

AMENDED STOLLER-ESER No. 132

**Ecological Resources Associated with Two Alternative Sites
for the Proposed Remotely Handled Low Level Waste Facility.**

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Introduction

Purpose of this Report

The U.S. Department of Energy (DOE) has identified a mission need for disposal of remote-handled low level waste (LLW) consisting of activated metals and ion exchange resins generated at the Idaho National Laboratory (INL). The existing disposal facility at the INL Radioactive Waste Management Complex (RWMC) will not be available after 2017, and a new disposal location must be selected. An alternatives analysis conducted to evaluate strategies to achieve this mission need identified two broad options for disposal of INL generated remote-handled LLW: offsite disposal most likely at the Nevada Test Site (NTS), or onsite at a newly constructed facility.

The purpose of this report is to assess the potential impacts to ecological resources including threatened, endangered, and sensitive species due to construction and operation of a facility to receive remotely-handled LLW associated with the alternatives described below.

Amendment to Original Report (November 2010)

This report was originally issued in June 2010. In August 2010, the U. S. Fish and Wildlife Service reinstated the gray wolf as an Endangered Species. The section on Affected Environment has been updated to reflect this change. This does not change the environmental impacts addressed in the Environmental Assessment.

Mission Need

The continuing nuclear mission at INL, associated ongoing and planned operations, and Naval spent fuel activities at Naval Reactors Facility (NRF) require continued capability to appropriately dispose of remote-handled LLW. However, with the closure of RWMC, INL will no longer have an onsite disposal capability for remote-handled LLW. The Remote-Handled LLW Disposal Project will establish continued, uninterrupted, remote-handled LLW disposal capability. Replacement remote-handled LLW disposal capability is required by October 1, 2017.

Providing continued disposal capability for remote-handled LLW supports the Office of Nuclear Energy's mission "to lead the DOE investment in the development and exploration of advanced nuclear science and technology." Without established, viable remote-handled LLW disposal capability, ongoing and future Office of Nuclear Energy programs at INL would be adversely impacted as remote-handled LLW disposal options would need to be considered on a program-by-program basis, resulting in increased costs and schedule. The lack of remote-handled LLW disposal capability also may impede DOE's ability to initiate new programs at INL.

Remote-handled LLW disposal capability also is critical to meeting National Nuclear Security Agency's mission to "provide the United States Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants." All spent nuclear fuel from the Navy's nuclear-powered fleet is sent to NRF for examination, processing, dry storage, and eventual shipment to a permanent geologic repository. A reliable disposal path for remote-handled LLW generated during spent nuclear fuel handling and packaging operations is

essential to NRF's continued receipt and processing of Navy spent fuel to support the Naval Nuclear Propulsion Program and national security.

From waste generation projections, INL must have the capability to dispose of approximately 84 m³/yr of remote-handled LLW with radiation exposure levels up to 30,000 R/hr, commencing by the end of FY 2017 (Harvego et al. 2010).

Description of the Proposed Action

Based on the analysis in the conceptual design report (Harvego et al. 2010) and operational experience at RWMC, the proposed onsite facility design would dispose of all identified remote-handled LLW waste streams in concrete vaults, which would be placed in an unlined, sedimentary soil bed. The proposed configuration of concrete vaults is based on the RWMC vaults, which are sized to accommodate the 55-ton cask liner currently used by NRF for transport of remote-handled LLW. Vaults of similar design, but sized to accommodate the cask liner dimensions used for the Advanced Test reactor (ATR) resins and the cask liner dimensions anticipated for the ATR and Materials and Fuels Complex (MFC) activated metals, also would be installed. If future cask and liner systems identified for use differ from those described herein, the design would be adjusted between conceptual and final design to account for these differences. The number of vaults proposed is based on the estimated waste stream generation rates anticipated from the generator facilities.

Construction of the proposed disposal facility involves installation of concrete vaults for remote-handled LLW activated metals and ion-exchange resin waste streams. However, none of the selected design features are based on characteristics unique to activated metals or ion-exchange resin waste streams, and therefore should not, in and of themselves, limit the type of remote-handled waste that could be disposed of in the facility. In accordance with DOE Order 435.1, specific waste acceptance criteria, based on the performance assessment and composite analysis, will be established for the proposed facility.

