanford, but it diverts attention from accidents, leakages, and scandals, and attempts to minimize the most serious threats to human and environmental health, dismissing the concerns expressed by outside groups. However, and regardless of how much *Hanford.gov* distorts information, the website is far more restrained than the Hanford Site *Facebook* page, which takes distraction to a new level by using Hanford's natural beauty, photographic evidence of cleanup progress, and support for Hanford workers to build community spirit and trust in the DOE. And while *Hanford.gov* has largely ignored the Site's recent waste tank leaks,

the Hanford Site *Facebook* page has reluctantly responded to them, though quite awkwardly, as I will explain.

On February 8, 2013, the DOE changed the cover photo of the Hanford Site *Facebook* (*FB*) page to a striking aerial photograph of the Columbia River.[21] In the photo, the river weaves from the background to the foreground, turning from white-blue to sky blue. A road runs along one side of the river, and tiny buildings are visible in the distance, but the land is otherwise unmarred by human activity. The terrain, a mix of flatlands and white, shadowy bluffs, looks like a relief map painted in shades of brown. The earthy colors and the time of day make the entire photo look hazy, and the haziness makes the Scablands beautiful.[22] On that same day, as always, Hanford Site's profile picture sat in the lower left-hand corner of the cover photo. The picture is a cartoonish version of the DOE's seal, which consists of a shield decorated with tiny depictions of the sun, an atom, an oil well, a windmill, and a turbine—symbols that represent the agency's many energy-related initiatives—and a bald eagle, in profile.[23] (See Figure 5.)

This juxtaposition of images—river side by side with government insignia—exemplifies the strange mixture of informally expressed pride (in Hanford's accomplishments and its natural beauty) and official discourse that appears on the Hanford Site *FB* page. While the DOE's seal marks the page as a legitimate source of information about Hanford, the cover photo—which spans most of the page—demonstrates the DOE's attention to matters beyond its official mission at Hanford. Instead of depicting an environmental remediation project (as other photos on the Hanford Site FB page do), this photo takes the Columbia as its subject, giving viewers a

glimpse of a place that is generally unseen because the federal government owns and manages both sides of the river. But the DOE lays claim to this area in more than a physical sense. By using this stretch of the river to represent itself on *FB*, the DOE paradoxically claims the authority to inscribe its own meanings on the land and argues that the land itself defines the Site. Despite the fact that Hanford has irrevocably polluted the area, the DOE represents the river as beautiful and uses that beauty to publicize its remediation efforts.[24]

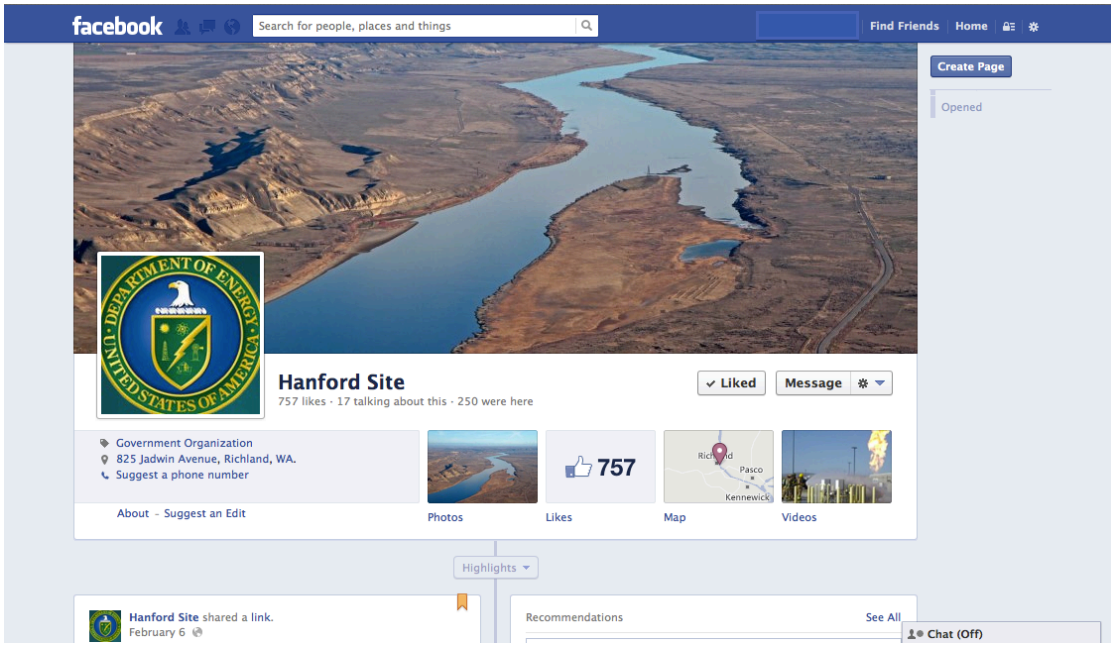

Figure 5. Image of Hanford Site *Facebook* page, captured on February 21, 2013.

Indeed, when one takes a step back, the Hanford Site *FB* page looks more like publicity for the DOE than a reliable source of information for citizens. The page allows the DOE to cultivate an image of transparency even as it works to shape viewers' perceptions of the Site's meaning. By offering a wealth of knowledge about the Hanford Site and its community (that would otherwise go undisclosed), the DOE creates the

appearance of openness and establishes itself as the primary authority on the Site. However, the *FB* page fails to report on the events and projects that seem most pressing to outsiders. Visitors to the *FB* page learn little about the Site's history of radioactive colonialism, its prolonged and expensive cleanup, and the government's inability to contain threats to people and the environment. Instead, the DOE uses the *FB* page to engage in what Kinsella calls "rhetorical boundary management":

> [The DOE's] strategies of discursive containment [have] evolved from the inelegant principle of secrecy to a more subtle principle of rhetorical boundary management. With this shift, concern [has] moved from the questions of "who knows" or "what is known" about Hanford and its organizational and technical practices, to what that knowledge means and to the related question of who participates in the making of those meanings. Informational boundaries have been replaced by boundaries on meaning, and on the interpretive authority to establish legitimate meanings. (167)

Because the DOE can no longer maintain strict informational boundaries (following disclosures about its current and former recklessness), it has shifted its discursive strategy to one of tightly controlled self-revelation. By posting text and photos every few days on a social network that reaches over a billion subscribers, the DOE makes it appear as though it has nothing to hide.

However, the page's interpretation of Hanford's meaning is completely at odds with the interpretations of public interest groups, local Native American tribes, and the vast majority of journalists reporting on Hanford. The DOE uses the *FB* page to establish

its credibility, likeability, and openness (primarily through the visual rhetoric of photos) and then uses its "interpretive authority" to minimize concerns about Site management. A troubling example of this is the Hanford Site *FB* page's handling of the recent waste tank leaks at Hanford. For the most part, the *FB* page has remained silent about the leaks. When it has posted about them, the information has been sandwiched between other posts that engage in the *FB* page's usual celebration of Hanford history and cleanup. *Hanford.gov* and the Hanford Site *FB* page are alike in their attempts to direct the public's attention away from controversy and scandals and in their lack of meaningful engagement with the public. *FB* provides the opportunity for users to comment on the DOE's activity—and one might think that some of the DOE's posts would generate confused or outraged replies—but very few people comment on the DOE's status updates, and the DOE does not request feedback. Indeed, the Hanford Site *FB* page does almost nothing to promote discussion or analysis of Hanford's problems and few questioning or dissenting voices are represented there—with one exception that I will discuss at the end of this section.

In order to establish its credibility and cultivate the impression that the DOE is an open, effective, and community-minded organization, the Hanford Site *FB* page posts photos of what it considers newsworthy events. Indeed, the DOE has posted thousands of photos there over the last few years, some of which capture buildings and areas that could not be spoken about publicly (let alone photographed) during the era of secrecy. This gives visitors the impression that they are being given insider access to a place that is otherwise off-limits (to both the public and the news media).[25] Besides that, many of the photos feel intimate: they create a sense of familiarity with the broken landscape of the

Site as well as with its workers, who are portrayed doing cleanup work, giving tours, and engaging in community service. (See Appendix A for examples of Hanford Site *FB* photos.)

Most of the photos posted on the *FB* page fit neatly into one of five categories: progress, safety, nature, visitors, and public relations. Presented together, these photos subtly argue that Hanford cleanup is occurring safely, transparently, and as planned, against a spectacularly scenic backdrop. A large collection of photos that emphasize progress show building demolition and construction, remediation of specific areas, and photos of sites like the F area (home to a decommissioned reactor) whose cleanup has been declared complete. Images that portray safety at the Site show DOE officials receiving safety awards, workers in protective clothing finishing dangerous jobs safely, and activities at the Site's Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Training Facility. Photos of nature depict serene or dramatic scenes like the Columbia River at sunset, Rattlesnake Mountain covered in snow, deer tracks in a remediation area, and a coyote running through the brush. Visitors pictured in photos include Site archaeologists touring with Cold War-era Hanford employees, the Washington State governor and U.S. Secretary of Energy, and engineers from the Tokyo Electric Power Company (who hope to use Hanford as a model of nuclear cleanup after the Fukushima disaster). There are also dozens of photos that show DOE officials engaging directly with the public: opening the Hanford Story kiosk at the Richland Public Library, speaking at local schools as part of the Hanford Speakers Bureau, and visiting local Native American tribes' museums and field stations. Together, these five categories of photos create the impression that the DOE is a benevolent, forthright agency that

serves the public interest; that Hanford is home to a community of conscientious and devoted employees; and that nature is thriving at the Site. Despite the dangers portrayed in some images, the overall tone of the photos is celebratory. More than anything, the Hanford Site *FB* page builds excitement about progress on cleanup projects, the hard work of employees, and the DOE's efforts to reach out to the public. This is what enables the DOE's discursive containment of the scandals at Hanford; without positive images of Hanford, the agency could not convincingly argue that everything is under control at the Site.

And yet there are vast and obvious gaps in what knowledge the DOE makes available to the public, as evidenced by the agency's response to new evidence of leaking waste tanks. Glossy photos and informal informational posts that express pride in the DOE's work at Hanford (like the one discussed at the beginning of this chapter) communicate that cleanup is proceeding safely and efficiently, but reports from advocacy groups and the media tell another story. Even though the Hanford Site *FB* page covers news that ranges from the momentous to the mundane, including visits from government officials, recent snowfall at the Site, and cleanup landmarks reached, the page gives very few details about the most controversial and alarming events that occur at Hanford. The page's silence about recent revelations of leaking waste tanks is the most recent example of this. As noted above, Hanford Challenge—a public interest group that advocates for "safe and effective cleanup"—released the news that a double-shell tank (called AY-102) at Hanford is leaking in mid-August 2012 (Hanford Challenge, "About"). The DOE did not admit to the "tank failure" until October 2012 (Hanford Challenge, "Leaking"). The

tank leak saga is still unfolding now—in August of 2014—and the DOE remains reluctant to admit to failure.

The AY-102 leak presents a serious challenge to the DOE's professed understanding of the waste tanks and to its central plans for remediation, though the agency does not admit that at *Hanford.gov* or on its *FB* page. There are 177 underground waste tanks at Hanford, and each one contains a unique brew of radioactive and chemical wastes. Of the 177 waste tanks, 149 are single-shelled—made from one layer of carbon steel encased in reinforced concrete. Hanford engineers built these temporary, single-shell tanks between 1943 and 1964, once they realized that they could not continue to dump large volumes of waste from plutonium processing directly into the environment.[26] Between 1968 and 1986, Hanford workers built another 28 waste tanks using a double-shell design. Since then, the DOE has counted on these double-shell tanks to contain waste until it can be stabilized at the Waste Treatment Plant (which has been plagued by design flaws, contractor malfeasance, skyrocketing costs, and long-term delays that make its opening date highly unpredictable).[27] As recently as April 5, 2013, a page of *Hanford.gov* dedicated to describing Hanford's tank farms referred to the supposed durability of the double-shell tanks: "These [newer] tanks [are] sturdier, made with a second shell to surround the carbon steel and the reinforced concrete. Called 'double shell tanks,' these tanks have not leaked any of their waste since being put into service" ("Tank Farms," April 5). Now that the agency has admitted to the failure of AY-102 (which holds approximately 857,000 gallons of radioactive and chemical waste), it has deleted the line about none of the tanks leaking. Such deletions happen quietly, even in circumstances that are particularly alarming, like this one.

Indeed, the DOE has provided little background about the tanks in its posts to *Hanford.gov* and the Hanford Site *FB* page despite the fact that context is important to understanding the situation. Hanford's waste tanks were only meant to last 20-40 years, and they were "never designed to permanently store high-level radioactive waste," yet the majority of them are still in service (Hanford Challenge "Tank Waste"). The single-shell tanks are considered less durable, so the DOE has actually been transferring liquid wastes from leak-prone single-shell tanks into some of the double-shell tanks.[28] Anna King, a longtime Hanford journalist who currently reports for Oregon Public Broadcasting, summarized the anxieties created by the AY-102 leak:

> The only problem is now we have found out that one of those double-shell tanks that was supposedly one of the newer, stronger-hulled tanks they were emptying the single-shell tanks into is now leaking internally. Although it's a slow leak, it is concerning because if one tank is leaking there could be others. That's what they're [the DOE is] looking into now. It's like a game of cups where you keep removing one cup and transferring the liquid into the remaining cups. But you have so much liquid and only so many cups to keep it in. If you keep eliminating cups, eventually you're going to run out of places to store the liquid. (King)

King pinpoints the impossibility of the situation: the DOE has been at a loss for where to store millions of gallons of liquid waste for decades, and Hanford has become a *de facto* waste storage site. The Tri-Party Agreement—the 1989 agreement between the DOE, the U.S. Environmental Protection Agency, and Washington State Department of Ecology that governs Hanford cleanup—dictates that the DOE "must remove 99% of the material

in every tank on the Site, or at least as much waste that can be removed based on available technology," so there is a legal imperative for the DOE to find a solution to the game of cups King describes (US DOE, "Tank Farms").

Despite the low-level panic induced by the AY-102 leak ("low-level" because Hanford is such an unspectacular, perpetually unfolding disaster that none of the worst news to come out of the Site inspires the terror that it might), the Hanford Site *FB* page made no mention of it. When Hanford Challenge disclosed news of the tank leak in August 2012, the advocacy group quickly followed up the revelation with links to media coverage on its *FB* page, newsletters with analysis about what steps the DOE should take next, and continued inquiries into the tank situation. In comparison to Hanford Challenge (and despite the fact that the DOE has the most information about the tanks), the Hanford Site *FB* page was silent. In the days after Hanford Challenge released news of the leak, the Hanford Site *FB* page—rather than posting news on the leak—posted a photo album called, "Feds Feed Families," in which Hanford workers are pictured transporting the thousands of pounds of food they collected to feed people in the local community. Whether this was purposeful distraction or a sign of the Hanford community's desensitization to crisis, the result was the same: the DOE did not communicate news about a major threat to the Site's groundwater, cleanup plans, and tank workers (who monitor the tanks everyday). Instead, by celebrating daily life at the Site, the DOE distracts from matters that require the public's awareness and input and lulls people into accepting the status quo of inadequate monitoring, inattention to problems, and worker endangerment.

Hanford's management structure allows the Site's public affairs staff to avoid releasing information about tank leaks via the Hanford Site *FB* page. Though "Hanford Site" is the Site's main *FB* page, it is maintained by the Richland Operations Office, which does not work directly on tank issues. The management entity that does oversee the tank farms, the Office of River Protection (ORP), maintains its own *FB* page, which is called "River Protection Project." Since the title of this page does not even include the word "Hanford," people searching for information about Hanford on *FB* are unlikely to stumble upon its updates about waste tank treatment. Secrecy continues to be an operating principle at Hanford, though the rhetorical tools the DOE now employs are less obvious than the agency's former approach of simply designating as classified all controversial information (Kinsella 165). Even when the River Protection Project posts about the tank leaks, it remains evasive, as in this post that describes the ORP's inspection of the area between the two shells (known as the annulus) of AY-102:

> A second riser was visually inspected last week and additional material was identified in the annulus near this second riser. At this time, it is unknown if the material is radioactive. This area of the tank annulus was previously viewed in 2006, providing historical benchmarking data [. . .]. We are continuing our investigation, including gathering additional information from other tank risers. (River Protection Project, "OVERVIEW")

The DOE is cautious about whether the unknown material in the space between the shells is radioactive, likely because the tank leak has already created public relations difficulties. The DOE has not taken the precautions necessary to prevent waste leaks (in

that it has not replaced or emptied aging tanks), but it avoids blame by employing noncommittal language and insisting that it needs more time to analyze the problem.[29]

The DOE has discovered several new tank leaks since the AY-102 crisis, but regardless of how dire the situation gets, the DOE's *FB* response remains the same: the agency continues to focus on cleanup progress, community service, and visits from government officials—in other words, anything but the tank leaks. On February 22, 2013, Washington Governor Jay Inslee announced that a whole new level of disaster had been reached at Hanford: after the leaks in tanks AY-102 and T-111 (a single-shell tank that was reported to have been leaking a week earlier), six other underground radioactive waste tanks were found to be leaking in the center of the Site (Inslee). This mass of leaking tanks poses a threat not only to human and environmental health but also to the public's faith in the management and contractors at Hanford.[30] State and federal officials are now looking into whether Hanford's monitoring and maintenance program is sufficient, and the government will have to decide how to store waste until the Waste Treatment Plant, which is being built to stabilize liquid waste in glass logs, is constructed and operational. This could take a decade or longer. News outlets in Oregon and Washington are generally the only ones to cover events at Hanford, but the report of the six leaking tanks made national and international news. While news agencies in France were translating Hanford commentators' quotations on the tank leaks and advocacy organizations like Hanford Challenge were furiously posting updated stories about the leak to their *FB* pages, the Hanford Site *FB* page said nothing about the leaks. Three days later, on February 25, Hanford Site posted a new status update, but it had nothing to do with the tank leaks: "Registration for Hanford Site public tours is on March 4 at 6 p.m.

So ‘march forth’ and get your spot. Details,” and a link to more information appeared below. Thus, two familiar strategies are at work in Hanford Site’s handling of the tank leaks: avoidance and distraction. Public affairs staff have avoided any mention of the leaks and have instead distracted readers with what might be mistaken for accountability: an invitation for citizens to see Hanford themselves.

Though the Hanford Site *FB* page ignored the mass leak event, the River Protection Project acknowledged it on the day it was announced by posting a link to a *Tri-City Herald* article about it. The River Protection Project is, in some ways, more forthcoming than the Hanford Site *FB* page, likely because ORP manages the tank waste and can more persuasively hide behind technical accounts and measurements. On February 25, three days after Governor Inslee announced the new leaks, the River Protection Project posted this status update, which was meant to quell anxieties about contaminants spilling into the groundwater:

> Lindsey Geisler, DOE spokesperson, on the six leaking Hanford tanks: “The Department of Energy is committed to the safe cleanup of the Hanford site. The cumulative rates of seepage from the 6 tanks is currently estimated to be less than three gallons a day. To put that amount in perspective, roughly 1 million gallons of material previously leaked into the soil from the single-shell tanks at Hanford over a period of decades. To address those tanks that were leaking, by 2005, the Department removed all the drainable liquid possible out of the single-shell tanks, into double-shell tanks. We have not observed any discernible change in the

> contamination levels in the monitoring wells, but continue to monitor it very closely."

Here, the DOE tries to reassure the public through careful language that avoids detailing what happened to the contamination. When Geisler offers "to put that amount [of contamination] in perspective," she does so by suggesting that the current levels of leakage are much smaller than levels measured in the past—as if the public should be reassured that Hanford tanks are leaking *less* than ever, with the implication that those past amounts never harmed anything. She also gives what has become a typical report on Hanford's leaking tanks when she says that they are leaking three gallons a day, but the DOE has not found contamination in their monitoring wells. None of the DOE's reports provides a possible reason for this discrepancy between what they know about leaks and what contamination they have actually measured in the local area.

The Hanford Site *FB* page has made very little mention of the tank leaks, but when it did mention the leak of single-shell tank T-111, it used similarly evasive, distancing language. Many Hanford Site status updates include an informal description of the event being described, clever wordplay, or an invitation to "check out" the information that is being provided. For example, the two status updates before Hanford Site mentioned the T-111 leak were playful: "Down to the core. Tri-City Herald covers preparations to cocoon Hanford's K East Reactor" and "Vote for your favorite flashback story on KGW-TV Portland on Monday, Kennedy at Hanford or Nixon in Portland." By contrast, the Hanford Site *FB* page announced the T-111 leak by linking to the DOE's press release: "Office of River Protection Confirms a Decrease of Liquid Level in Hanford Single-Shell Tank." Here, the *FB* page uses the title of the press release and says

nothing more. The title's equivocal language—in which the world "leak" is replaced by "decrease of liquid level," as if the tank's contents just evaporated—is characteristic of DOE press releases about controversial topics. The press release itself goes on to say, "Monitoring wells in the T Tank Farm, where Tank T-111 is located, have not identified significant changes in concentrations of chemicals or radionuclides in the soil." While the DOE cannot detect that anything has leaked from the tank, the press release notes that "this tank was classified as an assumed leaker in 1979," and though "pumpable liquids were removed" in the mid-1990s, "data indicate the current rate of loss of liquids from the tank could be in the range of 150 to 300 gallons over the course of a year" (Hanford Site "Office"). This string of assertions—which claims that the tank contains less liquid than it did before, but no waste has been found beneath it, though it may actually be leaking hundreds of gallons a year—is so careful to avoid conclusions that it confuses more than it clarifies. Like other Hanford press releases, it avoids putting this tank leak into a larger context and fails to interpret what this might mean for the local environment, human health, and future work at Hanford.

Though the DOE has worked to contain this scandal by limiting the information it provides to the public and couching its revelations with reassurances about safety, a DOE *FB* post about the recent tank leak inspired one *FB* user to criticize the agency's waste management practices. On the same day the DOE posted the news release on the tank leak, a *FB* user (whose name I have blacked out) posted this comment: "The DOE along with WRPS says the union workers have [too] good of benefits yet [we're] the ones that have to clean that crap up. And they wonder why we get sick." Here, a Hanford worker protests that the DOE and Washington River Protection Solutions (WRPS), the contractor

that manages Hanford's tank farms, try to reduce employee benefits during union negotiations, and yet tank workers face risks to their lives and health each day when they are monitoring and maintaining Hanford's tanks. Though there is much public concern about Hanford's poisoning of the environment and expensive, ineffective cleanup, this is one of the only dissenting comments to appear on the Hanford Site *FB* page. Whether this is because the DOE deletes such comments or because many of those who would voice dissent (such as Hanford employees) fear retribution, the dearth of protest confirms that the Hanford Site *FB* page is not a forum for meaningful exchange on Hanford issues. (The DOE did not respond to the worker's remarks.) Regardless, the very structure of *Facebook* creates the potential for debate. While very little discussion has happened there thus far, this comment proves that the DOE cannot always control the story when it is posting in a public forum. (See Figure 6.)

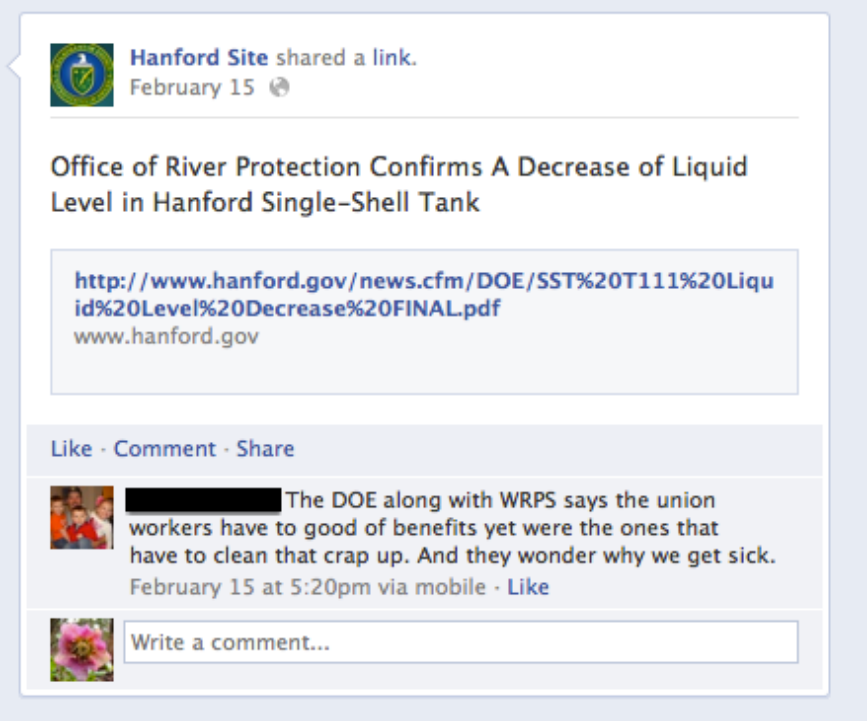

Figure 6. Hanford Site *Facebook* (*FB*) status update, posted on February 15, 2013, including response from *FB* user.

The DOE can, however, easily manage its discursive environment when it is the only voice allowed to speak. This is the situation in my third subject of analysis, *The Hanford Story*, a video series the DOE began to release starting in April 2011.[31] Unlike the Hanford Site *FB* page, which creates opportunities for public comment (however limited they are and however infrequently they are used), *The Hanford Story* represents what the DOE says about Hanford when it is not directly accountable to the public. Indeed, *The Hanford Story* transpires in time outside of time and in a world where dissent and scandal do not exist.

The DOE's current goal is to complete significant cleanup along the Columbia River Corridor in order to shrink its cleanup "footprint" to a 75-square-mile area at the center of the Site.[32] In order to sell its plans for new types of land management and help the regional community adjust to a new phase in long-term environmental cleanup, the DOE has intensified its public relations efforts. Those efforts culminated in the release of *The Hanford Story*, a video series produced by Lockheed Martin Creative and Strategic Services.[33] Together, the seven parts of the series, titled *Overview, Groundwater, Recovery Act, Tank Waste Cleanup, The Future, Plutonium Finishing Plant,* and *River Corridor*, argue that Hanford cleanup efforts are under control and that the Site and region have entered "a new era" in which Hanford will represent opportunity, innovation, and a clean environment.

The Hanford Story would like to give the impression that it tells the one, definitive narrative about the Site, but a closer look reveals that it presents a biased version of the Site's past, an unreasonably optimistic view of its present condition, and a disturbingly utopian version of its future. The videos so conspicuously avoid controversy

and undermine the claims of those who have exposed the harm Hanford has done to people and the environment that one would think they could only engender public distrust of the DOE. However, *The Hanford Story* effectively masquerades as an educational film; indeed, the *Overview* won a Northwest Emmy for best historical program.[34] The tone and content of *The Hanford Story* make one thing very clear: the DOE banks on the assumption that the American public will have forgotten (or never learned) about what happened at Hanford during several wars and what is still going on there today: unchecked releases of life-threatening pollutants and efforts to limit the public's knowledge of those releases. Whether most viewers realize it or not, *The Hanford Story* deliberately writes over other versions of Hanford's history and does rhetorical violence to the Site's victims.

Before *The Hanford Story* can advance its own version of history, it works to position the DOE as the definitive authority on the Site and to foreclose discussion of the waste management, financial, and ethical controversies that tend to define it in the public imagination. The first video, *Overview*, opens with a tellingly dismissive statement from a DOE spokesperson: "A lot of the people come here with a lot of questions; a lot of people come here with some concerns." In this vague pronouncement, the spokesman implies that the government has privileged knowledge about Hanford and that "people" (members of the public) come to the Site with a lack of knowledge (represented by their "questions" and "concerns"). This statement does not take into account that the public's concerns about Hanford—which are consistently validated by news reports—stem from the government's imposed secrecy, willful deception, and gross mismanagement of life-

threatening waste. This opening scene perpetuates the lay versus expert divide and sets a tone of condescension for the rest of the video series.

Instead of addressing the public's concerns, the videos engage in several means of distraction, including constant attention to areas of Hanford where the non-human world seems to dwarf human influence. The DOE spokesperson at the beginning of the video disappears, and nature scenes flash on the screen, carrying the viewer over the Columbia River and across Hanford's less-altered landscapes, away from the deadly waste that requires human intervention. Then, the scene abruptly shifts back to the human world and what appears to be a representation of public opinion about the Site. The video interviews a series of people and, one by one, they muse over what they would say if they had to describe Hanford in a single word. Twenty-four people offer their responses (though their opinions are obviously scripted), and the scene shifts among them as they give this series of answers: "The one word I would use to describe Hanford would be change." "Massive." "Enormous." "Employment." "I suppose it's cleanup." "Controversial." "Toxic." "Taxes." "Technology." "Bureaucracy." "Nuclear weapons production." "I think of testing." "Energy." "Science." "Jobs." "Unsustainable." "Money pit." "Historic." "Chaotic." "Radioactivity." "Impossible." "Unbelievable." "Unsafe." "Complicated." While most of these words are positive or relatively neutral, words like "radioactivity," "impossible," and "unsafe" reflect the well-documented sense of dread that the public experiences in response to nuclear technologies (Slovic, Flynn, and Layman 1606). Though this is what many people feel about Hanford, the videos do not linger on negative images; instead, the program's host (a male actor with an authoritative tone) appears and neutralizes any controversy that may have been represented in that scene. With a

knowing smile, he offers a condescending summary of people's impressions: "Maybe the best word is 'complex.' Welcome to Hanford." This pronouncement sets the tone for the rest of the series. Descriptions like "chaotic" (which suggest that Hanford's pollution and management are out of control) never surface again. Instead, the sense that Hanford's problems are "complex"—challenging, but not troubling—pervades the entire series.

This scripted simulation of dialogue between citizens and the DOE fails to represent conflicting views; instead, it suppresses dissent and forecloses discussion, both of which are necessary to democratic decision making at Hanford. Rather than acknowledging that the public has valid reasons to believe that Hanford is "unsafe" and "toxic," the video series uses actors, graphics, interviews with supporters, and carefully selected elements of Hanford's story to insist that viewers should associate Hanford with the positive images elicited by some of the words in the list above, including "jobs," "cleanup," "technology," "science," and "energy." The video's storytelling is an instance of the DOE's "decide, announce, defend" strategy, which sees public participation as an end in itself rather than a means to better decision-making.[35] Instead of acknowledging the legitimacy of the public's fears and then working to address them, the video series tells viewers what to believe about Hanford's past and present and then announces how the government will use the land there in the future.

Once the *Overview* contains dissenting views, it rewrites Hanford's destructive past in order to justify the DOE's current and future plans for remediation. Though the entire series is dedicated to describing the expensive and frustrating cleanup of one of the most contaminated sites in the world, it never finds fault with Hanford's operations or acknowledges the suffering the Site has caused for an untold number of people. Indeed, it

consistently characterizes Hanford's mission as patriotic and even describes the Site's history as "one of our nation's most compelling stories" (*Overview*). Instead of acknowledging that Hanford was made into a national sacrifice area without the consent of the American public or people living in the area, the *Overview* frames the Site's origins by defending its establishment: "the Hanford most people are familiar with was born out of an intense race to produce the world's first atomic bomb during the Second World War." Again and again, the DOE uses the threat posed by despots during WWII as a justification for everything that came after at Hanford despite the fact that most of Hanford's production and pollution happened after the U.S. dropped bombs on Hiroshima and Nagasaki, and Japan surrendered. Indeed, the *Overview* glosses over the feverish weapons production of the Cold War era in a single sentence: "Ushering in the atomic age, Hanford continued to support America's peace through strength policies throughout the Cold War, producing enough plutonium to maintain a continual and formidable deterrent to any potentially hostile nation, namely, the Soviet Union." Thus, the video argues that Hanford accomplished three missions, all three of which can be used to justify the existence of such intractable pollution problems: the Site paved the way for the "atomic age," supported the country's pursuit of "peace," and defended the country from the Soviet threat. And yet making weapons is an undeniably hostile act, and the "continual" production of plutonium to pursue "peace through strength" meant making war on people and the environment at home.

The video's denial of that central fact makes it inevitable that *The Hanford Story* also denies the history of conquest, colonization, and nuclear colonialism that began before Hanford and continues to this day. In a particularly tone-deaf portion of the

Overview's voiceover, the host describes Hanford's repeated colonizations (first by white settlers and then by the government) in a manner that can only be called light-hearted:

> before there was a Hanford, these windblown plains served Native American tribes such as the Wanapum, Yakama, Umatilla, and Nez Perce, who hunted, fished, and gathered traditional foods and medicines along the banks of the Columbia River. With the Gold Rush and westward expansion, early settlers began arriving to the area in the mid-1800s, establishing the farming communities of White Bluffs and the Hanford township. Life was hard in those days, but the communities flourished, growing to a population of some 1300 residents. Everything was hunky-dory, that is, until 1943.

The final words of this voiceover are followed by black-and-white footage of WWII explosions and the sound of artillery fire. While the narrator seems mildly troubled by war, he is not disturbed by his script's peculiar transition from Native American use of the Hanford area to the marginalization of those same people. Though the Wanapum, Yakama, Umatilla, and Nez Perce were violently displaced by white settlers, the host simply says that "early settlers" arrived "with the Gold Rush and Westward expansion"—as if frenzied resource extraction and brutal colonization were part of a natural progression of events. His preposterous and clumsy claim that "everything was hunky-dory" intensifies the video's already outrageous interpretation of history, and in trying to sound folksy and casual, the host insults his audience.

And yet *The Hanford Story* does not perceive its own awkwardness. Instead, it acts as if everything has always been hunky-dory at Hanford. The videos provide no

critical interpretation of the past—no acknowledgement of nuclear colonialism, the massive releases of pollutants to the air, soil, and water that have made countless people ill, or the ways government secrecy and deceit made those problems even worse (since people living in the area were never encouraged to take basic precautions like avoiding food covered in radioiodine or staying out of the Columbia River near Hanford). Over and over, *The Hanford Story* insists that a "new era" has begun at Hanford, and yet there is never any direct acknowledgment of wrongdoing in the previous era. The DOE tries to have it both ways: it maintains that cleanup and new business ventures at Hanford are part of one, continuing story of environmental protection and economic development, and yet simultaneously it claims that the government will revive the landscape and provide new economic opportunities, suggesting that a shift is occurring. The very suggestion that "a new era" is desirable implies that something went wrong in the former era, and yet the Hanford DOE never admits that.

The DOE is also expert at finessing explanations of how and why waste ended up permeating the environment at Hanford. Usually, national security is the justification, as in the *Overview* when the hosts says, "during these critical wartime and national security missions, the thought of what to do with the resulting waste and what its impact on the environment might be was secondary to the need for immediate production and use of the vital plutonium." In the DOE's logic, national security with respect to international enemies trumps domestic communities' need for security from exposure to radioactive and chemical waste. Plutonium is also considered "vital" to "national security missions," though the word seems out of place here, given that "vital" describes something that is indispensable to life—not destructive to it.

The DOE has several rhetorical ways around admitting that waste was irresponsibly and carelessly dumped in the ground at Hanford. At one point, the host says, "nearly 200 million gallons of this waste was held in underground storage tanks or worse, returned directly to the ground." The word "return" suggests that disposal is natural—a way to restore what has been extracted and destroyed—but this indirection hides the fact that nuclear waste has gone through countless human-directed transformations that make it too dangerous for apt comparison with rotting organic matter. Deposition of Hanford's waste could only create deadly land mines for current and future Hanford workers as well as those living downwind and downstream.

The Hanford Story offers other euphemisms to describe how waste was dumped at Hanford. In the *Overview*, a former B reactor worker (whose nostalgia about Hanford suggests that it was a safe and pleasant place to work) is interviewed, and he euphemistically admits that waste was "distributed" and "discharged" to the middle of the Columbia River. Such distancing language masks the revelation that workers were poisoning the Columbia River, though the B reactor worker, who also describes waste being placed in unlined trenches, insists that "that was how [waste] was disposed of in those days." The worker grins as he describes these irresponsible waste disposal practices, but the video redirects viewers' attention by jumping to a description of Hanford's cleanup project. As in this example, the tone of the series is consistently ill-suited to its material.

Much of *The Hanford Story* comes across as boastful, and the DOE's pride in Hanford's massive scale and mission is especially evident in the series' use of illustrations. Graphics interpreting Hanford's size, impact, and waste problems are

interspersed throughout *The Hanford Story,* and their impact is likely why the series was nominated for a Northwest Emmy for "best use of graphics." Hanford's physical presence on the landscape has been secret for so long and the things that have happened there are so difficult for outsiders to comprehend that graphics provide necessary visual aids. But the videos' graphics are used for more than interpretation; they also argue that, despite its problems, Hanford is worth bragging about. The DOE's tendency to show off is especially evident in the *Overview's* first use of graphics, which fly across the screen as the host reads these words:

> Hundreds of facilities and buildings along with their supporting infrastructure were constructed across the 586-square mile site, an area that would easily fit the city of Los Angeles today, with plenty of room to spare. In fact, Hanford is a city in its own right, with more than 500 miles of road, 1.2 million square feet of facility space, 12,000 phone lines and 40 meteorological monitoring stations. At its peak, Hanford employed some 50,000 people, ranging from laborers and security personnel to scientists and engineers.

