Dry Channel Fire Ecological Resources Recovery Plan

INL/RPT-25-85459
Revision 0

Natural Resources Group

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CONTENTS

FIGURES

TABLES

ACRONYMS

BLM	Bureau of Land Management
CCA	Candidate Conservation Agreement
GIS	Geographic Information System
INL	Idaho National Laboratory
NRG	Natural Resources Group
NVC	U.S. National Vegetation Classification
SGCA	Sage-grouse Conservation Area
SSER	Sagebrush Seppe Ecosystem Reserve
SSP	Special Status Plants
WFMC	Wildland Fire Management Committee

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Dry Channel Fire Ecological Resources Recovery Plan

1. Background

As pressures from invasive species, shifts in precipitation patterns, and anthropogenic impacts increase across the western U.S., managing wildland fire recovery to promote healthy sagebrush steppe has become an increasingly important stewardship responsibility. Sagebrush has been lost from nearly 250,000 ac (100,000 ha) of the Idaho National Laboratory (INL) Site over the past 30 years, and much of the landscape is undergoing extensive ecological changes. In response, the INL has developed a wildland fire recovery framework, which is a strategy to consistently and efficiently address post-fire natural resource recovery across the INL Site (Forman et al. 2024). The intent of the framework is to describe the technical approach and scientific basis for wildland fire recovery at the INL Site and to evaluate the tools available to support it in a comprehensive and broadly applicable format.

The INL Site has a Wildland Fire Management Committee (WFMC) to coordinate preparedness, suppression, and post-fire recovery efforts. One responsibility of the committee is to determine when a wildland fire requires a post-fire natural resources recovery plan, typically for wildfires larger than 100 ac (40 ha) or for which soil-disturbing suppression tactics, like containment lines were used. Once the WFMC requests a natural resources wildland fire recovery plan, the Natural Resources Group (NRG) uses the tools evaluated in the recovery framework to develop a fire-specific recovery plan. Each natural resources wildland fire recovery plan includes results of a post-fire ecological resources assessment, potential treatment areas and recommended treatment tools, and an outline of a post-fire monitoring plan.

In each fire-specific recovery plan, enough information is provided so that the WFMC can effectively evaluate and prioritize treatment options. All treatment options will also be evaluated through the Environmental Review Process prior to initiation to ensure that all environmental concerns, including cultural resources, have been addressed. Each plan will also contain enough information about treatment options so that Facilities and Site Services can proceed with work planning after the WFMC have prioritized treatment options. Once treatments are prioritized by the WFMC, NRG will also finalize a monitoring plan to evaluate the effectiveness of the treatments as well as the recovery status of areas at risk of poor recovery. As monitoring results become available, they will be evaluated against success criteria and additional adaptive management actions may be recommended to the WFMC as needed.

There were five wildfires reported on the INL Site in 2024. Four of the five wildfires were less than 1 ac (0.4 ha) in size but one wildfire, the Dry Channel Fire, was initially estimated to be about 142 ac (57.5 ha). The Dry Channel Fire burned on June 26, 2024, and was likely caused by a lightning strike. Containment lines were established around the perimeter of the burned area and resources from INL and the Bureau of Land Management (BLM) continued to monitor hot spots and conduct mop-up activities over the next few days. The WFMC met on July 1, 2024, to debrief and discuss emergency stabilization actions for the Dry Channel Fire. The WFMC met again on November 18, to review the INL wildfire season and a natural resources fire recovery plan was requested for the Dry Channel Fire during this meeting.

The Dry Channel Fire footprint is located within the Sagebrush Seppe Ecosystem Reserve (SSER) and within the Sage-grouse Conservation Area (SGCA) as designated by the INL Candidate Conservation Agreement (CCA) for sage-grouse. It is also with the Twin Buttes Allotment, which is permitted and managed by the BLM (Figure 1-1). There are no Comprehensive Environmental Response, Compensation, and Liability Act Institutionally Controlled areas within the footprint of the Dry Channel Fire. The ecological resource assessment and any proposed recovery treatment actions will take these land uses and designations into consideration. Proposed treatment actions will also address applicable State and Federal regulations, like those that focus on invasive species and noxious weeds. INL-specific guides and plans, like those that address revegetation and weed management will be referenced as applicable.