Alternative 1. Proposed Action. Near the Advanced Test Reactor Complex

The Proposed Action is located about 0.5 mi southwest of the Advanced Test Reactor Complex (ATRC)). The preferred area is a 45-acre parcel within which the approximately 5-acre facility would be located. The preferred site is located in an undisturbed area with existing unpaved road access and is located within 0.25 mi of accessible paved roadway. A power line is located about 1 mi to the east. Surficial sediment thickness determined from wells in the vicinity of Site 5 range from 43 to 73 ft with a mean thickness of 55 ft, which is more than adequate to support facility design and construction options. It also has excellent subsurface characteristics to impede downward migration of radionuclides and is located away from potential volcanic hazards. There are some geotechnical and characterization data from ATRC construction activities that may be applicable at this location. The site is outside of aquifer recharge zones and perched water. It is, however, approximately 3.3 ft (1 meter) above the 500-year floodplain and is near a perched water zone. The location is within a core infrastructure area but is well away from the explosives test area (Harvego et al. 2009).

Alternative 2. Southwest of Idaho CERCLA Disposal Facility

Alternative 2 is located west of Idaho CERCLA Disposal Facility (ICDF) and southwest of the Idaho Nuclear Technology and Engineering Center (INTEC). This Alternative is a 45-acre parcel within which the approximately 5-acre facility would be located. Power lines are located to the east and west within about 0.5 mi of the proposed site. Surficial sediment thickness, determined in wells in the vicinity of this location, ranges from 20 to 49 ft with a mean thickness of 31 ft. This is sufficient to support design and construction optimization. The site is located away from volcanic hazards.

There are abundant geotechnical and characterization data associated with the nearby facilities (i.e., INTEC). The site is well-drained and not prone to surface water flooding and/or ponding, and it avoids wellhead protection areas and aquifer recharge zones. Although the site is approximately 3.3 ft above the 500-year floodplain, it is recommended that additional flood data be reviewed to firmly establish the site's relationship to the 500-year floodplain. The site is not located in the vicinity of perched water. Alternative 2 is within a core infrastructure area but well away from the explosives test area (Harvego et al. 2009).

Alternative 3. No Action

Under this alternative, the Proposed Action (Alternative 1) and Alternative 2 would not be conducted requiring other options for waste disposal beginning in 2017 to be considered.

While this alternative does not meet the purpose and need of the proposed action, the no action alternative forms the baseline for the proposed action. As such, the no action alternative will be carried forward as part of the analysis.

Affected Environment

General Site Characterization

The alternative sites were surveyed to collect information necessary to characterize the ecological resources present at those sites. Additional information was gathered from existing reports and datasets.

Vegetation Communities

Both of the Alternative sites are within the general area burned by the Tin Cup Fire in July of 2000. The fire burned more than 40,000 acres and removed most of the big sagebrush (*Artemisia tridentata*) that had dominated most of the area before the fire. The area is presently dominated by herbaceous species and/or by re-sprouting shrubs. A few sagebrush individuals survived the fire and there appears to be some recruitment from the edges of the fire as well. The fire removed big sagebrush from most of both sites with only a few remaining individuals and/or small patches remaining.

The site near the ATRC is dominated by native grasses (primarily Sandberg bluegrass [*Poa secunda*]) and green rabbitbrush. The vegetation at this location is a very homogenous native community. The forb stratum is abundant and diverse and the only undesirable species found in the entire 45 acres were cheatgrass (*Bromus tectorum*) and desert alyssum (*Alyssum desertorum*).

The site near ICDF is much more variable in both plant community composition as well as species dispersion. The vegetation communities in this area include crested wheatgrass (*Agropyron cristatum*) monoculture with rabbitbrush interspersed as well as some areas of big sagebrush remaining or a Sandberg bluegrass/Wyoming big sagebrush/native forbs mix. This area also had much more cheatgrass mixed throughout.

Sensitive Plant Species

A list of the sensitive plant species that have the potential to occur within the area affected by construction of the LLW facility was compiled using data from the Idaho CDC (2009). All sensitive species known to occur in Butte, Custer, Jefferson, Bonneville and Bingham counties were considered. Species with habitat requirements similar to the conditions occurring around the affected area were included in the list. Sensitive species that were not included in the list were discounted because the habitat around the affected area was not suitable due to topography, soils, or climate. Table 1 lists sensitive plant species for which suitable habitat is present on or around the affected area.

Table 1. Sensitive species potentially occurring in the area affected by the proposed facility at either of the alternative sites and appropriate State of Idaho, U.S. Forest Service Region 4, and/or Bureau of Land Management Ranking.