During the voiceover, a visual representation of the city of L.A. falls from the top of the screen and is superimposed on a map of Hanford. Then, the city swirls and transforms into representations of Hanford's roads, facilities, phone lines, weather stations, and employees. At no point is it mentioned that this city was built to produce weapons of mass destruction. And it is clear that the DOE is doing more than just reporting the numbers; the *Hanford Story* videos consistently maintain a sense of awe in the face of Hanford. For example, right after this description of the site's infrastructure, the host

proudly introduces "one of the world's greatest construction projects of that era, Hanford's B reactor," and claims that it "is perhaps the site's most iconic image." Though the B reactor heralded a dangerous arms race, decades of nuclear proliferation, profound suffering, and an untold number of deaths (especially when you include deaths from exposure to all stages of the nuclear fuel cycle), the DOE maintains its pride in the reactor's construction and capabilities. The agency exaggerates when it refers to the B reactor as iconic, though—the Site has been too secret to produce an iconic image. In fact, *The Hanford Story* can only make such unfounded claims because the public knows so little about the Site. The videos take advantage of the public's lack of knowledge about Hanford and attempt to cultivate a misplaced sense of admiration for it. They accomplish this by using graphics both to entertain the audience and stand in place of the Site's unsightly realities.

Indeed, *The Hanford Story*'s animations make Hanford's waste problems appear palatable, even benign. The DOE uses more fast-moving, cartoonish illustrations to help viewers visualize the shocking waste statistics read in the following voiceover:

> the sheer magnitude of the impact on the environment, resulting in nearly incomprehensible numbers, numbers like 270 billion gallons of contaminated groundwater, 25 million cubic feet of buried or stored solid waste, 23 hundred tons of spent nuclear fuel, 20 tons of plutonium-bearing materials and 53 million gallons of waste in 177 underground storage tanks.

Instead of interpreting the incomprehensibility of these numbers with videos of workers handling the actual waste, the DOE illustrates groundwater flowing, barrels of solid waste

lining up in rows, spent nuclear fuel tipping a scale, plutonium-bearing materials falling into a truck, and then a black wave washing away the truck and transforming into underground storage tanks. A written description immediately reveals the absurdity of this cartoon sequence, but it fits seamlessly into the *Hanford Story's* larger intent to ensure that people do not learn the truth about Hanford, even as it poses as an educational video. The graphics in the video series are meant both to hide Hanford's realities and render them more impressive, but the unthinkable numbers reported in the passages above can be tolerated only if viewers have forgotten the meaning of them. And since the DOE sums up Hanford's early years by insisting that "ultimately, the Manhattan Project was a success," it is clear that the agency is not interested in framing the massive waste problems as a mistake: for the DOE, these wastes are the accidental legacy of a successful military project (*Overview*).

The ultimate evidence that Hanford has been a success comes in the apparent health of its ecosystems, and the DOE uses natural scenes throughout *The Hanford Story* to prove the paradox that the Hanford area is simultaneously safe and worth saving. The pervasiveness of nature scenes in a seven-part series on a nuclear wasteland is certainly remarkable, but it is typical for the DOE. A scene in the middle of the *Overview* illustrates one way the DOE persistently uses nature to assure people that the Hanford Site is safe. Once the host has finished describing the immensity of the Site's waste problem (discussed in the passage above that lists the types of waste at Hanford), he immediately assures viewers that none of that waste has harmed people: "Significantly, Hanford cleanup activities have resulted in exposures to the public that are exceedingly low, less than 1 millirem per year, well below regulatory limits." The host makes this

claim as a kayaker on the Columbia River flashes on the screen. The implication is that the kayaker would not be allowed on the river if it were unsafe to be there. But several things are made unclear by the host's statement: when and how this "1 millirem" measurement was made, through which pathway (air, groundwater, river, or food chain) exposure was measured, and which agency's regulatory limits are not being exceeded. In this, the only statement the *Overview* makes about potential threats to public health, the DOE dismisses the public's concerns with a single, unexplained number and a single powerful image; it uses the apparent safety of a person recreating in the river as evidence for its claims about safety.

Indeed, the DOE consistently invokes nature to dispute its statements about Hanford's waste. Just as the agency uses images of the local landscape to introduce the public to Hanford at the beginning of the *Overview*, it closes the video with similar scenes even as it delivers some of the most devastating news about Hanford cleanup. Again, the stirring violin music that opened the video rises slowly over the final words spoken by the video's host: "Because cleanup will never result in the complete elimination of all contamination, the government will continue to play an active role in Hanford's long-term stewardship, to help protect its magnificent cultural, natural, and historic heritage." Even as the host admits that Hanford will never be completely remediated, stunning shots of the sky over the Columbia River, cloud shadows over Rattlesnake Mountain, the moon rising over the shores of the Columbia, and salmon swimming underwater dispute his pronouncements with their apparent vitality.

Preservation, conservation, and recreation are only part of a bewildering array of future land uses the DOE unveils in *The Hanford Story's* fifth chapter, *The Future.* The

video features testimonials from political leaders and descriptions of land use plans, all described with the tone of an extended commercial for the DOE's utopian hopes. *The Future* opens with testimony from a stiff Tri-City Development Council spokesman who assures viewers that "The Tri-Cities has been supportive of national missions since 1943," which suggests that people in the region embrace all the economic development plans described thereafter. The video quickly moves from economic concerns to a powerful statement from local indigenous leader Rex Buck, who is identified as "Leader of the Wanapum": "This place is so sacred that we're part of this land and this land is part of us. I think that's what we work hard towards, to stay here because this is who we are and this is where we belong." Buck's testimony provides a powerful reason for the DOE to pursue complete cleanup of the Site, but—in the midst of *The Hanford Story's* larger narrative, which supports nuclear colonialism—the inclusion of that testimony serves only to conflate Native Americans' and whites' ties to the land. The Wanapum's traditional and sacred relationship to the land becomes an argument for the white economic boosters' development of that same land. Indigenous peoples' connection with the land, which includes specific principles of land management, comes to represent everyone's attachment to the land, regardless of their intentions for it.

Such conflation becomes even more obvious in the next scene, where child actors are brought in to advance a maniacally optimistic view of Hanford's future. In a portrait of innocence, a group of white children play in slow motion on an unnaturally green lawn, on a playground, and with a golden retriever. The lilting voices of the children and a soundtrack of steady drumming and birdsong give the scene an oddly soothing rhythm. One by one, with scripted words in their mouths, the children imagine their futures:

"When I grow up, my Hanford will be different." "It will be a place to explore." "A place to learn." "My Hanford will be a place" "where people come to visit." "Work." "And even play here." "That's what my Hanford will be." "Mine too!" "Mine too." "Mine too." Through these children, the DOE tries to sell its reinvention of Hanford, a reinvention that will erase the Site's history of violence and distract the public from the corruption and endless cleanup going on there today. One way to erase history is to equate Rex Buck and his people—who have a relationship to the land that requires them to stay in the Hanford area, regardless of the contamination—with these children, who repeatedly refer to the Hanford area possessively with the words "my" and "mine." The DOE's emphasis on the children denies the Site's long history of Native American inhabitation as well as the violence done by white settlers and the U.S. government. That the DOE uses children points to the importance of taking care of Hanford for future generations, but in the agency's imagined future, Hanford is valued only for tourism, employment, and recreation. And in the cleanup era, all groups—regardless of their relationships to the area—are depicted as equally invested in the future of the land. Everyone is reduced to a "stakeholder" with equal claims in a DOE-controlled political process that will decide the future of the landscape at Hanford.

The government has, to a large degree, determined the fate of the region in which Hanford was built and *The Future* suggests that the government will continue to make decisions for local people in the coming decades. Beginning with a confusing statement of faith in the Hanford community's ability to transition away from weapons production and cleanup, the hosts asks viewers to

> Fast forward to Hanford a few years from now where a community founded on harnessing the power of energy over 60 years ago has now reinvented itself through energy's potential. Where a 586-square-mile site once home to a nation's plutonium production efforts and its legacy of waste and ensuing cleanup has been reduced to a final waste management area less than 10 square miles in size. Transforming the site's remaining land into a vast canvas of preservation, possibility, and opportunity.

Here, the DOE paints a hopeful vision in which it can "fast forward" past the Site's intractable cleanup and into a future of economic prosperity. "Harnessing the power of energy" is a euphemism for making nuclear weapons, but the meaning of a community reinventing itself "through energy's potential" is less clear. If anything, it suggests that weapons production (and "its legacy of waste and ensuing cleanup") will continue to fuel the local economy far into the future. The DOE claims that the community is reinventing itself, but many of the projects woven into the "vast canvas of preservation, possibility, and opportunity" are being driven by federal agencies and private investors. As the host notes, "the basic foundation of the future of the Hanford Site is taking shape in documents" such as the DOE's Comprehensive Land Use Plan and the Comprehensive Conservation Plan for the Hanford Reach National Monument. In optimistic descriptions of those plans, *The Future* lays out a cacophonous mixture of land uses, suggesting that people will go to Hanford to hike, fish, kayak, and camp, visit the Manhattan Project Historical Park (which has not been approved by Congress), conduct academic research, and work in a thriving industrial center. Repeatedly and throughout the eight-minute video, *The Future* vows that, decades from now, Hanford will have entered "a new era";

that “Tomorrow is a Hanford imagined, a Hanford of possibility”; and that “This is the Hanford of tomorrow, a picture of a bright future.” The unfounded assurances that things will be different in the future do as much to indict the past as today’s headlines about contamination and corruption.

Unlike other videos in the series, many of which focus on how environmental remediation is being conducted, *The Future* looks past the cleanup era to a time when Hanford will be turned over to other uses. In this vision, the Site’s most intractable problems have been solved, and the DOE is proud to announce—but not explain—its vague plans for “how these lands and associated waste will be managed and monitored going forward.” Interspersed between descriptions of the agency’s grand plans for Hanford, the host of *The Future* reassures the public that “All of [these new land uses will occur] as the DOE continues to test, measure, and monitor the environment and human health to ensure ongoing protection for decades to come.” The agency will certainly monitor contaminants in the soil, groundwater, and river at the Site for many decades, but the DOE never gives specific details about what it will do to monitor human health. Announcing such plans would trigger too much public concern.

There is substantial evidence to suggest that even if the DOE discovered impacts to human health, it would deny the problem or otherwise fail to take action. The agency’s precursor, the Atomic Energy Commission, tested employees and local citizens for exposure to radiation, but it often did so without their knowledge and without the intention to correct radiation exposure problems. Hanford Downwinders’ cases against the government and its contractors are still in litigation, two decades after those suits were brought forth. Hanford cleanup workers, who experience some of the most

significant exposures to the Site's radioactive and chemical wastes, may be monitored, but they are often not given the proper equipment to prevent exposure and they often find that their exposure-related symptoms are dismissed by Hanford's on-site medical clinic.[36] The government has done little to compensate workers and civilians who have been damaged by Hanford's contaminants.

And yet the video perceives no issues with human health in Hanford's future, just as it foresees no problems with the progress of the Site's remediation. However, Hanford today faces serious, life-threatening challenges, including waste tanks that are leaking and potentially explosive and a vitrification plant that may never operate safely. As of right now, the DOE is pushing low-level waste toward the center of the Site and juggling high-level waste as the agency waits for the Waste Treatment Plant and a national geological repository for nuclear waste to be built. The DOE does not have a viable plan for dealing with the leaking waste tanks, and there is currently no money from Congress to build new tanks.[37] And yet, in the utopia laid out in *The Future*, those problems have vanished, and we are left with, "A Hanford that is new, based in potential, powered by imagination and made possible by you." Thus, *The Hanford Story* makes one last plea for the public to make the DOE's plans possible even as it shifts responsibility for imagining a new future onto the viewer.

Through claims to transparency and the three forms of web communication discussed in this chapter, the Department of Energy is attempting to redefine Hanford in the public imagination. The DOE's use of new, web-based communication forms like *Facebook* demonstrates that these tools can be used to disseminate not only useful

knowledge but also propaganda. To a large degree, *Hanford.gov*, the Hanford Site *FB* page, and *The Hanford Story* merely neutralize citizen concern, close down conversation about Hanford's future, and make a mockery of government transparency. The waste tank leakages happening right now are a keen reminder of the fact that Hanford's violence is continually unfolding, and they provide an especially disturbing counterpoint to the DOE's optimistic projections about Hanford. Advocacy groups, local Native American tribes, and scholars continue to challenge the DOE's narrative and to insist that "cleanup"—a word I have used throughout this chapter—is a euphemism (since nuclear waste can only be contained or relocated—never removed), but even as they labor to keep institutional memory alive, the DOE works to dismantle it. Indeed, the agency encourages the public to forget (or never learn) about the slow violence occurring in the windswept, southeastern corner of Washington State.

Notes

[1] To protect the privacy of *FB* users who have commented on Hanford Site status updates, I have blacked out their names.

[2] The news release linked to the status update provides more information about the movement of radioactive material described in the *FB* post: "Today's transfer [of waste from the Columbia River] is the first of six shipments this summer to remove the most radioactive material. At the same time, a separate system is being built to remove the rest of the sludge from the basin by 2015" (U.S. DOE "First of Hanford's"). In other words, the process will take longer and is more complicated than the status update suggests. The

news release explains why: Hanford engineers have had to develop new technologies and tools to deal with the sludge. In its description of the shipment, the news release repeatedly congratulates workers for performing the task safely, which suggests that it was dangerous work. The status update and the news release both downplay the dangers and delays.

[3] Hanford Site's *Facebook* page frequently engages in wordplay that diverts attention from the seriousness of Site operations. For example, on August 9, 2012, Hanford Site linked to a video of a celebration and announced: "It's our 'treat' to share our b-roll from today's 200 West Pump and Treat Operations Celebration with you: http://ow.ly/cRJVu." Here, Public Affairs Officers use two meanings of "treat" but foreground the pleasure they take in sharing their celebration and suppress the word's usual Hanford meaning: massive groundwater treatment operations.

[4] Not everyone has the opportunity to tour Hanford. The DOE only takes a few thousand people on tour each year, and those interested must register beginning at midnight on a particular day of the year. Tour tickets are free, but they often "sell out" within a few hours.

[5] Several laws, including the National Environmental Policy Act (NEPA), State Environmental Policy Act (SEPA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; also known as "Superfund"), and the Resource Conservation and Recovery Act (RCRA), require the DOE to solicit comments from the public about how the agency handles hazardous waste.

[6] *Hanford.gov* can be accessed at www.hanford.gov. A quick search for "Hanford Site" on *Facebook* should bring a user to the DOE's Hanford *FB* page. Later in the chapter, I will also discuss another *Facebook* page called "River Protection Project" that is maintained by Hanford employees. *The Hanford Story* videos can be accessed via *Hanford.gov* or from the "HanfordSite" YouTube Channel. Though I will not discuss it here (since the account is not very active, and it replicates—with much less substance—what is posted on *Facebook*), the Hanford DOE also maintains a *Twitter* account that goes by the username @HanfordSite.

[7] Another scholarly work on Hanford is Findlay and Hevly's *Atomic Frontier Days: Hanford and the American West*, which focuses not only on production and pollution at Hanford (as *On the Home Front* did) but also on the growth of the Tri-Cities, the politics of building the bomb, and the impacts of economic interests and environmentalism on the area.

[8] Though some reviewers claim that Gerber was working for the DOE when she wrote *On the Home Front*, she was, in fact, an independent historian when she researched and wrote the book. It was only later—once she had demonstrated her knowledge of Hanford by doing exhaustive research about the Site and publishing her book—that Gerber was hired as a Public Information Officer at Fluor Hanford, Inc., a DOE contractor. Despite its praise for Hanford's engineering achievements, *On the Home Front* presented a revolutionary view of Hanford; it was not only the first book-length work on Hanford but also one of the first texts to expose abuses at a specific site in the nuclear weapons complex (Findlay vii).

[9] The bombs dropped on the Alamogordo Desert (Trinity) and Nagasaki, Japan in 1945 were made with plutonium processed at Hanford. The uranium for the bomb that destroyed Hiroshima, Japan was enriched at the Manhattan Project's Oak Ridge, Tennessee site.

[10] When describing the large number of declassified documents as a "column of paper 3 miles high," the DOE inadvertently echoed the name of the what is regularly cited as the only nuclear disaster to happen in the U.S., the 1979 nuclear meltdown at Three-Mile Island in Pennsylvania.

[11] The Office of Environmental Management is the DOE office responsible for conducting cleanup of the nation's nuclear weapons complex.

[12] The nuclear weapons production process begins with uranium mining and milling, refining, and enrichment. Plutonium is produced in production reactors and chemically separated at production reactors and reprocessing facilities like those at Hanford. Nuclear weapons must also be designed, assembled, and tested and then used, stored, or dismantled. Sites all over the U.S. have hosted these activities, all of which are toxic to local people and the environment.

[13] The DOE claims that its primary mission is cleanup at all of the sites within the nuclear weapons complex. Advisory boards, advocacy groups, and—in some cases—regulatory agencies like the U.S. Environmental Protection Agency (EPA) and the Washington Department of Ecology work to ensure that DOE remains committed to that mission, but the DOE frequently proposes to engage in activities outside of its cleanup mission, including storing new waste at Hanford. In 2008, for example, the government

(under a program called Global Nuclear Energy Partnerships) considered reprocessing spent fuel at an undetermined location within the nuclear weapons complex. Hanford would have been an obvious choice because it is already so contaminated, and some people in the Tri-Cities supported the initiative because it would spur economic development in the region. However, activists (like Tom Carpenter of Hanford Challenge) pointed out the irony in reprocessing at Hanford: a very similar process had created the Site's 56 million gallons of high-level waste, which the government has been unable to clean up (Cary, "Reusing").

[14] These advisory boards can be quite influential, as evidenced by the fact that the DOE continually tries to gut them. As recently as 2012, DOE officials considered imposing term limits on members of the Hanford Advisory Board. Some board members viewed this as "an attempt to exert more control over the board or even rid it of members with opinions [the DOE] dislike[s]" (Cary, "DOE"). Many argue that board seats should not have term limits because experienced members provide much-need institutional memory. For more information on site-specific advisory boards, see the U.S. DOE Office of Environmental Management's "EM Site-Specific Advisory Board (EM SSAB)" website.

[15] The Obama Administration and the DOE withdrew the Yucca Mountain's license application in 2010 despite the fact that the government had no plans for building another repository. The U.S. has already spent over $10 billion researching and building the site. In a move that reveals the degree to which the fate of nuclear waste is subject to

the whims of changing administrations, the U.S. Court of Appeals recently ruled that the federal government must continue the process of licensing Yucca (Cary, "Court").

[16] Croft's solution of making documents "more findable" does not address the entirety of the problem. For example, a large number of documents on Yucca Mountain used to be available through a single website devoted to that project. If a researcher wants to find those documents today, he or she will have to guess at what the correct search terms would be. And if that researcher never saw the original website, he or she would be especially at a loss.

[17] This blog post disappeared for some undetermined amount of time but is now (as of August 2013) available through a Google search. It is not, however, listed on the Hanford Blog when one clicks a link for January 2013 entries. The DOE may argue that it removes and relocates information in order to streamline its websites, but these practices may frustrate readers. Furthermore, moving and erasing information alters the online record of what the DOE has published to *Hanford.gov*.

[18] The public's distrust for the DOE is a well-documented phenomenon. In a study conducted in 1991, Slovic, Flynn, and Layman showed that the public's negative perceptions of the U.S. nuclear waste program are based not only on "deeply rooted images of fear and dread" associated with radioactivity, but also on "decades of mishandling of wastes at the nation's military weapons facilities" (1603, 1606). The authors further concluded that the public's confidence cannot be won back easily or quickly.

[19] For example, the Hanford DOE recently announced that it would likely miss major court-enforced deadlines, including one that requires the DOE to empty leaking waste tanks (Cary, "Update").

[20] Hanford declared an alert the evening of August 21, 2013 when C farm workers' radiation monitors detected a leak from equipment being used to transfer waste from the farm's single shell tanks (Cary, "Emergency").

[21] Hanford Site's *Facebook* page functions as the main source of DOE-generated information about Hanford available on *FB*. The "About" section of the page claims that the account "is maintained by Public Affairs Officers for the Department of Energy at the Hanford Site." *FB* users who "like" the page receive Hanford Site's "status updates" in their "News Feeds" whenever Hanford Site posts them, which is generally every few days. Like all other *FB* pages, Hanford Site uses *FB*'s relatively new "Timeline" format, which presents a user's history in a series of reverse chronological posts that are designed to emphasize visual information. Viewers of the page can scroll down to revisit past events, but the point of origin is always the top of a user's page, which includes a small "Profile Picture" and a larger "Cover" photo. Hanford Site's Timeline should list all the status updates Public Affairs officers have posted since the page was created, but I have regularly encountered problems with accessing information that was posted in the past. This is one serious problem with the DOE pursuing accountability via *FB*.

[22] The Missoula Floods carved out eastern Washington's unique geology. The vast areas of barren, relatively soil-less topography are known as Channeled Scablands. While they are beautiful to those who appreciate desert landscapes, they are not widely

considered photogenic. The DOE goes to some trouble to make them appear spectacular in the photos it posts to the Hanford Site *FB* page.

[23] Though cleaning up nuclear waste is one of the DOE's most significant and costly jobs, that mission is not represented on the DOE seal.

[24] The DOE posted the photo of the Columbia without any textual interpretation, a move that makes it easy to forget the history of the landscape there. Only someone intimately familiar with Hanford would know that this single bend in the Columbia flows by a decommissioned reactor, the crumbling buildings of a former town, and a portion of the Hanford Reach National Monument dedicated to scientific research. These marks on the landscape represent a fraught history of early settlement, weapons production, and enclosure justified by science, but that history is rendered invisible by the dazzling image of the river. Though the DOE uses the beauty of the Columbia to publicize its cleanup work and even refers to itself as a "steward" of the river, recent revelations about waste tank leaks support what many have known about Hanford for decades—that the DOE is not protecting the river from Site contaminants.

[25] Since outsiders are rarely given access to Hanford and are even more rarely given permission to take photos there, the Hanford Site *FB* page is one of the best sources of images of the Site. When Hanford appears on the evening news, the footage is often taken through fences at the Site or drawn from previous stories when journalists were allowed at the Site. While the Hanford Site *Facebook* page offers thousands of photos (many of which are close-ups of equipment and workers), they are, of course, hand-picked by the DOE, and they can disappear at any time.

[26] Despite the fact that Hanford engineers knew that wastes from plutonium processing should be contained, they dumped waste straight into the soil. The "Tank Farms" page of *Hanford.gov* reluctantly admits to this practice: "However, even with 149 tanks available, the volume of chemical wastes generated through the plutonium production mission far exceeded the capacity of the tanks. Some of the liquid waste *did* end up being put into holding facilities and some was poured into open trenches. Some of the wastes that were put into the tanks didn't stay there, as the heat generated by the waste and the composition of the waste caused an estimated 67 of these tanks to leak some of their contents into the ground. Some of this liquid waste migrated through the ground and has reached the groundwater." The DOE uses passive voice and phrases like "the liquid waste *did* end up being" that seem to be reluctantly answering accusations of misconduct.

[27] The DOE does not currently have an estimated date of completion or total cost for the Waste Treatment Plant, which has serious design flaws (according to the Defense Nuclear Facilities Safety Board and others). Earlier plans had optimistically predicted that the WTP could open by 2019, but that goal now seems unrealistic (Bernton, Wald).

[28] This process of relocating waste from single- to double-shell tanks is neither simple nor safe; workers involved in waste transfer routinely fall ill from inhaling toxic vapors. Though Hanford workers are consistently endangered, "the Occupational Safety and Health Administration (OSHA) does not have jurisdiction at the Hanford Site or any other DOE site. Today, tank farm workers are left to fend for themselves as the DOE

chooses not to exercise effective contractor oversight to ensure a quicker, 'cheaper' cleanup" (Carpenter and Gilbert 3).

[29] The DOE has thus far prioritized construction of the Waste Treatment Plant—which would stabilize the tank waste—over the construction of new tanks. Building new tanks would take several years and would require millions—if not billions—in additional federal funding. Still, many critics would argue that the DOE should have foreseen the mass leakage of Hanford's tanks that is happening now.

[30] The DOE is not certain how many tanks are leaking. At a public forum held in Seattle, representatives of the Washington State Department of Ecology reported that 7 of the 177 underground storage tanks are leaking, and 66 more are under investigation for declining levels or possible rainwater intrusion (Holmes and Lyon).

[31] The DOE's description of *The Hanford Story* is curiously patronizing: "Many in the Pacific Northwest region are aware the site exists; but what really happens in this 'secret' place known as Hanford? In response to these questions and concerns, the Department of Energy created The Hanford Story, a multi-media presentation of several chapters. This documentary takes a look at a complex, historical location and makes it understandable for the general public by providing an outline and basic information on the Hanford site" ("The Hanford Story"). It released the videos in the series one by one, beginning in April 2011 and ending in June 2012.

[32] The "2015 Vision" is "a road map for finishing the cleanup activities on the 220-square-mile River Corridor portion of the Site by the year 2015" (US DOE, "2015 Vision"). While it is important for Hanford cleanup to have specific objectives, Hanford

Challenge and other groups are "concerned that the 2015 vision inaccurately conveys that the river corridor will be completely cleaned up by 2015, which could threaten future funding for the remaining work" (Hanford Challenge, "Letter").

[33] Lockheed Martin is one of the world's largest defense contractors, and its primary customers are U.S. government agencies.

[34] The first chapter of *The Hanford Story* (*Hanford Overview*) won a Northwest Emmy Award for best historical/cultural program or special. According to the DOE, it was nominated for "best use of graphics" ("The Hanford Story").

[35] Endres cites several authors who have explored the implications of the "decide, announce, defend" strategy. Many commentators on environmental decision-making processes "have examined how technocratic models of public participation often dismiss the input of citizens because they advance social, political, or value-based arguments that do not fit into the traditional positivist notions of science or expertise and are thus perceived as non-scientific" (Endres, "Science" 51).

[36] Investigators have found that workers are sometimes denied supplied-air respirators even if they request them after they believe they have been exposed (Carpenter and Gilbert 29). Outside examiners have also discovered that, "in the overwhelming majority of exposure incidents, workers were wearing no respiratory protection at all" (29). Furthermore, workers treated by doctors at the on-site occupational services contractor, Hanford Environmental Health Foundation (HEHF), are routinely told that their exposure symptoms are either psychosomatic or the result of seasonal allergies (30).

[37] On June 14, 2013 the DOE announced that it will take six years to pump out leaking double-shell tank AY-102 (despite federal regulations that say a leaking tank must be pumped within 24 hours) (Frame, "Feds"). A week after this announcement—which was based on the assumption that only the inner shell of AY-102 was leaking—news broke that AY-102 is actually leaking through both of its shells and into the soil below (Frame, "Worst").

CHAPTER III

NATURE-INDUCED AMNESIA: THE HANFORD REACH NATIONAL MONUMENT

On July 3, 2013, the Washington Department of Ecology's Hanford Education and Outreach Network *Facebook* (*FB*) page breathed a sigh of relief: "Refreshing to get some good news about Hanford once in a while!"[1] The good news appeared in a linked article from the *Tri-City Herald* (*Herald*): "[T]wo bald eagles have hatched in a nest on the Hanford nuclear reservation, for possibly the first time in more than 50 years" (Cary, "Baby Eagles"). Unsurprisingly, the U.S. Department of Energy (DOE)—which is always on the lookout for signs that life persists at Hanford—posted a photo of the eagle nest on its Hanford Site *FB* page and announced that "These approximately 10-week-old bald eagle chicks will spend their 4th of July at Hanford." Any newly discovered bald eagle nest might be cause for celebration, given that eagle populations were decimated by widespread insecticide use in the 1960s and 1970s, but the DOE has special cause to publicize the health of sensitive species at its most contaminated nuclear site.[2] To demonstrate that wildlife is flourishing at Hanford is to suggest—however subtly—that the Site is safe and in the final stages of recovery from decades of plutonium production and waste disposal.

The public affairs specialists who manage the Hanford Site *FB* page must have found it fortuitous that eagles, of all species, were spotted on site in advance of July 4th. Emblematic of the U.S., eagles elicit patriotism—a sentiment the DOE counts on when it argues that the U.S. government destroyed the landscape at Hanford to protect national security. Not coincidentally, the U.S. government has publicized eagles thriving at other

highly contaminated, militarized sites, including Rocky Mountain Arsenal in Colorado, which became an attractive habitat for eagles even after the government had manufactured chemical weapons there for four decades.[3] In a broader sense, the recovery of bald eagle populations represents a triumph for environmentalists and conservationists; a combination of banning insecticides, protecting habitat, and restricting hunting brought the species back from the brink of extinction. And yet here, eagles are found roosting at the most contaminated site in the Western Hemisphere, which also hosts one of the largest environmental remediation projects in the world—characteristics that would seem to make Hanford just as threatening to eagles as DDT. But observers at Ecology, the *Herald,* and the DOE (via the Hanford Site *FB* page) all took solace in the eagles' presence. They were happy to forget Hanford for a moment. (See Figure 7.)

Figure 7. Washington State Department of Ecology status update about Hanford's eagle nest, posted July 3, 2013.

Though plants and animals living in the aftermath of nuclear disaster are endangered by their exposure to extreme pollution, some individuals appear to persist or even thrive in these contaminated environments, and this seeming resilience fascinates observers.[4] Consider the case of the world's most spectacular nuclear accident, the 1986 nuclear meltdown at Chernobyl (rivaled only by the Fukushima disaster, which is still actively contaminating large volumes of groundwater, soil, and ocean, nearly three years after the initial meltdown) (Tabuchi). Once Chernobyl was contained in a concrete sarcophagus, officials drew a 30-km "zone of exclusion" around the site to prevent people from encountering radiation that lingered in the soil, water, and vegetation. Years later, in the 1990s, a bull was discovered grazing in the exclusion zone. Instead of provoking horror, the bull offered inspiration to human survivors of the accident: "The apparent health of the animal became a source of commentary and pleasure for workers and neighboring communities who were dealing with the daily effects of radiation exposures and uncertainty in their lives" (Masco, "Mutant" 526). The event made it easy momentarily to forget that Chernobyl generated a huge area of permanently uninhabitable land. The bull's ability to survive in the wasteland seemed to suggest that humans might recover from the incident, too.

While individual animals should not be taken as indicators of ecosystem health at post-disaster Chernobyl, many journalists, politicians, and scientists have done just that and even reinterpreted the exclusion zone as a nature reserve. In an essay written in response to the twenty-fifth anniversary of the Chernobyl explosion, journalist Steve Featherstone argues that such reports have sensationalized the resilience of the natural areas surrounding Chernobyl.[5] In these accounts,

> the nightmare has changed to a comeback story. The Zone is no longer a wasteland, the story goes, but rather a lush wildlife refuge renewed by the irrepressible forces of nature. Eager to rebrand the Zone as Europe's largest nature preserve, the Ukrainian government has introduced a small herd of endangered Przewalski's horses to the Zone and has dabbled in niche tourism. Endtimes enthusiasts can now take day trips to the forbidden city of Pripyat, a postapocalyptic Disney World complete with a creepy amusement park and authentic Soviet-themed sets. (42)

Featherstone explains the degree to which the Ukrainian government and private interests have used—and perhaps, as in the case of the endangered horses, even exploited—non-human species in order to reinvent Chernobyl in the public imagination. Several Chernobyl tour companies have popped up in recent years, and many of them argue that wildlife has triumphed in the zone. On its website, a tour company called CHERNOBYLwel.come invites potential visitors to "See how nature has taken over and overruled the exclusion zone and see this amazing place for yourself." The term "overruled" is purposely vague, but it suggests that nature has asserted dominance over the conditions of nuclear disaster and is now flourishing at Chernobyl.

The DOE and its partner agency at Hanford, the U.S. Fish and Wildlife Service (alternately "Fish and Wildlife" or "the FWS"), have made similarly broad claims about nature's ability to overcome nuclear disaster at Hanford. Just a month after posting a photo of Hanford's breeding eagles to *FB*, the DOE (via the Hanford Site *FB* page) shared photos of a snowy owl perched on railroad tracks and power lines with the caption: "Some more photos of Hanford's thriving wildlife." (See Figure 8.)

Figure 8. Status update posted by Hanford public affairs officers on Hanford Site's *Facebook* page August 13, 2013.

Notably, the DOE does not elaborate on what it means by "thriving." The agency seems to take the very existence of animals at Hanford as a sign that wildlife is healthy. While nuclear sites like Hanford provide refuge for animals that have been pushed out of surrounding areas by development, accounts like the one about the snowy owl may obscure the ways animals are damaged by radiated environments. Scientists studying birds at Chernobyl, for example, have found birth defects and abnormalities like albinism in barn swallows exposed to radioactive contaminants (Møller et al.).[6] One of those scientists, Tim Mousseau, explained to Featherstone that Chernobyl cannot be taken at

face value: "'[it's] not a lunar landscape. [. . .] It's much more insidious than that. Because everything's still there, it's just being modified at some low level'" (Featherstone 42). In other words, Chernobyl did not simply wipe out everything in its vicinity; instead, it exterminated some organisms and altered others. The disaster also left behind a massive volume of contaminated soil and water punctuated by particularly deadly radiation hotspots. Exposure to that environment has induced low-level genetic modifications that are often difficult to detect.

Scientists working for the U.S. government have not volunteered evidence of genetic mutation in animals living near Hanford, but there is no doubt that both plants and animals encounter and spread radioactive contamination at the Site. Hanford's tumbleweeds provide the most frequently cited example of this phenomenon. These tumbleweeds send roots deep into the ground, extract radioactive isotopes from the soil and then break off at the surface and roll across the landscape. Hanford pest control workers search for the tumbleweeds that are radioactive, gather them up, and ensure that they are disposed of properly. Without human intervention, these tumbleweeds could roll off site or even create airborne contamination by landing in the path of a wildfire (Marshall 1616).

In other cases, animals disperse radiation in areas of the Site that workers ordinarily consider safe. In 1998, contractors discovered that fruit flies and gnats were spreading contamination in a worker lunchroom and in trash that was ultimately dumped at a municipal landfill (Ashton). As recently as June 2013 (a month before the roosting eagles were spotted at Hanford), workers discovered contamination someplace they least expected to find it—at a new on-site construction project. They ultimately traced it to the

work of barn swallows that were building their nests with contaminated mud (Cary, "DOE Tracks Source").

Events like these have made headlines and provoked the concern of Hanford officials not because plants and animals may be irrevocably damaged by their contact with radioactive and chemical waste but because uncontained radionuclides pose a threat to Hanford workers and, potentially, the public. To neutralize that threat, animals that spread contamination are hunted, killed, and then handled as waste. In November of 2010, for instance, Hanford workers discovered rabbit droppings contaminated with radioactive cesium on site, just north of the city of Richland. Washington Closure Hanford, a Hanford contractor, tracked the droppings to a single contaminated rabbit, which it killed and "disposed [of] as radioactive waste" ("Radioactive"). Since the DOE's fundamental strategy for dealing with Hanford's waste is containment, it runs a "robust animal control program" to manage the threat posed by radioactive wildlife (US DOE, "Information").

The agency also maintains a discursive containment program to manage the public's perceptions about these incidents. It releases as little information as possible about animals that have been damaged by exposure to Hanford waste and simultaneously publicizes its commitment to protecting animals that have not proven to be contaminated. For instance, when Hanford officials discovered the eagles nesting on site, they announced that workers would maintain a "buffer zone around the nest until the birds have fledged" (Cary, "Baby eagles"). Though Hanford's eagles are subject to the ultimate human intrusion (exposure to anthropogenic chemicals and radionuclides that may alter

their physiology and even their genetic code), the DOE claims that it can protect them from disturbance.

The U.S. government makes even grander claims about its relationship to the natural world at the Hanford Reach National Monument (also known as "Hanford Reach" or "the HRNM"), an enormous refuge that exists to protect threatened species living on Hanford's outer edges. This 195,000-acre Monument, which is managed by the FWS as part of the National Wildlife Refuge System, surrounds the Hanford Site and was carved from the security buffer zone created around Hanford's production facilities when the area was seized by eminent domain in 1943.[7] Since this buffer zone has been controlled by the military and federal agencies for seventy years, it has inadvertently shielded non-human species from the erosive impacts of agriculture, ranching, and development. Pieces of what has become the HRNM held federal designations like "National Wildlife Refuge" and "National Environmental Research Park" prior to 2000, but it was not until that year that President Clinton declared the entire area a National Monument. Since then, the government has maintained an official boundary between the nuclear site and the Monument, and it has claimed to sequester contaminants on one side and protect non-human species on the other.[8]

The FWS describes Hanford Reach as a "thoroughly unique refuge," but Joseph Masco, an anthropologist who studies the nuclear weapons complex, calls the phenomenon of transforming nuclear sites into a wildlife refuges "a uniquely modern contradiction" (US FWS Homepage; Masco, "Mutant" 532). The contradiction rests in the fact that the government has both rendered these lands uninhabitable and preserved them for future generations. The HRNM is not the only nuclear site to undergo such a

transition; dozens of former military and nuclear sites across the U.S. have been redesignated as wildlife refuges. David Havlick shows how discourses about these "military-to-wildlife" or "M2W" conversions (at sites formerly owned or managed by the DOE or the Department of Defense [DOD]) contribute to a "broader discourse of ecological militarization," which "frames military practices as compatible with and contributing to environmental protection" ("Logics" 151). Though these conversions have occurred across the U.S., they have gone largely unnoticed by the American public.