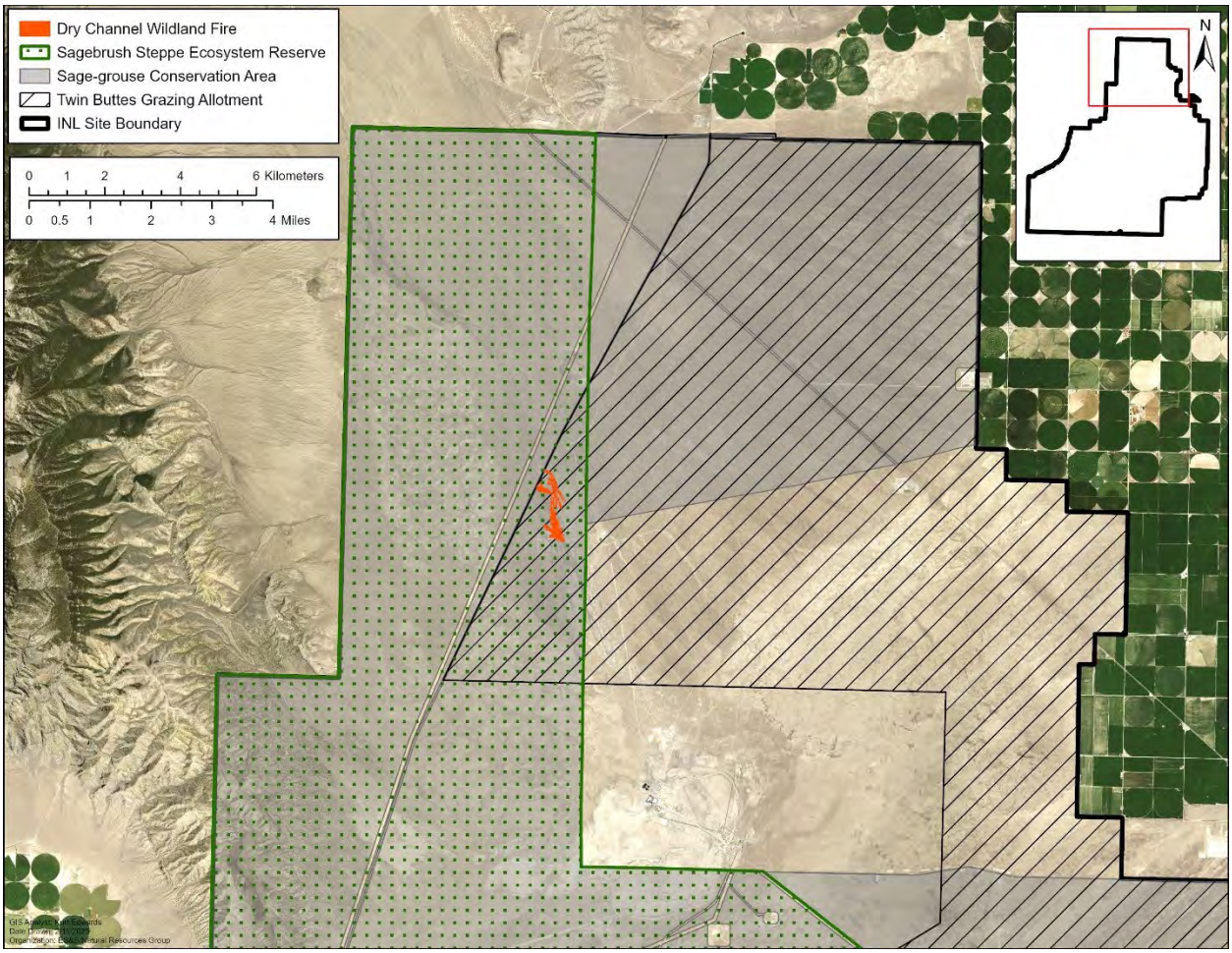

Figure 1-1. The location of the 2024 Dry Channel Fire footprint in relation to the Sagebrush Steppe Ecosystem Reserve boundary, the Sage-grouse Conservation Area boundary, and the Twin Buttes grazing allotment boundary.

2. Ecological Resource Assessment

Before post-fire treatment options can be evaluated for a specific wildland fire, the potential impacts to natural resources from the wildland fire and associated fire suppression activities must be characterized. The ecological resource assessment process is expedited by completing analyses at a high level, using existing natural resource monitoring data. This approach necessitates an understanding that ground-based evaluations are often required prior to initiating a treatment to ensure current on-the-ground conditions are as expected and treatment criteria are met. Potential treatment areas may then be prioritized based on minimizing the risk of poor ecological recovery, accelerating the recovery of important or high-use habitats, and limiting overall loss of ecosystem function. In many cases, results of an ecological resource assessment can be synthesized to focus restoration efforts within the context of the landscape, so that areas with maximum benefit in terms of restoring habitat connectivity or limiting vectors for weed spread can be targeted.

2.1. Fire Summary

On June 26, the Dry Channel Fire started east of State Highway 22 from a reported lightning strike. A water tender and BLM resources were used to aid in suppression while dozers bladed a containment line

around the perimeter of the fire with an initial burned area estimated to be approximately 142 ac (57.5 ha).

On November 6, high resolution imagery was collected via drone across the area impacted by the Dry Channel Fire. The drone was a Quantum Systems Trinity F90+ eVTOL fixed-wing mapping platform. The onboard sensor was a Sony RX1 RII 42-megapixel RBG digital camera. The spatial resolution of the imagery was 0.67 in (1.7 cm) and all individual tiles were mosaicked into a single image dataset and orthorectified using Pix4D Mapper software version 4.6.4. The drone imagery served as the basemap dataset used to delineate the burned area of the Dry Channel Fire. Given the spatial resolution of the drone imagery and amount of detail captured, the burned area was mapped at 1:500 scale in a Geographic Information System (GIS) to accurately delineate the perimeter of the fire and the unburned patches of vegetation.