Scientific Name	Common Name	State	USFS	
			Reg. 4	BLM
<i>Astragalus aquilonius</i>	Lemhi milkvetch	GP3	S	TYPE 2
<i>Astragalus diversifolius</i>	meadow milkvetch	GP2	S	TYPE 3
<i>Camissonia pterosperma</i>	wing-seeded evening-primrose	S		TYPE 4
<i>Catapyrenium congestum</i>	earth lichen			S
<i>Eriogonum capistratum</i> Rev. var. <i>welshii</i> Rev.	Welsh's buckwheat	GP2	S	TYPE 3
<i>Ipomopsis polycladon</i>	spreading gilia	2		TYPE 3

A survey specifically for sensitive plant species was completed in June of 2010 in both proposed sites. The yearly precipitation levels were good for vegetation across the desert. Although suitable habitat for the sensitive plant species was located, none of the specific plants in question were found.

Ethnobotany

A list of species thought to be of historical importance to local tribes was compiled from Plant Communities, Ethnoecology, and Flora of the Idaho National Engineering Laboratory by Anderson et al. (1996). The list included those species documented to have been used by “indigenous groups of the eastern Snake River Plain,” (Anderson et al. 1996). Table 2 lists those species of ethnobotanical concern observed during the surveys for sensitive plants).

Invasive and Non-Native Plant Species

A total of eleven Idaho Noxious Weeds have been identified on the INL Site. No noxious weed species were observed at the sites proposed for the LLW facility. In a literature survey, Pyke (1999) identified 46 exotic species that are weeds capable of invading sagebrush steppe ecosystems, with as many as 20 of these classed as highly invasive and competitive. Other significant non-native and/or invasive plants found on the proposed LLW facility include cheatgrass (*Bromus tectorum*), tumble mustard (*Sysimbrium altissimum*) and crested wheatgrass (*Agropyron cristatum*, *A. desertorum*, *A. sibericum*).

Table 2. List of species of ethnobotanical concern occurring on vegetation plots surveyed in the affected areas of the facility construction.

Current Scientific Name	Common Name	Uses
<i>Achnatherum hymenoides</i>	Indian ricegrass	food
<i>Allium textile</i>	textile onion	food, medicine, flavoring, dye
<i>Artemisia tridentata</i>	big sagebrush	food, medicine, cordage, clothing, shelter, fuel, dye
<i>Chrysothamnus viscidiflorus</i>	green rabbitbrush	medicine, gum
<i>Delphinium andersonii</i>	Anderson's larkspur	medicine, dye
<i>Descurainia pinnata</i>	western tansymustard	food, medicine
<i>Descurainia sophia</i>	herb sophia	food, medicine
<i>Ericameria nauseosus</i>	rubber rabbitbrush	medicine, gum
<i>Lappula occidentalis</i>	flatspine stickseed	food
<i>Lomatium foeniculaceum</i>	desert biscuitroot	food, medicine
<i>Opuntia polyacantha</i>	pricklypear	food
<i>Poa secunda</i>	Sandberg bluegrass	food, medicine

Non-native species also present a challenge in disturbed areas. They establish very quickly and successfully compete with the native species. Cheatgrass and crested wheatgrass were present on both proposed sites. These non-native annual species are very quick to colonize any new disturbance and are very difficult to eradicate once they are present. Most non-native annuals produce large amounts of seed every year and the seeds remain viable for long periods of time.

Wildlife

Scientists on the INL have been collecting wildlife data for more than 40 years and have recorded a total of 219 vertebrate species (Reynolds et al. 1986) occurring on the INL Site, many of which are directly associated with sagebrush steppe habitat. Species that permanently reside on the INL Site include small and medium sized mammals (bushy-tailed woodrat [*Neotoma cinerea*], Ord's kangaroo rat [*Dipodomys ordii*], pygmy rabbit [*Brachylagus idahoensis*], black-tail jackrabbit [*Lepus californicus*], long-tailed weasel [*Mustela frenata*], badger [*Taxidea taxus*]), and reptiles (Great Basin rattlesnakes (*Crotalus viridus*), sage brush lizard [*Sceloporus graciosus*] and gopher snake [*Pituophis catenifer*]). Such species have small home ranges, limited mobility, or a social structure that restricts movements. With the exception of pygmy

rabbit, each of these species can be found in both sagebrush and grassland habitats. Birds (horned lark [*Eremophila alpestris*], sage sparrow [*Amphispiza bilineata*], rough-legged hawk [*Buteo lagopus*], and red-tailed hawk [*Buteo jamaicensis*]) and large mammals (elk [*Cervus elaphus*], mule deer [*Odocoileus hemionus*], and pronghorn [*Antilocapra americana*]) use the area in a seasonal transitory manner.