This chapter will investigate how government agencies have used nature to shape perceptions of Hanford's nuclear activities, its safety, and, especially, the U.S. government's actions there. At Hanford, the FWS has been charged with protecting nature, and in that role, the agency has served as both manager and interpreter of the landscape. Nature has provided a convenient screen for government control and mismanagement at Hanford; rare plants and charismatic wildlife have come to symbolize health and purity in a landscape that would otherwise be considered a wasteland. Such symbols have become especially useful to the government in recent years, as Hanford cleanup has proven far more complex and expensive than the DOE originally anticipated.

While the DOE has maintained its controlling narratives about Hanford through discursive containment, the FWS has furthered those narratives through discursive proliferation. Fish and Wildlife has done little to mark the physical place of the HRNM as a National Monument established for the visiting public, but it has built an extensive portrait of the Monument on the Internet. Though it seems outside the purview of an agency that focuses on the preservation and restoration of habitat, the FWS uses the HRNM website to draw explicit connections between war and preservation and to justify

the continued enclosure of lands that were once inhabitable and are now compromised by their proximity to Hanford. A closer look at the evolution of the HRNM website reveals that FWS has, in recent years, expanded its discursive construction of the HRNM, thereby aiding the DOE in that agency's efforts to assure the public that Hanford is not a threat to local people or the environment. Because Fish and Wildlife manages Hanford Reach at the DOE's behest, the FWS's work must be seen as an extension of the DOE's mission at Hanford, which is not only to remediate the Site but also to rehabilitate its image in the public imagination. The FWS extends and perpetuates DOE-generated propaganda by using the HRNM website to minimize the threats posed by Hanford and also by promoting the health of Hanford's ecosystems. Before examining how Fish and Wildlife constructs the HRNM, this chapter will investigate the circumstances that converged to create the HRNM: the interaction of local and national interests, the public relations needs of federal agencies like the Atomic Energy Commission (AEC) and DOE, and the relatively recent phenomenon of ecological militarization, which has made it seem rational to create wildlife refuges at militarized sites.

When the U.S. Army Corps of Engineers and the U.S. War Department established the Hanford Engineer Works in 1943, they established a huge security buffer zone around the operational core of the 375,000-acre Site. This buffer zone made the Site visually inaccessible, prevented people from living or farming in areas directly downwind of Hanford, and allowed the government to maintain ownership of land that it might need for future operations. Though the War Department had promised to return the land to its previous inhabitants after WWII ended, the federal government instead expanded

Hanford's plutonium production operations, and it justified continued occupation of the land by invoking the Communist threat. The Hanford Site and its buffer zone underwent a number of transformations during the Cold War. By the 1990s, the DOE—compelled by Hanford's waste problems, public pressure, and pervasive concern about pollution—began environmental remediation of the Site. After decades of conflict between the U.S. government, Native American tribes, and other local stakeholders about what would happen to lands released after cleanup, in 2000, President Clinton declared the former buffer zone Hanford Reach National Monument.[9] This new designation was enabled by the Antiquities Act, which "authorizes the President to establish as national monuments 'historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States'" (US FWS, *HRNM CCP* B-7).[10] Thus, the federal government has—through the Antiquities Act—explicitly objectified the human history and ecology of the Hanford area. The "objects of historic or scientific interest" identified at Hanford Reach include traces left by former inhabitants (including Native Americans, homesteaders, and nuclear workers) and aspects of the local ecosystem, including sagebrush-steppe vegetation and wildlife species like elk. The HRNM also protects Hanford Reach, the 51 mile-long stretch of the Columbia River that bisects the Hanford Site. Many refer to Hanford Reach as the "last free-flowing, non-tidal stretch of the Upper Columbia River" because it is one of the only areas of the Columbia that has not been dammed. The Reach is also an important spawning ground for large numbers of fall Chinook salmon.

The U.S. government has drawn one boundary after another on Hanford's landscape, beginning with the establishment of the nuclear site and buffer zone in 1943.

Since then, Hanford Reach and the surrounding area have gone through a remarkable number of transformations as federal and state agencies have claimed portions of the landscape. While FWS publications about the HRNM make it look like any other refuge, the fine print of the Monument's *Comprehensive Conservation Plan (CCP)* reveals that the Monument's management is incredibly complicated.[11] The HRNM itself is superimposed over approximately 196,000 acres of the 586-square mile DOE-managed Hanford Site, and those 196,000 acres are further divided by other management boundaries: "The DOE currently administers approximately 29,000 acres of land within the Monument and retains land surface ownership or control on all acreage. Approximately 165,000 acres [of the 196,000-acre Monument] are currently managed by the FWS through its authorities under the National Wildlife Refuge System Management Act" (US FWS *HRNM CCP* 1-6-7). (The Washington Department of Fish and Wildlife also manages a smaller, 8,000-acre portion of the Monument through a permit with the DOE.) Thus, the HRNM is managed as an "overlay" refuge, which means that the FWS "manages for the benefit of fish and wildlife resources," but the DOE retains the title to the land (1-7). FWS-managed land is further divided into four units—the Rattlesnake, Wahluke, Saddle Mountain, and Ringold Units—which are dedicated to different purposes, including recreation, hunting and fishing, conservation, and scientific research. (See Figure 9.)

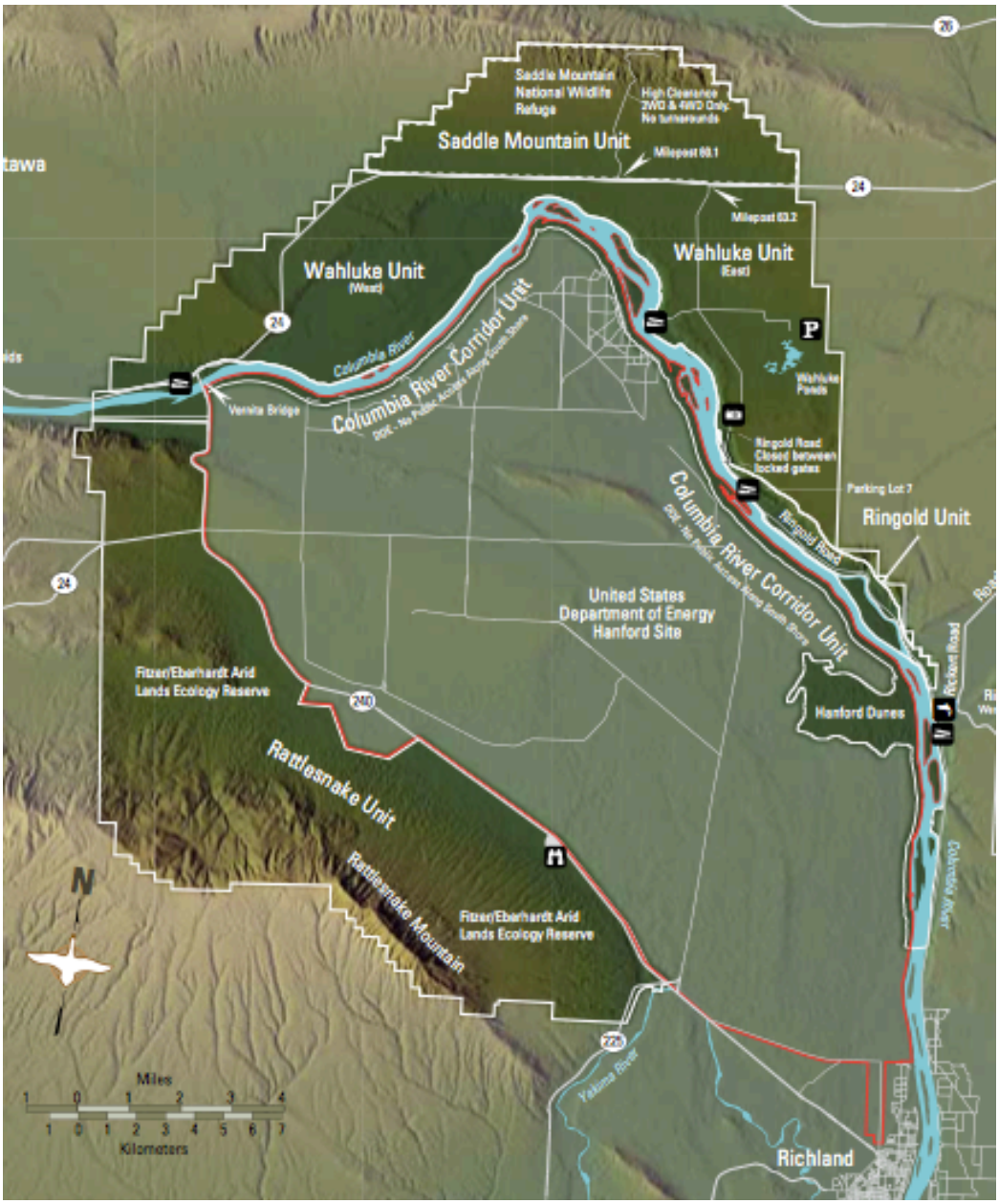

Figure 9. Map showing the boundary (marked in red) between the Hanford Site (at the center of the map, in lighter green) and the Hanford Reach National Monument (ringing the Site, in darker green) (US FWS "General Map").

Thus, the Hanford Site—a chaotic collection of former production areas, waste tanks, waste burial grounds, and new construction projects (with a commercial nuclear reactor operating nearby)—is ringed by the HRNM, which is itself an assortment of areas designated for hunting, fishing, recreation, preservation, and scientific research. Hanford

and the Monument are surrounded, in turn, by an assortment of land uses, including other industrial zones, irrigated agricultural fields, dams, residential areas, wildlife refuges, game preserves, and parks. According to John M. Findlay and Bruce Hevly, the boundaries drawn within and around Hanford "epitomize the emergence of a hypercompartmentalized West" characterized by "a patchwork of mutually exclusive, or contradictory, uses" (203). In part because the federal government has exercised such power to influence the landscape of the Hanford area, it has become a "patchwork of sacrifice zones and natural and cultural reserves [. . .] managed by a tangle of government agencies" (208). Thus, in the Hanford area, heavily industrialized, militarized zones permeated with pervasive, long-lived pollution exist adjacent to the urban areas of the Tri-Cities, dams that restrict river flows, large-scale agricultural monocultures, recreational areas, and preserves. Aerial photos of the Hanford area exhibit these unusual land-use patterns. In the photos, one immediately sees the Site's alarming proximity to the Columbia River as well as the stark contrast between Hanford's relatively intact sagebrush steppe vegetation and neighboring agriculture.

The Hanford area's hypercompartmentalization is the result of competing interests acting on the landscape, but it is also the consequence of government rhetoric working to reassure the public of Hanford's safety. In order to accept the idea that a city or a recreational area might exist side-by-side with one of the world's largest and most intractable environmental disasters, one has to believe that the bodies on one side of the boundary will not encounter the contaminants on the other. Locals in the Hanford area have certainly embraced their share of endangerment in exchange for jobs and investment, but people's acceptance of the risks posed by Hanford have been influenced

at every step by the federal government's insistence that Hanford is not a threat to public health.

Though the FWS only arrived on the scene at Hanford in 2000, it has played no small part in the government discourse that creates this hypercompartmentalized mindset. The agency describes the HRNM in evasive and misleading terms that work to make the public forget Hanford's past and the threat it poses to the region today. For example, in the background of the HRNM's *CCP*, the FWS offers an ambiguous description of the Monument's history: "The land comprising the Monument has an unusual and colorful provenance" (1-1). So as to avoid making judgments about the Monument's origins, the FWS calls them "unusual and colorful," as if to suggest that Hanford is merely a curiosity—not a threat. Indeed, the FWS attempts to depict Hanford as harmless throughout its publications. For instance, the description of the Monument in the CCP also states that "The entry of the United States into World War II and the race to develop an atomic bomb led to a search for a suitable place to locate plutonium production and purification facilities" (1-1). Federal agencies often refer to the arms race to lend a sense of urgency to Hanford's work. Here, the FWS also uses the word "purification" discursively to sanitize Site operations. While it may be accurate to state that plutonium was purified—in other words, separated from impurities—at Hanford, this choice of words belies the larger context of plutonium production. The chemical process that separated plutonium from irradiated uranium fuel rods created a far greater volume of toxic byproducts than usable plutonium. "Purification" sounds like a process of decontamination; in reality, it creates toxic, long-lived chemical and radioactive waste.

Just as the FWS eschews descriptions of Hanford's waste that might alarm the public, it also avoids less flattering descriptions of Hanford Reach. In the Monument's CCP, the agency does this by sidestepping details of the Reach's relationship to Hanford and then burying precise descriptions in the footnotes. The text of the document at one point claims that "By the late 1980s, the primary DOE mission had changed from defense materials production to environmental restoration, waste management, and science and technology research, further decreasing the need for a large land base" (1-1-2). This suggests that the DOE of the 1980s was demilitarizing and no longer needed such a vast area to carry out its missions or protect the public. However, the passage ends with a footnote in which the FWS admits that the Monument is, even today, a buffer zone that stands between Hanford and the public:

> The Monument was created primarily from parts of the Hanford Site that were considered safety and security buffers during the weapons production period of the site's history. As such, the Monument forms a large horseshoe-shaped area around what is generally known as Central Hanford and, because use has been restricted in the area, the Monument provides a buffer for the smaller areas currently used for storage of nuclear materials, waste storage, waste disposal, and the Energy Northwest Power Plant. (1-2)

Nowhere on the Monument's websites or in its brochures does the FWS describe Hanford Reach as a buffer for pollutants and possible accidents occurring at the nuclear site. Nor does it acknowledge that the DOE actively monitors safety buffers (around known areas of contamination) that extend into the Monument. The FWS instead hides this

information in its CCP, a nearly 400-page document with over 100 footnotes. And even in slightly more candid statements like the one above, the agency attempts to downplay the fact that the Monument and its wildlife, workers, and visitors provide a barrier between the nuclear site and the outside world.

One might wonder how a sacrifice area like Hanford received official recognition as a safe haven for wildlife and a recreational area for people. Though many factors contributed to the transformation of Hanford's buffer zone, the land within the boundaries of what is now the HRNM was preserved—in piecemeal fashion—in part because the government had a public relations problem at Hanford. Beginning in the years after WWII, people were both curious and concerned about the effect the plant might have on the surrounding area. Instead of changing its practices, the government embraced any scheme that would keep the public in the dark about Hanford's activities. During its conversion, the Monument was divided into separate areas that FWS now manages for different values and uses. I will describe two areas of the Monument, the Wahluke Slope and the Arid Lands Ecology Reserve, which represent two critical moments in the history of Hanford's buffer zone. The fates of these two areas illustrate the HRNM's complicated road to preservation as well as the discourses of conservation, security, and science that have shaped the landscape there.

First, I will discuss the Wahluke Slope, which exemplifies how the federal government's need for public approval made preservation the most attractive option for Hanford's buffer zone. During the Cold War, people living near Hanford were both fearful of pollution emitted from the Site and resentful that the government controlled such a large area of land around Hanford. The nuclear reservation was already massive

and encompassed areas north of the Columbia River in Grant and Franklin counties when it was established in 1943. Then, the Atomic Energy Commission (the agency in charge of Hanford from 1947 to 1974), responding to concerns about safety, extended the buffer zone. This move prevented the settlement and development of 280,000 acres on the Wahluke Slope (north of the Site). In those early years, Hanford scientists believed that if a catastrophic accident occurred, airborne releases from the plutonium production reactors would blow to the north and northeast, with the prevailing winds (Findlay and Hevly 218-19).

Despite the AEC's warnings about safety, a core group of local farmers, ranchers, and business owners who were keen to develop and diversify the local economy pushed the agency to release buffer zone land to the public. They twice convinced the AEC to reduce the size of its land holdings on the Wahluke Slope (Findlay and Hevly 221). In retrospect, it is difficult to understand why local people would protest the government's attempts to protect the public, but Hanford historians John M. Findlay and Bruce Hevly illuminate why:

> While local residents lacked the expertise to challenge AEC opinion about the hazards of Hanford reactors, they objected to being told that they could not decide for themselves whether to live with those hazards, if they wished [. . .]. In rationalizing their right to expose themselves (not to mention their agricultural products and the consumers of those products) to the environmental hazards of plutonium production, Hanford's neighbors adopted a kind of nuclear fatalism. (222-23)

Over the decades, residents of the Hanford area have embraced a variety of plans—including proposals to build commercial nuclear power reactors and to turn the Site into a national repository for nuclear waste—that would turn their home into a national sacrifice area. According to Findlay and Hevly, this eagerness to embrace dangerous new schemes came not only from fatalistic acceptance of hazard, but from beliefs in sacrifice and leadership that the community had embraced since the time of Hanford's original establishment in 1943 (233). In their desire to develop the Wahluke Slope, residents were also looking for ways to expand the local economy, the success of which was limited by the area's remoteness and undesirability to outsiders. The AEC fought locals on opening the buffer zone to development but then decided that maintaining good public relations was more important than withholding lands for safety reasons. Besides, the AEC learned in the late 1950s that well-populated agricultural and urban areas to the southeast were just as vulnerable to Hanford's emissions as the Wahluke Slope. The agency could not afford to admit these dangers or evacuate the Tri-Cities, so it released more lands within the Wahluke Slope to the public in 1958. The government rarely disclosed Hanford's dangers, and, when it did, powerful local voices balked at its concerns. Perhaps this was because "the AEC, wanting to portray Hanford as a good neighbor, emphasized the safety of the plant much more persistently than the risks it presented to surroundings areas" (224). Indeed, the government systematically ignored or minimized concerns about the safety of Hanford's buffer zone, which allowed powerful local interests to dismiss potential risks, too.

Within the AEC, officials still believed that the agency needed to maintain control of buffer zone lands, and that belief laid the foundation for preservation and, eventually,

the Hanford Reach National Monument. The AEC embraced preservation as an alternative to development at Hanford for three reasons. First, the agency was concerned that development within Hanford's buffer zone could expose people to toxic emissions or stir up wastes that had already been deposited in the soil and water. Second, the government wanted to maintain government ownership of Hanford lands in case it needed to expand plutonium production. Third, the AEC was concerned about its public image, and it felt that transferring areas of Hanford to wildlife agencies and scientific researchers would ultimately instill public confidence. Many locals resisted preservation, claiming that it would reduce opportunities for resource development, so the AEC led the charge when it came to environmental pursuits at Hanford. Findlay and Hevly frame this as a contradiction: "Paradoxically, then, while the AEC was largely responsible for the pollution at Hanford, it also became a source of preservation programs and ecological awareness in the Columbia Basin" (248). And yet, the federal government has done everything possible to prevent the public from perceiving this as a paradox. Preservation at Hanford has always been a consequence of the government's desire to control land and conceal contamination, but those ulterior motives have gone largely unnoticed. This has been perhaps especially true at the second area of the HRNM that I will discuss, the Fitzner/Eberhardt Arid Lands Ecology Reserve (ALE), which has been promoted not only by bureaucrats but also by ecologists.

Indeed, the ALE has been shaped not only by government action but also by the priorities and discourses of the ecological sciences. The ALE today forms the southwest portion of the HRNM (located within the Rattlesnake Unit), but it was created in 1967, before any other areas of Hanford's buffer zone were dedicated to preservation.

According to a history of the ALE written by the Pacific Northwest National Laboratory (PNNL, a DOE-managed national science lab based in Richland, Washington), the "U.S. Atomic Energy Commission set aside 33,500 hectares of nearly pristine shrub-steppe on the Hanford Site to preserve portions of vegetation types that once covered a great expanse of the West" ("Shrub-steppe"). The AEC may have identified those 33,500 hectares as "pristine" because it did not want to release them to the public (either because the agency was worried about contamination or because it needed to reserve the area for the government's future use). Early ecologists contributed to that justification by framing these areas as valuable historical remnants that were representative of the Western U.S. PNNL ecologists continue to emphasize the value of this ecosystem today: "The concept of a large, outdoor laboratory in which to conduct studies of native plants and animals without human intrusion was conceived in the early 1960s. Botanists and managers of the Hanford Laboratories (operated by General Electric [GE] Company) and AEC managers all recognized the value of Hanford lands as an ecological oasis" (O'Connor and Rickard). Thus, ecologists helped to justify the continued enclosure of Hanford's buffer zone not by claiming that Hanford was a threat to human health, but by arguing that its ecosystems ought to be preserved from "human intrusion."

Prior to being recognized as an "ecological oasis," the area encompassed by the ALE had first been sacred to local Native American tribes, including the Yakama and Wanapum. In 1995, the Yakama Nation submitted a proposal to re-acquire ALE lands in which they described the tribe's historical connection to the area: "Since time immemorial, this area has provided the indigenous peoples of the region with lithic materials, wild game, seasonal roots and berries, grazing land, and burial grounds" (qtd.

in O'Connor and Rickard 18). The Yakama continue to request access to the area, and they maintain their sacred ties to the most prominent geological feature of the ALE, Rattlesnake Mountain. According to the Yakama, their people have gone to the mountain regularly to "seek visions." Indeed, one of the tribe's most important spiritual leaders, Smohalla, formed the foundation of his teachings after receiving a vision at Rattlesnake Ridge. The Yakama ceded the area that is now known as the ALE to the U.S. government through the Treaty of 1855, but the tribe retains treaty rights to hunt, fish, and gather in all "usual and accustomed places." In the decades after the Yakama ceded tribal lands, homesteaders inhabited the land that would become the ALE, and in the early 20th century, companies drilled natural gas wells there. The area was then taken over by the Army Corps when the Hanford Site was established in 1943, and the Army built Nike Ajax missile defense systems there in the 1950s.

The ALE was "'permanently' set aside for desert ecology research and education" in 1967, and this opened the area to a number of other, scientifically based land management designations (O'Connor and Rickard 19). In 1971, the ALE was designated as "the Rattlesnake Hills RNA [Research Natural Area] as part of a five-agency federal cooperative agreement under the Natural Area Preserves Act" (19). Agencies have established RNAs throughout the Pacific Northwest to preserve terrestrial and aquatic ecosystems that have been identified as having biological value. One of the major purposes of RNAs is to "preserve examples of all significant natural ecosystems for comparison with those influenced by man" (19). Despite being on the Hanford Site (in close proximity to massive quantities of chemical and radioactive pollution), the ALE was seen as an untouched area that could serve as a baseline against which other,

impacted ecosystems could be measured. The agencies involved in designating the RNA also valued the ALE for its enormous size and Hanford's ability to shield scientific research projects from public scrutiny and intrusion: "Its large size is of importance… It is quite unusual to have an area available for long-term environmental monitoring and research that permits addressing factors that operate at a landscape scale" (20). Hanford was especially attractive to scientists because other large, "pristine" areas were not as easy for them to acquire. The RNA title made way for yet another classification, and in 1977, portions of the ALE and other areas of the Hanford Site were declared a National Environmental Research Park (NERP). According to PNNL, research parks like the one at Hanford contribute to the government's ecosystem-based land management program: "The Hanford NERP was one of seven DOE established across the nation in six major ecoregions covering more than half of the United States" (20). Since the NERPs were established on land already owned by the DOE, there has been less public review of the government's work on them than there might be if the DOE were to acquire such vast acreage today. After 1971, the ALE received one final designation when it was renamed the Fitzner/Eberhardt Arid Lands Ecology Reserve by Congress in 1993. The reserve makes the "pristine" landscape off-limits to the public but allows government scientists to conduct research there. Hanford has thus been used to serve a number of needs for the U.S. government, though this use goes largely unquestioned because it contributes to the advancement of the ecological sciences.

However, federal management of the ALE was jeopardized in the early 1990s, when the DOE began cleanup work at Hanford and outside groups began to push for the release of remediated areas. Both the Bureau of Land Management and the Yakama

Nation put in proposals to take ownership of the ALE in 1995, but in 1996, then-Secretary of Energy Hazel O'Leary announced that the DOE would retain the ALE, admitting that "[a] change in ownership would result in unacceptable cost to the Department in meeting standards imposed as a result of a change in the site boundary" (24). The DOE was unwilling to meet the cleanup standards necessary to release the ALE into the public domain, so it opted to transfer management of the land to the FWS. Thus, the HRNM, which appears to preserve "pristine" ecosystems, also serves as a way for the government to retain ownership of an area that will continue to present a hazard hundreds of years from now.

Many other sites within the nuclear weapons complex have been subject to similar scrutiny and acquisition by scientists working not only in weapons production and environmental remediation but also in the ecological sciences. Nuclear activities have cordoned off massive areas of land in the U.S., and within the DOE's constellation of National Environmental Research Parks, the former buffer zones of sites like Hanford, Oak Ridge, the Nevada Test Site, and Los Alamos have proven to be productive real-life laboratories for scientists developing an understanding of natural systems. Scott Kirsch describes how the Savannah River Site, a nuclear site in South Carolina that produced plutonium and tritium for the U.S. nuclear arsenal beginning in the 1950s, has been transformed into an "experimental landscape" by ecologists. The Savannah River Ecology Laboratory (SREL) was established in 1960, and beginning in those early years, it hosted the work of early ecologists like Eugene Odum. Since the beginning, SREL has provided "an extraordinary resource for long-term ecological observation and for the controlled manipulation of environments" (487). Scientists at SREL put high value on the

spaces in which they work, claiming that those spaces are "biologically significant" not just because of the species present but also because of the size of the reserve (491). In other words, the SREL scientists value the landscape for the special protections and the level of exclusion afforded by the DOE's control of the land. Science at SREL is subject to almost no human intrusion, little public scrutiny of research projects, and in some cases, exemption from environmental laws (491-92). Thus, ecology—because of its need for access to "untouched" natural systems—has depended on the continued colonization of landscapes by government agencies that have prioritized defense over environmental and public health. Though the DOE and FWS often argue that weapons production has been good for the natural environment (resulting in preserves like the ALE and SREL), it is more accurate to say that government officials and scientists are the ones who benefit when an area is militarized.

As the parallels between the HRNM and SREL suggest, Hanford Reach is neither the only former military site to provide habitat for a range of plants and animals nor the only one to receive official designation as a wildlife refuge. In 2007, David Havlick brought to light the startling number of U.S. military sites that had recently been transformed into wildlife refuges: "Since 1988, the United States Department of Defense (DOD) has closed or reclassified approximately 400 military sites, including more than 125 major installations. Of these, nearly two dozen bases on more than one million acres have been redesignated as new national wildlife refuges" (Havlick, "Logics" 151). These "military-to-wildlife (M2W) conversions" (Havlick's term) may not drastically alter the physical landscape (since they are predicated on protecting preexisting wildlife and habitat), but they represent a change in how the government justifies its occupation of

large tracts of land. Since the U.S. Fish and Wildlife Service is the recipient of M2W lands, and its work is less controversial than that of the U.S. military, the FWS is often the agency that provides an explanation for these conversions.

In many cases, the FWS describes M2W conversions in evasive terms, without explaining how or why they have come about. For example, on its website for the Aroostook National Wildlife Refuge (in northern Maine), the FWS mentions—but does not discuss at length—the fact that Aroostook was carved from Loring Air Force Base, the largest base of the Air Force's Strategic Air Command during the Cold War: "What was once a strategic military base for half of a century has now been restored to an ecologically diverse assemblage of federally protected lands in northern Maine" (US FWS, "About" *Aroostook*). The FWS provides no information about how Loring affected the landscape or how the land was redesignated; instead, it directs the public's focus to the site's restoration. For the FWS, there is nothing remarkable about the fact that where the government formerly stationed "long-range bombers capable of delivering nuclear weapons," it now protects numerous species and habitats, including moose, upland sandpipers, neotropical migratory birds, wetlands, and grasslands. By emphasizing nature and recreational opportunities at Aroostook, the government sidesteps the contradiction between military activity—which is necessarily destructive of land and life—and protection of nature.

Regardless of this obvious inconsistency, the government-generated discourse about M2W refuges exhibits a characteristic comfort with the salvage ecology being practiced on military lands. Though many M2W refuge managers have to deal with enduring traces of military impacts, and though these conversions have the potential to

erase military history, the federal government consistently argues that a M2W conversion is a "win-win-win" for the DOD, the natural world, and the public (Havlick, "Logics" 152). Indeed, the government narrates these conversions within a discourse of "ecological militarization," which "frames military practices as compatible with and contributing to environmental protection" (151). This discourse is especially advantageous for the DOD, which has actively cultivated a "green" image in order to stem criticism of its usual environmental practices, which put the pursuit of "national security" before the well-being of people and environment. Other parties support this discourse as well; conservationists, for example, often push the hardest for the remediation, preservation, and release of former military lands. They believe there is value in restoring even the most ecologically devastated landscapes. While such restoration may be a noble pursuit and M2W refuges may present "a prospective opening of restricted military spaces into public places dedicated to environmental conservation," militarization and preservation are not as compatible as the U.S. government would like the public to believe (151).

Even as M2W conversions provide habitat for rare species and allow public access to formerly sequestered sites, they are often plagued by military legacies that the U.S. Fish and Wildlife Service is unequipped to handle. Many M2W refuges are polluted with chemical waste, littered with unexploded ordnance (UXO), or otherwise scarred by their military pasts. In some cases, the DOD has done little or nothing to remove contamination before transferring lands to the FWS. For example, at the Big Oaks National Wildlife Refuge in Indiana (formerly known as Jefferson Proving Ground), the Army has not cleaned up UXO from decades of ammunitions testing. Visitors to the refuge "must register at the refuge office upon arrival and departure, watch a 30-minute

safety video, sign a hold-harmless agreement that limits government liability for the munitions hazards remaining on-site, and even then are free only to visit approximately 10 percent of the refuge lands; the rest remains gated and off limits" (Havlick, "Disarming" 192). While Jefferson Proving Ground's transformation into Big Oaks looks like a rededication of land to public use and environmental protection, the refuge's inability to guarantee visitor safety reveals the degree to which the U.S. military's decades of bombing destroyed the landscape and limited the range of uses to which the land could be put in the future.

Even when the DOD spends billions to remediate such sites before transferring them to the FWS, some threats may linger. Take the case of the Rocky Mountain Arsenal (RMA) in Colorado, for example. For forty years, this chemical weapons manufacturing site produced napalm, nerve agents, grenades, rocket fuels, biological weapons, explosives, and a variety of persistent chemicals, some manufactured for commercial use. The area was designated a Superfund Site in the late 1980s, at which point the Army and Shell (one of the on-site commercial manufacturers) were forced to pay more than two billion dollars for remediation. Twelve years later, in 1992, the RMA was designated as a wildlife refuge. Today, visitors to the refuge can explore the "interactive exhibit hall" in the recently built Visitor Center, fish in one of the refuge's two lakes, or take a "self-guided Wildlife Drive auto tour" of the refuge (US FWS, "Visitor" *RMA*). The drive affords views of the FWS's shortgrass prairie restoration projects and its herd of reintroduced bison. While this might read as a success story, the RMA "perseveres as a militarized site with its Army-owned chemical land-fills, subterranean barriers to contain

toxic groundwater, and ongoing soil, odor, and water treatment efforts" (Havlick, "Logics" 162). The Arsenal's impacts may be felt (if not seen) far into the future.

Rather than publicizing those impacts (and fulfilling its mission of environmental education by discussing the nearly irreversible effects of chemical pollution), the FWS argues that the Arsenal has undergone "a natural transition" (Visitor Center sign). While this phrase may be taken to mean that the refuge is "transitioning" to a state that reflects increased concern for the natural world, it also makes the conversion itself seem natural, as if it came about without human influence. In fact, the current state of the RMA is the result of decades of environmental devastation, which was followed by public outrage and a highly political process that led to the site's designation as a refuge. This rhetoric—which shows up at the RMA Visitor Center, on its website, and in other publications released by the FWS—has a powerful influence on the public's perceptions of the site, given that most physical traces of the RMA's weapons production years have been removed and replaced by Fish and Wildlife infrastructure. Furthermore, FWS signage implicitly and explicitly argues that the RMA is both protective of natural systems and safe for the public to visit.

The federal government has directed several similar redesignations within the nuclear weapons complex, including the one that created the Hanford Reach National Monument. Though no scholarship has catalogued all of these "nuclear-to-wildlife" (N2W) conversions (as Havlick has done with the M2W sites), several authors have described preservation schemes at a variety of nuclear sites, including Savannah River, Rocky Flats, the Nevada Test Site, the Los Alamos National Laboratory, Idaho National Engineering and Environmental Laboratory, and Hanford, among others. Just as the

public came to understand these areas—this "archipelago of contaminated sites"—as a threat to human and environmental health, the U.S. government rebranded them as wildlife preserves (Masco, "Mutant" 530). These N2W refuges come with their own unique problems and circumstances, many of which are different from those generated by M2W conversions. Refuges at former nuclear sites operate on land formerly or currently managed by the DOE (rather than the DOD) and are therefore influenced by the DOE's guiding narratives about nuclear weapons production. Like the DOE, the FWS avoids volunteering information that would undermine the U.S. government or generate concern about public health. This loyalty to the DOE's narratives, which are informed by long-standing policies of deceit and secrecy, is especially alarming given that another unique feature of these N2W conversions is their proximity to massive amounts of radioactive contamination, some of which will be dangerous for the next 240,000 years (as in the case of left over plutonium). At Hanford, significant remediation was performed on Monument lands before they were transferred to the FWS and opened to the public. Hanford workers and managers generally accept it as true that the HRNM is safe to visit. And yet the DOE retains the title to the Monument, at least partially because there are still some hazards there. Like Big Oaks NWR, Hanford Reach is operated as an "overlay refuge," which means that the FWS manages wildlife, habitat, and visitors, but another agency holds the deed to the land (US FWS, *HRNM CCP* 1-7).

This connection between Big Oaks and Hanford Reach points to the fact that there are also significant similarities between M2W and N2W conversions. Indeed, the nuclear weapons complex should be seen as a special subset of lands within the much larger picture of militarized land in the U.S. Both the DOD and DOE create the sense that they

are performing a public service when they remediate devastated lands and then open those lands to the public. In reality, areas zoned as residential or commercial would have to meet a higher standard of environmental cleanup than sites zoned as wildlife refuges, so transferring land to the FWS provides federal agencies and their contractors with a relatively cheap and convenient solution to the problem of what to do with heavily impacted land. In the case of both M2W and N2W refuges, "the discourse of 'preservation'" is enabled only by a policy of "ignoring the long standing practices of environmental ruin" that characterized the former military sites (Masco, "Mutant" 531). While M2W and N2W conversions may offer support for wildlife species and habitats valued by the U.S. government, they may erase evidence of military impacts and mistakenly give credit to the DOD and DOE for the apparent health of ecosystems that have endured military occupation.

M2W refuges gain legitimacy through the stories that are told about them. In general, these stories are narrated by federal agencies, but they also gain support from conservationists, elected officials, and members of the public. Havlick explains how three different "logics of change"—Biodiversity, Brownfields, and Serendipity—work to justify M2W refuges in public discourse. The first justification, Biodiversity, is given when scientists and conservationists discover that a plot of former military land hosts a diversity of species that are considered biologically valuable. Thus, at Hanford Reach, the variety of rare, endangered, and charismatic species justifies the Monument's existence. Often, this recognition of ecological attributes happens at the cost of other values. Those who advocate for refuges often assume "that risks can be geographically bounded and public access effectively managed. The privileged positioning of ecological sciences and

biodiversity protection looms large here, as concerns about public health or socioeconomic disruptions are largely left out of comments contributed by environmental advocates of M2W conversion" ("Logics" 155). Potential impacts to refuge staff and the visiting public do not enter into this calculation.

Other M2W conversions are narrated using the Brownfields explanation, the title of which refers to areas of land whose potential for future use is compromised by real or perceived contamination. This explanation argues that former military sites might as well be transformed into wildlife refuges since it would impossible or far too expensive to remediate them enough for people to inhabit them. This logic is nothing if not practical, saying that

> nothing else redeeming will likely come of military lands so their highest, most practical "use" will be to dedicate these places to conservation priorities. Put somewhat less charitably, military managers recognize that certain DOD lands are too contaminated to ever bear more economically productive commercial or residential activities, so a wildlife refuge designation can present a positive public face to an otherwise blighted site. (156)

Once a M2W refuge is established, the FWS rarely admits to economically motivated practicality as a reason for the redesignation; instead, the agency helps the DOD or DOE to "present a positive public face to an otherwise blighted site" by emphasizing the ecological attributes worth saving (156). While it may, in fact, be inexpensive and beneficial for the federal government to convert militarized sites into refuges, admission of that fact is rarely incorporated into the government's story about a given site. Thus, the

HRNM resulted at least partially from the recognition that lands so close to the Hanford Site could not be developed for residential or commercial use (because of the Site's contamination), but the government never acknowledges that fact in its publications about Hanford Reach.