The Dry Channel Fire resulted in a patchy burn across the fire footprint with numerous unburned patches of vegetation left intact following the fire. The total mapped burned area was 113.7 ac (46 ha) and there was a smaller area outside the fire where 0.2 ac (708 m^2) were bladed and vegetation was removed. There was approximately 5 mi (8.1 km) of containment line, averaging 15-20 ft (4.6-6.1 m) wide. The combined area impacted from the fire and fire suppression activities resulted in a loss of 86.8 ac (35.1 ha) of sagebrush habitat (Figure 2-1). There were extensive two-track roads created inside the burned area and for access points around the fire perimeter resulting in 35.1 mi (56.5 km) of new roads associated with suppression activities (Figure 2-2).

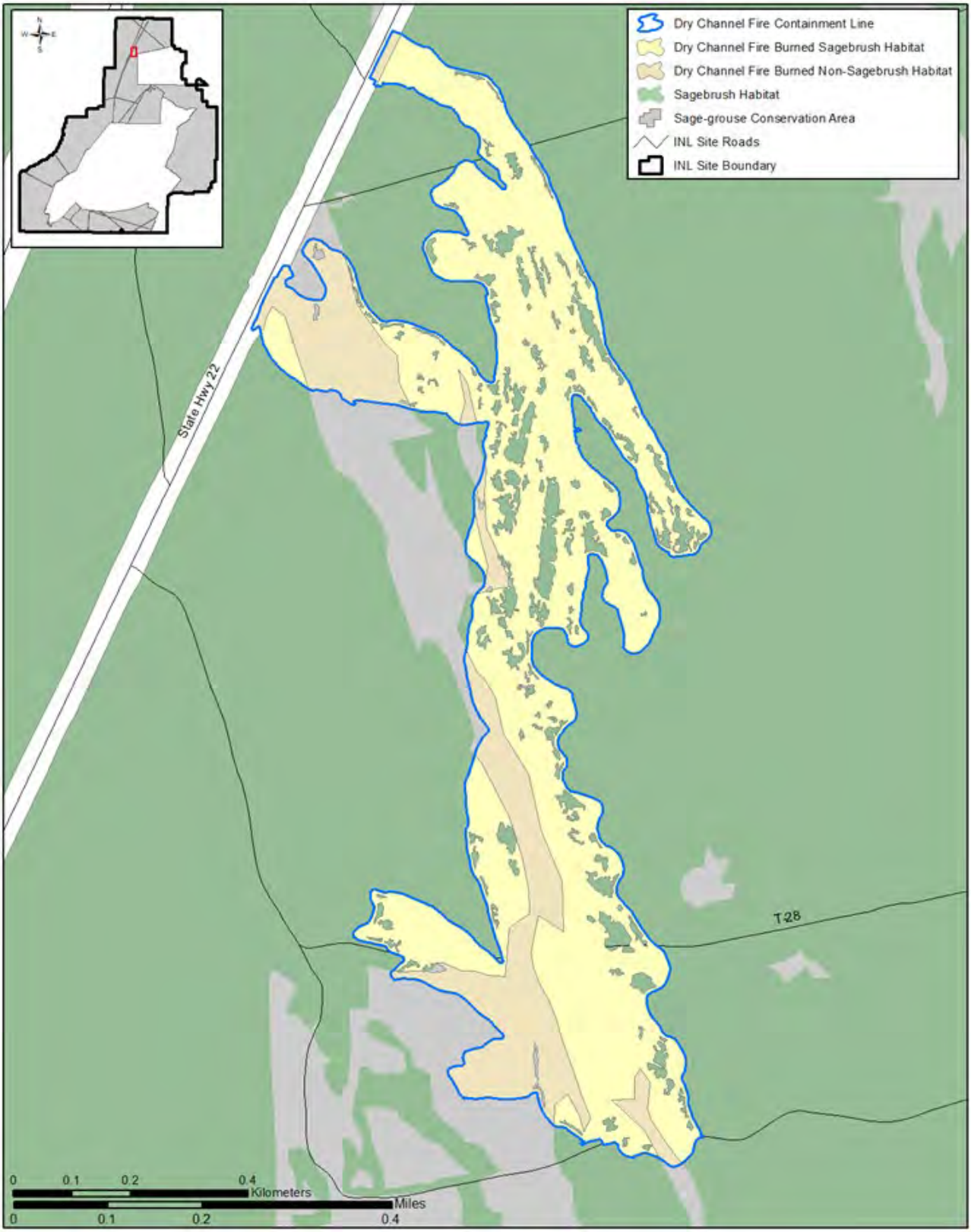

Figure 2-1. The 2024 Dry Channel Fire burned area boundary on the Idaho National Laboratory Site. The burned area is completely within the Sage-grouse Conservation Area.