There are currently no species that occur on the INL that are listed as Endangered or Threatened, under the Endangered Species Act (ESA). However, the U.S. Federal District Court in Missoula, Montana, issued an order on August 5, 2010, in Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM, which vacated the delisting of the Northern Rocky Mountain (NRM) Distinct Population Segment (DPS) of the gray wolf. In compliance with this order, wolves are again considered endangered throughout the NRM DPS except where they are classified as experimental populations (southern Montana, Idaho south of Interstate 90, and all of Wyoming) which includes the INL.

Wildlife species of concern addressed in this analysis include all migratory birds (including raptors), sage-grouse (*Centrocercus urophasianus*), pygmy rabbits and all large mammal species.

At the ARTC location, there was visual confirmation of pronghorn antelope, horned lark, ravens, ground squirrels, and other small mammals. There was also evidence of badger present in the area. Wildlife or sign observed at the ICDF location included ground squirrels and other small mammals, badger, sage thrasher (*Oreoscoptes montanus*), barn swallow (*Hirundo rustica*), horned lark, meadowlark (*Sturnella neglecta*), pronghorn, and coyote (*Canis latrans*).

Greater Sage-Grouse

The US Fish and Wildlife Service recently released a finding that sage-grouse warrant protection under the Endangered Species Act, but are precluded due to other listing priorities (DOI-FWS 2010). Breeding habitats, primarily leks, have become a focal point for managing this species. Lyon (2000) estimated the average nest distances to the nearest lek varies from 0.6-3.9 mi but may be as great as 12.5 mi. Sage-grouse guidelines from Connelly et al. (2000) suggest that all sagebrush habitats within 2 miles of occupied leks be protected.

The Environmental Surveillance, Education and Research (ESER) program is conducting a sage-grouse radio telemetry study on the INL site. The results of this research will be incorporated into the INL Conservation Management Plan and a Candidate Conservation Agreement with the U.S. Fish and Wildlife Service. Sage-grouse were captured and fitted with radio transmitters at numerous leks throughout the INL in 2008 and 2009. No birds in that study have been reported to use the areas associated with the Alternative sites for proposed action (ESER unpublished data).

No sage-grouse leks have been reported in the vicinity of either alternative site (Shurtliff and Whiting 2009). With the loss of big sagebrush in the Tin Cup Fire, it is also unlikely that suitable nesting, brood rearing, or wintering habitat exists in the general vicinity of the proposed sites for the LLW facility.

Surveys of the area in June 2010 did not find sign of sage-grouse using these areas.

Pygmy Rabbit

Pygmy rabbits are sagebrush steppe obligate species and under consideration for protection under the Endangered Species Act. Pygmy rabbits depend on sagebrush for cover and forage. Once sagebrush is removed from an area pygmy rabbits disappear (Green and Flinders 1980, Katzner et al. 1997). Populations of pygmy rabbits on the INL Site may be relatively stable because much of the site remains undisturbed; however, little is currently known about the status of pygmy rabbit populations on the INL Site.

Two investigators surveyed the area south of the parking lot at ATRC and the area near ICDF on the west side of Lincoln for pygmy rabbits by walking both areas; this entailed the investigator operating the Trimble GPS unit to be positioned on the edge of the area being sampled while the other surveyor was positioned 66-82 ft from the Trimble operator. Surveyors searched the area in a zigzag pattern. The search pattern was modified while surveying in areas of sagebrush, by walking through the tallest and thickest stands of sagebrush within the survey areas. The survey was conducted during February weeks 1-3. During this time there was approximately 10-16 in of snow cover. It is preferable to conduct these surveys with fresh snow cover because recent tracks and pellets are obvious in fresh snow, thus facilitating identification of active burrows.

These surveys indicated that no active burrows were present at either of the alternatives sites. Little if any suitable habitat for pygmy rabbit was observed at each site.

Birds

Most avian species occupying the INL Site use both sagebrush and grassland habitats from a few days for feeding and resting during migration to several months for breeding and raising young. Many bird species utilize specific habitats for foraging and reproduction. Species that primarily use sagebrush include the greater sage-grouse, sage sparrow, Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*), and loggerhead shrike (*Lanius ludovicianus*). Species that occur mainly in grassland habitats include horned lark, western meadowlark, vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus bairdii*). Although most raptors use the site indiscriminately for foraging, nesting structures are a limiting factor in population abundance and species diversity.