The final—and perhaps most deceptive—justification for a M2W conversion is Serendipity, which says that wildlife—and not human actors—are responsible for a site's transformation. To illustrate this justification, Havlick provides the example of the FWS's reaction to the discovery of bald eagles nesting at the RMA: "'In a way, it was the eagles that made it happen.'" This statement "implies that scientists, politicians, the DOD, economists, community leaders, FWS officials, conservation advocates, court rulings, and the many other elements that actually contributed to this reclassification are merely bit players in the larger stage of what is fundamentally a *natural occurrence*" (157). This justification insists that nature has directed the conversion of a given site. At Hanford Reach, the Serendipity argument emerges in the FWS's descriptions of the shrub-steppe ecosystem. Historically, this ecosystem has been devalued and destroyed by farmers, ranchers, and developers, who have seen little aesthetic or economic use for it. As the weapons production era at Hanford began to wind down, the government suddenly discovered the ecological value of the shrub-steppe, which hosts a diversity of plant and animal communities. This discovery came at a convenient time—just when the DOE needed to identify some positive outcome of decades of bomb building. Thus, the FWS may say that it was the persistence of the shrub steppe and its diversity of flora and fauna that made the Monument, but others might ask: was this ecosystem uniquely valuable, or was it made accessible to scientists in order to distract from other events at Hanford?

Many would say that both are true; there is very little shrub-steppe left in the western U.S., and the fact that some of it sits on the Hanford Site proved advantageous for ecologists and the federal government.

Today, the HRNM's status as a National Monument and Wildlife Refuge allows the government to characterize parts of Hanford as worth preserving. Indeed, the FWS depicts the HRNM as not just ecologically valuable (and equivalent to other valuable sites) but particularly intact and safe for native plants and wildlife. This is, of course, exactly the opposite of what one might expect from a nuclear site. Visitors to Hanford Reach might reasonably feel unsettled about visiting a former nuclear weapons production site that is still in active cleanup. They might worry about their own safety, the safety of Monument workers, and the health of plants and animals that can easily migrate between the relatively uncompromised landscape of the Monument and the highly contaminated spaces of the nuclear site. And yet the HRNM website—which exists as a means of interpreting the Monument for the public—registers no concern for those potential threats. In fact, it strategically avoids the nuclear issue by redirecting visitors' attention to the local ecology and even relocating the threats to that ecology, as in this declaration: "Without a doubt, the biggest threat to the Monument are invasive plant species—weeds" ("Wildlife and Habitat"). Such an assertion communicates that the proliferation of cheatgrass is a more serious hazard to the ecological integrity of the Monument than the presence of long-lived radionuclides right next door. Fish and Wildlife's preoccupation with weeds—a symptom of an already suspect concern for so-called native species—becomes even more suspicious in the context of Hanford. Indeed, the FWS consistently ignores the big, nuclear elephant in the room when it represents

Hanford Reach to the public. While not every aspect of the agency's work at Hanford need be related to the impact of nuclear activities on the local ecosystem, the FWS also should not aim to distract the public from past, present, and future dangers. And yet, in its online rhetoric, the FWS depicts the Monument as a paradise brimming with charismatic wildlife, rare and native plants, unique geology, and fascinating "cultural resources." According to the agency's calculation of risk, only weeds and wildfire—not nuclear contamination or ongoing government occupation of the land—threaten these valuable "resources." Thus, the HRNM website provides insight into how the FWS (and by extension, Hanford Reach's co-owner, the DOE) frames the relationship between Hanford's nuclear activities and its preservation. It also offers interpretations of Hanford that are difficult to come by if you actually visit HRNM, given that the Monument offers little in the way of signage, facilities, or tours. (See Figure 10.)

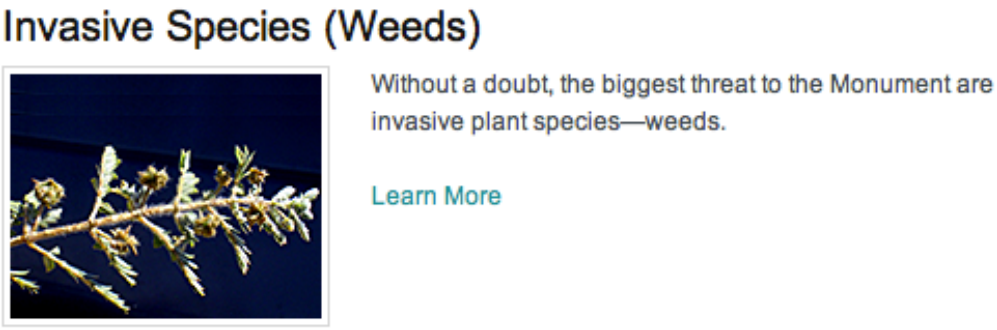

Figure 10. Screenshot from the HRNM website's "Wildlife and Habitat" page.

Most of the HRNM website makes the Monument seem more like a park dedicated to picturesque scenery than the outer edges of a nuclear site, and yet—unlike a park—the Monument does not offer interpretive centers, well-marked trails, or restrooms.

Visitors are left to their own devices, and it appears as if the FWS is indifferent to—or perhaps wary of—people's presence on the Monument. A trip to the northern units of the HRNM demonstrates just how isolated and uninviting the landscape is. As you drive northwest from Richland on State Route 240—which serves as the boundary between the nuclear site and the Monument—you travel for roughly thirty miles with Hanford Site on your right and the Rattlesnake Unit of the HRNM on your left. Neither is well marked, but you know Hanford by the barbed wire fences with warnings not to trespass, and you can recognize the HRNM by the stunning views of Rattlesnake Mountain, which has long been sacred to Columbia Basin tribes. Shortly after you arrive at the Columbia River, you pass a viewpoint from which you can see the B Reactor, which sits in the distance, across the river. (This is the only way to see the B Reactor without a Hanford Site badge or a seat on a DOE tour bus.) State Route 240 eventually becomes State Route 24, which forms the border between the Wahluke and Saddle Mountain Units of the Monument. The HRNM signage near the road is sun-faded, worn, and in some cases, riddled with bullet holes.

For example, a sign on a dirt road located off the highway offers an ambiguous "Welcome to the Wahluke Unit" (See Appendix B for a photo of the sign.). The pictures on the sign highlight the landscapes and birds that can be viewed at the HRNM, but the text reveals the degree to which the Wahluke Unit itself—and not just the core of the Hanford Site—was once militarized: "The 5th Anti-Aircraft Artillery Group operated 1200mm gun batteries along these slopes from 1950 to 1957. To further protect Hanford during the Cold War, NIKE missile silos and radar control sites were maintained here. All were deactivated and removed after 1958." When the sign claims that these

operations protected Hanford during the Cold War, it literally means that the government defended Hanford's plutonium production facilities using artillery, NIKE missiles, and radar, but it also suggests that the landscape itself was protected. The assertion that all weaponry was "deactivated and removed after 1958" implies that military occupation ended mid-century, and Hanford Reach is no worse for the wear. The text of the sign communicates that instead of damaging the landscape, federal protection (via the military and land use designations) purified it, as demonstrated by illustrations of the Saddle Mountains, a meadowlark, and a long-billed curlew. And yet the HRNM's purified landscape is not as welcoming as the sign indicates; the drawing of the meadowlark is shot through with bullets, ironically echoing the military presence that once existed there. If anything, the sign makes one feel the artificiality of the HRNM's designation as a Monument; the government has erected signs to claim the landscape, but they seem neglected and the entire area is eerily empty.

Other signage at the Monument is even less inviting and sends mixed messages about whether the Monument is open to visitors. The northern side of the HRNM feels like the middle of nowhere, but the occasional sign with the Monument logo indicates that you are in a regulated space. For example, a "DEAD END" sign at a turnoff on the Columbia River side of State Route 24 suggests that visitors should turn around, but it is not clear whether the sign is meant to help confused drivers (who may be lost in this landscape without restaurants, gas stations, or restrooms) or to keep people out. (See Appendix B for a photo of the sign.) Regardless, the sign's message is startling, and it seems peculiar given that the area beyond the sign is less a dead end than a scenic overlook. The end of the road provides an extraordinary view of both the Columbia River

and, in the distance, the Hanford Site. This view connects the Monument and the river to the nuclear site, which is the opposite of what the FWS wants to emphasize about the area. Thus, the road is a kind of dead end for the government's narratives, which attempt discursively to separate the Monument and river from Hanford's deadly waste.

The visitor's sense that the Monument is undeveloped and even a little unwelcoming is corroborated by the HRNM website, which—on its "About the Monument" page—extends an ambiguous invitation to visit the Reach:

> So, whether you're interested in history, sightseeing, wildlife, hunting, fishing, or just enjoying a bit of time away from the bustle of everyday life, the Hanford Reach National Monument has something to offer you. But don't come expecting a lot of visitor facilities—they don't exist. You'll be experiencing the Monument on its own terms.

Here, the FWS depicts the HRNM as both a pastoral escape and threatening wilderness. People are invited to visit but not linger. Nature sets the "terms" at the HRNM, and those terms are difficult, if not dangerous, to humans. Furthermore, there are no visitor facilities to make the landscape more hospitable to visitors. In this way, the FWS paints a paradoxical portrait of an enchanting yet ominous landscape seemingly devoid of human influence.

This depiction of the HRNM accomplishes two things. First, it makes a landscape that has been irrevocably altered by humans appear as if it were ruled by non-human nature. (Native American habitation, white settlement, fire suppression, agriculture, and careless dispersal of long-lived contaminants have made their mark on the HRNM, but the FWS does not mention this.) Second, it excuses the agency for opening the

Monument to the public without providing visitor facilities. The HRNM's *CCP* backs the agency up on this point; the document spins the lack of facilities at the Monument as something that contributes to the naturalness of the landscape.[12] In reality, the FWS has neither the will nor the funding to erect buildings and staff them. So why was the HRNM turned into a Monument, and why has the FWS created an extensive website that depicts the HRNM as a friendly place to visit and view wildlife? Why does the FWS build more and more discursive infrastructure online while the Monument itself remains undeveloped?

Given the government's history of seizing the Hanford area by eminent domain, laying waste to it, and then spending billions of dollars inefficiently to address the pollution that will threaten human and environmental health far into the future, there is a great deal at stake in Fish and Wildlife's interpretation of Hanford Reach. The FWS has repeatedly revamped the HRNM website, increasing the amount of interpretive text available to the public, fleshing out its own framing of Hanford's M2W transition. The website has become more sophisticated in its representations of that transition, but each version has made this central claim: that nuclear weapons production paved the way for preservation of native plants and wildlife. It is no coincidence that just as the DOE is talking about the end of environmental cleanup and new opportunities for economic development, recreation, and tourism at Hanford, the FWS has increased its planning for the HRNM and used its website to justify Hanford's status as a Monument. The changes the FWS has made to Hanford Reach's website suggest that the agency is paying closer attention to the language and images it uses to depict the Monument lands than it did in years past. Here, I will trace the evolution of the FWS's online rhetoric through three

different versions of the website—one that was live through March 2009, another that was up from March 2009 to May 2013, and another that has been available since May 2013. While these three successive interpretations emphasize different aspects of Hanford Reach, all three present the Monument as if it were a national park rather than a nuclear site, and each version argues that Hanford's nuclear activities fortuitously protected vast tracts of shrub-steppe habitat. Though the HRNM directly borders the Hanford Site, none of the versions of the HRNM website discusses how contamination and cleanup affect plants, wildlife, "cultural resources," or public access. As an agency tasked with preservation and habitat protection, the FWS is more justified in focusing on the "natural" features of the landscape than the DOE. While the FWS places emphasis on sagebrush, elk, and other local species, the agency must also interpret how Hanford Reach came to be a wildlife refuge, and that forces the FWS out of its usual administrative and science-based discourse. Today, the proliferation of pages on the HRNM website works to justify and celebrate the continued government colonization of Hanford's outer edges and to argue that military activities are compatible with environmental protection.

At its inception, the HRNM website provided very little information about what one would find at the Monument, but still managed—with a scant amount of text—to equate preparing for war with preserving a natural area. At that point, the website was less flashy than it is today; the FWS had yet to publicize the Monument with crisp, professional photographs of elk herds and coyote. Instead, the front page featured a banner with the FWS logo, a generic drawing of a fish, and the Monument's tagline,

"protecting the last of the free-flowing Columbia River." Beneath the banner, the FWS summarized the Monument's characteristics, history, and management. The most striking passage was the second paragraph of this description, which made an awkward and ambiguous argument about how government action had transformed the Monument's lands over the decades: "Originally preserved to help win the second world war, the lands that now comprise the Hanford Reach National Monument have been part of a progression from World War II to the Cold War to preservation as a testament to both the natural world and the history of the 20th century." In this tangled statement, the FWS insinuated that when the government converted 640 square miles of land adjacent to the Columbia River into a nuclear complex in the 1940s, it was actually *preserving* the landscape's natural qualities. In a contemporary environmental context, "preserve" means "protect," but what the government has actually done at Hanford more closely matches another meaning of "preserve"—to "reserve" for personal use. Over and over, the government has ensured its legal claim to Hanford—first by seizing the land in 1943, then by claiming that national security required decades of plutonium production, and now by arguing that the Site's environment must be protected. Though the passage argued for the compatibility of militarization and preservation, it tried to appear neutral by referring to the series of government takeovers as a "progression." Indeed, the passage insisted on having it both ways: it appealed to readers' patriotism by emphasizing that Hanford helped to "win" World War II, and it appealed to environmental concern by underscoring the importance of preservation. But the passage made these appeals in a strategically vague and bewildering way; it did not clarify what serves as a "testament to both the natural world and the history of the 20th century." The word "testament," which

has a sacred valence, suggests that the HRNM is a sign of the righteousness of two things: the U.S. nuclear mission and its protection of nature. (See Figure 11.)

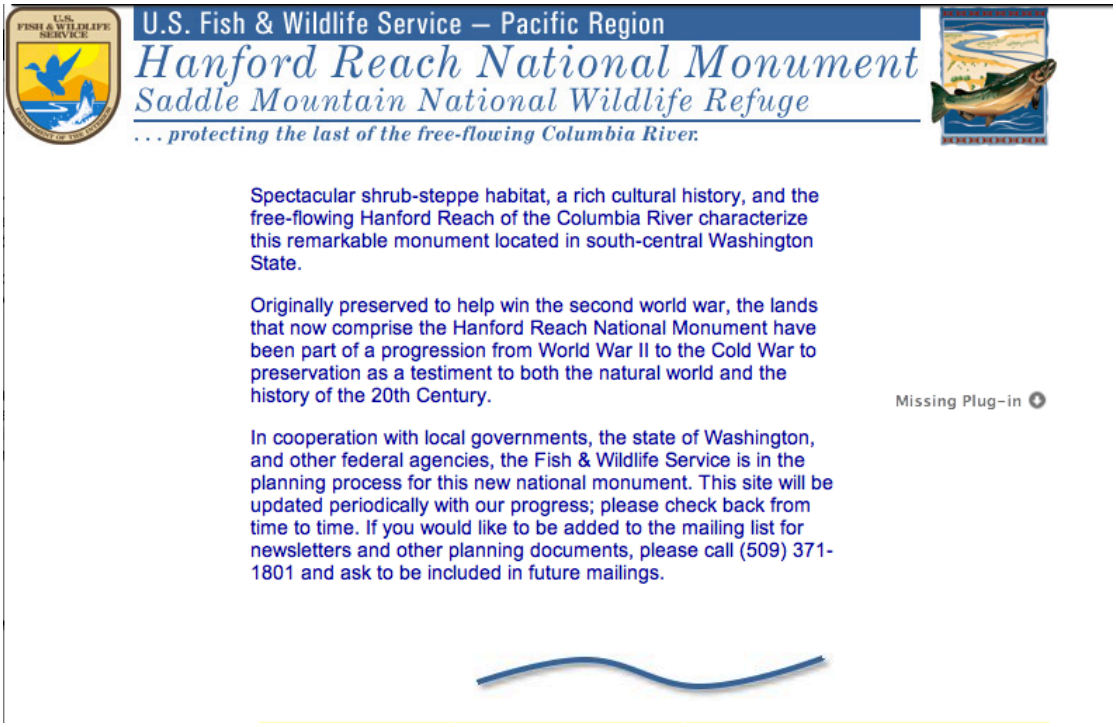

Figure 11. Image of the HRNM website, captured on February 18, 2007 and available through the Internet Archive Wayback Machine under http://www.fws.gov/hanfordreach/index-expanded.html.

In 2009, the FWS revised its description of the Monument to emphasize the notion that preservation has purified the landscape at Hanford. In that version of the website, large photographs of an elk herd, river otters, and a fisherman holding a salmon dominated the homepage. While the earlier version merely mentioned the Monument's "spectacular shrub-steppe habitat," the revised version elaborated on the diversity of species that dwells in that habitat:

> Welcome to the Hanford Reach National Monument—the U.S. Fish and Wildlife Service's first national monument and the only one within the interior United States. Protected by Presidential Proclamation in 2000

> under the American Antiquities Act, the Monument is a place of sweeping vistas and stark beauty, of towering bluffs and delicate flowers. Wildlife abounds in this harsh landscape—rare is a trip along the river that doesn't produce mule deer, coyotes, bald eagles, great blue herons, or white pelicans. A large elk herd hides in the canyons, and incredibly, porcupines are a common sight. Rare plants defy the desert, wind and heat. Beautiful spring wildflower displays delight the visitor who ventures into the field.

In this account, the Monument is a place for people to get back to nature. The landscape is at once sublime in its "sweeping vistas," "stark beauty," and "harsh landscape" and pastoral in its benign and inviting "wildflower displays." The natural world at Hanford is resilient even in the face of punishing conditions: "wildlife abounds" and "rare plants defy the desert." This Eden would seem to exist outside history—and outside the nuclear weapons complex—but for the next paragraph:

> The Monument is also a reminder of our history. Plutonium reactors stand along the river, remnants of WWII and the Cold War. Plutonium from B Reactor fueled "Fat Man," the atomic bomb dropped on Nagasaki, Japan, on August 9, 1945. No longer in production, these reactors are now being dismantled, and the lands and waters cleaned.

This version of the website acknowledges Hanford's nuclear past, but avoids making judgments about it. "Plutonium reactors" passively "stand along the river" like ancient ruins from a time when plutonium "fueled" a single atomic bomb. (Neither the bomb's creators nor the astounding number of bombs produced at Hanford are mentioned here.) In this attempt to be impartial about Hanford's nuclear activities, the FWS carefully

avoids the moral debates surrounding Hanford's devastation of human and ecological communities in the U.S. and abroad. The agency is distant but reassuring when it claims that military activities at the Site have ended and environmental cleanup is putting everything back in order. Without explicitly connecting war and preservation (as the earlier version does), the FWS implies that government activities have been protective of life and landscape at Hanford. The nuclear site and the Monument are conflated so that both can be purified by resident wildlife, environmental cleanup, and federal protection. (See Figure 12.)

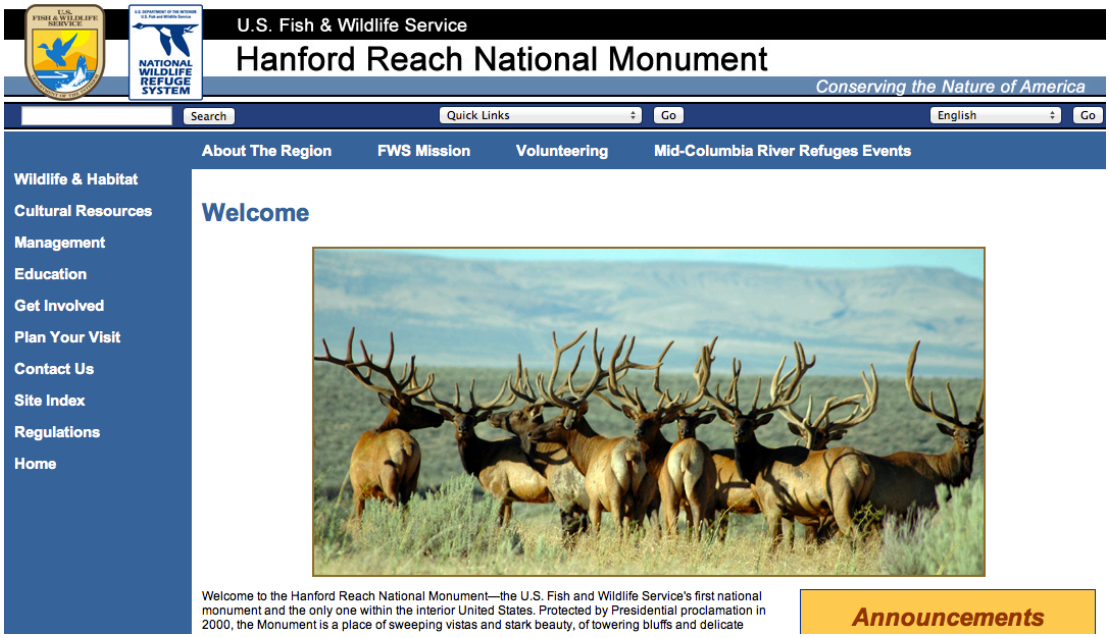

Figure 12. Image of the HRNM website captured on September 22, 2012 and available through the Internet Archive Wayback Machine under http://www.fws.gov/hanfordreach. When this version of the website was live (between 2009 and 2013), the main photo rotated between this one and several others, which featured Monument wildflowers, jackrabbits, river otters, and fishermen.

The FWS has recently made even more extensive alterations to the HRNM website. As planning for the Monument has proceeded, the FWS has added more and more interpretive text and imagery. This proliferation of discourse became even more

pronounced in spring of 2013 when the FWS brought the appearance of the Hanford Reach website into alignment with that of other websites maintained for National Wildlife Refuges (NWR) across the country. Now, the HRNM website adheres to FWS's standardized format, which makes Hanford Reach look like any other refuge in the NWR System. Even though the homepage declares that the HRNM is a "thoroughly unique refuge," the FWS argues that the landscape's natural qualities—not its atomic history—make it unique. Nothing on the website's main page indicates that the HRNM has any association with the military, nuclear weapons, or war. This makes it easy to forget that the Monument exists on the margins of a nuclear wasteland.

The current version of the HRNM website (which went live in May 2013) contains more interpretation of Hanford's human history, but the homepage focuses solely on the qualities of the Monument that make it suitable for inclusion in the National Wildlife Refuge System. A single, close-up photo of a kangaroo rat dominates the homepage. The tiny rat is not as immediately symbolic of the landscape as the elk herds that the FWS often uses to publicize the Monument, but its photo communicates that the FWS is dedicated to protecting all species at Hanford, even those that are smaller and less charismatic than the elk. The image is accompanied by an overview of the HRNM that paints a dramatic portrait of the Monument's terrain and its human history: "Born of fire and ice and flood over millions of years, preserved through the war and conflict of half a century, now protected forever." In this account, the Monument was created by spectacular geological change, threatened, and ultimately saved by human intervention. However, the FWS strategically muddles its own meaning when it claims that Hanford Reach was "preserved through the war and conflict of half a century." Whether the Reach

was preserved *even despite* war or *by* war is made purposely unclear. This allows the agency to again suggest that war and preservation are compatible, albeit more subtly than it did in the first version of the website. (See Figure 13.)

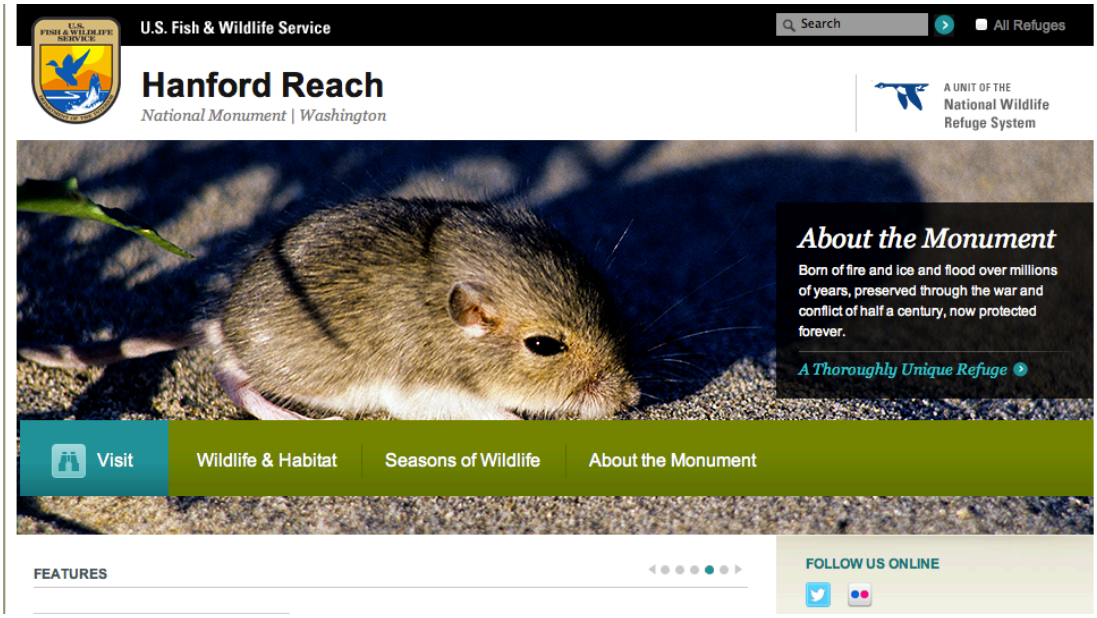

Figure 13. Screenshot of the most recent version of the HRNM website, taken February 10, 2014. The website began using this new format in spring 2013.

According to the FWS, "war and conflict" have left pristine habitat in their wake. The pages that fall under the heading "Wildlife and Habitat" on the HRNM website are dedicated to overturning readers' presumed assumptions about the flora and fauna of the Monument. On the surface, the agency may seem to be challenging readers' beliefs about desert environments, which are often viewed as sterile and lifeless. Indeed, the FWS insists that the desert ecosystem at Hanford is a productive one: "Although it appears barren—especially to those from more temperate climates—the Hanford Reach National Monument supports hundreds of animal species that have adapted to its dry environment" ("Wildlife and Habitat"). The website lists many of these hundreds of species and

repeatedly argues that they are all scientifically and ecologically important to the Monument's ecosystem:

> The Monument has its share of "charismatic" wildlife—herds of mule deer, plenty of coyotes, chubby marmots, industrious beavers, fun-loving otters, and some of the most majestic elk in the West. But you might be surprised at what is the most abundant mammal here—and one of the most important. The most abundant mammal in the shrub-steppe habitat on the Monument is the Great Basin pocket mouse. These [and other] rodents form the prey base for much of the rest of the Monument.

But the FWS is not just listing these species in order to prove that deserts can be productive. The agency takes the argument one step farther by asserting that Hanford's vast array of plant and animal species have only persisted because they have been isolated. In a short summary about rare species found at the monument, the FWS declares that "[s]ometimes sequestration is a good thing. Seven decades of it has left the Monument as a bulwark against the tides of extinction." The FWS does not mention that these seven decades of sequestration were an inadvertent consequence of seven decades of militarization. Instead, it insists that the Monument's lands have been a stronghold throughout war—paradoxically, a last bastion against environmental destruction.

The FWS is also ready with reassurances about the health of those species that have persisted at Hanford. For example, the agency frequently mentions that "large numbers of fall Chinook salmon spawn in the Hanford Reach" in order to support its claim that the Reach is healthy ("Fish"). In general, the agency strategically avoids mentioning Hanford's nuclear activities and local wildlife in the same breath, but there

are a couple instances when it clumsily refutes claims that Hanford has impacted animal health. In one passage, the agency uses a cartoon character to argue that the fish in Hanford Reach have not been damaged by Hanford contaminants: "If you're thinking Hanford, and you're thinking 'Blinky,' the three-eyed fish from the Simpsons, you're thinking wrong. The Hanford Reach of the Columbia River supports a varied, important, and much-sought-after fishery" ("Wildlife and Habitat"). Though the agency hopes to make the comparison seem absurd, simply mentioning Blinky, a three-eyed fish that has been mutated by exposure to runoff from an irresponsibly managed nuclear power plant, brings a disturbing image to mind.[13] The ridiculousness of the allusion also highlights the FWS's tendency to oversimplify environmental health. In this case, it offers only two indicators (abundance of fish and lack of mutant characteristics) and no scientific evidence to support its claim that local fish populations are healthy.

The FWS has ensured that the layout of the HRNM website emphasizes the health of the Monument's wildlife and vegetation, but deeper within its layers of linking pages, the FWS also uses the website to advance a version of Hanford's human history that is not unlike the one presented by the DOE. Since the FWS only manages seven national monuments, its primary experience is in interpreting the "biological resources" (the flora and fauna) at national wildlife refuges. A portion of the HRNM began as Saddle Mountain National Wildlife Refuge (managed by the FWS), but the federal government eventually made the area into a Monument, thereby acknowledging the significance of its human history. Thus, as the primary manager of the HRNM, the FWS is also charged with interpreting the Monument's "cultural resources." Like the DOE, the FWS uses its platform to suggest that white settlement of the Hanford area was part of a natural

progression of history, that military operations at Hanford were justified, and that patriotic citizens ought to feel a sense of awe in the face of what Hanford engineers accomplished at the Site.

Because the FWS is less experienced with depicting human history (than the National Park Service, for instance) and because Hanford provokes heated controversy, the agency approaches its interpretation of the HRNM's cultural resources by making vague and evasive statements about the distinctiveness of the landscape. The FWS is especially ambiguous when called upon to sum up Hanford Reach in a few words, as it does on the "About the Monument" page of the HRNM website: "While many national wildlife refuges protect remnants of America's history, none are as rich, varied and complete as Hanford." Hanford's history is certainly "rich" and "varied" in that it has always been a significant cultural center for Native people in the Columbia Basin and has been repeatedly colonized by prospectors, settlers, and the government, but these adjectives are equivocal at best.

The agency's use of the word "complete" is also difficult to explain, though the next sentence on the "About the Monument" page may help to clarify its meaning: "The unique and fortuitous circumstances (establishment of the Hanford Nuclear Reservation during World War II) that preserved the area since 1943 also created a unique set of cultural resources with contextual integrity that may no longer exist anywhere else in the region." The diction and syntax of this passage serve to mystify rather than shed light on the Monument. The agency uses the word "unique" twice, as if it does not know how else objectively to address the "circumstances" that created Hanford. The agency does seem to take a stance when it uses the word "fortuitous," though it strategically avoids saying

what was fortuitous or who benefitted from the good fortune. Finally, the agency employs vague and nonsensical jargon like "cultural resources" and "contextual integrity" to suggest that Hanford Reach is significant without explaining why. Because the FWS avoids the tragic elements of Hanford's human history, it is left with little of value to say.

As is often the case with agencies that engage in historic preservation and preservation of ecosystems, the FWS wants to freeze Hanford Reach in time, to keep the landscape empty of people, and to ensure that both history and nature remain static. But even as it celebrates that which is still intact at Hanford, the FWS acknowledges that Hanford forever changed the local landscape: "Unfortunately, some of the resources, such as the historic town sites, homesteads and other structures, as well as Native American traditional use areas and aboriginal occupation areas, were destroyed before and during establishment and operation of the Hanford Nuclear Reservation." The FWS—as an agency that is loyal to the U.S. government's narrative of Hanford—cannot acknowledge all that was lost when Hanford was built. Instead, it must use what is left to shape public memory of what happened there. Thus, the HRNM website draws on Hanford's "cultural resources" to craft a compelling history that distracts from the central facts of Hanford: continuous government occupation and unprecedented pollution. The HRNM website depicts Hanford's cultural resources in a four-part progression from "Native Americans" to "Modern History" to "B Reactor" and finally to "Cold War." (Conspicuously absent is anything about the area's contemporary history, an era that has been defined by waste removal, remediation, and crisis.) The first two pages in this series must be read together as a statement about the agency's devaluation of Native American

history and complicity with the ongoing colonization of the Site, both accomplished through physical occupation as well as narrative occupation.

One might expect a page headed "Native Americans" to describe the long and rich history of the Native people who live in the Hanford area. One might also expect that this page would describe how Native people have suffered the worst impacts of the U.S. government's occupation of the land and pollution of the region. Instead, the page puts Hanford's tribes squarely in the Precontact past: "For centuries and into today, the Columbia River—'Chiawana' (Big River)—and its tributaries were the lifeblood of Native Americans in the Columbia Basin, providing food, water, travel corridors, trading routes, and religious beliefs." Though this passage begins with "for centuries and into today," thereby establishing a sense of Native people's age-old relationship with the land, it uses the past tense to suggest that the river *was* a resource for tribes, sometime long ago. The FWS portrays the subsistence and cultural practices of Native people as a part of the landscape's past: "As early as 10,000 years ago, the ancestral inhabitants of today's Wanapum People, Yakama Nation, Confederated Tribes of the Colville, Confederated Tribes of the Umatilla Reservation, and Nez Perce fished, hunted, and collected a variety of natural resources in the area." Though the FWS names the tribes with historical claims to the Hanford area, the agency fails to acknowledge that the descendents of those same Native people continue to depend on the area for food and medicine. But the focus on Native Americans who lived at Hanford 10,000 years ago suggests either that Native people have disappeared—a white myth from the nineteenth century that persists even today—or that something has broken their traditional relationship with the land. Indeed, early white settlement, Hanford's plutonium production, and the Monument's

preservation have limited Native people's access to traditional hunting and fishing areas, places where food and medicine are gathered, and sacred sites—though the FWS mentions none of this. The last sentence of the paragraph acknowledges the fact that local tribes continue to use resources from the Hanford area, but it also refuses to acknowledge how Hanford has impacted those resources: "Even today, Native Americans gather tules for making house coverings, sleeping mats and other household uses." The phrase "even today" casts gathering tules as an outdated practice. Further, the FWS's focus on the gathering of non-food items neglects the legacy of radioactive colonialism left by Hanford's nuclear activities. Native people—who have traditionally fished, hunted, and gathered a greater amount of their food from the area than white settlers—have been disproportionately exposed to Hanford's massive releases of chemical and radioactive contaminants.

The following section about Hanford's "Cultural Resources," demonstrates that the FWS adheres to a notion of historical progress in which Native people have simply disappeared, thereby making way for waves of white settlement in the Columbia Basin. The FWS devotes three successive pages to Hanford's "Modern History," and those pages are prefaced with a quotation from John L. O'Sullivan, originator of the term "Manifest Destiny," which described the infamous belief (held by many Euro-Americans in the nineteenth century) that whites were destined to settle the entire North American continent. Though it is today widely acknowledged—by scholars, activists, and the wider culture—that Manifest Destiny was founded on belief in the racial and cultural superiority of whites, and that it laid the ideological foundation for the violent

colonization of North America, the FWS places the quotation in bold, italicized font, which would suggest that it supports the doctrine.

The FWS exhumes the rhetoric of Manifest Destiny in order to portray the HRNM as a place of purity and peace, completely devoid of history (though, ironically, the agency is interpreting Hanford history on this very webpage). The FWS quotes O'Sullivan, for whom Manifest Destiny represented the unbridled optimism associated with white settlement of the West:

> We have no interest in the scenes of antiquity, only as lessons of avoidance of nearly all their examples. The expansive future is our arena, for our history. We are entering on its untrodden space, with the truths [. . .] in our minds, beneficent objects in our hearts, and with a clear conscience unsullied by the past. We are the nation of human progress, and who will, what can, set limits on our onward march? Providence is with us, and no earthly power can.

Ironically, the FWS here describes the history of a Monument that has been designated by the Antiquities Act with a passage that denies "interest in the scenes of antiquity." The stated purpose of the HRNM is to preserve a connection with the past, but the FWS here endorses complete denial of it. Like the DOE, the FWS erases the history of Native people and endorses American exceptionalism, which allows whites—even today—to colonize land "with a clear conscience unsullied by the past." The two agencies view Hanford—which they see as a marvel of both the atomic age and the natural world—as the climax in a long progression of settlement. Thus, directly after quoting O'Sullivan, the FWS insists that "the land comprising the Monument has an unusual and colorful

provenance. The history of the Hanford Reach is the history and fulfillment of 'Manifest Destiny.'" While it is true that the endless and brutal march of what whites have called "progress" ended in a nuclear wasteland that has been enshrined as a national monument and wildlife refuge, the FWS indicates (here and throughout the HRNM website) that this is a favorable outcome. The FWS uses ambiguous descriptors like "unusual" and "colorful" because it is eager to avoid contentious debate about Hanford, and yet it stumbles directly into those debates by embracing the DOE's interpretations of Hanford's history.