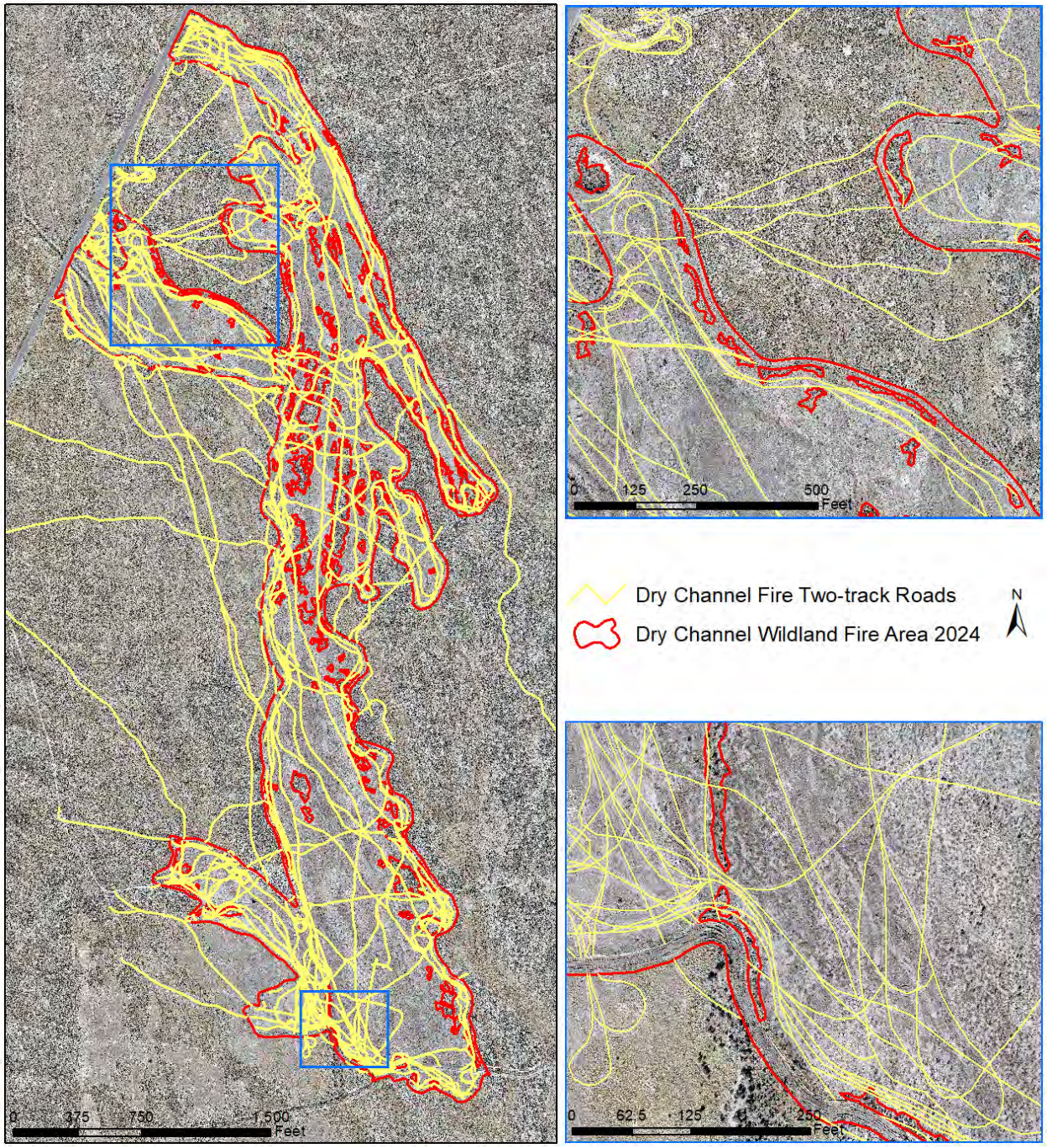

Figure 2-2. Mapped two-tracks associated with firefighting suppression activities and post-fire mop-up on the 2024 Dry Channel Fire on the Idaho National Laboratory Site.

2.2. Soils

Soil data on the INL Site are derived from a general soil map created in 1995. This general soil map was generated using historical soils data from surrounding counties, historical BLM soil surveys, and various smaller scale soil studies within the INL Site (Olson et al. 1995). The soil series and map unit descriptions provided in the soils map project report give broad descriptions; definitions of the areas soils and soil boundaries may not be mapped precisely, but they can lend some insight into understanding the ecology of the areas surrounding wildland fire footprints.

The Dry Channel Fire burned only one soil map unit, Whiteknob gravely loam. Soil types associated with Whiteknob gravelly loam include Lidy sandy loam and a soil that is similar to this Whiteknob soil but that does not have a layer of lime accumulation. This soil is formed in alluvium derived from mixed sources. Both soil types are described as deep, well drained soils with low available water capacity. Surface runoff is slow, and the hazard of erosion is slight. Similarly, the risk of erosion due to wind is slight due to the size and composition of soil particles. These soils may be suitable for rangeland drill seeding and for weed control via spraying in areas where vegetation communities were degraded prior to the fire and native vegetation is not likely to return.

2.3. Vegetation

This section summarizes the impacts of the Dry Channel Fire on the vegetation that was present within the burned area. Vegetation resources and concerns addressed in this post-fire ecological resource assessment include the distribution and abundance of plant communities within the fire footprint, known and potential occurrences of rare and sensitive plant species populations, and known populations as well as areas at increased risk for invasive and noxious weeds. A GIS was used to spatially evaluate vegetation classes burned by the Dry Channel Fire and to calculate summary statistics for each class within the burned area. The most recent update to the INL vegetation map GIS data layer (Shive 2024) was used for this analysis. Potentially impacted Special Status Plants (SSP) were evaluated using INL-specific population data and occurrence data from available regional data sets. Data used to assess the current distribution and potential impacts of invasive and noxious weeds include the INL vegetation map, incidental weed observations, and applicator spray records.