Bird species observed at the ATRC site were horned lark, ravens (*Corvus corax*), and various species of sparrow. Two active nests were found of at the Alternative 1 site.

Bird species observed at the ICDF site were western meadowlark, sage thrasher, horned lark, and various sparrow species. Five active bird nests were located at the Alternative 2 site.

Large Mammals

Elk, mule deer and pronghorn have been observed during semi-annual surveys using the general areas of both alternative sites throughout the year. Comer (2000) found that elk tend to utilize sagebrush on lava habitat more frequently than any other habitat type on the INL Site. The majority of this habitat type on the INL Site occurs within the non-grazed areas. Pronghorn and mule deer are more randomly scattered throughout the INL Site, with concentrations being greater near the Big Lost River Sinks and juniper woodlands respectively.

At both the Alternative 1 and Alternative 2 sites, signs of elk, mule deer, and pronghorn use of the area were observed during surveys conducted in June of 2010. Pronghorn were observed at the ARTC location.

Environmental Consequences

Operational controls would be implemented prior to and during the facility construction and operation to minimize the potential for adverse direct and indirect impacts to ecological resources in the area of potential effects. A tiered approach with initial efforts focusing on identification and assessment, followed by various protection strategies, as necessary, would be adopted as summarized below.

Vegetation

Plant Communities

Land development at either location would increase soil disturbance and vegetation community fragmentation. An increase in soil disturbance would likely lead to an associated increase in weedy non-native species. The potential to displace native species in the communities adjacent to the selected site also would be amplified.

Potential impacts to the vegetation communities at either location can be controlled to some extent by minimizing the footprint of the soil disturbance. Weed control would also be necessary because even the slightest amount of soil disturbance would lead to non-native species invasions.

Invasive and Non-Native Species

Soil disturbance is a primary contributor to the spread of invasive plants. Invasive and non-native plants are present on both of the Alternative sites and could be spread by mowing, blading, grubbing, and any other means used to remove the vegetation in order to build a new facility. If the proposed construction schedule occurs coincident with or immediately following seed ripening for several invasive plants, including cheatgrass, spreading would likely occur. Similarly, disturbed soils would be open and available to receive seeds through much of the seed dispersal period for nearly all of the invasive species found in this survey. This would require additional efforts for weed management associated with construction area. Operational controls to minimize invasive and non-native species would include the development and implementation of a weed management plan.

Ethnobotany

The impacts of building a new facility would likely be greater on less common species than they would be on abundant species. Frequently occurring species are generally quite abundant; thus, removing several individuals would not greatly affect the larger population. Populations of species with more isolated distributions, however, are much more sensitive to the loss of several individuals.

Because the soil disturbance and risk of non-native species invasion would impact populations of species of ethnobotanical concern at either Alternative site, the most effective operational control to protect those populations would be to minimize the amount of soil disturbed. Potential impacts to populations of plant species of ethnobotanical concern also may be controlled by revegetating

areas impacted by soil disturbance. Seeds or seedlings are commercially available for about one-third of the species listed in Table 2; therefore, those species may be directly replanted, provided care is taken to choose appropriate subspecies and cultivars. Using a diverse mix of native species for revegetation would be important if species of concern, for which seed or stock is not available, are to re-establish voluntarily. Finally, weed control would be critical to facilitate re-establishment of native communities, including species of ethnobotanical concern.

Sensitive Plant Species

Because no occurrences of sensitive plants were found, no impacts to sensitive plant species are anticipated due to facility construction and operation at either Alternative site.

Wildlife

Both alternatives would have common unavoidable impacts to wildlife, including loss of ground-dwelling wildlife species and associated habitat, and displacement of certain wildlife species due to increased habitat fragmentation. Nesting bird surveys would be required prior to any vegetation disturbance between May 1 and September 1.

Sage-Grouse

Because no suitable habitat was found and no known active or historical leks are nearby, no impacts to sage-grouse are anticipated due to facility construction and operation at either Alternative site.

Pygmy Rabbit

Because no suitable habitat or active burrow systems were found, no impacts to pygmy rabbit are anticipated due to facility construction and operation at either Alternative site.

Habitat Fragmentation

Because Alternatives 1 and 2 are adjacent or near to existing industrial infrastructure and the area presently is not dominated by sagebrush, it is unlikely that habitat fragmentation related to construction or operation of this facility would have a substantial affect on sage-grouse or pygmy rabbit.

Cumulative Impacts

Because Alternatives 1 and 2 are adjacent or near to existing industrial infrastructure and would have much smaller foot print than that existing infrastructure, it is unlikely that there would be any substantial cumulative impacts on ecological resources.