The FWS is perhaps especially influenced by the DOE when it describes the B Reactor, which is the next subject the agency approaches in its discussion of Hanford's "cultural resources." The FWS introduces the reactor with yet another ambivalent explanation: "Unassuming, looking a bit like a long-abandoned steel factory, B Reactor is a testament to both the ingenuity of man and his fractious nature." In this description, the reactor is portrayed as "unassuming"—unpretentious and innocent of its own history. It easily masquerades as a "steel factory" and looks "long-abandoned," as if it were no longer in use. Each of these descriptors helps the government portray the B Reactor as harmless. Though the second half of the passage hints at the fact that the reactor may have been dangerous, the word "testament" suggests that the reactor is more a symbol of good and evil ("the ingenuity of man and his fractious nature") than a real, material threat. While the B Reactor—which has been preserved as a National Historical Landmark—could reasonably be interpreted as a monument to the recklessness of war, the FWS interprets it as a neutral outcome of humanity's capabilities and childish irritability.

It may be surprising that FWS even comments on the B Reactor, given that it is located on the Hanford Site and not on Monument lands. The FWS reveals why at the end of its description of the reactor: "Because of its historical importance and contributions to world events, there is a significant movement to preserve this landmark. The National Park Service has studied the B Reactor and determined that it should be preserved as part of a national historical park. Legislation to create just such a park is working its way through Congress." The FWS's political agenda here, which aligns with that of the DOE and other government agencies, is to support the creation of a Manhattan Project National Historical Park (which I will discuss in Chapter IV of this dissertation). Each of these agencies supports plans to bring more visitors to the Hanford Site, in part because they hope to convince the public that the Site's threats to environmental and public health have been contained.

The last section of the HRNM website's four-part description of Hanford's "Cultural Resources," which focuses on the Cold War, draws connections between U.S. weapons production, the events of the Cold War, and the landscape of Hanford Reach but does so without any reflection on Cold War waste production at Hanford. The webpage provides a brief background on the Cold War and then details how international events that threatened U.S. world dominance were met with increased construction at Hanford:

> What is interesting about the Hanford Site is that, in addition to fueling the Cold War arms race, key events in the Cold War can be traced here [. . .]. So, as you look down the river at the various generations of reactors, you can see world events unfolding—the Truman Doctrine, the formation of NATO, the end of the American policy of "isolationism," the Marshall

> Plan, the invasion of South Korea by North Korea, the rise of Mao Tse-tung and Nikita Khrushchev, the space race and the launching of Sputnik, the period of "McCarthyism," the spy trials of Alger Hiss and Julius and Ethel Rosenberg, the eras of "massive retaliation" and "mutually assured destruction," and many other world-changing events. All of these are etched into the banks of the Hanford Reach.

The FWS does little to interpret these events and instead treats them as interesting bits of Hanford-related trivia. The agency seems to look back on them with nostalgia, or at least with an admiration for Hanford's part in them. This sense of wonder in the face of what Hanford has accomplished certainly evokes the DOE's descriptions of the Site. While the DOE's pride in Hanford's work can be explained by its direct involvement in weapons production, the FWS's apparent satisfaction in seeing "world-changing events [. . .] etched into the banks of the Hanford Reach" is more puzzling. Though the FWS arrived at Hanford to preserve and restore valuable habitats, it fails to interpret how militarization and nuclearization have impacted the areas it claims to protect. Just when it might describe how plutonium production during the terrifying decades of the Cold War did extensive damage to Hanford and its surrounding environment, the FWS turns its attention away from the Hanford's natural landscape and towards the wider world.

Tellingly, the FWS isolates its discussions of the Reach's wildlife from its interpretation of the area's human history. Portions of the website devoted to "wildlife and habitat" are neatly divided from pages about the Monument's "cultural resources." Thus, our general tendency to separate humans from nature proves convenient for the U.S. government. The FWS can convincingly discuss the health of the flora and fauna at

a nuclear site without acknowledging how colonization and war have irrevocably impacted the local environment. And even though the FWS claims to be devoted to habitat protection and public education at the HRNM, it can operate an entire website about the Monument without discussing Hanford's pollution in any substantive way.

By designating the HRNM a Monument and not just a wildlife refuge, the federal government gave it special status as a place to remember the nuclear history that we all (in most cases, involuntarily) share. However, when the FWS argues that world-changing events of the twentieth century are "etched into the banks of the Columbia," it fails to admit that those etchings are deep and permanent scars ("Cold War"). Instead of challenging the DOE's narratives about the health of Hanford's natural systems, the FWS repeatedly works to make Hanford's pollution invisible. While the FWS might be seen as noble for pursuing conservation and restoration in compromised landscapes like the one at Hanford, it is also important to recognize that the agency actively downplays hazards at the M2W and N2W refuges it manages. When the FWS argues that government "sequestration" of land protected the health of plant and animal species at Hanford, refers to Hanford's removal from the public domain as "fortuitous," and explicitly dismisses concerns about the effects of radionuclides on resident species, the FWS supports the DOE's mission of assuring the public that Hanford is safe for—and even protective of—life. Thus, scientists and managers of today's FWS who quietly accept landscapes damaged by the military have something in common with U.S. ecologists of the mid-twentieth century who, in their eagerness to conduct experiments on the government's vast and enclosed tracts of land, implicitly supported the practices of the U.S. military. The DOE, for its part, continues to use the Monument as a buffer zone between

Hanford's lethally toxic core and neighboring landscapes that are heavily cultivated and well populated. The DOE also uses the Monument just as the Atomic Energy Commission used its mid-century preservation schemes—as a bulwark against public curiosity and criticism. By offering scientists and the public access to the land surrounding Hanford (limited though that access is), the DOE reduces the threat perceived by outsiders while "preserving the appearance of open space" (Findlay and Hevly 202). Claims to openness are deceiving, however, given that the public is not allowed to access much of the Monument. People cannot camp there, boaters cannot dock their boats on the Columbia River shoreline (which is managed by the DOE), and the area is subject to nuclear emergencies caused by fires, floods, earthquakes, human error, and chance. By transferring land to the FWS, the DOE associates itself and Hanford with the FWS's relatively unsullied reputation. However, as Havlick warns, this redesignation of military sites comes at a cost: "merely as a result of the shifting nomenclature of these sites we risk the historical erasure of military operations in exchange for the easy acceptance of a new conservation mission" ("Logics" 162). Indeed, the FWS's emphasis on the health of plants and wildlife at the HRNM erases not only Hanford's military past but also its militarized present, thereby contributing to the cultural amnesia that enables continued government occupation (and destruction) of Hanford lands.

Notes

[1] The Hanford Education and Outreach Network Facebook page, operated by the Washington State Department of Ecology, updates FB users on Hanford news and Ecology's role in Hanford cleanup.

[2] Bald eagle populations are growing quickly now that some of the pressure from insecticide use has been removed (Shogren). The vast tracts of "undisturbed" land at places like Hanford and Rocky Mountain Arsenal are undoubtedly attractive to nesting birds, but foraging and reproducing in these irrevocably polluted places presents new threats to the birds' health.

[3] U.S. Fish and Wildlife (FWS) claims that the appearance of bald eagles at Rocky Mountain Arsenal (RMA) led to the site's transformation into a wildlife refuge: "In the early 1980s, the Army and Shell began an extensive environmental cleanup under the oversight of federal, state, and local regulatory agencies. Soon after, a roost of bald eagles was discovered prompting the U.S. Fish and Wildlife Service to become involved in managing wildlife at the site. The discovery also led Congress to designate the site as a national wildlife refuge in 1992" (U.S. FWS RMA).

[4] The recent cultural fascination with the resilience of nature in the face of pervasive pollution, landscape destruction, and climate change has spawned a new genre of literature, films, and television shows. There are wildlife documentaries about animals living in Chernobyl's exclusion zones, books and television programs like *The World Without Us* (by Alan Weisman) and *Life After People* (on A&E)—both of which imagine how the world will look once people have disappeared—and countless magazine and newspaper articles about life in the aftermath of Chernobyl and Fukushima.

[5] Coincidentally, the Fukushima meltdown occurred in the same year as Chernobyl's 25th anniversary. Both incidents generated media coverage about how

people, plants, and wildlife are coping in the toxic environments created by those two disasters.

[6] Scientists have argued about whether radiation has had a lasting effect on birds in the Chernobyl exclusion zone (Gill). The most prominent voices are those of Jim Smith, a radioecologist who has studied Chernobyl for over 20 years and concluded that the site's radiation has not done significant permanent damage to wildlife, and Tim Mousseau and Anders Møller, who have published numerous studies on the devastating but subtle effects radiation has had on the abundance, diversity, physiology, and fitness of birds living in the exclusion zone.

[7] The Hanford Site is about half the size of the state of Rhode Island because the government wanted a large buffer zone around the production facilities both for secrecy and public safety. Fortunately, only about 10% of the 586-square-mile site has radioactive or chemical contamination. So, yes, Hanford is generally safe because the waste there is contained. Further, it isn't accessible to the public, and employees who perform cleanup work receive specialized training and wear protective gear (Washington DOE).

[8] Ironically, though, the government does not claim to protect Hanford species from contaminants; instead, it identifies land development as the greatest threat to wildlife.

[9] President Clinton established the Monument through Presidential Proclamation 7319.

[10] "Section 2 of the Antiquities Act, 16 U.S.C. 431, authorizes the President to establish as national monuments "historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States."

[11] The FWS is required by the National Wildlife Refuge System Improvement Act to write a Comprehensive Conservation Plan (CCP) for each refuge in the National Wildlife Refuge System. According to the FWS, "Comprehensive Conservation Plans provide long-term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the U.S. Fish and Wildlife Service's best estimate of future needs" (CCP 2). Both the draft CCP (and the accompanying Environmental Impact Statement for the Monument) and the final version of the HRNM CCP are available via the HRNM website. While the final version guides the FWS's management of the Monument, the draft version lays out the various management alternatives that were explored during the planning process.

[12] The HRNM Comprehensive Conservation Plan, published in September 2008, lays out FWS's management plan for the Monument, which came about after an extensive planning process, public comment, and an Environmental Impact Statement. The focus of the preferred alternative—which was ultimately chosen through the planning process (Alternative C-1) "is on protecting and conserving the biological, geological, paleontological and cultural resources described in the Monument Proclamation by creating and maintaining extensive areas within the Monument free of facility development." The CCP claims that this alternative was created and chosen

"based on comments received on the draft CCP/EIS from Native American tribes, other agencies, special interests, and the public regarding limiting extremes in both providing and controlling public uses." Thus, FWS justifies the lack of facilities by claiming that the tribes, agencies, and the public called for that approach. It may also be true that relevant agencies have lingering concerns about contamination and attracting people to a hotly contested government site that has already attracted its share of negative attention from the media.

[13] However, "Blinky" has powerful cultural resonance, and this comparison may have the unintended consequence of bringing to mind the mistrust of government and corporate America that pervades *The Simpsons*.

CHAPTER IV

DENIAL AND COMMODIFICATION: NUCLEAR TOURISM AT HANFORD

After decades of keeping the public and the press away from the radiating disaster of the nuclear weapons complex, the U.S. Department of Energy (DOE) now invites people to tour some of its most dangerous sites. In January 2013, the DOE proudly advertised one of its nuclear sites on *Energy.gov* in an article titled "A Marvel of Science and History is a Must-See in the Northwest" (Mikell). The "marvel" was Hanford, a nuclear site regularly featured on the evening news for its gross mismanagement of radioactive and chemical waste leftover from the Manhattan Project and the Cold War. The DOE happily reported that "[t]he B Reactor National Historic Landmark tour and the Hanford Site cleanup tour in Washington State are getting a positive reaction from *Seattle Met* magazine. The publication added the historical tours to its list of best places to visit in the Northwest." The agency's report of this "positive reaction" ignored the *Met's* critical analysis of the tours; instead, the DOE cites the award (with purposeful vagueness) as proof that Hanford Site offers visitors an extraordinary experience:

> Tens of thousands of visitors from every state and more than 48 countries have toured B Reactor, the world's first full-scale plutonium production reactor. This firsthand view of history, science and the scale of the reactor provide guests with a scope of the enormous intellectual and physical collaboration known as the Manhattan Project. (Mikell)

Everything in the DOE's account of Hanford is big: "tens of thousands" of visitors have toured the Site to witness the "scale" of the B Reactor and the "scope of the enormous" project that built it. The DOE typically describes features of Hanford's wasteland as awe-

inspiring, but here, the large number of tourists who have visited the Site is invoked to suggest safety. A few sentences later, the agency notes that tours "fill up quickly," thereby framing them as desirable commodities for which one has to compete (Mikell). At first glance, the *Met* might seem to be participating in the same type of unexamined commodification, given that it lists Hanford as one of the "best places to visit" in the Northwest, alongside a series of leisure destinations, including a luxury hotel, kayak tour, bike trail, and car museum.

But even the *Met*, which tends not to engage political issues when advising readers about how to spend their time and money, provides a brief, critical analysis of the DOE tour program. Though it lists Hanford as one more travel destination to be consumed, the magazine recognizes that the DOE's Hanford tours are deceptive:

> It's a marvel, an engineering marvel. Those words are repeated throughout the five-and-a-half-hour tour of the Hanford Nuclear Reservation, a free outing that's open only to adult U.S. citizens without cameras. The B Reactor in the middle of the Department of Energy site truly *is* a marvel; the world's first plutonium reactor was built in just over a year. Though it looks like a three-story telephone switchboard, the reactor represents a great leap forward in American science. Just don't expect to hear much about why that plutonium was created—rare are the words "atomic bomb" or "Nagasaki." (Williams)

In a short paragraph, the *Met* identifies both the serious omissions in the DOE's tour script and what the agency does to distract attention away from the historical holes left by those omissions. The magazine assesses the tour program accurately; B Reactor tours

focus primarily on the engineering achievements that created the U.S. nuclear arsenal, and they say almost nothing about the human costs of manufacturing plutonium for weapons. The DOE hopes its guests will experience such a sense of awe when confronted with the reactor face that they give little thought to what the reactor produced, namely, the suffering and death of the people at home and abroad.

Hanford is not the only nuclear site to become increasingly accessible to tourists. The post-Cold War era has seen a widespread opening up of sites of nuclear production, design, testing, and accident. Chernobyl's exclusion zone is now open to tourists, and private tour companies depart Kiev for the zone every day. Radiation "hotspots" (where radiation is much higher than in surrounding areas) dot the zone, but the Ukrainian government and tour companies suggest—just by offering the tours—that people can visit safely as long as they adhere to tour rules and regulations. Similarly, the DOE today offers a number of museums and guided tours that take people through the U.S. weapons complex. The agency does not invite people to areas that have been irradiated by a nuclear meltdown (as Chernobyl tour companies do), but some tours do bring people relatively close to contaminated sites. At Hanford, tourists stand above the dusty, windblown Environmental Restoration Disposal Facility (which holds low-level radioactive waste) and ride by waste tank farms, which are leaking into the groundwater and belching flammable gasses that could cause a tank explosion. This willingness on the part of the DOE to operate tours suggests that the agency is more interested in bringing people to Hanford to make the argument that the Site is safe than it is in protecting the public. The agency has increasingly commodified these sites of disaster by turning them into landmarks, monuments, and parks; funding atomic museums that interpret the bomb

as a spectacular American achievement; and offering tours that make visitors feel as if they are getting an insider's look at the weapons complex. Though the U.S. government has traditionally concealed its nuclear activities, it now makes claims to transparency by inviting people to visit its nuclear sites. Further, it interprets public interest generated by nuclear tours as public approval of its remediation work, which draws a false correlation between curiosity and assent.

Thus, the DOE invites and, in fact, produces nuclear tourists. The agency's ability to attract visitors may be explained by the current era's distance from WWII and the Cold War: "The term 'nuclear tourism' may seem like an oxymoron but, as we enter what Jonathan Schell calls 'the second nuclear age' in the era following the end of the Cold War, the sites/sights of the first nuclear age are increasingly being commodified as tourist attractions and national commemorative sites" (Gusterson, "Nuclear" 23). That commodification allows visitors to experience the thrill of contact at a consumer's distance. Because the government claims that tours are relatively safe, people visit without much thought to the risks involved. The public's puzzling eagerness to visit nuclear sites can also be explained by the irresistibility of that which is off-limits; as one journalist writing about Chernobyl put it, "the zone possesses the allure of the forbidden and a promise of rare, personal insights into history" (Chivers). The "new post-war pilgrim—the nuclear tourist"—is driven by curiosity as well as the desire to have a bodily experience of a nuclear site (Gusterson "Nuclear" 23). That desire is, of course, paradoxical; an authentic bodily experience of nuclear technology would involve radiation sickness and death.

Though the DOE might just as easily raze any visible evidence of its nuclear activities—which it has done at sites like Rocky Flats (a plant in Colorado that made plutonium triggers for atomic weapons)—it has chosen to preserve artifacts and buildings at many sites within the nuclear weapons complex. Hugh Gusterson lists a series of unusual sites affected by the U.S. nuclear weapons complex that tourists can now visit, including Bikini Atoll, where one can dive to the ocean floor to visit ships sunk by nuclear tests; a nuclear bunker built for President John F. Kennedy on Peanut Island, Florida, which is now a museum; and the Nevada Test Site, where one can ride in a chartered bus across the bomb-cratered landscape ("Nuclear" 23). These sites are complemented by DOE-funded museums in New Mexico, Nevada, Washington, and Tennessee, which feature interpretive exhibits on the Manhattan Project and Cold War, bomb memorabilia, and other artifacts from the nuclear age. The agency has preserved these sites under pressure from organized preservationist groups operating at both the national and local levels. The communities created by the establishment of the nuclear weapons complex are especially dedicated to preserving nuclear sites because they value local history and the economic benefits associated with preservation (including employment and revenue from tourism). This preservationist impulse benefits the DOE, which is eager to prove that it is operating safely and openly. By supporting atomic museums and inviting controlled access to the weapons complex, the agency satisfies public curiosity about sites that have long been off-limits even as it makes a spectacle of its own transparency.

The DOE ostensibly operates tours to enhance public understanding, but it also uses them as a means of persuasion. The tours, ironically, help the U.S. government hide

the contradictions in its own nuclear policies. Though the government claims to be pursuing disarmament, "U.S. officials have sustained nuclear weapons as a seemingly permanent fixture of American foreign policy and military strategy [. . .]. Awkwardly suspended, [these weapons] continue to radiate threat and paradox" (Taylor, "(Forever)" 199). One paradox is that each of the U.S. nuclear sites that hosts tours appears to have disarmed but continues to engage in activities that support the use of nuclear weapons. Los Alamos, for example, looks after the U.S. nuclear weapons stockpile, while Hanford hosts a remediation program that helps to maintain the illusion that we can simply clean up after weapons production. These conditions mean that, in the nuclear age, both citizens and the government must find ways to manage paradox: "citizens must develop a story enabling them to rationalize the simultaneity of *possessing old weapons, making new weapons,* and *cleaning up*. If they are to continue to enjoy citizen consent, nuclear officials must minimize potential incongruity surrounding these activities" (Taylor, "(Forever)" 199-200). One way the government minimizes incongruity is to establish wildlife refuges at the country's nuclear sites, a move that hides these sites' troubled pasts by offering nature as both distraction and as evidence that weapons production can actually protect the environment. Another way the government smoothes over contradictions is to open nuclear sites to tourism. On the surface, inviting tourism appears to be the ultimate form of transparency. In reality, it gives the DOE a way to engage the public in a rhetorical reimagining of what the nuclear weapons complex has meant for local populations and the country as a whole.

Given that Hanford still presents active threats to the environment and public health, it is more hazardous to invite people there than to other sites where the DOE

operates tour programs (such as Trinity, New Mexico, which hosted only a single nuclear explosion, decades ago). However, preservation and tourism activities at Hanford are particularly valuable to the DOE for the very reason that Hanford's waste problems are ongoing. The agency must work harder to contain materials—both physical and discursive—that are still actively leaking. Thus, the Hanford area is now home to several government-sponsored tourist attractions, including the Hanford Reach National Monument (discussed in Chapter III of this dissertation), the B Reactor National Historic Landmark, both of which were declared in the early 2000s, and the Hanford Reach Interpretive Center, which will open in July 2014. The Monument and the Interpretive Center are located outside the DOE-operated Hanford Site, but the DOE's public tour program brings people onto the Hanford Site. And so, even as Hanford's waste tanks spring leaks and Site workers are sickened by exposure to chemical vapors, Hanford visitors ride across the desert landscape in buses, stopping at attractions like the Plutonium Finishing Plant, the Environmental Restoration Disposal Facility, and the half-built Waste Treatment Plant. Preservationists and nuclear enthusiasts—including many in Richland—hope that more people will visit Hanford in the coming years; they are currently promoting a proposal that would create a Manhattan Project National Historical Park, a multi-site park that would include Hanford's B Reactor as well as facilities in Los Alamos, New Mexico and Oak Ridge, Tennessee. The DOE is directing environmental cleanup at all three of these sites, but Hanford hosts the largest and most controversial cleanup project.

To distract attention from the failures of that project, the DOE supports preservation and tourism at Hanford. When it preserves Hanford's relics, the DOE hopes

to argue that those relics represent a different time and that the danger of nuclear weapons is in the past. Similarly, by inviting people to visit the Site, the DOE suggests that it is safe enough for tourists and therefore not a threat to the region. However, the appearance of safety at Hanford is an elaborately constructed illusion built on denial and deceit. Over the decades since Hanford cleanup began, countless incidents have revealed that the DOE is hiding critical information about Hanford's contamination from the public. Thus, the strategy of bringing the public to the Site is especially dangerous for two reasons. First, workers are still uncovering new contamination at the Site, and much of the waste is less stable than the DOE would have people believe, which means that there is a safety risk associated with allowing the public on site. Second, when the DOE brings people to Hanford and presents them with evidence of environmental remediation successes, people are less likely to voice concern or become actively involved in advocating for safer, more efficient, and more thorough cleanup of the nuclear reservation. Many would argue that it is important for people to have some access to Hanford in order to understand its immense scale and the challenges of environmental remediation, but the public can only visit the Site on DOE tours, and those tours actually undermine visitors' ability to comprehend the full extent of what has happened at Hanford.

In this chapter, I will argue that the DOE uses historic preservation, museums, and tours of the nuclear weapons complex to normalize militarism and environmental contamination. Ironically, the agency believes it can most effectively contain and constrain discourse about the weapons complex by bringing citizens to witness it. In order to provide context for my argument, I will explain how DOE preservation and

tourism initiatives function rhetorically. The agency has exerted a controlling influence over the messages these programs communicate by silencing controversy and offering only sanitized stories of nuclear weapons, waste, and war. I will also explain how nuclear tourism has created the conditions for direct confrontation between the DOE and its detractors. Scholars and journalists writing about the weapons complex have shown how the DOE uses its tours to cultivate cultural amnesia about the Bomb.

Hanford offers a particularly timely and relevant example of how preservation initiatives and tours serve to pacify the public. To support this argument, I will describe the variety of schemes that are encouraging the growth of nuclear tourism at Hanford and analyze the Hanford tour program. I will then close the chapter with an examination of the controversy over the proposed Manhattan Project National Historical Park (MPNHP). Advocates are determined to push the proposal through Congress, but many are concerned that the government's current narratives about the nuclear weapons complex would simply be fortified by the creation of a MPNHP. At stake in debates about preservation in the weapons complex is "the power of language to make weapons programs seem natural and safe or to erase from consciousness the suffering of those maimed and killed in war" (Gusterson, *People* xxii). As it stands, DOE landmarks, museums, and tours not only normalize nuclear weapons and erase the most devastating aspects of our shared nuclear history but also celebrate events that have destroyed life and made vast tracts of land unsuitable for habitation.

The first atomic museum in the U.S., the American Museum of Atomic Energy (now the American Museum of Science and Energy), opened in a wartime cafeteria at the

Oak Ridge National Laboratory in 1949 (AMSE). Like its sister museums at other sites in the nuclear weapons complex, AMSE has been heavily influenced by the imperatives of the federal agencies and government contractors in charge of the nuclear weapons complex. Many of these museums are owned by the DOE and operated by its contractors, though local preservation groups have also made significant contributions to the work of running these museums. Indeed, such groups have been instrumental in the creation and maintenance of the country's atomic museums, and they have had immense influence over the country's nuclear narratives and the shape of historic preservation initiatives. Despite the power of these groups, the DOE wields the ultimate authority over preservation and tourism within the nuclear weapons complex because it controls access to buildings and artifacts and massive amount of federal funding. In fact, atomic museums could not display government-owned artifacts and would be unlikely to survive without DOE funding (particularly since they operate in remote places where they would be unable to fund themselves through ticket sales or local donations). However, affiliation with the DOE means that atomic museums must adhere closely to the government's version of the country's atomic history. The DOE's own proud summary of its historic preservation efforts hints at how the agency seeks to frame U.S. nuclear activities through these programs: "The Department of Energy (DOE) supports exhibits, museums, and historic facilities across the country dedicated to displaying and interpreting the history of the Department and its scientific and technological missions and accomplishments" ("Exhibits"). As this description reveals, the DOE uses the country's atomic museums to celebrate the Department's technological "accomplishments" and downplay the legacy of harm left by U.S. nuclear activities.

The DOE helps to sustain four major atomic museums, each of which is located at or near its associated nuclear site: the American Museum of Science and Energy (in Oak Ridge, Tennessee), the Bradbury Science Museum (in Los Alamos, New Mexico), the National Atomic Testing Museum (in Las Vegas, Nevada), and the National Museum of Nuclear Science and History (in Albuquerque, New Mexico) ("Exhibits"). (As of June 2014, *Energy.gov* still claims the Columbia River Exhibition of History, Science, and Technology (CREHST) in Richland, Washington as one of the DOE's atomic museums, but CREHST closed in January 2014.) The museums are charged with preserving, exhibiting, and interpreting artifacts, as well as increasing public awareness of nuclear history.

The DOE insists that these museums are heavily influenced by local conditions and therefore do not conform to a prescribed format: "Each museum is idiosyncratic, arising from particular local needs and with varying funding and management relationships with DOE" ("Exhibits"). However, each is shaped by the dual influences of the DOE and a local community that grew up around the Bomb, so they bear striking similarities to one another. All of the museums characterize the Manhattan Project as a success and portray its scientists as brilliant, and all of them argue that the weapons complex was instrumental to U.S. victory in WWII and the Cold War. None of the museums says much about how the weapons complex has caused devastation at home and abroad and none of them dwell on the extensive environmental remediation projects happening at DOE sites. Instead, they distract attention from site remediation work by describing the other scientific projects underway at laboratories in the nuclear weapons complex, including research on lasers, nanotechnology, and the human genome. Thus,

Arthur Molella contends that despite their regional flavor and the "wide variety of sites, the [country's atomic] museums show little variation in theme or general approach. Shaped by the same political, cultural, and economic forces, they express a common ideology based on an unquestioned belief in the nation's nuclear mission" ("Exhibiting" 214). Because the DOE is a major backer, and because these museums were established by communities that were themselves created by nuclear weapons production, many of them celebrate the nation's nuclear mission and describe it as one driven by self-sacrifice. Atomic communities that have been less inclined to submit to the government's narrative have seen their preservation efforts obstructed by the DOE.

Indeed, several atomic communities have met with opposition from the DOE when they have sought to preserve the buildings, artifacts, and stories of the nuclear weapons complex. Jason Krupar and Stephen Depoe discuss two nuclear sites in particular—Fernald and Rocky Flats—where "DOE leaders have generally resisted [. . .] preservation efforts, even as they moved ahead with remediation activities" (136). The danger in such a situation is that all physical evidence of a nuclear site would simply disappear without a trace. For example, in the late 1990s and early 2000s, concerned citizens' groups, the Ohio EPA, and county waste management organizations sought DOE support for historic preservation and public education at Fernald, a former DOE uranium refinery west of Cincinnati, Ohio. These groups envisioned the creation of a federally owned "multi-use education facility" that would attract people from all over the region to learn about Fernald's history and the threats it might pose to local populations (Krupar and Depoe 149). Fernald's neighbors were particularly concerned that the DOE would pursue only limited cleanup of the nuclear site and then abandon it. These groups

had to press the DOE for over a decade to get the agency to leave behind more than an unmarked, superficially restored landscape. In the end, the DOE established Fernald Preserve—a landscape "restored to pre-settlement conditions using native plants and grasses"—where the Fernald plant once stood (US DOE LM, "Fernald"). Though the Fernald Preserve Visitors Center, built in 2008, does offer some information about Fernald's nuclear history, the DOE has publicized the preserve's green virtues (the Visitors Center is a LEED-certified building, and the Preserve is popular among birders) over and above the site's legacy of contamination (Kupfer; US DOE LM "Fernald").[1]

At Rocky Flats, a plant located west of Denver, Colorado that made plutonium triggers for the U.S. nuclear weapons arsenal, local residents, politicians, academics, and community activists were similarly concerned that the DOE would simply demolish buildings, transfer land to the U.S. Fish and Wildlife Service for the establishment of a National Wildlife Refuge, and vacate the site without leaving behind evidence about what had happened there. During its operation from 1951 to 1989, mismanagement and safety issues at the plant led to several nearly catastrophic incidents. Two major plutonium fires there in 1957 and 1969 sent clouds of toxic smoke over Denver and led federal investigators to raid the site in 1989. The Rocky Flats History Project (later the Rocky Flats Cold War Museum, or RFCWM)—a coalition of local groups—sought to preserve artifacts and stories from this troubled site. The DOE agreed that the local area might benefit from a museum that would educate the public about the site's history and hazards, but it said that the RFCWM would have to acquire private funding for an exhibit space. The RFCWM observed that the DOE already supported atomic museums at other sites through public-private partnerships, but this argument did not change the DOE's stance

(Krupar and Depoe 155). Today, the area where the Rocky Flats plant once operated is called the Rocky Flats National Wildlife Refuge, and there is no museum to acknowledge the thirty-plus years of plutonium production that occurred there.[2] Many local residents and activists are concerned that construction projects happening at the edge of the former nuclear site will stir up plutonium and other contaminants (Draper). Such construction is enabled by the failure to remember the vast extent to which Rocky Flats contaminated the soil, water, and air in its vicinity.

Historic preservation may seem inconsequential in comparison to the other work that needs to be done at nuclear sites, considering the toxic legacy that threatens human and environmental health now and in the future, but choosing not to preserve cultural memory of the nuclear age may prove just as hazardous as mobile nuclear waste. Indeed, Krupar and Depoe argue that the resistance exhibited by the DOE in the cases of Fernald and Rocky Flats can have disastrous results. They contend that local populations are directly endangered when the DOE pulls up stakes without leaving behind informational exhibits to explain the variety of consequences to health and environment that can arise from nuclear production. Further, the disappearance of a nuclear site undermines our collective need to understand the complex legacies of the weapons complex:

> [t]he histories and landscapes of sites such as Fernald and Rocky Flats are being scrubbed away. Institutional memories, personal remembrances, and physical artifacts are all in danger of being removed from not only the local sites, but from the national conversation about the legacy of nuclear weapons production. DOE officials, through their actions, are replacing the "atomic spaces" of the Cold War nuclear arsenal with a network of

historical black holes dispersed throughout the country. (Krupar and Depoe 136)

This historical erasure impacts not only our capacity to interpret the lessons of the past and advocate for sound policy (relating to atomic energy, nuclear weapons, and remediation of nuclear sites) but also our ability to preserve awareness of ongoing threats posed by DOE sites. People may be conscious of the dangers presented by sites in active cleanup (like Hanford), but most people are not aware that even those sites that have been cleaned up and transferred to the DOE's Office of Legacy Management (which manages the DOE's "legacy responsibilities" through long-term surveillance) have the potential to endanger surrounding populations (US DOE LM).[3] Such lack of awareness leads to "public inattention" to nuclear sites, which allows the government to close nuclear sites without preserving people's stories about them (135). (Cases like Rocky Flats prove that even when people are paying attention and they organize to preserve the history of a given site, they may not be able to establish and run a museum without DOE support.[4)]

National museums in Washington, D.C. have collected some artifacts and stories related to U.S. atomic history, but these museums have encountered strong opposition when their exhibits have confronted the ethical questions associated with the Bomb. The controversy surrounding the *Enola Gay* exhibit at the Smithsonian National Air and Space Museum (NASM) provides the most famous example of this. Prior to the opening of the exhibit, the Smithsonian acquired the *Enola Gay*, the plane that dropped the first atomic bomb on Hiroshima in 1945 and also participated in the Nagasaki bombing. The NASM planned to display the plane in an exhibit called *The Crossroads: The End of World War II, the Atomic Bomb and the Cold War* in 1995, fifty years after the end of

WWII. The contents of *The Crossroads* immediately ignited debate about how the Hiroshima and Nagasaki bombings should be remembered, and museum staff ultimately had to cancel the original exhibition. Opposition came largely from the American Legion, the Air Force Association, and members of Congress, who felt that the exhibit focused too much on Japanese casualties and not enough on the Bomb's role in ending WWII. Meanwhile, antinuclear protesters claimed that the exhibit defended the U.S. for what it viewed as indefensible actions. The museum and its critics could not come to consensus on what would constitute a fair portrayal of the Hiroshima and Nagasaki bombings, so the original plans for the exhibit were abandoned (Gallagher). A "much-reduced exhibit" that displayed the plane's fuselage and "videotaped statements from World War II veterans" opened in 1995, thus demonstrating how groups aligned with the government ultimately prevented the museum from encouraging reflection on the U.S. nuclear weapons program: "At the Air and Space Museum the national fetish [the Bomb] was ultimately protected by political interests who denied the possibility of interrogating the terms of World War, the meaning of the bomb, or the evolution of the nuclear security state" (Masco, "Nuclear" 240-41). Conservative interests influenced the debate but also provoked a response; shortly after the exhibit opened, protesters entered and poured ashes and human blood on the *Enola Gay*, in an effort to represent the consequences of the Bomb that went unrepresented in the exhibit's final version (Associated Press).

Another Smithsonian exhibit that explored the use of the Bomb generated controversy at relatively the same time. In April 1994, Smithsonian curators unveiled an exhibit called *Science in American life* at the American History Museum. The exhibit explored "the interaction between science and society from 1876 to the present" and thus

included some displays on the Manhattan Project and the Bomb (Smithsonian). Curators of the exhibit, including Arthur Molella, encountered pushback when they portrayed nuclear fear, atomic testing, and downwinders as crucial features of American life in the nuclear age: "This display got us into immediate trouble—plenty of it—with our sponsors, the American Chemical Society, and various other quarters of the scientific establishment. They accused us of maligning America's physicists, chemists, and scientists in general by associating their work with forces of destruction" ("Exhibiting" 213). No one associated with the development and deployment of the Bomb (not veterans, the military, the federal government, or scientists) has wanted to be remembered in association with its most devastating consequences.

In the absence of Smithsonian exhibits, the country's atomic museums have taken on new importance. Since *Science in American Life* was taken down in November 2011, the Smithsonian has not presented the Manhattan Project or Cold War weapons programs in any significant way. This makes the museums of the nuclear weapons complex particularly influential. They are, in fact, the only museums interpreting U.S. nuclear activities for the public: "by default, the atomic museums are becoming the principal venues for artifacts and exhibitions documenting the nation's Atomic Age. These are thus the museums that will help mould much of what the general public understands about nuclear bombs and the era of their creation" (Molella, "Atomic" 23). In other words, these museums, which offer people rare access to some of the secrets of the nuclear weapons complex, have enormous potential to influence public opinion. Because they tell the story of the Bomb in the places where it was created, visitors may think that they gain access to legitimate stories about it. However, these museums are not always subject to

the kind of scrutiny that a Smithsonian exhibit might receive; in fact, atomic museums are located in relatively out-of-the-way locations where there is strong support for nuclear technologies, so they are in a position to exhibit bias without sparking national debate.

In this environment, relatively free from criticism, the museums of the nuclear weapons complex provide a platform for the federal government and atomic communities to tell their own sanitized stories of the Bomb, its construction, and its effect on people's lives. While these museums are presented as a way of remembering, they often facilitate forgetting: "Just as individual human memory can be selective and contradictory, the collective memory inscribed in museum collections and exhibitions is prone to similar confusions and lapses [. . .] memories can be dim or partial, selected to conform to deeply ingrained self-images or even suppressed outright, almost to the point of amnesia" (Molella, "Atomic" 21). This amnesia plays out in similar ways at each of the five DOE-supported museums. Rather than shedding light on what might seem to be the most conspicuous consequences of nuclear weapons development, the museums' "views of the Bomb and the Atomic Age remain oddly distorted and veiled, revealing much about the imperatives and technical aspects of atomic bomb development but virtually nothing about their actual uses and unimagined destructiveness" (Molella, "Exhibiting" 211). They celebrate nuclear technology itself but say little about its consequences for people and environment.