2.3.1. Plant Communities

Plant communities across three vegetation classes were impacted by the Dry Channel Fire (Figure 2-3). Approximately three quarters of the area affected by the fire were in the Big Sagebrush Shrubland vegetation map class, which represents plant communities dominated by big sagebrush (*Artemisia tridentata*). Pre-fire, cheatgrass (*Bromus tectorum*) dominated plant communities, represented by the Cheatgrass Ruderal Grassland class, covered about 20% of the area, and plant communities characterized by an abundance of low-statured subshrubs occupied the remaining area (Table 2-1). The Indian Ricegrass Grassland and Gardner's Saltbush (Winterfat) Shrubland class may be dominated by Gardner’s saltbush (*Atriplex gardneri*), winterfat (*Krascheninnikovia lanata*), or a combination of both. Indian ricegrass (*Achnatherum hymenoides*) is often quite abundant in these plant communities.

Loss of plant communities in the Big Sagebrush Shrubland vegetation class affects habitat availability for sagebrush obligate wildlife and other taxa that prefer more structurally complex habitat types. Total sagebrush habitat loss from the Dry Channel Fire, as reported in Section 2.1, is 86.8 ac (35.1 ha). This estimate is slightly less than the total area impacted in the Big Sagebrush Shrubland vegetation map class (Table 2-1) because sagebrush habitat is defined by the CCA using the SGCA, and the SGCA has a buffer along major roads that does not apply to the INL vegetation map. Areas dominated by cheatgrass may be at risk of poor natural recovery due to low abundance of resprouting native herbaceous species. Communities in the Indian Ricegrass Grassland and Gardner's Saltbush (Winterfat) Shrubland class tend to favor fine, shallow, and sometimes gravelly soils that have low productivity and tend to be especially slow to recover.