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Appendix A

Suggested Text for the Environmental Assessment

Affected Environment

The natural vegetation of the INL Site consists of a shrub overstory with a grass and forbs understory. The most common shrub is Wyoming big sagebrush, where basin big sage may dominate or co-dominate in areas with deep or sandy soils. Other common shrubs include green rabbitbrush, winterfat, spiny hopsage, gray horsebrush, gray rabbitbrush, and prickly phlox. The shrub understory consists of native grasses, thickspiked wheatgrass, Indian ricegrass, bottlebrush squirreltail, needle-and-thread grass, Nevada bluegrass, and bluebunch wheatgrass and native forbs: tabertip hawksbeard, Hood's phlox, hoary false yarrow, paintbrush, globe-mallow, buckwheat, lupine, milkvetches and mustards. A portion of the INL Site has been designated as the Sagebrush Steppe Ecosystem Reserve that has a mission to provide research opportunities and preserve sagebrush steppe habitat. In addition, the INL site is designated a National Environmental Research Park.

A wide range of vertebrate species are located within the site; several species are considered sagebrush-obligate species, meaning that they rely upon sagebrush for survival. These species include sage sparrow, Brewer's sparrow, northern sagebrush lizard, Greater sage-grouse, and pygmy rabbit.

There are currently no species that occur on the INL that are listed as Endangered or Threatened, under the Endangered Species Act (ESA). However, the U.S. Federal District Court in Missoula, Montana, issued an order on August 5, 2010, in *Defenders of Wildlife et al. v. Salazar*, CV 09-77-M-DWM and *Greater Yellowstone Coalition v. Salazar*, CV 09-82-M-DWM, which vacated the delisting of the Northern Rocky Mountain (NRM) Distinct Population Segment (DPS) of the gray wolf. In compliance with this order, wolves are again considered endangered throughout the NRM DPS except where they are classified as experimental populations (southern Montana, Idaho south of Interstate 90, and all of Wyoming) which includes the INL.

Additionally, the Greater Sage-grouse is a Candidate species and is common on the INL Site. Several species of concern, including, long-eared myotis, small-footed myotis, Townsend's big-eared bat, pygmy rabbit, Merriam's shrew, long-billed curlew, ferruginous hawk, northern sagebrush lizard, and loggerhead shrike occur on the site.

Environmental Consequences

Both alternative sites are in an area burned by a wildfire in 2000. Only a few patches of sagebrush remain in this area. The current vegetation includes primarily native and non-native perennial grasses, green rabbitbrush, native perennial forbs and non-native annual grasses and forbs. A number of small mammals and reptiles permanently reside in the area around the areas, while bird species and large mammals use this habitat in a seasonally transitory manner.

Wildlife species of concern include Greater sage-grouse, all migratory birds (including raptors), pygmy rabbits, Great Basin rattlesnakes, and all large mammal species (Blew et. al. 2010). No critical habitat for threatened or endangered species, as defined in the Endangered Species Act (ESA), exists on the INL Site. Greater sage-grouse is considered to be a Candidate species for listing under ESA. However, if a species such as the greater sage-grouse or pygmy rabbit are listed before or during construction of the facility, DOE would initiate formal consultation with the US Fish and Wildlife Service. No habitat or sign for either sage-grouse or pygmy rabbit were found in either Alternative site.

Potential impacts to vegetation communities associated with the proposed facility would be controlled by minimizing the footprint of the soil disturbance, revegetating the areas that have been disturbed, and implementing a weed management plan. Revegetating with a diverse mix of native species similar in composition to the existing plant community may help maintain the diversity of those communities. The revegetation effort would need to consider the different soil types likely to be found in either alternative. Revegetation in sagebrush steppe is generally successful in only one of three years.

Both Alternative 1 and 2 would have unavoidable impacts common to all facility development such as: (1) loss of ground-dwelling wildlife species and associated habitat, (2) displacement of certain wildlife species due to increased habitat fragmentation, and (3) an increase in the potential for negative interaction between wildlife and humans. The following control measures would be implemented to reduce the impact on wildlife: seasonal timing of activities, nesting bird surveys and awareness programs.

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Blew, R. D., J. R. Hafla, J. C. Whiting, D. K. Halford, and G. Gillette. 2010. Ecological Resources Associated with Two Alternative Sites for the Proposed Remotely Handled Low Level Waste Facility. Amended Stoller-ESER Report No. 132. 13pp.