The American Museum of Science and Energy (AMSE) exemplifies the strategic amnesia of DOE museums. AMSE is located in Oak Ridge, Tennessee, just a few miles from Oak Ridge National Laboratory (ORNL), one of the original Manhattan Project weapons production sites. Established in 1949—only a few years after the bombs were

dropped on Japan—the museum is owned by the U.S. government but operated by private contractors. Though decades have passed since Oak Ridge made uranium fuel for the bomb the U.S. dropped on Hiroshima, AMSE works to keep the patriotic, pronuclear spirit of the Manhattan Project alive. The museum's central exhibit, *The Story of Oak Ridge,* is strikingly enthusiastic about nuclear technology; it "presents an unmistakably celebratory history, a tale told in heroic terms. It tells the story of such atomic pioneers as Enrico Fermi, Albert Einstein, and Robert Oppenheimer and describes the process of making bombs and enriching uranium fuel" (Molella, "Atomic" 22). *The Story of Oak Ridge* is complemented by other nuclear-themed exhibits, including *The World of the Atom*, which features a "cross section model of a nuclear reactor and a simulated underground nuclear waste storage area" as well as displays on "pioneering atomic scientists, natural radiation, fusion, and nuclear energy in space" (AMSE). The museum also "proudly" displays a "vast array of atomic shelling casings" ("Exhibiting" 215). For all its descriptions of the technical aspects of nuclear weapons, the museum exhibits contain "almost nothing on the human costs of the bomb" (Molella, "Atomic" 22).

According to Molella, the reasons for AMSE's unsettling lack of self-reflection are two-fold. First, Oak Ridge, like other atomic cities, continues to be shaped by its relationship to the nuclear weapons complex. Molella observes that the city was built for "livability"; from the beginning, it was imagined as an idealized community that would support men and families working for the American war effort ("Atomic" 22). Even today, the city is obliged by its economic ties to the DOE and its contractors to support government programs:

> the citizens of Oak Ridge continue to base their future on nuclear research and development, always seeking to attract new government contracts from the Department of Energy (DOE) and nuclear industries. Cold War weapons programs kept pumping money into the area for decades, stunting any prospects for economic diversification. A wholly owned subsidiary of the DOE, it is still the government equivalent of a company town." (23)

Since nuclear weapons production ended, Oak Ridge has worked to stay in the good graces of the DOE, which owns ORNL. Further, the DOE and its contractors exercise direct influence over the exhibits at AMSE: "To ensure adherence to its primary messages, the DOE and its subcontractors maintain tight control of the museum's exhibitions and educational programs, determining subjects, themes, and even wording of labels. It is no secret that they reserve the right to censor presentations that fail to toe the company line" (24). The Oak Ridge community has, to some degree, been coerced into adhering to the government's story about it, and alternative narratives about the nuclear weapons complex have had little opportunity to emerge there.

Another atomic museum, the Bradbury Science Museum (BSM) in Los Alamos, New Mexico, expresses the same patriotism and pride in the Bomb that characterize AMSE, but the BSM has been forced to invite dissent into its exhibit spaces. Founded in 1953, the BSM is located at Los Alamos National Laboratory (LANL), the so-called "birthplace" of the bomb. Scientists assembled the first nuclear weapons at LANL in 1945, and most of the weapons in the U.S. arsenal were designed there. Thus, LANL has become a focal point for contention over the Bomb; anti-nuclear organizations see it as an

epicenter of evil, while patriotic groups view it as "a symbol of American expertise [. . .] and of sacrifice for global peace, freedom, and democracy" (Taylor, "Revis(it)ing" 121). Because LANL is so ideologically charged, the BSM is too. Like other DOE-supported museums, the BSM celebrates weapons science and the country's nuclear history. Bryan C. Taylor provides an account of the BSM's exhibits, which manifest LANL's biases. He claims that the exhibits

> typically emphasized positive themes such as innocence, control and rationality over negative themes such as guilt, failure and death. [. . .] The exhibits also promoted particular sectional interests in nuclear culture (such as national security) over others (such as environmentalism, for example, in an absence of discussion about safety problems facing radioactive waste-storage facilities). (122)

According to Taylor, one BSM exhibit in particular, called "Weapon Engineering," invited visitors to stand at a workstation and simulate the process of designing a warhead. Once visitors had designed their weapons, they could play a game that would allow them to launch their "customized warhead" to determine whether it would work (122).

In the early 1990s, this and other exhibits inspired a peace and environmental group, the Santa Fe-based Los Alamos Study Group (LASG), to request space at the BSM for the creation of an alternative exhibit. Joseph Masco visited the museum and spoke to members of LASG, who felt compelled to challenge the museum's "carefully sanitized view of the nuclear age": "One LASG member told me that the alternative display idea was provoked by a brass plaque positioned near casings of the bombs dropped on Hiroshima and Nagasaki [. . .], which declared 'These bombs represent the

highest achievement of the human intellect.'" (Masco, "Nuclear" 240). LASG could not allow such outrageous statements to remain unchallenged. The group cited a precedent for its request to put up an alternative exhibit; in the 1980s, activists in California had—after a long legal struggle—won the right to put up an alternative exhibit at the Lawrence Livermore National Laboratory's museum. In 1993, shortly after the BSM moved to a more visible location in Los Alamos than it had previously occupied, the LASG was allowed to create an "alternative views" wall. The LASG used the wall to explore the costs of the Bomb to the U.S. and the world. The organization also erected a display from the Hiroshima Peace Museum that vividly depicted how bomb blasts and radiation exposure harm the human body. The display "gave visitors to Los Alamos a vision of an alternative history of the nuclear age, one not focused on technoscientific achievement but on damaged bodies and ecosystems" (Masco 241). This angered many people in the local community, who felt that U.S. deployment of nuclear weapons during WWII had been justified.

The LASG's exhibit attracted more attention than it otherwise might have, had it not been created around the time of the fiftieth anniversary of the bombings of Hiroshima and Nagasaki and the Smithsonian's *Enola Gay* controversy. In 1995, veterans and LANL retirees formed their own group, the Los Alamos Educator's Group (LAEG), which argued that it should be allowed to put up a "counter-counterexhibit" at the BSM (Masco 242). The LAEG felt that the LASG's alternative exhibit and indeed the rest of the BSM museum was engaging in "revisionist history" that failed to recognize Japanese war crimes during WWII or the Bomb's role in ending one war and preventing another (Masco 242). The BSM determined that the LASG and the LAEG would have to share

the exhibit space and so, for a while, their competing narratives existed side by side. The LASG did not think it was fair for the LAEG to have access to "alternative" exhibit space since it viewed the LAEG's pronuclear exhibits as fundamentally similar in tone to the rest of the museum (Masco 243). The LASG eventually removed its exhibit in protest, which demonstrated how effectively DOE-sponsored museums discourage and suppress dissent.

One might think that an atomic museum devised in the contemporary period, long after the end of widespread support for the maintenance of a U.S. nuclear arsenal, would reflect a diversity of perspectives on the Bomb. However, the Atomic Testing Museum (ATM), established in 2005, advances pronuclear narratives that are striking similar to those of AMSE and the BSM. The ATM not only rehearses the patriotic and militaristic viewpoints that are characteristic of atomic museums but also looks back on the era of atomic testing with nostalgia. Located in Las Vegas, only sixty-five miles southeast of the Nevada Test Site (NTS), the ATM celebrates the decades of nuclear bombings that the U.S. carried out on what it recognized as its own soil though Shoshone people inhabited the area prior to the establishment of the Test Site and continue to have legal claim to the area via the 1863 Treaty of Ruby Valley. The U.S. government conducted hundreds of experimental nuclear tests at NTS beginning in 1951 (though it must be noted that these explosions were only "tests" in the sense that they did not occur on enemy territory; they still exploded with all the force that would be present in any nuclear detonation).[5] The tests occurred first above and then below ground, and they continued—sometimes at a rate of one bomb every three weeks—up until 1992, when a moratorium was placed on all atomic tests. While the tests were happening, people in the surrounding

areas—including tourists in Las Vegas—would gather to watch the spectacle of mushroom clouds swelling in the distance. In fact, the tests drew people into the city, thereby helping to stimulate tourism and casino economies in Vegas (Krupar and Depoe 141). When testing ended, people became especially concerned that the Test Site's history would be lost. Volunteers collected artifacts and oral histories and eventually formed the Nevada Test Site Historical Foundation (NTSHF). NTSHF, along with other organizations, the DOE's National Nuclear Security Administration Nevada Test Site Office, and NTS contractors, such as Bechtel Nevada and Lockheed Martin Nevada Technologies, acquired millions in public and private funds to build the ATM (Krupar and Depoe 142-43). These interests have used the museum to emphasize the importance of weapons testing to U.S. victory in the Cold War.

The ATM offers displays that would be considered standard fare for an atomic museum, including artifacts and a timeline of NTS tests, but it also features some extraordinary exhibits that demonstrate the degree to which the museum has commodified nuclear testing. In a review of the museum for *The New York Times*, Edward Rothstein refers to the ATM as "a place to consider the apocalypse." He describes the museum's Ground Zero Theater, which not only shows videos of nuclear blasts but also attempts to give visitors a sense of how nuclear explosions felt:

> But here [in the Theater], the impact of the virtual blast is thoroughly visceral. Bursts from air cannons blow against your body imitating the bomb's shock wave; vibrations from subwoofers shake your equanimity. In their theme-park manner, the unexpected effects give some credence to the words of participants in the atomic tests, whose voices are heard in that

> theater and on video monitors throughout the museum. "There was never a detonation when you weren't scared," one participant said.

The Ground Zero Theater evokes the fear associated with standing near an atomic test but only simulates that experience in the most limited way. Instead of inspiring empathy for those soldiers and civilians who actually stood at the sites of nuclear blasts (and lost their health or their lives), the theater makes people feel safe in the presence of the bomb. In that way, the theater imitates the Nevada testing program, which the U.S. government used to "strip the bombs of the fear and awe they inspired" (Rothstein). For decades, the U.S. detonated bombs at NTS, hoping that it could normalize nuclear weapons by exposing the public to them.[6] Today, the ATM engages in similar work; indeed, Rothstein argues that "stripping nuclear testing of fear and awe is also one of the goals of the museum itself, which has, after all, come to life in a company town that may once have had as strong a connection to nuclear testing as to gambling."[7] The ATM aims to ensure that people remember Nevada's atomic past but forget the collateral damage it caused.

It is, in part, this normalization of atomic weapons that has created controversy around the ATM. Downwinders—those who lived near NTS and suffered health and other effects from exposure to fallout—have been critical of the museum, especially since it makes no mention of the health effects caused by the hundreds of bombs detonated at NTS. In an editorial for the *Salt Lake Tribune*, Mary Dickson, a NTS downwinder, wrote, "Missing are exhibits about the human toll of nuclear testing, about downwinders, about how far the winds carried radioactive fallout and about the death and disease it caused. This omission comes as a crushing blow to the tens of thousands of Americans who have

suffered the health effects of fallout and who continue to lose loved ones to fallout-related illnesses." Indeed, Rothstein corroborates Dickson's view that the ATM largely celebrates the nuclear testing program: "the history of testing, as told here, is largely the history of its justification. Problems and issues are noted, including the debates about the effects of fallout that grew more intense as the testing proceeded. But such issues are mentioned and then put aside, to get on with the main story." At the ATM, the main story presents the visible traces of nuclear tests as a dazzling spectacle that simultaneously encouraged local tourism and helped to bring the Cold War to an end.

Indeed, the museum's exhibits and even its executive director look back on the era of testing with surprising fondness. In a March 2014 interview with Las Vegas's public radio station, the ATM's Executive Director, Allan Palmer, waxed nostalgic on the days of atomic tourism in Las Vegas, claiming that the mushroom clouds that could be seen from the city were "a great attraction." Palmer repeatedly insisted that, in the early days of testing, residents and people around the country supported the testing because "everybody was pretty patriotic at the time." Though the interviewer seemed vaguely aware of the horror associated with the bomb, he also wondered whether the testing program might ever be restarted at NTS, and Palmer offered this bewildering reply:

> The world, the world is always changing. The geopolitical situations are changing. We can see that today with Ukraine. Some people have even suggested the Cold War might be a possibility of returning. Who knows if it does. But if it does, I think our country is prepared for whatever's gonna be. And if it meant retesting again, the Test Site would be a place you

> could do it. We had decided not to, but we reserve the right to do it in the future, I think, if it's necessary.

Though the U.S. and the world community agreed over twenty years ago to end nuclear testing, Palmer, a former military pilot, acknowledges (and almost seems to take comfort in) the possibility that NTS could be reopened to nuclear testing. This is a nightmare scenario for downwinders, anti-nuclear activists, and many others, but Palmer's statements about Ukraine and the possibility of a renewed Cold War point to the ways pronuclear advocates might use fear to push for the reopening of closed weapons production and testing sites. Though the government is unlikely to acknowledge the fact, its continued ownership of NTS lands leaves an opening for the resumption of atomic testing there.

Atomic museums allow visitors to pretend that they are weapons scientists or military personnel, but of course they merely simulate the experience of standing at ground zero and its equivalent. The DOE's public tours, on the other hand, actually bring people to a number of sites within the weapons complex. The agency offers tours of several nuclear facilities and test sites, including the X-10 Graphite Reactor in Oak Ridge, the B Reactor and several other areas of the Hanford Site, the Trinity Site in New Mexico, and the Nevada National Security Site (formerly the Nevada Test Site) outside Las Vegas. The DOE refers to these sites as "historic facilities," but each one exists inside a fully operational military or nuclear site (US DOE, "Exhibits"). Though most of the tour sites are located in the relatively inaccessible deserts of the western U.S., they draw thousands of visitors each year. Hugh Gusterson explains that a variety of people,

including “history enthusiasts,” those who patriotically support the U.S. weapons program, and protesters, visit weapons sites because they “are drawn to the nuclear [. . .] by a sense of awe and mystery” (“Nuclear” 24). Tours of formerly secret facilities and testing grounds like Hanford and NTS “promise a glimpse into the sublime and the forbidden” (24). And because they invite people to pass through security gates and “plant their feet where history was made,” tours have the potential to show visitors how severely weapons tests have marred the landscape and how thoroughly nuclear waste has permeated the environment (25).

But this is not how the DOE’s public tours function. Instead of giving visitors perspective on how the government has sacrificed life and health to prepare for war, the DOE’s tours portray the nuclear weapons complex as evidence of American ingenuity and patriotism. The DOE is not the only organization that engages in such reinterpretation; “war tourism is often predicated on a ‘process of sanitation’ that seeks to cleanse war sites of danger and controversy, packaging them as opportunities for education, commemoration, and the commodified consumption of spectacle (Gusterson, “Nuclear” 24). The U.S. government takes those methods of reframing a war site one step further by packaging its nuclear facilities and testing ranges as historical sites rather than sites that present an active threat to the public. By placing the dangers of a nuclear site in the past, the government can invite people to visit and cleanse the site of any undesirable meanings. The DOE does this by ensuring that people can only visit at prescribed times and with DOE or military oversight.

The Trinity Site, the location of the first atomic explosion, is one such site where the government invites tourism but also maintains strict control of both the physical and

discursive environment. The U.S. Army detonated the Trinity explosion at the Alamogordo Bombing Range in New Mexico on July 16, 1945. The site was declared a National Historic Landmark in 1965. Though the Trinity Site could be considered part of the nuclear weapons complex, it is operated by the U.S. Army rather than the Department of Energy. Until recently, the Army held an "open house" twice a year at Trinity (one weekend in April and another in October). Today, the Army claims that "due to fiscal constraints within the Department of Defense, WSMR must reduce the frequency of the Trinity Site Open House from twice to once a year" (U.S. Army). The government may feel less urgency to interpret Trinity for the public because—unlike other nuclear sites—it has not hosted a nuclear laboratory or environmental cleanup project about which the DOE needs to maintain good public relations. However, the government still exercises power over Trinity by limiting public access, framing the bombing within its established narratives, and prohibiting protest.

Despite these regulations, several protest events occurred during the fiftieth anniversary of the bombing in 1995. About 5300 visitors showed up on that day. According to Gusterson, who attended the anniversary, one man dragged a "life-size replica of a nuclear waste cask behind his truck all the way from North Carolina" (27). (He was forced to leave it behind at the perimeter of the site.) Another man from the area near Three-Mile Island "threw mock blood on the obelisk at Ground Zero." Finally, a group called the Atomic Mirror Pilgrimage gathered around the obelisk, held hands, and hummed (28). The Army's prohibitions against protest could not contain the dissent inspired by the decades of weapons development, production, and testing that came after Trinity. Whereas the government may find it relatively easy to control the discourse

about nuclear sites when it keeps people away from them, it gives up some power when it allows people to visit on tours. Military officers and government officials may prevent protests before they happen or imprison those who disrupt the tour script, but they can neither stop protest entirely nor prevent people from later representing their tour experiences in terms that are critical of the government's actions.

Rebecca Solnit offers one such condemnatory account of a DOE tour of the Nevada Test Site (NTS) in her book *Savage Dreams: A Journey into the Landscape Wars of the American West*. Solnit protested outside the gates of NTS at the annual Peace Camp demonstration, researched the history of the Test Site, and talked to local people about the effects of radioactive fallout in the late 1980s and early 1990s. It was only after those experiences that Solnit went on a DOE tour, "only to see the place and scribble down the DOE's version of things" (204). Her tour description is something of a post-script; it fills the last few pages of her two-hundred-page political and cultural history of the Test Site. By leaving the DOE's "version of things" until the end, she decenters the agency's narrative and gives priority to the stories of antinuclear activists, local people, and Native Americans, whose stories have been buried by the government. Solnit's tour description is darkly humorous. Before she and her guide set out, she is given a radiation badge that she says "would measure how much radiation I was exposed to, and if they considered it too much, they would notify me. (They didn't.)" (205). In Solnit's estimation, this would be a typical sequence of events: the government would expose her first and (possibly) let her know later.

Solnit goes to the Test Site to gain a direct experience of a landscape that the public is barred from visiting. On the tour, her guide tells her about detonations, bomb

craters, and underground pockets of radiation—aspects of the Test Site that are offered as entertainment. Solnit rejects the idea of finding amusement in nuclear tests and, as she and her guide move closer to the center of the site, where the most iconic tests have occurred, she shifts away from the government's narrative and defines the Test Site in her own terms: "We approached the pass of the ranges that had always defined the horizon of the Test Site I walked into, and crossed over it into a new landscape, the imagined landscape I had always been walking toward [as a protester], the most bombed place on earth" (208). Prior to this passage, Solnit has dismissed the notion that a nuclear detonation can be understood as "test." Instead of accepting the DOE's narratives about testing, she repeatedly redefines the Test Site as the "most bombed place on earth." As Solnit travels through the site, she registers the experience in her body: "I was queasy about the dust, but it was a dank, still day, a good day to be out in a contaminated area" (209). This echoes passages at the beginning of the book, in which she worries about exposure to radioactive dust as she is traveling through the area as a protester. Though her tour guide assures her that the DOE has the site's waste problems under control, the agency's narratives are out of sync with what Solnit knows intellectually and what she feels viscerally.

According to Solnit, NTS employees have buried their own concerns about working at the Test Site beneath several layers of denial. She observes her DOE hosts speaking in coded language: "The first thing I noticed was that they always spoke of the DOE as 'we,' and that bombs were never called bombs, they were 'devices'" (204). The government initially used the word "device" to maintain secrecy about the Bomb and then later employed it to domesticate nuclear weapons. Solnit leaves NTS with the

impression that employees continue to use such euphemisms because the site's culture demands evasion. Solnit also notes that DOE employees are unusually obsessed with wildlife living at the Test Site. She sees this as a symptom of their unease: "It seemed as though the Test Site workers displaced their anxiety about their work into elaborate care for the wildlife" (205). In Solnit's account, NTS workers exhibit disproportionate concern for animals even as they dismiss the notion that radioactivity at the Test Site might be harmful.

Ultimately, Solnit concludes that the DOE's narratives are deceptive and empty. The tour provides her with her first opportunity to see the Test Site, but the landscape and the DOE script cannot provide her with the kind of deep understanding of NTS that she has gained from interacting with local people and protesters:

> The landscape of the Nevada Test Site was strangely innocent of its own history, even with all its craters and ruins. It was the stories that brought it to life for me, the stories of Pauline and Rachel and Janet, of the atomic veterans, the local people. When I had come to it from the Peace Camp, I had always been walking on a strong foundation of stories; now I was being wafted around on a tissue of tourism—on nuggets of curious information that painted no picture of the real effect of the 953 or so nuclear bombs that exploded in this place. (211)

Solnit's criticism cuts to the heart of what disturbs many people about the DOE's tours of nuclear sites: they present "nuggets of curious information" without even alluding to the stories of people whose lives have been permanently impacted by the development, testing, use, and disposal of nuclear materials. For Solnit, a tour of NTS is not a

fascinating and informative view into a secret era of modern history; it is instead a troubling manifestation of the DOE's attempts to cultivate cultural amnesia of the story of the Bomb.

Ten years after *Savage Dreams* was published, Joseph Masco took his own DOE-led tour of NTS and found similar evidence of the U.S. government's strategic amnesia. Masco's "Desert Modernism" looks at strange spectacles that have been hidden in the Nevada Desert. The essay is a four-part portrait that leads the reader through a tour of NTS, a tour of the Yucca Mountain nuclear waste repository, a trip to Rachel, Nevada (a town populated by conspiracy theorists), and a visit to the Liberace Museum in downtown Las Vegas. Masco claims that many U.S. citizens continue to see the western half of the country as an "endlessly renewable frontier" where people can go to remake themselves, but the West has actually become a "technoscientific wasteland where the most dangerous products of a militarized society are located." Masco further argues that in order to minimize the cognitive dissonance that results from these contradictions, "both citizens and officials have come to rely on tactical amnesias, temporal sutures enabling a precarious—if addictive—cosmology of progress." That addiction to "progress" is especially evident in the two government projects Masco describes: NTS, where mushrooms clouds explode in a "highly gendered performance" of patriotic masculinity, and Yucca Mountain, where the government hopes to master nature by digging miles of tunnels and then burying nuclear waste there.

Like Solnit, Masco shows—through a description of his NTS tour—how individuals working at the center of government nuclear projects exhibit a sense of certainty based on amnesia. According to Masco's impressions, Cold War masculinity

has not died at NTS: “Our guide is utterly charming. A 35-year career at the Nevada Test Site making detonation mechanisms for nuclear weapons has obviously been good to him. He carries himself with the cool assurance of someone who has performed well at the center of a national undertaking, a Cold Warrior in the truest sense.” The tour guide becomes the main character in Masco’s story—an individual with profound faith in the U.S. nuclear project who propagates the DOEs’ narrative about NTS. Repeatedly, the guide denies any knowledge of harm that has come from the explosions at NTS: “When we ask about contamination, our guide assures us that he has walked ‘every inch of this site’ and suffered ‘no ill effects.’ There is some contamination, he acknowledges, but it is contained and poses no public risk.” The guide then tells them about something that might have been a real danger at the site: a rattlesnake that bit his boot. In response, Masco concludes that “Dangers at NTS, in his presentation, are natural or international, but never nuclear or technoscientific.” Again, and as at other nuclear sites, the DOE displaces threat, finding it in the warlike ambitions of other countries or the wildness of a nuclear site’s landscape—but not in the radioactivity of nuclear materials.

Writers like Solnit and Masco use the opportunity to tour NTS not only to challenge the DOE’s narratives, but also to raise questions about who can interpret information about the weapons program authoritatively. By restricting access to the nuclear weapons complex, the DOE has limited the public’s ability to understand and interpret it. However, the agency can neither exert complete control over its tourists nor contain the critical narratives that emerge after it invites the public to visit its most secret sites. Robert Jay Lifton argues that people must find ways to visualize the impacts of nuclear weapons—to “imagine the real”—even as government agencies try to make those

realities invisible (qtd. in Gusterson, "Nuclear" 28). For critics of the nuclear age, visiting nuclear sites is a strategy for countering the government's refusal to acknowledge the destructiveness of nuclear technologies:

> Since nuclear weapons are rarely seen, except by those who take care of them, and the government often refuses even to confirm where they are stored, it is easy to forget that the weapons exist at all. It is in order to break through this membrane of denial and help us all to 'imagine the real' that anti-nuclear activists have wanted to display photographs of Hiroshima, spill blood at the Trinity site, and carry banners condemning the unseen but quite real testing of nuclear weapons in the Pacific. (29)

When they carry out protests at nuclear sites, activists seek to lift the veil on the government's nuclear activities and to sustain national memory of the nuclear age. Similarly, authors like Solnit and Masco publish accounts of DOE tours to reinterpret them for a larger audience. By contextualizing nuclear sites and reporting on the contradictions they discover when they visit them, these authors show readers how nuclear activities mar the physical—as well as the social and political—landscape.

Despite the cynicism expressed by outsiders, people living near nuclear sites continue to support programs that would bring more people to visit the nuclear weapons complex. In the Hanford area, local citizens are working to preserve the area's nuclear history, create more public access to Hanford lands, and develop tourist destinations. In recent years, these local priorities have resulted in new opportunities to explore aspects of Hanford's natural and cultural history. Hikers and naturalists can visit the Hanford Reach

National Monument, and history enthusiasts can register for an official Site tour or view Hanford artifacts on display at a local museum. Though Hanford has the potential to become even more dangerous than it is today (since contaminants are constantly moving and interacting with one another in new ways), many area residents embrace the idea of living in an atomic community and hope to attract more tourists on the basis of the area's nuclear history. Though local citizens—and particularly those who have worked at Hanford—have instigated many of the area's preservation and tourism activities, the DOE has not hesitated to use this local energy to its advantage.

The DOE sponsored the first efforts to put Hanford's history on display at a local museum. That museum—originally called the Hanford Science Center and later renamed the Hanford Museums of Science and History—collected and displayed artifacts from the nuclear reservation. Funded in part by the DOE and run by Westinghouse Hanford Co., the museum was closed in 1995 in response to DOE budget cutbacks (Associated Press, "Budget"). Shortly thereafter, in 1996, it was resurrected as the Columbia River Exhibition of History, Science, and Technology (CREHST), a private nonprofit that billed itself as "a museum and science center created to tell the dynamic story of the Columbia Basin and surrounding region" (CREHST Museum). The museum looked more broadly at the region's history but maintained a specific focus on the Hanford Site. Docents were from Richland and some had even worked for Hanford in its early days. CREHST was supported, in part, by funds from the DOE and one of its contractors, Mission Support Alliance. That funding was repeatedly cut, and curators were pulled from the museum to work at the Hanford Site, where preservationists were needed to catalog and remove artifacts from buildings that were being torn down as part of cleanup

operations. CREHST suffered from these reductions in funding and staffing. Like museums in other atomic communities, the museum found it hard to operate without DOE sponsorship. CREHST closed in January 2014, in part because the DOE and area residents are trying to shift focus away from Hanford and towards the natural qualities of the Hanford Reach National Monument (HRNM).

As CREHST was struggling, the local community was raising funds to build an interpretive center that would serve as a "gateway" to the HRNM. The Hanford Reach Interpretive Center (known as "the Reach"), which will open in summer 2014, will offer some exhibits about the history of the Hanford Site, but it will primarily pay tribute to regional identity. The facility, which is located on the Columbia River in Richland, has thus far been enthusiastically imagined as a place that will "celebrate the natural and cultural history of the Hanford Reach of the Columbia River, the only free-flowing section of the river in the United States" (Richard). The Reach's Executive Director described the museum as a place for Columbia Basin residents to honor their history and identity:

> The Reach will be a hybrid institution. Part museum, part interpretive center, part visitor center and all about telling our stories and defining the character of the community, the Reach will act as a guide to inspire us all to embrace learning with passion and joy, and to honor who we are, where we've been and where we are going. (Toomey)

What this declaration does not mention is that Hanford has been an integral part of regional history. The Tri-Cities have been sustained by Hanford even as they have been betrayed by its contamination of the local environment. Thus, when a community-run

museum proposes to "honor" the people of the region but maintains a focus on the natural environment rather than the unfolding nuclear disaster in its backyard, that museum has been designed as much to forget as to remember.

The Reach may be a descendent of CREHST and the Hanford museums that came before it, but the new interpretive center will not replace those Hanford-focused museums. Some artifacts from CREHST will be on display at the Reach, but other CREHST holdings will be returned to the DOE, which maintains ownership of all Hanford artifacts that were not officially purchased from the government (Cary, "Hanford").[8] The Reach will not have as much room for Hanford interpretation as initially hoped because museum supporters were not able to raise enough money to build the facility as it was envisioned. Still, the Reach will feature a Manhattan Project exhibit when it opens in July.

By all accounts, that exhibit will advance the same uncritical narrative of the U.S. nuclear weapons program that the country's atomic museums express. This may be a result of the fact that the Reach has already received large donations from two DOE contractors, Battelle and Mission Support Alliance. According to museum staff, the Manhattan Project exhibit will focus on "the urgency of producing an atomic bomb," a theme that is emphasized across the DOE's atomic museums (including AMSE, the BSM, and the ATM). Enthusiasm for Hanford's work will be further demonstrated by "a replica of the atomic bomb dropped on Nagasaki, Japan, fueled with plutonium made at Hanford," which will be suspended above visitors (Cary, "Concept"). The museum plans to create three more Hanford exhibits (on "the Cold War years, environmental cleanup,

and public access to Hanford"), but it will have to solicit more donations in order to expand its interpretation of Hanford (Cary, "Concept").

Even if the Reach devotes more space to Hanford, it will continue to focus primarily on the natural and cultural history of the region. The U.S. Fish and Wildlife Service has donated $2.4 million "to tell the story of the Hanford Reach in the main gallery, including information about the Ice Age floods, tribes, settlers, and plants and animals and [that] narrative will dominate the museum space" (Cary, "Concept"). Thus, the Tri-Cities has lost a DOE-sponsored museum dedicated solely to the exhibition of Hanford history and gained a flashy new facility that expresses an optimistic view of the region. Though the local community facilitated this shift in interpretation, the government made it possible. Besides donating funds, it contributed a hopeful perspective on the environment of the mid-Columbia Basin. Many people in the Tri-Cities are counting on the National Park Service to take over Hanford interpretation (if a Manhattan Project National Historical Park is created), but until then, Hanford will take a backseat to the Hanford Reach National Monument at the region's major museum.

While local residents have been focused on the construction of the Reach, the DOE has been saving historical objects from destruction. Remediation has entailed the demolition of hundreds of buildings and therefore an untold number of artifacts. The DOE's Hanford Site *Facebook* page has publicized some of the artifacts that have been preserved. For example, on January 24, 2014, the DOE posted a status update with eight photos of historic facilities and artifacts along with this caption:

> The artifacts from Hanford's Manhattan Project and Cold War era (1943-1990) that have been generated, tagged, and mostly collected are going to

> be critical to telling the stories of ingenuity, industrial production, creativity, problem-solving, safety, and many more. These artifacts include things like tools, machinery, signs, instruments, period-correct household or office products, first-of-their-kind pieces of equipment, the desk of famed physicist Enrico Fermi, and original reactor-area phone booths. DOE believes these treasures of history should eventually be made available for the public to enjoy and for students, teachers, and researchers to learn from in the future and is working toward this goal. Until then, we hope you enjoy these photos. (See Appendix C for a screenshot of this status update, which includes photos of Hanford artifacts.)

Though it has not announced where the "treasures of history" featured in its photos will be displayed, the DOE insists that they will be "critical" to telling the story of the "ingenuity" exhibited during Hanford's production years. Thus, the tools and machinery pictured in the status update are more than historical objects; they are means of shaping the public's understanding of Hanford.[9] Besides functioning to define Hanford's story as one that reflects the integrity and genius of Site workers, these artifacts also help the DOE show that it has made Hanford accessible to the public—to "students, teachers, and researchers" alike. Offering photos of Hanford artifacts on *Facebook* helps the DOE establish trust and credibility.

Hanford tours perform similar work. In the contemporary era, the DOE must simultaneously mislead the public about the dangers of Hanford contaminants (so as not to admit to wrongdoing and deceit) and maintain the appearance of openness and transparency. In order to balance these competing imperatives, the agency began offering

public tours. It offered limited tours of the Site before 2001, but they were stopped after the September 11 terrorist attacks that year. The tours were reinstated in 2004, and the DOE (via Mission Support Alliance, the contractor that operates the tours) has greatly increased their availability since then.[10] The agency offered only four tours in 2004, but that came nowhere near meeting public demand; in fact, the agency maintained a waiting list with the names of 100 people (Sinclair 3). After that, the DOE revamped the tour program and, in the words of the tour manager, "looked for ways [. . .] to market the tours to a larger audience." The fact that the DOE has attempted to "market" the tours suggests that it benefits from them and, indeed, they serve a promotional function.

Because Hanford's environmental cleanup project has been a failure in recent years (as the DOE has missed multiple legal deadlines for cleanup and run into countless unexpected problems), the agency has had to work even harder discursively to contain the Site's problems. It has done this by selling Hanford as a tourist destination. Even as multiple crises unfold at the Site, including waste tank leaks, design and construction problems at the Waste Treatment Plant, and mysterious tank vapor releases that sicken workers, the DOE publicizes and operates public tours of Hanford. This helps the agency argue that the Site's threats have been contained and that remediation efforts are going according to plan.

The DOE strikes a delicate balance when it brings the public to Hanford. It promotes the Site as a spectacular relic of the Atomic Age even as it attempts to make people feel safe there. Like tours of Trinity and NTS, Hanford tours offer an unprecedented chance to view "the sublime and the forbidden" (Gusterson, "Nuclear" 24). However, a real experience of the sublime—"an awe and wonder [. . .] tinged with

terror"—may have been more accessible in Cold War Nevada (when mushroom clouds filled the desert sky and the American public perceived nuclear war as imminent) than it is at Hanford today. On today's Hanford tours, the DOE portrays even those features of Hanford that might evoke the terror of the sublime—like the B Reactor, which produced the fuel for the bomb the U.S. dropped on Nagasaki, Japan—as awe-inspiring but ultimately harmless artifacts. People can take these tours without contemplating the morality of nuclear weapons production or perceiving the seriousness of Hanford's waste problems because appearances are deceiving. If one ignores its massive size, Hanford looks like any other industrial site. Since it was never a test site, there are no nuclear bomb craters there. The only thing that marks Hanford as a nuclear landscape is the presence of countless nondescript production buildings, and many of those are being demolished as part of the remediation project.

Tourists can also leave Hanford without an understanding of the challenges the Site's waste presents because the DOE's tour publicity and scripts are carefully crafted for public consumption. As the tour program manager wrote in the text of a talk she gave at a waste management conference,

> all communication efforts surrounding the tours (e.g., instructions and guidelines for participation in public tours, the tour script, website content, and collateral literature and press releases) required thorough reviews and approvals from DOE and its prime contractor before anything was issued. This approval included consent by personnel from the communications, security, and legal divisions, along with that of senior management. (Sinclair 2)

These "reviews and approvals" ensure that the DOE is protected from legal action as well as public criticism. In order to bring people to the Site to advance its own narratives about the Manhattan Project, Cold War, and environmental remediation, the DOE has done a number of other things to increase the attractiveness and accessibility of its tours: it has developed an online registration system to streamline the signup process, shifted tour dates so that they occurred during the week (and therefore when Hanford cleanup work is occurring), changed the tour route yearly to highlight the most relevant projects, and started to offer up to sixty tours per year rather than the original four.

Today, the Hanford DOE offers two types of tours: one that focuses on the Manhattan Project and another that takes tourists to several parts of the Site and emphasizes its environmental cleanup project. The first type of tour, which visits only the B Reactor, was created in 2009 (Sinclair 6). Called "Manhattan Project B Reactor Tours," these are open to people as young as 12 years of age, and they allow tourists to carry cameras, cell phones, and recording devices. Because they access the Hanford Site via a public road, there are no security badge requirements. And so, even though the Reactor is located on an active remediation site and can only be accessed through an official tour, it has come to be treated essentially like any other museum. In fact, the B Reactor has become its own, independent tourist attraction within the larger Hanford Site due in part to the way the DOE has publicized it and in part to the way local people have taken up the cause of preserving it as a museum.

The DOE tries to generate enthusiasm about the B Reactor to distract the public from its most devastating effects. The agency repeatedly describes the Reactor as "an engineering marvel" that was "built in only thirteen months" and without blueprints ("B

Reactor"). It also consistently emphasizes the B Reactor's first, most famous mission—the production of fuel for one of the world's first atomic bombs—over and above the fact that it produced plutonium (and polluted the local environment) for over twenty years after the end of WWII. On *Hanford.gov*, the DOE argues that the B Reactor played a heroic role in American history:

> One of the most historic buildings at Hanford is the B Reactor, code named 105-B during World War II. The B Reactor was the world's first, full-scale nuclear reactor and produced the plutonium used in the 'Fat Man' bomb dropped over Nagasaki, Japan, in August of 1945. Five days after the bomb was deployed, World War II ended. ("B Reactor")

By emphasizing the historic significance of the building and drawing a direct connection between the Reactor and the end of WWII, the DOE implicitly argues that the danger and waste created by the Reactor were justified. But mere justification is not enough; to transform the Reactor in the public imagination, the agency tries to give it new, positive associations. In some cases, the DOE attempts to put a positive spin on the facts simply by placing an exclamation point at the end of a sentence: "The Du Pont Corporation was the main contractor during construction of the reactor, agreeing with the United States government to build the reactor—and indeed the whole Hanford Engineer Works—for costs plus $1. As Du Pont's team completed the project early, they were only paid 67-cents profit for the project!" Sentences like this demonstrate the degree to which the DOE hopes to turn the B Reactor into the stuff of American myth. In the DOE's story, DuPont is not a corporation that did the government's bidding despite extreme hazards and

appalling environmental consequences but is instead a patriotic organization that contributed to a miracle of American engineering.