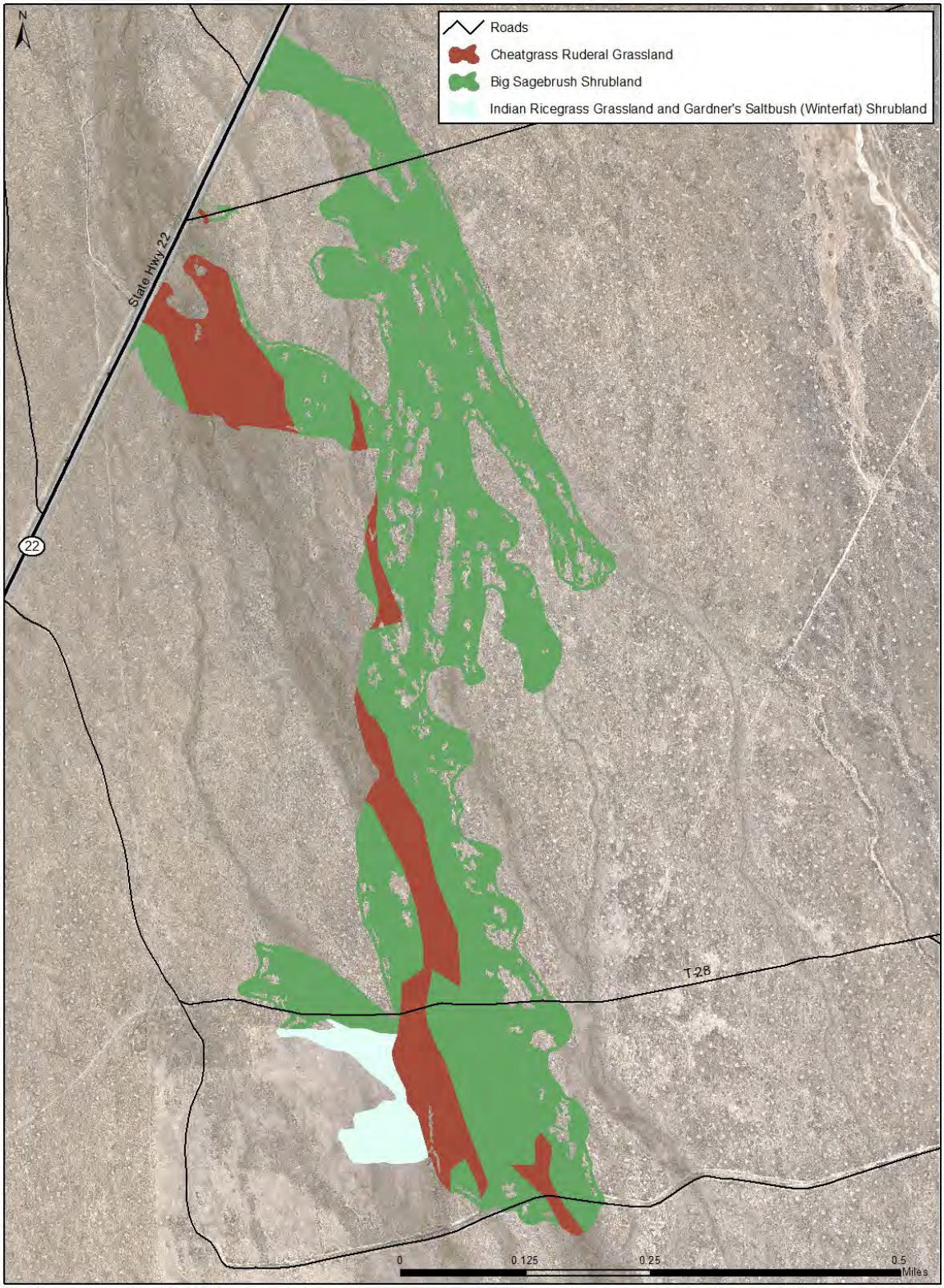

Figure 2-3. Vegetation map classes within the 2024 Dry Channel Fire footprint.

Table 2-1. Amount of area for each vegetation map class within the 2024 Dry Channel Fire footprint.

Map Class Name*	Total Area in Acres (Hectares)	% Total Area
Big Sagebrush Shrubland	87.3 (35.3)	76.8
Cheatgrass Ruderal Grassland	21.6 (8.7)	19.0
Indian Ricegrass Grassland and Gardner's Saltbush (Winterfat) Shrubland	4.8 (1.9)	4.2

*Map classes are named according to National Vegetation Classification conventions.

The INL Site vegetation classes were named according to U.S. National Vegetation Classification (NVC) standards (FGDC 2008), and each INL Site vegetation class was cross walked to similar NVC Associations at the time the classification and map were completed (Shive et al. 2019). NatureServe conservation rankings are assigned to NVC Associations and can be applied to analogous INL Site vegetation classes for interpreting the conservation status of plant communities across the INL Site (Table 2-2). Conservation rankings of pertinent vegetation classes have been updated for this report (NatureServe Explorer 2025).

There are eight NVC Associations with elevated global or state conservation rankings with the potential to occur within the Dry Channel Fire footprint. Of the eight Associations with the potential to occur, two are not likely to occur because the available habitat within the fire footprint does not have the appropriate soil, substrate, or co-occurring species. The two Associations that are not likely to occur are the Indian Ricegrass Shale Barren Grassland and the Indian Ricegrass - Lemon Scurfpea Grassland. The remaining six Associations may be represented within the fire footprint and are assigned elevated conservation status rankings because they are at risk of loss across part or all their range due to threats like wildland fire. Regionally, these Associations are taken into consideration when planning fire recovery or other restoration efforts.

Table 2-2. National Vegetation Classification Associations with elevated conservation status potentially occurring within the 2024 Dry Channel Fire footprint cross walked with corresponding Idaho National Laboratory Site vegetation map classes.

INL Vegetation Map Class	NVC DB Code	NVC Association	Conservation Rank*
Big Sagebrush Shrubland	CEGL001043	Wyoming Big Sagebrush / Squirreltail Shrubland	G4S1
	CEGL001049	Wyoming Big Sagebrush / Sandberg Bluegrass Shrubland	G4S2
	CEGL001051	Wyoming Big Sagebrush / Needle-and-Thread Shrubland	G2S2
Cheatgrass Ruderal Grassland**	N/A	N/A	N/A
Indian Ricegrass Grassland and Gardner's Saltbush (Winterfat) Shrubland	CEGL001651	Indian Ricegrass Shale Barren Grassland	G2SNR
	CEGL001650	Indian Ricegrass - Lemon Scurfpea Grassland	G3S3
	CEGL001444	Gardner's Saltbush / Indian Ricegrass Dwarf-shrubland	G3SNR
	CEGL001445	Gardner's Saltbush / Western Wheatgrass Dwarf-shrubland	G3SNR
	CEGL001326	Winterfat / Sandberg Bluegrass Dwarf-shrubland	G3S2

*G = Global Rank, S = State Rank, 1 = Critically Imperiled, 2 = Imperiled, 3 = Vulnerable, 4 = Apparently Secure, 5 = Secure, NR = Not Ranked
** Conservation ranks are generally not applicable to Associations dominated by non-native species

2.3.2. Special Status Plants

The areas affected by the Dry Channel Fire have not been surveyed for SSP and therefore, no SSP species were documented within the fire footprint prior to the fire. However, the plant communities affected by the fire include key habitat types appropriate for SSP species and the Dry Channel Fire potentially impacted undocumented populations of one SSP and one lichen species. The desert dodder (*Cuscuta denticulata*) is Apparently Secure globally and is Critically Imperiled in Idaho (G4S1). The desert dodder is a perennial herbaceous forb that is parasitic, tapping into its host species for sugars and nutrients. Its hosts are typically shrubby species including sagebrush (*Artemisia* sp.), several types of rabbitbrush (*Chrysothamnus* sp., *Ericameria* sp.), snakeweeds (*Gutierrezia* sp.), saltbush (*Atriplex* sp.), and other sagebrush steppe plants. The compact Earth lichen (*Heteroplacidium congestum*) is Apparently Secure globally and is Imperiled in Idaho (G4S2). The compact Earth lichen is a component of the biological soil crusts of arid, cold desert shrublands. It can be found across a range of soil types including calcareous sandy soils, saline soils, and clayey loam rocky soils.