Though the B Reactor, which operated from 1943 to 1968, was slated to be "cocooned" (contained in concrete until its radioactivity decayed) like the other reactors at Hanford, it acquired a fan club that launched it on the road to preservation ("B Reactor").[11] Local people, including former Hanford workers, wanted to preserve the reactor and so formed the B Reactor Museum Association (BRMA) in 1991. The BRMA is dedicated to the goals of restoring the reactor building, opening it to the public, and creating exhibits there to interpret the history of the Manhattan Project (B Reactor, "Vision Statement"). The DOE began offering tours of the B Reactor once Hanford tours were resumed in 2004, and, at that point, former Hanford employees (often from the Site's early missions) gave walking tours of the B Reactor (Sinclair 3). The tour program has grown since then, and, in 2008, the Reactor was recognized with the highest designation available from U.S. Department of the Interior (DOI) when it was named a National Historic Landmark.

At the ceremony that marked the National Historic Landmark designation, local Hanford enthusiasts as well as the Deputy Secretaries of the DOI and the DOE repeatedly—and vaguely—spoke about the "significance" of the Reactor and its impact on the world. In a video of the ceremony (posted on *YouTube* by the DOE), Hanford historian Michele Gerber stands at a podium in front of the B Reactor face and explains why the crowd has gathered to give the Reactor a new designation:

> This machine changed the world. It changed the lives of every one of us standing here today [. . .]. So why do we come here today to honor B

> Reactor? We come because we have to. We're driven to it. It's in our blood and our genes as humans to want to and to need to come to places where significant things happened.

Without acknowledging that not everyone would choose to "honor" the Reactor, Gerber repeatedly offers imprecise descriptions of the its influence on the world, insisting that it "changed" everything and that it is a place where "significant things happened." She and the other speakers at the ceremony scrupulously avoid making reference to the radioactive poisons the Reactor produced. After Gerber's speech, Deputy Secretary of the DOE Jeffrey Kupfer reminds the crowd that the 2,000 spots on the DOE bus tour of Hanford are "snapped up" within a few hours every time they are advertised. He says this as if to legitimize the Reactor tours by offering evidence of the public's interest in them. Kupfer also promises that the DOE will protect the Reactor's place in history: "We at the Department are very committed to preserving the significance of the Reactor and to making it more accessible." Here, Kupfer makes a telling slip. Though he means to suggest that the DOE is "committed to preserving" the reactor as a public museum, he actually says that it is "committed to preserving the *significance* of the Reactor." The DOE is, in fact, more interested in keeping the Reactor relevant—in maintaining it as a symbol of the supposed good that can be done by nuclear weapons (since many people believe that the bomb dropped on Nagasaki helped to end WWII)—than it is in preserving public access.

The public dedication of the B Reactor helped to normalize not only the Reactor but also the concept of visiting it. The DOE's "Tour Information" webpage about B Reactor Tours (available on *Hanford.gov*) performs similar work. The page cites the large

number of people who have participated in B Reactor Tours and then uses that to explain why the agency lowered the minimum age for Reactor tourists: "More than 40,000 visitors have toured the B Reactor since 2009 from all 50 States and over 68 countries. This has culminated in the reduction of the minimum age requirement from eighteen to twelve years in 2012." This passage exhibits characteristic avoidance; it seems to suggest that the agency lowered the minimum visitor age in response to enthusiastic public interest in the tours, but it never says why there was an age minimum in the first place. The DOE's press release about the policy change quotes the DOE's Richland Operations Office manager, Matt McCormick, who emphasizes the safety of visiting B Reactor: "'The facility has safely hosted more than 25,000 visitors over the last three years and is carefully maintained for public access'" ("DOE Lowers"). The press release does not say specifically what the threats might be, and visitors are justified in wondering whether there is any lingering radiation inside the reactor (given the massive cleanup project going on outside of it). Instead of addressing those concerns, the DOE has publicized the visits of school groups to bolster its case that the B Reactor is a safe and compelling tourist destination. Shortly after the first school group visited the reactor, the agency posted a video on *YouTube* of the students entering the reactor. The students walk into the Reactor's central room slowly, and the camera captures their surprised and excited reactions. Many of them immediately lift their phones to take photos of the reactor face (HanfordSite "Delta"). By posting this video, the DOE suggests not only that the reactor is safe but also that it offers an amusing experience. The DOE is not alone in its excitement about offering tours to teenagers; the press release mentions the support of several Northwest politicians, including Senator Patty Murray, who claims that the

change is “great news for families and the local community” (“DOE Lowers”). By holding tours and opening them up to adolescents, the DOE has convinced a range of visitors and observers that the B Reactor is a family-friendly tourist destination.

The DOE largely avoids addressing whether it is safe to visit Hanford, but there are two places on its tour registration website where the agency acknowledges potential dangers. The “Tour Information” page of *Hanford.gov* assures the public that the DOE is concerned about visitors’ safety: “The Department of Energy has gone to great lengths to ensure that the facility is safe and that any potential hazards for your child have been removed or sealed to prevent any contact with our visitors. The facility is vigorously inspected prior to each tour to ensure a safe and enjoyable visit” (“B Reactor Tours Tour Information”). Here, the agency suggests that it has been proactive about addressing safety issues, but it does not say what hazards could be present or how it “vigorously inspects” for them. Instead, the agency essentially requires the public’s trust in exchange for access to the Hanford Site. Visitors may be skeptical of the DOE’s reassurances, though, since tour participants must agree to a “disclaimer” when they sign up for tours at *Hanford.gov*: “Due to the industrial nature of the Hanford Site neither the Government, nor DOE and its agents, employees or contractors [. . .] will be held responsible for any personal injury” (“Hanford Site Public Tours”). Here, the DOE identifies the “industrial nature” of the Hanford Site as a potential threat to visitors, avoiding concerns about exposure to chemical and radioactive contamination. The agency makes a similar move when it describes the hazards particular to the B Reactor: “The B Reactor is a historic building that retains many of its original conditions. It has not been updated to modern building or seismic codes and therefore may pose safety hazards and risks for participants

entering the building" ("B Reactor Tours Registration"). By strategically avoiding mention of the threats that would be particular to a highly contaminated structure like B Reactor and instead claiming that the threats posed by the facility are common to all "historic buildings," the DOE attempts to normalize the unique dangers inherent in the use of nuclear technologies.

The DOE's claims that B Reactor is safe are complemented by the tone and content of its tours of the facility. The tour script focuses almost solely on the science and engineering that allowed the B Reactor to produce plutonium for twenty years. Former DOE employees (some of whom are wearing B Reactor trucker hats) guide visitors through the interior of the reactor and explain how a nuclear chain reaction inside the reactor's giant graphite block worked. When I took a whole Site tour (which includes a walking tour of the B Reactor), the tour guides described the plutonium production process in the first person, as if they were there when it happened. It was obvious that the guides admired the engineering of the reactor, which they referred to as "truly a marvel of engineering." By focusing on the engineering details of the reactor's operation, the guides were able to avoid prolonged discussion of the social and political context in which the reactor operated, the wastes it generated, and questions about whether it is safe for tourists to visit the facility. Once we had listened to the tour script, those of us on the tour were set free to visit other accessible portions of the building, which consisted mostly of control rooms.

The DOE and the BRMA's assurances about safety and enthusiasm about preserving the reactor have paved the way for its commodification. Over time, the BRMA has added more exhibits to the interior of the B Reactor and made tours available

to the public on a more frequent basis. The Atomic Heritage Foundation has also created a virtual tour guide for the B Reactor; visitors can now visit *Rangerinyourpocket.org* to watch informational videos before and during their visit to the reactor (Cary, "New"). These videos honor the reactor as a historic site and celebrate the history of the Manhattan Project through videos about General Groves (the director of the Manhattan Project), DuPont's role at Hanford, and specific aspects of the reactor's operation. Thus, when you are standing inside the facility, listening to the DOE tour guide and perhaps following the Atomic Heritage Foundation's story about Hanford on your smartphone, it is easy to be dazzled by stories and displays about Hanford and momentarily to forget that you are inside a nuclear reactor and not just a museum modeled as one. One tourist writing about his experience for the *New York Times* described the reactor as simultaneously forbidding and harmless: "The reactor itself stood silent and massive, a three-story square of iron, steel and Masonite housed in [a] block of graphite [. . .]. Staring into a decommissioned reactor is perhaps what it might be like to come face to face with the Grim Reaper without his scythe: defanged but still producing an ominous sense of awe" (Schlegel). The DOE counts on visitors to experience this paradoxical mix of feelings—to be in the awe of the Reactor and yet feel that it is harmless.

The DOE also offers a second type of tour, the Hanford Site Public Tour, which is a four-hour bus trip that takes visitors through most areas of the Site. Because this tour accesses so much of the Site (and not just a single facility), there are stricter security requirements. Tourists must be American citizens who are at least 18 years old, and they cannot bring cell phones, recording devices, or cameras. Visitors are required to check in, receive a paper security badge, and remain with the tour group. The tour route changes

from year to year, but in 2014, the Site tours are visiting Hanford's 300 Area, the 100 Area (which includes views of all nine Site reactors and a walking tour of the B Reactor), the original Hanford and White Bluffs town sites, the Cold Test Facility, the Plutonium Finishing Plant, the 200 West Groundwater Treatment System, the Environmental Restoration Disposal Facility, and the Waste Treatment Plant (USDOE Hanford "Hanford Site Public Tours"). By adding new tour destinations like the groundwater treatment facility, the DOE intends to showcase its commitment to investing in new waste treatment technologies that will ensure more thorough and less expensive cleanup.

During these tours, the DOE attempts to create the impression that everything you see at the Site is simultaneously spectacular and routine. The agency represents the Site's waste problems as remarkable in order to justify its huge expenditures of taxpayer money, but also frames those same problems as routine in order to normalize the processes of manufacturing nuclear weapons and then cleaning up after them. The height and power of the B Reactor offers a spectacle that connects tourists with the Atomic Age, and the gigantic size of the Hanford Site makes the argument that Hanford's problems require an enormous effort. At the same time, explanations of how remediation works—how workers scrape waste tanks clean and remove gloveboxes contaminated with plutonium—communicate that everything is proceeding as expected at Hanford.

In other words, the DOE uses Hanford tours just as it uses all of its other forms of publicity—to deny the Site's most serious problems. When I took a tour of Hanford in May 2013, the tour guide did not mention that the Defense Nuclear Facilities Safety Board had just identified serious flaws in the design of the vitrification plant (Wald). When he did mention the Site's leaking waste tanks, it was only to set the stage for

explaining how waste is removed from them. At no point in the tour did the guide represent Hanford's problems as anything but surmountable. Instead of addressing the Site's remediation challenges, the tour script focuses on what might be considered less controversial aspects of Hanford history and cleanup, such as explanations of how cleanup technologies work. On my tour of Hanford, the first stop was the Cold Test Facility, a "full-scale mockup of a single shell [waste] storage tank at Hanford" (U.S. DOE Hanford "Cold"). A representative for one of the contractors met us near the tank to explain the three different types of waste found in Hanford tanks (supernate, sludge, and saltcake) and how difficult they are to remove. He then explained how removal of each type of waste requires different technology and, perhaps to provide some entertainment, spoke at length about the Mobile Arm Retrieval System (MARS), a robot that workers send down into the tanks to mobilize contaminants that are otherwise hard to reach and remove (because the environment is far too radioactive for workers to enter). Once robots finish their work, they are left in the bottom of the tanks, and they themselves become radioactive waste. Tank waste is so dangerous that the robots become too contaminated to retrieve. Thus, even the agency's waste retrieval mechanisms can result in more waste. While the spokesperson described in detail how the MARS robot works, he said nothing about the ways it represents the ironies of cleanup.

The DOE and its contractors are adept at hiding the realities of cleanup. One way they do so is through euphemisms. On my Hanford tour, we visited the Plutonium Finishing Plant (PFP), a plant where plutonium liquids were turned into plutonium "buttons" during the Cold War. PFP stored such dangerous materials that armed personnel guarded the facility for decades. The last of the plutonium stored at PFP was

shipped to the DOE's Savannah River Site in 2009, and the DOE now intends to decontaminate and demolish the structure. My Hanford tour guide detailed PFP's history and described the facility as "one of the most mucked up buildings" on the Hanford Site. Though "muck" refers generally to waste, it is usually used to refer to manure or other relatively harmless waste products. By referring to PFP as "mucked up," the tour guide domesticated Hanford waste and dismissed the special dangers it presents. To reduce the audience's perception of threat even further, the tour guide claimed that workers have to dress "in their whites" to do remediation at PFP. While this phrase could easily be mistaken as referring to a white uniform or even to white collar work, it actually alludes to the fact that Hanford workers have to wear personal protective clothing (also known as hazmat suits) when they enter PFP because the contamination there will easily penetrate clothing and human tissue. Thus, the terms of nuclear waste and danger—"mucked up" and "whites"—seemed to be a part of everyday language at Hanford, perhaps because workers have to understate the threats they face each day in order to keep their jobs.

My DOE tour also revealed the degree to which the DOE and its contractors believe—or want the public to believe—that they can completely repair the damage at Hanford. As he was pointing out significant landforms present on the Site, my tour guide explained that, decades ago, the DOE drilled holes in Gable Mountain to determine whether it would be a suitable place to store nuclear waste. Gable Mountain, which is located northwest of the 200 Area, has been recognized as a traditional cultural property because of its sacredness to local Native American tribes, but that did not prevent the DOE from conducting experiments to determine whether its volcanic rock could be a stable home for radioactive waste. According to my tour guide, when the DOE instead

decided not to create a deep geological repository at Hanford (because it had decided to build one at Yucca Mountain in Nevada), the agency put Gable Mountain "back to the original." His statement indicated that the DOE believes it can simply gut and then reassemble a sacred, geologically and ecologically complex feature of the landscape. In another, similarly dissonant moment of the tour, our guide told us about Hanford's newest pump and treat system, the 200 West Groundwater Treatment Facility. The facility runs all day and all night, pumping water from the ground beneath it, removing contaminants, and returning the water to the ground. When my tour guide was explaining the facility, he claimed that it sends water back into the ground "better than ever" as if to suggest that the pump and treat system is not only capable of filtering out all contaminants but also of making the water cleaner than it was prior to Hanford's production era. These statements are misleading at best and betray a failure to recognize the limits of remediation.

The DOE goes to great lengths to ensure that its tour program creates a favorable impression of Hanford cleanup, but there is always a chance that Site visitors will see through the agency's presentation. To limit the possibility of such an outcome, the DOE makes the tours relatively inaccessible to people who live outside the Tri-Cities. People have to first discover that the tours exist then register months in advance via an online registration system. The system accepts reservations beginning on a particular day and time, and all of the seats are generally taken within a few hours. Tickets are competitive largely because people have been kept off the nuclear reservation for so long, and tours are the only chance people have to see the Site.[12] Hanford is also a relatively long drive from anywhere but the Tri-Cities, and full Site tours are only available in the middle of

the week, when most people are working. The DOE claims that it moved full Site tours to the weekdays to allow visitors to see cleanup in action, but, in reality, holding tours in the middle of the week makes it difficult for many people (especially those who live outside the Tri-Cities) to make the trip.[13]

Despite this, the tours have become such a hot commodity that tourists have rated them on the popular consumer review websites *Yelp* and *Trip Advisor*. All of the reviews on these two sites enthusiastically recommend Hanford tours and demonstrate the degree to which the DOE has been able to convince the public to be both grateful for access to the Site and awed by what they see there. One reviewer at *Trip Advisor* left a review titled "A nuclear site with style" on June 9, 2011. After explaining that tours are difficult to obtain (because of competition for registration), the reviewer excitedly praises them:

> It's a bit sobering to see all of the excavated areas that were contaminated, the armed guards, all of the signs indicating radiological risk areas… but it's thrilling at the same time, too. The best part of the tour is when you get to go into the B Reactor, the facility that turned good ol' uranium into plutonium. It's like breathing science, standing in there. The reactor core towers above you and is absolutely BEAUTIFUL, a marvel of engineering, imagination, and grace. The tour is safe, you don't need to worry about getting irradiated, all you have to do is enjoy the scenery… and be impressed with how well the clean-up efforts really are going, and with how much raw power was contained in that section of the state, back in the day. It's a history trip, it's a science trip, it's a political trip. Take the tour!" (Traveler0237)

This review demonstrates that people pick up on the language the DOE gives them for talking about the Hanford Site. Few people would look at the B Reactor and independently refer to it as "beautiful." The words "marvel of engineering" come straight from the DOE's descriptions of the Reactor. Besides giving people language for interpreting the Site, the DOE has instilled such a sense of gratitude and awe in the visiting public that visitors begin to lose sight of what the Reactor produced and the danger it has posed to the region. This reviewer claims that "you don't need to worry about getting irradiated, all you have to do is enjoy the scenery," which is exactly what the DOE hopes people will believe.

Though the DOE already hosts hundreds of tours annually, a new initiative to establish a multi-site Manhattan Project National Historical Park (MPNHP) may bring even more tourists to Hanford in the coming years. If the park proposal is approved, Hanford's B Reactor will be included in the MPNHP and will thus be given yet another federal protected status (in addition to the National Historical Landmark designation). The proposal to establish the park has met with strong resistance, but its supporters—including members of the B Reactor Museum Association—have been tireless in their efforts to establish Hanford, Los Alamos, and Oak Ridge as national sites of memory that would tell the story of the Manhattan Project.

Preservation groups and government agencies have advocated for the creation of a MPNHP for over a decade. The proposal began to take shape in 2001 when the Advisory Council on Historic Preservation recommended that the DOE preserve key sites associated with the Manhattan Project, in partnership with the National Park Service

(NPS). In 2004, Congress asked NPS to examine whether such a park would be feasible and appropriate. The NPS prepared an Environmental Impact Statement and consulted with the DOE to develop five possible alternatives, which the Park Service presented to the public in 2007. In 2011, the NPS and DOE recommended that Oak Ridge, Hanford, and Los Alamos be included in this park (DOE "Manhattan Project National"). If the park is established, the partnership between the DOE and NPS would be similar, in some ways, to the one that exists between the DOE and U.S. Fish and Wildlife (FWS) at the Hanford Reach National Monument, in that the DOE would continue to own and operate the three sites while the NPS would provide interpretation and visitor access.[14]

Though the two agencies are now supportive of the park, both had reservations about what its creation would mean. Each had something to lose in the arrangement: "The NPS had initially been reluctant to take on responsibility for industrial properties located within security areas and potentially containing legacy contamination from wartime operations. Similarly, the DOE had been reluctant to participate in a park experiment that might jeopardize control of its own property and restrict any aspect of future mission-critical work" (McGehee and Isaacson 52). Like the FWS at the HRNM, the NPS did not want to deal with contamination or public safety issues at Manhattan Project sites. For its part, the DOE did not want to disrupt "mission-critical work," including nuclear weapons research, development, and stewardship, waste storage, and environmental remediation. In the end, the NPS was convinced that it would not be asked to manage risk at nuclear sites, and the DOE was assured that it would retain ultimate control of its nuclear sites, which are still operational.

Though the MPNHP has yet to be created and many details of its management therefore have yet to be worked out, the DOE publicizes the park on its website, *Energy.gov.* There, the agency emphasizes its ownership of Manhattan Project sites and its involvement in the park establishment process:

> The Department, as the direct descendent of the Manhattan Engineer District, owns and manages the Federal properties at most of the major Manhattan Project sites. [. . .] For over a decade, the Department, in cooperation with other Federal agencies, state and local governments, and other stakeholders, has pursued the possibility of including its most significant Manhattan Project properties within a Manhattan Project National Historical Park. ("Manhattan Project National")

In this description, the DOE portrays itself as a benevolent landlord that is generously willing to share its "most significant Manhattan Project properties" with the public. The agency also argues that it deserves some of the credit for preserving what it elsewhere refers to as its "Signature Facilities" even though the NPS will ultimately carry out interpretation at the MPNHP (US DOE, "Manhattan Project").

For its part, the NPS emphasizes that it is the appropriate agency to preserve and interpret sites of national significance like Los Alamos, Oak Ridge, and Hanford. In its *Special Resource Study/Environmental Assessment* on Manhattan Project sites, the NPS claims that the park proposal presents a unique opportunity to protect sites at a national level:

> Cultural resources associated with the Manhattan Project are not currently represented in the national park system, and comparably managed areas

> are not protected for public enjoyment. The comprehensive story of the Manhattan Project is not interpreted by other federal agencies; tribal, state, or local governments; or the private sector. Various sites have some protection (such as those managed by the Department of Energy), and some sites and museums tell parts of the story, but the comprehensive story of the nationally significant Manhattan Project is not told anywhere. Including Manhattan Project-related sites in the national park system will expand and enhance the protection and preservation of such resources and provide for comprehensive interpretation and public understanding of this nationally significant story in 20th century American history.

The NPS has not previously been involved in Manhattan Project preservation, but it believes such places might be prime sites for "public enjoyment" of the nation's history. Further, the agency is prepared to step in and tell the "comprehensive story of the Manhattan Project" (though many would argue that the comprehensive story would be one in which all affected parties had a voice). In 2011, National Park Service Director Jonathan Jarvis argued that the NPS is uniquely positioned to interpret Manhattan Project sites: "There is no better place to tell a story than where it happened, and that's what national parks do [. . .]. The National Park Service will be proud to interpret these Manhattan Project sites and unlock their stories in the years ahead" (McArdle). Many groups are skeptical of how the agency will "unlock" those stories.

Though the DOE, NPS, and heritage groups have worked diligently to push the MPNHP proposal forward, the bill that would establish it has stalled in Congress largely because powerful voices believe that such a park would "inappropriately celebrate the

atomic bomb and the destruction of Hiroshima and Nagasaki at the end of World War II" (Meeks). While no one has proposed explicitly to celebrate the incineration of Hiroshima and Nagasaki, preservation advocates' patriotic rhetoric and celebration of weapons science have sparked concern that a MPNHP would glorify war. In September 2012, U.S. representative Dennis Kucinich of Ohio argued that creating a national park is not an appropriate way to memorialize the Manhattan Project, saying "We're talking about the devastation of the people of Hiroshima and Nagasaki—hundreds of thousands killed, [a] $10 trillion Cold War between the U.S. and Russia, tens of thousands of nuclear weapons which today threaten the existence of the world—and this is something we should celebrate?" (Robbins). Many anti-nuclear activists share this belief that a MPNHP would celebrate the bomb. For example, Greg Mello, co-founder of the anti-nuclear Los Alamos Study Group asked, "'Are we really poised to make a national park out of a few shabby ruins where we built instruments of mass murder, delivered to statesmen the instruments of universal destruction, and destroyed the marriage between science and human values?'" (Associated Press and *Tri-City Herald*).

Some activists (including Mello) have strategically framed their opposition to the MPNHP by arguing that creating such a park would sully the National Park System. Michael Mariotte, who is the executive director of the anti-nuclear group Nuclear Information Resource Service, told *The New York Times* that "National parks are national treasures, and glorifying a weapon of mass destruction is certainly not among the purposes of a national park" (McArdle). Similarly, Mello claimed that "what we risk is harming the national park system as a whole and the idea of national parks just when we

need to protect the environment the most" (McArdle). Both of these arguments appeal to the widely held sense that national parks are places of purity.

Despite resistance from a handful of politicians and anti-nuclear activists, most of which is based on the assumption that a MPNHP would discourage sober reflection on the Bomb's devastating effects on public and environmental health, many politicians who represent atomic communities, federal officials, and historical preservationists support the creation of a MPNHP. Congressman Doc Hastings, who represents central Washington State in the U.S. House, has been one of the most vocal supporters of the MPNHP bill. Hastings has an obvious personal and political stake in whether a national park is established at Hanford, since many of his constituents take pride in their contribution to nuclear weapons production and would benefit from the tourism dollars that such a park would generate. He thus portrays the preservation of buildings and artifacts at MPNHP sites as a win-win situation that would open Hanford, Los Alamos, and Oak Ridge to public access and reduce the exorbitant costs of fully decommissioning nuclear sites. According to a report Hastings submitted along with the bill that would establish the park (H.R. 208), many facilities at the three nuclear sites

> are currently scheduled to be destroyed by the Department of Energy, but their preservation for public visitation would instead reduce federal spending by millions of dollars. For example, the first full-scale nuclear reactor ever built, the B Reactor at the Hanford Site, would alone cost tens of millions of dollars to demolish, while facilitating safe and secure public access to the structure can occur at a small fraction of the cost.

In other words, preserving nuclear sites for public visitation would be cheaper than decommissioning them. This argument would seem to indicate that Hastings values saving money more than he values public safety, but he insists that the DOE and NPS could ensure "safe and secure public access" to structures at nuclear sites. He also argues that the federal government ought to open nuclear sites in order to promote public education and patriotism. He insists that the U.S. was justified when it used the Bomb on Hiroshima and Nagasaki, and he claims that the MPNHP bill would open B Reactor up "to schoolchildren and others to see what we did to preserve freedom" (Cary, "Ohio"). The MPNHP's opponents and scores of others would, of course, disagree that the U.S. needed to use the atomic bomb to end WWII, but in today's political climate, the vague idea of "preserving freedom"—which ultimately means assuring U.S. dominance in world politics—holds sway with many U.S. citizens.

While the priorities of Hastings's home district influence him to support the MPNHP, not everyone who defends the park proposal is as obviously biased by political expediency as Hastings. In June 2013, Stephanie Meeks, President of the National Trust for Historic Preservation, wrote an op-ed for the *Los Angeles Times* that countered many of the arguments against establishing such a park. Meeks claimed that a MPNHP would open people's eyes to the legacy of the Manhattan Project:

> As a nation, we have a responsibility to grapple openly and objectively with the Manhattan project's complex legacy. To do that, we need a space for reflection. [. . .] Opening up these sites as a national park would provide an opportunity for Americans to consider the Manhattan Project in

> its full scope and complexity, encouraging the sort of thoughtful reflection that is the best way to avoid glorifying the bomb.

While many would argue that the very act of turning these three sites into a national park would wrongfully celebrate the Bomb, Meeks argues that they would actually be the best place for honest, informed consideration of the bomb's deep and lasting effects. She claims that this type of park would "encourage visitors to consider the Manhattan Project's many ethical, cultural and scientific implications." Historians and other researchers also argue that we would lose an understanding of our national history if these sites were demolished or kept off-limits to the public. Ellen McGehee, a historian and archaeologist at Los Alamos, argues that if the buildings used to assemble and house bombs during the Manhattan Project are not "maintained or managed, they will go away." According to McGehee, this would prevent people from fully comprehending the Manhattan Project since "You can't really understand how the scientists were working, what conditions they were working under, unless you come out to the place where history really happened" (Cowan).

Firsthand knowledge is indeed significant to the public's understanding of the Manhattan Project, and there is no substitute for visiting a nuclear site—for witnessing its massive production equipment or its bomb craters. However, the public's understanding of nuclear sites is deeply influenced by their narrative presentation. Though the NPS expresses the importance of telling the "comprehensive story" of the Manhattan Project, it is impossible to believe that the agency's MPNHP narrative would depart much from the interpretation the DOE currently provides at Oak Ridge, Los Alamos, and Hanford. Given the fact that the country's other DOE-supported atomic museums and tours glorify

nuclear weapons, hide the contradictions in U.S. nuclear policy, and portray the DOE as a responsible environmental steward, the public can only assume that a MPNHP would perform similar rhetorical work. The DOE claims that "[I]f a Manhattan Project park is authorized, the NPS would work with the Department and consult with the public and other stakeholders to develop a management plan" ("Manhattan"). However, the federal government would ultimately control the public participation process, and the DOE would inevitably exert a strong influence over the outcome. Preservationists and federal agencies have argued that "preservation does not imply moral endorsement," but the country's atomic museums and nuclear tour programs demonstrate that they tend to go hand in hand (Broad).

Supporters of the MPNHP may not have all the information and context necessary to make a decision about whether the park would provide interpretation from multiple perspectives and whether it would be safe. People living in atomic communities are pushing for more access to nuclear landscapes—including those at Hanford—without foregrounding the potential consequences of encouraging tourism at a site where disaster is still unfolding. A Manhattan Project National Historical Park will bring more visitors to Hanford at a time when conditions at the Site are disconcertingly unstable. If one believed the DOE's reports about Hanford, though, one might not perceive that instability.

In his *New York Times* essay on Hanford tourism, Jeff Schlegel observes that the people of the Tri-Cities support Hanford tourism because it boosts the local economy: "locals hope the unusual pairing of World War II and cold war history with the region's

natural beauty will play a bigger role in a tourist trade that already lures visitors with its wineries, golf courses, desertlike climate and ample sunshine." Indeed, Tri-Citians rely on Hanford not only for the success of their tourist industry but also for the prosperity of their regional economy. Hanford cleanup costs $2 billion per year, and much of that money is injected directly into the Tri-Cities. The DOE has taken advantage of this dependent relationship as well as local enthusiasm for historic preservation and tourism in developing its museums and tour programs.

As long as the DOE retains ownership of the nation's nuclear weapons sites, it will continue to be the principal entity influencing how they are interpreted for the public. This is dangerous considering the state of preservation and tourism in the weapons complex today. All of the DOE's atomic museums and its tour programs adhere to a predictable narrative that embraces militarism and technological positivism. Many of them can be said to look back on the Manhattan Project and the Cold War with nostalgia. Even when interpretation is carried out by other government agencies like the U.S. Fish and Wildlife Service or by local preservation groups, the DOE's biases emerge.

Many would argue that nuclear tourism helps people understand the complexities of nuclear weapons and environmental remediation, but in today's weapons complex, it contributes more to the DOE's rhetorical purposes than to public education. In an era that is nominally devoted to cleanup and transparency, the DOE can no longer keep all of Hanford's secrets from the public. Thus, its strategy is to hide Hanford in plain sight—to invite tourists to see the Site's reactors and waste facilities for themselves. This opportunity to shape the public's perceptions of Hanford is particularly valuable to the DOE for two reasons. First, it improves public relations about a site that has failed to

meet many important cleanup milestones and that has been in environmental remediation for twenty-five years. Second, interpretation that celebrates both production and cleanup helps the government normalize the contradictions surrounding nuclear weapons. By suggesting that weapons production and environmental remediation are normal and natural, the federal government and its contractors pacify the public and remain free to pursue their own agendas.

Notes

[1] At the Fernald Preserve Visitors Center Grand Opening, acting Deputy Secretary of Energy Jeffrey Kupfer closed his dedication speech by saying, "And so today as we remember and seek to preserve the many contributions Fernald has made to our national security, we also celebrate Fernald's future—the future of America—as we forge ahead to achieve energy security in an environmentally responsible way." Kupfer's speech exemplifies the DOE's attempts to shift public attention from the nuclear weapons complex to the agency's "environmentally responsible" energy projects and to frame those projects as patriotic. The *Energy.gov* homepage rarely features anything about environmental remediation of nuclear weapons sites—though this costs the agency approximately $6 billion per year—whereas it continually promotes the DOE's work on renewable energy and green building projects.

[2] Though the DOE never funded a Rocky Flats Cold War Museum, there is now an organization called the Rocky Flats Institute and Museum (RFIM), which has a website and *Facebook* page. The museum's mission statement states: "The Rocky Flats

Institute and Museum seeks to foster dialogue about critical international and local nuclear realities, building on the diverse narratives and legacies of the Rocky Flats Nuclear Weapons Plant to inform, educate, and empower the public" (RFIM, "Home page."). The organization's emphasis on dialogue may explain why it did not acquire DOE funding.

[3] There is irony in the work of the Office of Legacy Management. Though the DOE refers to the waste leftover from weapons production as the "legacy" of the Manhattan Project and the Cold War, "legacy" usually refers to something valuable (such as money or property) passed down by a predecessor—not unstable, long-lasting pollution. Through the Office of Legacy Management, the DOE attempts to manage not only the threat posed by that pollution but also history itself.

[4] The Rocky Flats Museum and Institute currently operates in a temporary location in Arvada, Colorado, but without DOE backing, it is so constrained by budget concerns that it cannot pay museum staff. Financial uncertainty makes the museum less visible and accessible than the DOE's museums in places like Oak Ridge and Los Alamos.

[5] Rebecca Solnit offers a helpful explanation of why it is inappropriate to refer to the bomb detonations that occurred at NTS as "tests": "*Test* is something of a misnomer when it comes to nuclear bombs. A test is controlled and contained, a preliminary to the thing itself, and though these nuclear bombs weren't being dropped on cities or strategic centers, they were full-scale explosions in the real world, with all the attendant effects. I think that rather than tests, the explosions at the Nevada Test Site were rehearsals, for a

rehearsal may lack an audience but contains all the actions and actors" (5). Indeed, people living outside NTS suffered "all the attendant effects" of the hundreds of explosions that occurred there, though they were not identified as the bombs' intended targets.

[6] Rothstein further notes: "The military, in fact, was almost zealous in its urge to demystify [. . .]. The exhibition also cites a military leader's comment in 1948 that if atomic testing wasn't conducted within the United States, the lack of direct American experience would result in an 'unhealthy, dangerous and unjustified fear of atomic detonations.'"

[7] Nuclear testing had an enormous impact on the economy of Las Vegas: "In 1970 the test site was credited with adding $1 billion a year to the Nevada economy" (Rothstein).

[8] The DOE "Hanford Site" *Facebook* page provides photographic evidence of this effort to identify and preserve artifacts from the Hanford Site. Though the agency has not said what it will do with these artifacts, the *Tri-City Herald* interviewed Colleen French, DOE government affairs program manager, who reported that "'The ultimate idea is to keep the collection together so it can be displayed and interpreted.'" Thus, the DOE has plans to "make the collection available to the community," though it has not announced what those plans are (Cary, "Hanford").

[9] Though the DOE does not say so directly, it may be intending to display these artifacts at the Manhattan Project National Historical Park, should Congress approve it. Until then, the public can only view DOE-owned equipment and facilities on a Hanford Site Public Tour.

[10] Mission Support Alliance, LLC (owned by Lockheed Martin/Jacobs/WSI) manages the DOE tour program for the DOE, but the DOE has ultimate authority over Hanford operations, so I describe the tour program as DOE-run.

[11] In DOE jargon, "cocooning" is known as Interim Safe Storage (ISS). It involves removing as much contamination as possible from the inside of a reactor, sealing the reactor shut, and placing a new roof on top of it. This is meant to prevent intrusion by water, animals, and any other trespassers. Reactor cores remain in ISS for decades while some of their radioactivity decays.

[12] People are eager to access off-limits areas of the nuclear reservation, partially because they are forbidden and partially because people want to know what is there. For example, hundreds of people sign up for Hanford Wildflower Tours, which the U.S. Fish and Wildlife has led for the last few years. There is so much demand for the tours that Fish and Wildlife holds a lottery to choose guests. The tours showcase the wildflowers of the Hanford area, but perhaps more significantly, they give access to the Arid Lands Ecology Reserve on the Rattlesnake Unit of the Hanford Reach National Monument, an area that is normally closed to the public. This year, Fish and Wildlife sent emails to those who were unsuccessful in the lottery noting that 608 people were vying for 160 available tour spaces. In the same email, FWS admitted that the wildflower displays are not even that impressive at Rattlesnake: "We wish you better luck in the future. However to be honest, the wildflower viewing is actually better on the Saddle Mountains, and that area is open 365 days/year." What the FWS fails to recognize is that people did not sign

up for the tour simply to see wildflowers; many are just curious about Rattlesnake Mountain.

[13] The tour program manager claims that the DOE began to hold tours on weekdays in order to allow visitors to see cleanup in action and give them "the opportunity to get off the bus to listen to subject matter experts describe current Hanford cleanup work and present future plans for the site. Now, rather than just driving by buildings, visitors can see and come to appreciate the difficulty of the work and commitment of the workers cleaning up the site" (Sinclair 4). The DOE believes that the more people appreciate the "difficulty of the work" and the "commitment" of the workforce, the more they will support the DOE's cleanup plans.

[14] According to the current MPNHP proposal, the DOE would continue to own and manage its facilities, such as B Reactor, but the park would also include some private and county land (particularly in Los Alamos) (McGehee and Isaacson 51).

CHAPTER V

CONCLUSION: HIDDEN IN PLAIN SIGHT

In March 2014, twenty-six workers were exposed to chemical vapors at Hanford's waste tank farms. Tank vapor incidents have been occurring at Hanford since the tanks were built, but, since the early 2000s, the rate of chemical exposures has increased because the U.S. Department of Energy (DOE) and its contractors have been pursuing "faster, cheaper cleanup" (Carpenter and Gilbert 24).[1] The workers exposed to vapors in March have reported a range of symptoms, including headaches, persistent cough, sore throat, and a metallic taste in the mouth. After being exposed, one worker's nose bled for days, and her doctors eventually cauterized it to stop the bleeding (Frame, "Sick"). Other employees working in the tank farms have suffered from long-term (and sometimes fatal) medical conditions, including neurological problems.

Shortly after the tank farm exposures, the DOE held public meetings about Hanford cleanup progress at which its representatives only reluctantly discussed the vapor exposure incidents. "State of the Hanford Site" meetings, which give the public an opportunity to discuss cleanup progress with the DOE, U.S. Environmental Protection Agency (EPA), and Washington Department of Ecology (WA DOE), are supposed to be held annually, but the federal government shutdown in 2013 pushed that year's meetings to April 2014. At the April 16 State of the Site meeting in Portland, Oregon, the agency representatives presented on Hanford cleanup successes and challenges but again strategically avoided the recent vapor exposure incidents.

At the end of the meeting, I stood at the microphone and asked the representatives of the DOE, EPA, and WA DOE several pointed questions about the vapor incidents. I

wanted to know why the agencies had not mentioned the exposures in their presentations and how they were going to protect workers in the future. Kevin Smith, manager of Hanford's Office of River Protection, claimed to take my concerns seriously but the language he used to describe the vapor incidents suggested otherwise. Smith promised to seek new solutions to keep workers safe, but he also noted that workers have the option of wearing respirators whenever they are working in the tank farms. He insisted that Hanford's waste tanks have always been "stinky" and indicated that some workers are especially "sensitive" to "smells" emitted from the tanks, comparing Hanford's tank waste vapors to ordinary garbage.

But the vapors released from Hanford's tanks are more than just unpleasant odors; they may consist of "any number of more than 1,200 organic and inorganic chemicals, in addition to radiation" (Carpenter and Gilbert 24). By referring to chemical vapors as "smells," Smith trivialized and domesticated a problem that has made countless Hanford employees ill. By arguing that workers could do more to prevent these incidents, he blamed victims for their own exposures.[2] Though Smith promised greater protections for workers at the State of the Site meeting, as of June 1, 2014, six more employees have received medical treatment for inhaling chemical vapors at the tank farms (Frame, "6 Hanford").

Hanford's remediation crews are canaries in the coalmine; epidemics of sick workers tell us that Hanford is not operating safely and that the government has not stabilized the Site's chemical and radioactive waste. And yet there is painful irony in allowing humans to serve as canaries; workers have to become seriously ill for us to

understand that Hanford endangers inhabitants of the mid-Columbia Basin, communities downstream on the Columbia River, and people living across the Northwest.

Though science has confirmed a direct link between illness and exposure to the types of toxins in Hanford's tanks, the DOE and its contractors can conceal the danger of chemical and radioactive waste by manufacturing "an ambiguous climate for public discourse" (Cable, Shriver, and Mix 380). The agency does this by both ignoring exposure incidents (as its representatives did in their presentations at the Portland State of the Site meeting) and minimizing workers' claims to illness (as Smith did when I pressed him on the subject). The DOE's response to the recent vapor incidents mirrors its general strategy of avoiding accountability by denying problems. Worker illness makes visible the physical consequences of Hanford waste, which are otherwise invisible as a result of the DOE's denial and the long latency period of toxin-induced sickness.

This dissertation has argued that the federal government is using web communication, nature reserves, and nuclear tourism to control the discourse about Hanford, and that Hanford is a case study in an even larger problem. The DOE now employs new methods of containing scandal that are required by the advance of the Information Age. Instead of pursuing secrecy to manage discourse, the DOE and other federal agencies overseeing preservation at Hanford now engage in online publicity, preservation, and tours to redirect the public's attention from the uncontained environmental disaster to a neatly subdivided and managed patchwork of government-managed lands.

New information about waste tank leaks has emerged since I began writing this dissertation. The DOE confirmed in March 2014 that double-shell tank AY-102 has

sprung a third leak (Cary, "More"). When the first leaks in AY-102 were reported in 2012, the DOE claimed that the tank had special construction flaws that made it prone to leak and that "it seems unlikely that the other double-shell tanks in similar circumstances would have been similarly affected" (Washington River Protection Solutions ES-2). However, in February 2014, the *Associated Press* reported that there are "significant construction flaws" in other double-shell waste tanks that could cause them to fail as AY-102 has. Surveys of the tanks show that thirteen additional tanks could be prone to leak. Though the DOE has been charged with transferring waste from single-shell tanks to double-shell tanks, the future of the double-shell tanks is far from certain. The DOE has announced that it will not meet legal deadlines for pumping tank waste and completing construction of the vitrification plant (meant to stabilize tank waste in glass logs), which the Washington State Department of Ecology (WA DOE) finds unacceptable (Cary, "No Decisions"). Negotiations between the DOE and WA DOE over how the DOE will meet court-enforced deadlines are, as of early June 2014, at a standstill.[3]

Meanwhile, neither *Hanford.gov* nor the Hanford Site *Facebook* page—two of the most conspicuous sources of information for members of the public interested in Hanford cleanup—provided any updates on the tanks leaks, the construction of the vitrification plant, or the tank vapor incidents. The DOE operates these web and social media sites about Hanford, ostensibly to increase transparency about how money is spent, where contamination exists and how it is cleaned up, and how decisions are made. And yet, these sites say nothing about the most dangerous events occurring at Hanford. Instead of explaining the DOE's position on waste tanks or announcing how the agency intends to prevent future vapor exposures, the Hanford Site *Facebook* page celebrated recent events

at Hanford, including the DOE's donation of computers to the Hanford Reach Interpretive Center, the Site's annual Health and Safety Expo, the DOE's celebration of Women's History Month, and the achievement of several cleanup milestones. It also offered several reminders about opportunities to offer public comments or go on government-led tours (of both the Hanford Site and the Hanford Reach National Monument). Mixed in with these updates were several explicit reminders that the DOE and its contractors are protecting the local environment. One status update from March 25, 2014, which included photos of bald eagles roosting at Hanford, boasted that "DOE and contractor Mission Support Alliance received the Presidential Migratory Bird Federal Stewardship honorable mention award for the second time. (See Appendix C a screenshot of the status update.) While work at Hanford focuses on cleanup, this award illustrates the continued dedication to environmental stewardship by DOE and its contractors." The DOE continues to offer the eagles as a symbol of Hanford's ability to support life.

Also since writing the preceding chapters, discussions about what will be done with lands remediated and released by the DOE have intensified. These conversations hinge on whether lands along the Columbia River, which the DOE expects to have cleaned up by 2015, ought to be made accessible to the public. In March 2014, an official from the DOE's Office of Environmental Management said that the federal government would seek to "turn some of that land back over to the community for reuse" (qtd. in Cary, "Federal"). The federal government and community leaders appear to agree on this subject, except that the Tri-City Development Council (TRIDEC) and the Tri-Cities Visitor and Convention Bureau, along with other local leaders, are concerned that remediated lands will be transferred to the U.S. Fish and Wildlife Service (FWS) and not

opened to public access. The federal government claims that land may be transferred to the FWS for addition to the Hanford Reach National Monument, but local leaders argue that "adding additional property to an already underfunded and understaffed agency could be doing a complete disservice to both the Fish and Wildlife Service and our community" (Cary, "Tri-City"). TRIDEC and the Visitors Bureau have put forth a proposal that would open remediated lands to "controlled public access for hiking, biking, and camping." Local people want more access to remediated lands and the Monument, but some areas that have been released from Hanford cleanup are still dangerous; as I discussed in Chapter III, Monument lands serve as a buffer between Hanford's radioactive materials and nearby communities.

TRIDEC and the Visitors Bureau have proposed to partner with the National Park Service (NPS) as well as the DOE in developing plans to open remediated lands to tourism. Though the Manhattan Project National Historical Park (MPNHP) proposal has repeatedly died in Congress, Hanford boosters see the park's creation as a foregone conclusion. In a recent attempt to get the proposal passed, Doc Hastings, the Natural Resources Committee Chairman of the U.S. House of Representatives, sponsored an amendment to the National Defense Authorization Act of 2015 that would create the MPNHP. The bill has passed the House. Advocates for the Park, such as Hastings, argue that it has bipartisan support and that park advocates and historic preservationists are backing the project (Atomic Heritage Foundation). This makes it appear as though reasonable people of all political orientations support the idea of bringing more tourists to Hanford at a time when conditions at the Site are disconcertingly unstable.

The proliferation of DOE representations of Hanford online as well as the increase in the number of nature reserves and historic sites within the nuclear reservation's bounds suggest not that the DOE is becoming more transparent and Hanford is becoming safer for human visitors and non-human inhabitants but rather that the federal government is trying to clamp down on this contested site. DOE *Facebook* photos of dump trucks carrying contaminated soil to Hanford's giant low-level waste landfill and FWS webpages about the health of Columbia River salmon may demonstrate the genuine pride of government employees who are working to stabilize waste and protect wildlife, but they do not represent government openness.

Even when the government conveys substantive information about the weapons complex via its websites and *Facebook*, the public cannot count on that information to be available later. The government's web communications are strikingly ephemeral; as I was writing this dissertation, several Hanford websites were moved, altered, or deleted entirely. Their availability was also subject to the vagaries of national politics; for example, the FWS website about the Hanford Reach National Monument was completely unavailable for the first two weeks of October 2013 because Congress could not agree on a budget and the federal government had entered a shutdown. Such events demonstrate that the government's Hanford-related websites offer only a façade of openness and accountability.

And yet that façade is believable enough to convince people to take tours of Hanford. When the agency posts photos of bald eagles roosting at the Site and jokes about cleanup workers having a "glowing good time," it gives outsiders the impression that it might be safe—and even amusing—to visit Hanford. By expressing pride in the

work done at the Site and by representing the cleanup as nearly complete, the DOE controls public perception and makes Hanford seem like a reasonable tourist destination. The rise of the Internet has given governments powerful new tools for managing their citizens, and the DOE has made extensive use of those tools at Hanford.

Though the government bombards us with a constant stream of meticulously crafted information about Hanford, its plans to bring more tourists to the Site suggest that—after decades of failed cleanup—it has grown increasingly desperate to appease the public. The DOE and FWS have long been managers at Hanford, but the proposal to create a MPNHP and bring NPS into the mix of federal agencies operating at the Site represents the government's frenzied effort to give Hanford the appearance of order. In the past, most of the designations given to Hanford lands kept the public off the nuclear reservation and its former buffer zone (as in the case of the Arid Lands Ecology Reserve, which is only open to scientists). Today, the DOE has shifted tactics and begun to bring more tourists to the Site. This increased openness on the part of the federal government shows not that Hanford has become safe and habitable but that government officials know they need to offer more public access to demonstrate that they have made progress on cleanup. Since the government can no longer maintain secrecy, it must hide the extent of Hanford's contamination in plain sight.

Hanford's chemical and radioactive poisons have affected people living in the Hanford area most directly, but many Tri-Citians are clamoring for more access to Hanford lands (whether for recreation or development). This may seem puzzling, given that many people in the area have personal experience of the Site's health impacts, but people living in places irreversibly contaminated by government and industry have both

more and less perspective on local conditions. They have direct experience of living and working in toxic environments, and thus they may possess greater insights into associated risks. At the same time, government agencies and contractors working in their communities often lie to them about the extent and location of contamination as well as the dangers it poses. In the Tri-Cities, local people may support government cleanup, preservation, and tourism because they see these activities as being in their best interest, but often, that support can translate to public support for DOE deception and containment.

Hanford's future looks bleak not only because of the DOE's mismanagement of an already impossible task but also because of the way the federal government is—as one Washington Department of Ecology employee said—"consistently in denial" at Hanford (Frame, "Feds"). However, this is where we—as members of the public—might step in and contribute to reducing Hanford's threats. By paying close and sustained attention to the contours of the DOE's discourse about Hanford, we might begin to resist that denial and pursue a better future for Hanford workers and everyone living downwind and downstream of the Hanford Site. When we see that the government has only reluctantly pursued transparency at Hanford, that its web communications are lacking in substantive information and are subject to disappearance, that it deploys nature to suggest that Hanford is safe, and that it would bring tourists to the Site even as tank workers are falling ill due to exposure to toxic vapors, we can begin to recognize a pattern of deception and denial. This recognition, coupled with an effort to find more accurate sources of information, can help us make better decisions and begin to articulate a more effective protest.

There are some immediate, material solutions that might help to stabilize the situation at Hanford. The Site's regulators and the State of Washington might step in to ensure that workers have better protections from tank waste exposures. Workers should have access to supplied air, particularly when they are working in or near the tank farms. The DOE can invest in new waste tanks to contain waste until the vitrification plant is fully functional. To make certain that the vitrification plant is built to operate safely and effectively, the DOE can stop rewarding contractors with bonuses for work shoddily done. To accomplish all of this, the federal government may need to bring more or different regulators to the Site. The DOE has repeatedly demonstrated its inability to pursue safe and efficient cleanup, and so it may take oversight by yet another entity to get Hanford cleanup under control.

None of this can happen unless the narrative about Hanford changes. Since I began my research on Hanford, I have been struck first by the degree to which the DOE controls the current narrative and second by the fact that most essays, articles, and television news stories do little to move beyond the most basic details about Hanford. Because the majority of people do not even know that Hanford exists, scholars and journalists are obliged to rehearse Hanford's fundamentals. This demonstrates not the ignorance of the American public but how effective the DOE has been at discursively containing the Site's problems. In 2014, twenty-five years after the U.S. government signed a legal agreement saying that it would properly treat, stabilize, and dispose of Hanford waste, we must hold it to that promise. And we must do so before more workers get sick and before a fire, earthquake, or waste tank explosion brings to light what a spectacular catastrophe Hanford has been all along.

Notes

[1] Tom Carpenter and Clare Gilbert cite a 2003 Government Accountability Project (GAP) report that noted a "drastic increase in the rate of workers being exposed to chemical vapors at [Hanford] and requiring medical treatment." Carpenter and Gilbert argue that the increase in exposures and worker illness will only get worse if the DOE continues to aggressively pursue cleanup goals: "The more intense the cleanup effort, the more tank waste is agitated, escalating the release of pent-up toxic vapors into the work environment" (27). This is the flip side of quicker cleanup; more and more workers are made seriously ill in the process. When public interest groups press for better and more thorough Hanford cleanup, they must do so with the possible consequences for workers in mind. Hanford Challenge (which Carpenter directs) is a cleanup watchdog that specializes in protecting Hanford workers (whistleblowers and exposure victims alike).

[2] Hanford workers claim that management discourages them from wearing respirators, because getting workers suited up takes extra time and money (Frame, "Calls"). The DOE has complete authority over workplace safety at Hanford, so outside agencies like the Occupational Safety and Health Administration can neither investigate working conditions at Hanford nor ask the DOE to improve safety protocols.

[3] Both the WA DOE and the Hanford Advisory Board have called for the DOE to build new waste tanks.

APPENDIX A

U.S. DEPARTMENT OF ENERGY HANFORD SITE *FACEBOOK* SCREENSHOTS

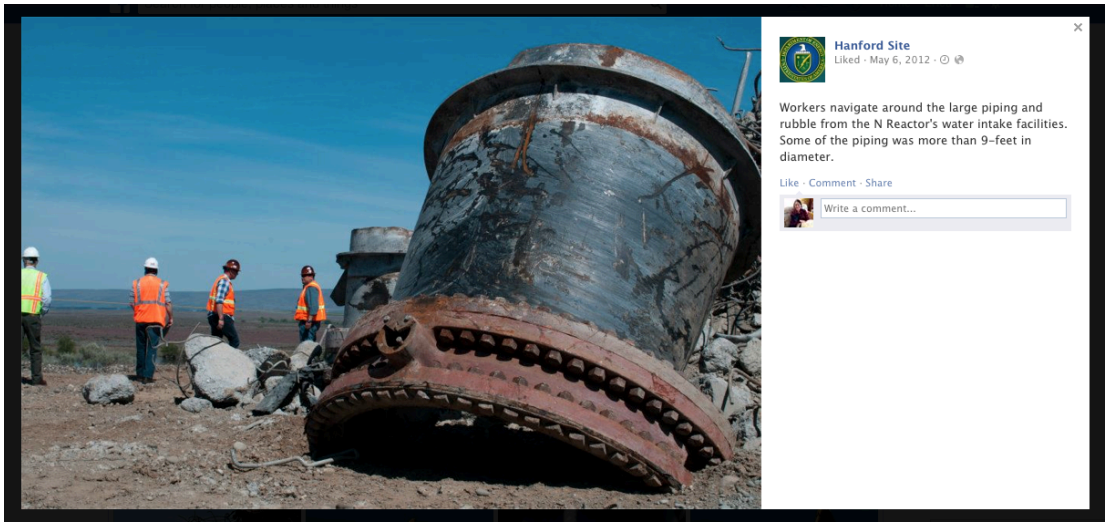

Figure A1. Many photos posted on the Hanford Site *Facebook* page feature workers laboring under vast blue skies to dismantle weapons-era infrastructure. Here, a former reactor intake pipe dwarfs nearby workers. Photos like this attempt to capture the immense size of the Site in order to demonstrate the difficulty of its waste problems. Caption: "Workers navigate around the large piping and rubble from the N Reactor's water intake facilities. Some of the piping was more than 9-feet in diameter." Date posted: May 6, 2012.

Figure A2. Many photos create a sense of intimacy with Hanford workers, who are frequently pictured in radioactive protective clothing. In this photo, the photographer places the viewer in the midst of workers removing a 10-ton plutonium glovebox from the Plutonium Finishing Plant (a building where Hanford workers took plutonium that had been chemically separated from irradiated fuel rods and turned it into metal buttons for nuclear weapons). Caption: "Workers prepare the sections of the glovebox for separation. Altogether, the glovebox was approximately 10-tons in weight and two stories tall." Date posted: October 25, 2012.

Figure A3. The Public Affairs Officers who operate the Hanford Site *FB* page are fond of wordplay, as evidenced by this update, which plays on the popular misconception that radioactive substances glow, in order to suggest that workers enjoy handling radioactive material. Date posted: June 19, 2012.

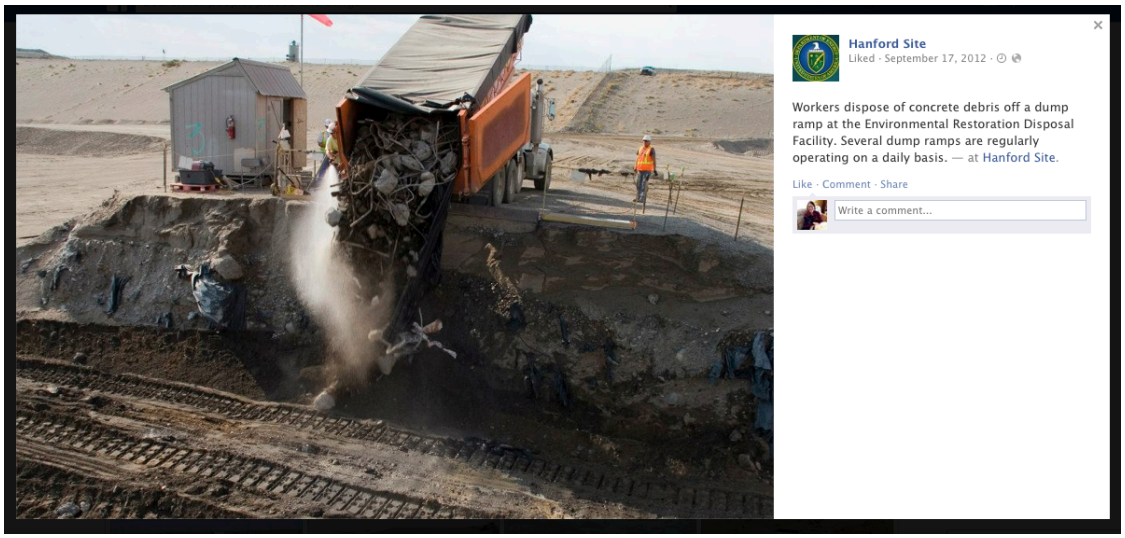

Figure A4. The Hanford Site *FB* page often demonstrates cleanup progress by posting photos of demolition and dumping. This photo was posted in an album titled "Hanford Landfill Reaches 14 million tons disposed." The Environmental Restoration Disposal Facility (ERDF), a low-level radioactive, hazardous, and mixed waste landfill near the center of the Hanford Site, accepts up to 600 truckloads of waste each day. Though the DOE often refers to Hanford "cleanup" (which might suggest that waste is removed from the Site), it often measures progress in tons of waste moved to ERDF. Caption: "Workers dispose of concrete debris off a dump ramp at the Environmental Restoration Disposal Facility. Several dump ramps are regularly operating on a daily basis." Date posted: September 17, 2012.

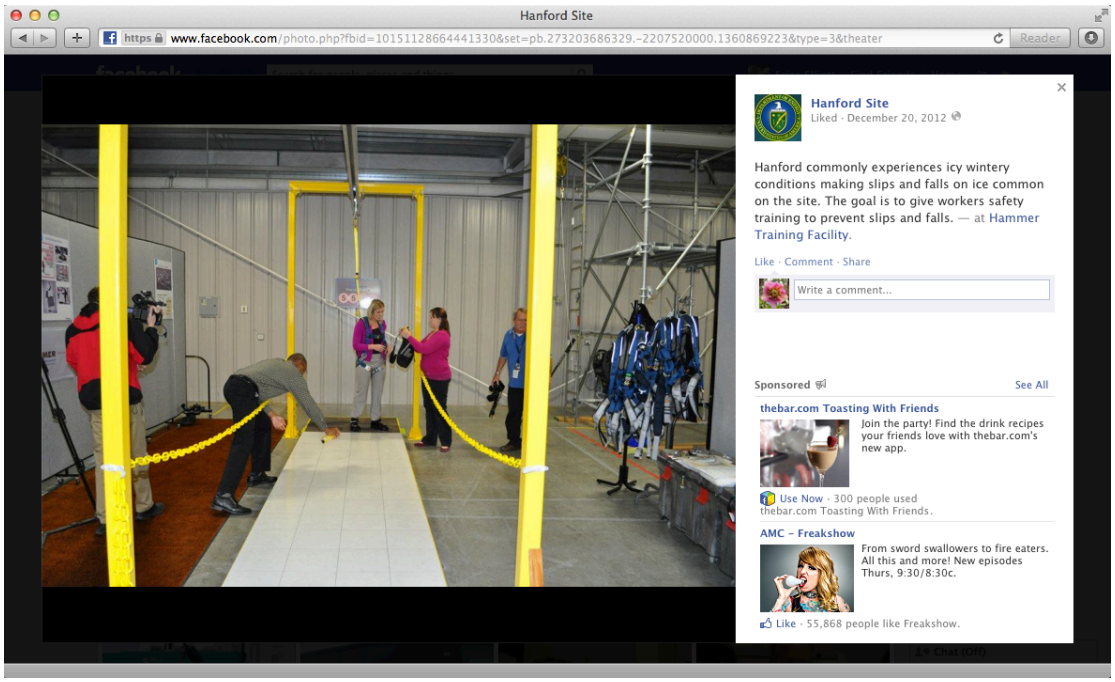

Figure A5. Often, when the Hanford Site *FB* page posts information about a specific aspect of Hanford cleanup, it emphasizes that the job is being performed safely. The page also distracts from some of the larger safety issues related to chemical and radioactive waste by posting photos of safety training exercises like the one depicted above. Caption: "Hanford commonly experiences icy wintery conditions, making slips and falls on ice common on the site. The goal is to give workers safety training to prevent slips and falls." Date posted: December 20, 2012.

Figure A6. Numerous photos posted on the Hanford Site *FB* page depict wildlife and nature scenes, as in this photo of a coyote padding through the snow. These photos often portray Hanford's nature as serene and intact (as in the photo above, which includes no visible traces of the nuclear site's infrastructure). Posted: January 28, 2012.

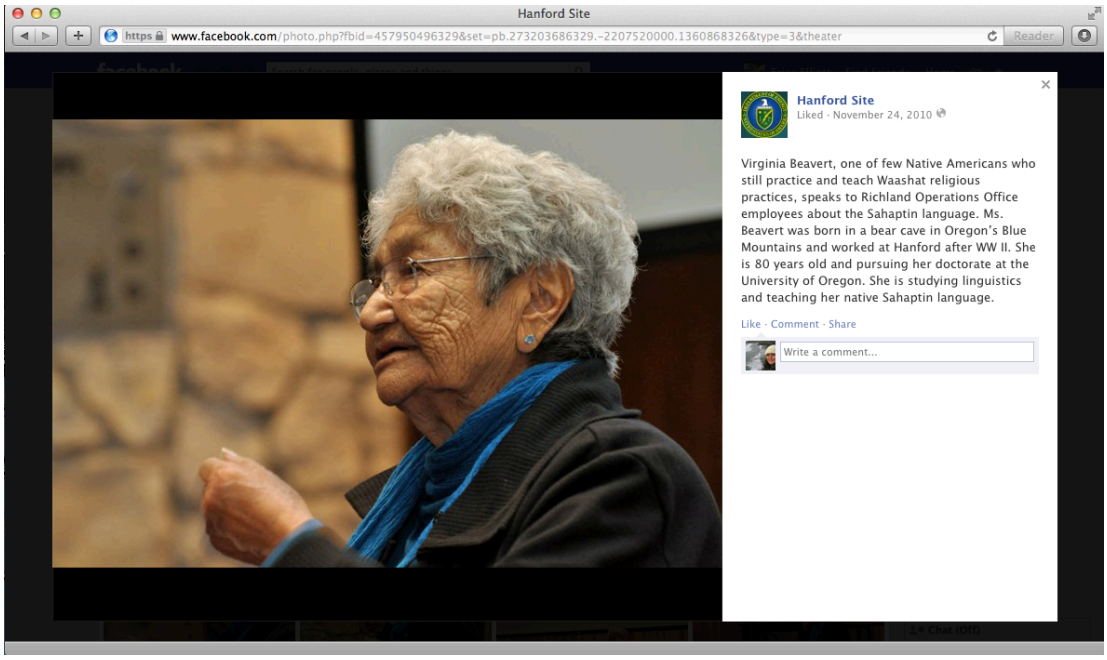

Figure A7. Hanford receives many visits from local, state, and national politicians as well as outsiders (like engineers from the Fukushima nuclear plant in Japan) who come to study Hanford's remediation projects. The Hanford Site *FB* page also posts photos of Native American visitors, though it says nothing about how local tribes view Hanford. Caption: "Virginia Beavert, one of a few Native Americans who still practice and teach Waashat religious practices, speaks to Richland Operations Office employees about the Sahaptin language. Ms. Beavert was born in a bear cave in Oregon's Blue Mountains and worked at Hanford after WWII. She is 80 years old and pursuing her doctorate at the University of Oregon. She is studying linguistics and teaching her native Sahaptin language." Date posted: November 24, 2010.

Figure A8. The Hanford Site *FB* page frequently posts information about the Department of Energy's public outreach efforts. This photo shows a Hanford Public Affairs Officer, Cameron Salony, speaking to a group of local high school students. Salony is smiling at a student who is demonstrating the white radioactive protective clothing that many people associate with the Site. Photos like this suggest that the DOE is preparing the local community for several more decades of cleanup. Caption: "Hanford Speakers Bureau visit Kiona-Benton High School Friday in Benton City. Speaker Cameron Salony talks about personal protective equipment (PPE) with students." Date posted: December 17, 2012.

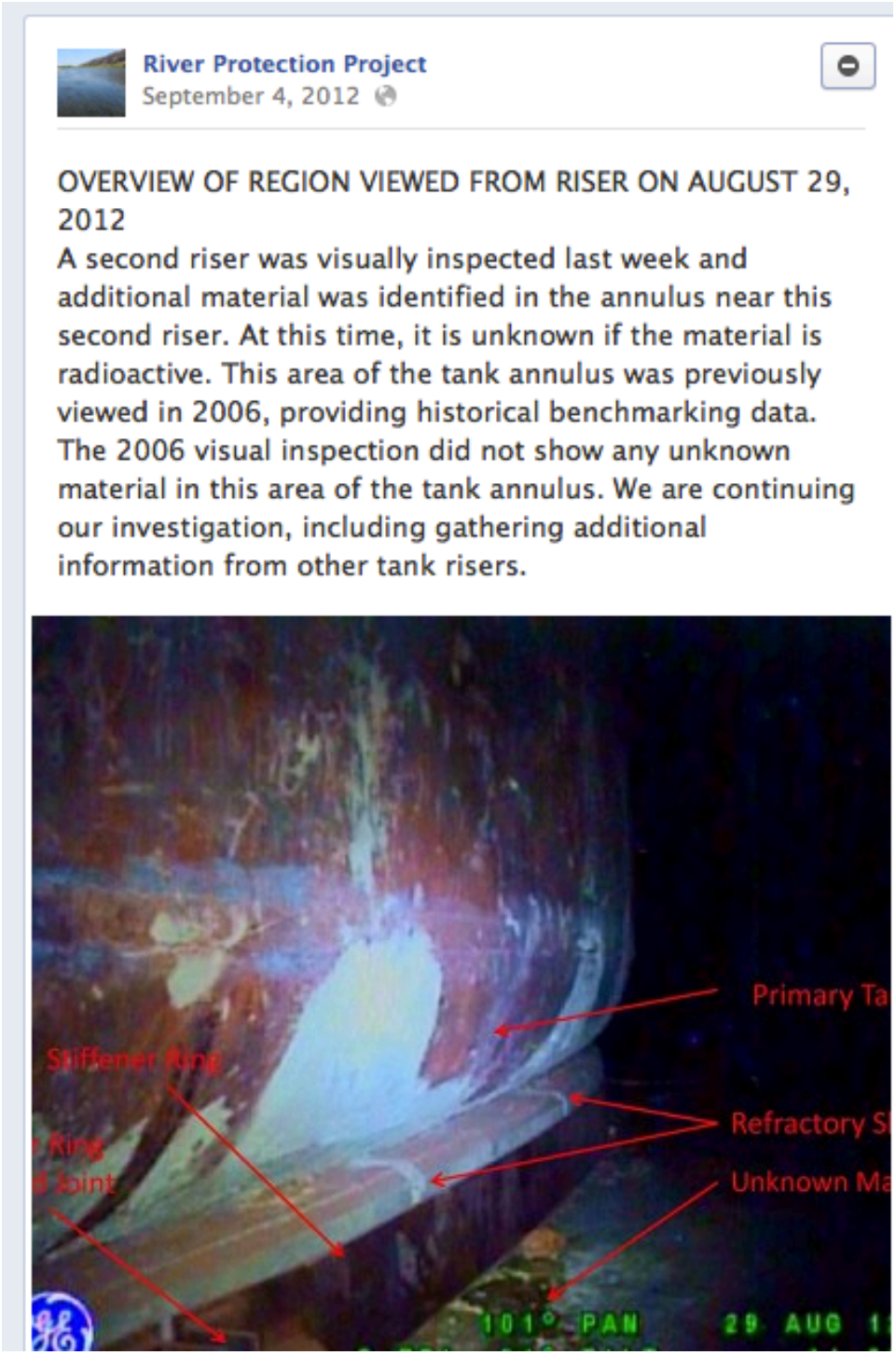

Figure A9. Few posts on the Hanford Site *FB* page communicate information about Hanford's most troubling waste problems. When the DOE has posted details about the recent leak of tank AY-102—as in this post, which includes a photo of the tank's annulus—it has carefully avoided making any admissions about the nature of the " unknown material" escaping the tank.

APPENDIX B

PHOTOGRAPHS OF HANFORD REACH NATIONAL MONUMENT SIGNS

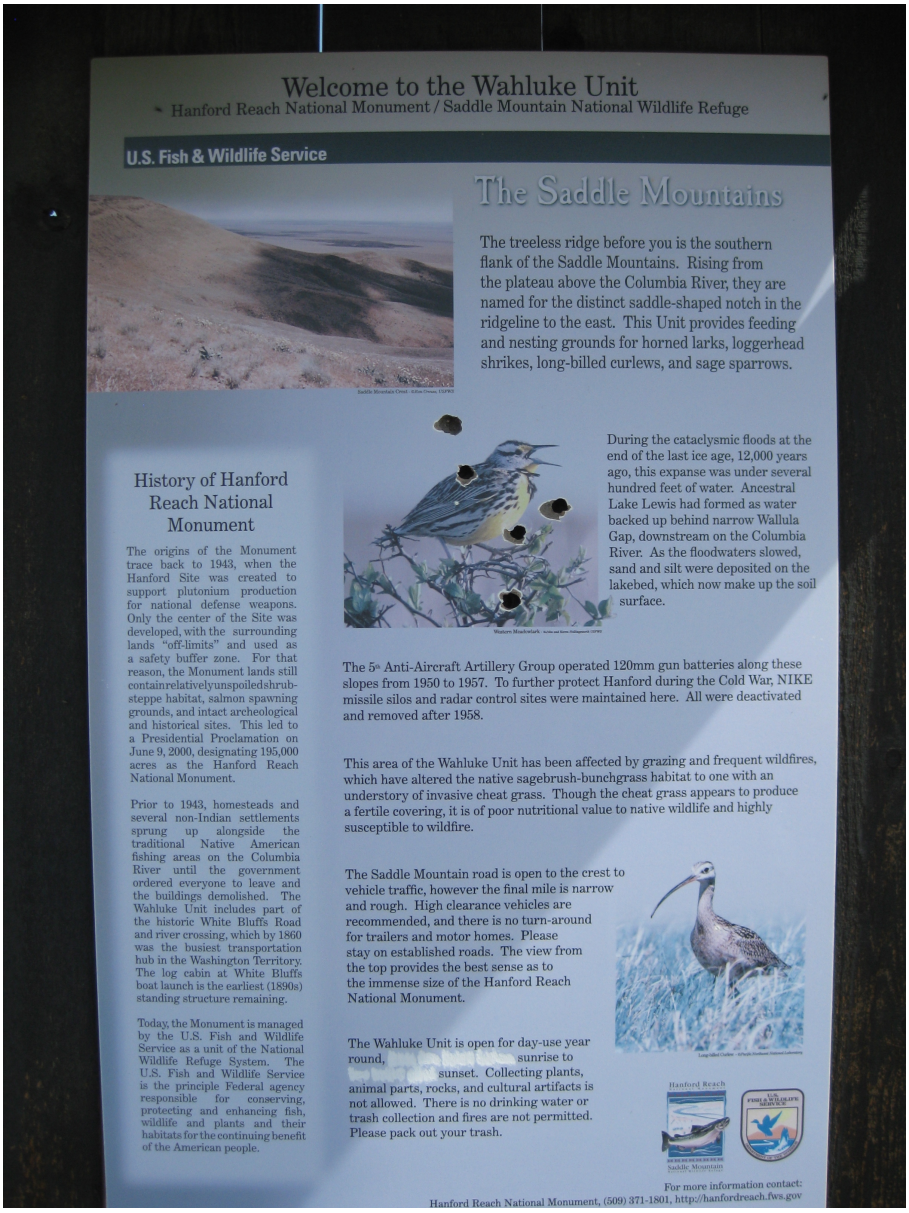

Figure A11. Photograph of FWS interpretive sign at the Wahluke Unit of HRNM. Though FWS obviously did not intend for it, the most prominent feature of the sign is a collection of bullet holes shot through a drawing of a Western meadowlark.

Figure A12. One of few signs erected by FWS at HRNM alerts people that they have reached a “DEAD END.” The road does eventually stop, but it ends at an overlook with a spectacular view of the Columbia River and the Hanford Site.

APPENDIX C

DEPARTMENT OF ENERGY HANFORD SITE STATUS UPDATES

Hanford's Manhattan Project and Cold War Era Artifacts

Updated about 2 months ago

The artifacts from Hanford's Manhattan Project and Cold War era (1943-1990) that have been generated, tagged, and mostly collected are going to be critical to telling the stories of ingenuity, industrial production, creativity, problem-solving, safety, and many more. These artifacts include things like tools, machinery, signs, instruments, period-correct household or office products, first-of-their-kind pieces of equipment, the desk of famed physicist Enrico Fermi, and original reactor-area phone booths. DOE believes these treasures of history should eventually be made available for the public to enjoy and for students, teachers, and researchers to learn from in the future and is working toward this goal. Until then, we hope you enjoy these photos.

Figure A14. This status update from the Hanford Site *Facebook* page included eight photos of Site artifacts that the DOE collected and tagged for preservation. Date posted: January 24, 2014.

Figure A15. The DOE has posted about the presence of eagles at Hanford on its Hanford Site *Facebook* page several times. In this status update, the agency boasts that the DOE and its contractor, Mission Support Alliance, have been recognized for their "continued dedication to environmental stewardship." Date posted: March 25, 2014.

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