2.3.3. Invasive and Noxious Weeds

Initial monitoring of the Dry Channel Fire by INL applicators resulted in no observations of noxious weeds listed by the State of Idaho. Although there were no observations made upon the initial monitoring effort, seed from noxious weeds could remain in the seed bank and not germinate and emerge until the following growing season. It should be noted that in 2022, Canada thistle (*Cirsium arvense*), rush skeletonweed (*Chondrilla juncea*), and spotted knapweed (*Centaurea stoebe*) were observed within and around the T-28 North Borrow source (INL unpublished data) and could potentially spread to the surrounding area. Canada thistle and rush skeletonweed are both perennial plant species commonly found on the INL Site that spread effectively through root material and seed. Spotted knapweed also has the potential to occur; it is a biennial species and spreads predominantly through seed.

Invasive plant species not designated as noxious weeds are generally identified using the 2019 INL Vegetation Map (Shive et al. 2019) which identifies vegetation classes containing undesirable understories referred to as ruderal classes. As discussed in Section 2.3.1, there was only one ruderal vegetation community mapped within the Dry Channel Fire footprint. Cheatgrass Ruderal Grassland covered approximately 20% of the burned area (Figure 2-3), increasing the likelihood of cheatgrass returning to those areas if control measures are not implemented or natural processes are not favorable to increase native species cover. To understand the extent and severity of the cheatgrass populations and to inform recovery actions, additional monitoring should be conducted during the first few growing seasons following the fire to assess native species recovery.

2.4. Wildlife

This section summarizes the impacts of the 2024 Dry Channel Fire and suppression activities on wildlife resources within and adjacent to the fire perimeter. Wildlife resources and concerns addressed in this post-fire ecological resource assessment include impacts to special status species associated with vegetation communities within the fire footprint, to greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse) leks and breeding habitat, and to bat roosts, foraging areas, and hibernacula. The presence of habitat was based on the vegetation assessment completed in Section 2.3.1. and the data used to evaluate impacts to special status wildlife species included Breeding Bird Surveys, Midwinter Raptor Counts, pygmy rabbit (*Brachylagus idahoensis*) occupancy surveys, and known winter range areas for ungulate species provided by the Idaho Department of Fish and Game. A GIS was used to spatially evaluate distance to active and inactive sage-grouse leks and to the nearest monitored bat hibernacula, foraging areas, and roosting sites.

Loss of plant communities in the Big Sagebrush Shrubland and Indian Rice Grassland and Gardner's Saltbush vegetation classes will remove nesting habitat for sagebrush-obligates, some shrub-steppe/grassland associated bird species (Owens 2025; INL 2024), and habitat for pygmy rabbits. While

this may negatively impact specific individuals, population impacts are unlikely as habitat is available in adjacent undisturbed areas for those species. Given the small size of the Dry Channel Fire, it is unlikely that loss of habitat will impact species of concern that have large home ranges such as pronghorn (*Antilocapra americana*) and golden eagles (*Aquila chrysaetos*). Disturbance from the fire and suppression activities may be beneficial to generalist species such as common ravens (*Corvus corax*) and coyotes (*Canis latrans*).

The closest sage-grouse lek to the Dry Channel Fire is 0.4 mi (0.7 km) and is inactive. The nearest active lek is 2.6 mi (4.2 km) and therefore loss of Big Sagebrush Shrubland may negatively impact nesting and brood rearing habitat since sage-grouse generally nest within 5 mi (8 km) of a lek and may utilize brood rearing habitats at even greater distances depending on available resources. While these negative effects may impact individuals, they are unlikely to impact greater sage-grouse populations on the INL Site.

The nearest year-round monitored bat roosting site is located 21.6 mi (34.7 km), and the nearest monitored summer bat roosting site is located 8.4 mi (13.8 km) from the Dry Channel Fire and were likely not affected by smoke or noise from suppression activities. Smoke from the fire may have affected individual bats that forage at the waste storage lagoons at the Specific Manufacturing Capability Facility located 4.3 mi (6.9 km) from the fire, depending on wind direction. Smoke and noise from suppression activities may have negatively affected individuals foraging or roosting near the fire, but it is unlikely that they impacted bat populations on the INL Site.

3. Recovery Actions

This section includes all treatments and other actions proposed to improve the recovery of ecological resources on the Dry Channel Fire. The overarching goals that guided the development of the framework focus on maintaining a healthy, functional ecosystem at the INL Site through a proactive land stewardship approach to wildland fire recovery. To address these goals, fire recovery treatment options are organized into four objectives based on the types of ecological risks they address. Ecological risks of poor recovery, challenges to implementing treatments, and logistics were evaluated for each potential treatment option to ensure recommended treatments were optimized in terms of probability of success and cost efficiency.

3.1. Soil Stabilization and Erosion Control

Containment lines were recontoured in October of 2024. Because the depth of the containment lines was sufficient to remove all perennial vegetation, including root masses, and to disrupt the soil structure of the uppermost soil horizons (Figure 3-1), herbaceous revegetation is recommended on approximately 12.5 ac (5.1 ha) of containment line and adjacent staging areas. Revegetation with native, herbaceous species will stabilize soils exposed during containment line construction and will help prevent the establishment and spread of noxious weeds and other undesirable non-native species like cheatgrass. See Section 3.3 for detailed revegetation recommendations including planting techniques and a recommended seed mix.

Once revegetation efforts have been completed on the containment lines, signs or barriers should be added where they bisect existing roads to prevent vehicular travel on the recovering lines. This can either be done with signage, jersey barriers, or simply with T-posts placed close enough together to deter traffic. Prior to each field season a brief memo should be issued reminding all fieldworkers to avoid vehicle travel on containment lines.

To decrease the visibility of the containment lines from Highway 22 and further discourage their use by vehicle traffic, sagebrush seedlings should be planted within the containment lines adjacent to the highway. A distance of 100 ft (30.5 m) from the shoulder of the road toward the interior of the fire footprint would be sufficient to visually disrupt the continuity of the containment lines. Five containment lines terminate at Highway 22: at an average width of 15 ft (4.6 m), sagebrush seedlings would be planted

across 9,000 ft^2 (836 m^2). Additional details about recommendations for sagebrush seedling planting are in Section 3.4.

Figure 3-1. Representative example of containment line condition on the Dry Channel Fire in October of 2024.

Soil disturbance from vehicle traffic associated with suppression and mop-up activities results in damage to surviving native vegetation and the movement of weed seed within and around the area affected by a wildland fire. Because vehicle tracks were densely distributed across the Dry Channel Fire footprint (Figure 2-2 and Figure 3-2), the entire footprint will be monitored for the recovery of native herbaceous species and for an increase in cheatgrass density beyond that which is present in the surrounding unburned vegetation. If, after two growing seasons, cover from desirable native, perennial species is substantially lower or the cover of undesirable annual species, like cheatgrass, is substantially higher within the fire footprint, then additional treatments should be considered. These treatments may include herbicide application to suppress weeds, and revegetation of perennial herbaceous species. Monitoring activities are described in Section 4.2.

Because the Dry Channel Fire was not adjacent to any INL Site facilities and it was a patchy burn with substantial surviving vegetation, dust and sediment are unlikely to be a significant issue. The soils in the area affected by the fire are also generally at low risk of erosion. Therefore, there are no natural resource recovery recommendations specific to erosion control.

Figure 3-2. Representative example of vehicle tracks associated with suppression and mop-up activities. Photograph taken in October 2024.

3.2. Cheatgrass and Noxious Weed Control

Though not dominant in plant communities across most of the area affected by the Dry Channel Fire, cheatgrass was abundant prior to the fire and fire suppression activities, which increases the risk of post-fire cheatgrass dominance. The amount of soil disturbance related to vehicle traffic during, and post-fire adds to that risk. To detect any significant post-fire increases in cheatgrass abundance within the fire footprint, the footprint and adjacent areas will be monitored annually (Section 4.1). If after at least two years of natural recovery, monitoring data indicate that cheatgrass abundance is significantly greater in the fire footprint, then cheatgrass treatment will be recommended.

If cheatgrass treatments are recommended across some or all of the fire footprint, these areas should be treated using a chemical pre-emergent. The preferred pre-emergent is Rejuvra (indaziflam; EPA Reg. No. 432-1609) which provides approximately three years of residual effects to annual species such as cheatgrass. If the areas to be treated are large enough to be considered for aerial application, the application of herbicide using aircraft is preferred to ground-based application. Aerial application is cost effective and minimizes the potential for additional soil disturbance. If the areas recommended for cheatgrass treatment are not large enough to justify aerial application, ground-based spray equipment may be used, however, equipment used to apply pre-emergent should be cleaned before and after treating the area. The optimal treatment window for cheatgrass is August-October. All herbicide application will be in accordance with Environmental Protection Agency label instructions.

In the long term, herbicide treatment may only be effective in an area with sufficient recovering perennial species. If an area is treated without consideration of native herbaceous species recovery, the treated area will likely return to a cheatgrass dominated plant community. Post-treatment herbaceous planting may be recommended in combination with cheatgrass treatment if sufficient native perennial species are not present to effectively outcompete cheatgrass. Reestablishing the native plant communities in areas at risk of post-fire cheatgrass dominance can be an effective way to increase ecological resistance against further invasive species dominance. See Section 3.3 for details about planting native herbaceous species.

Noxious weeds will be inventoried on an annual basis over the five-year span of the recovery plan (Section 4). All noxious weed observations will be transmitted to Facilities and Site Services weed applicators for treatment. Any new occurrences or infestations should be treated utilizing integrated pest management principles prior to implementing chemical control. Chemical control should be conducted with INL-approved chemicals and in accordance with EPA label instructions (INL 2013).

3.3. Native Herbaceous Recovery

Treatments to improve native herbaceous recovery include planting native grasses and forbs within the containment lines and laydown areas that were directly impacted by suppression efforts to reestablish native plant materials where they were removed. These areas total approximately 12.5 ac (5.1 ha). The containment lines and staging areas should be planted during the fall of 2025, or in the fall of a subsequent year as soon as possible. With each growing season that passes after the initial disturbance, the abundance of non-native species increases. An abundance of non-native species impacts the logistics of planting as well and the competitive ability of the native seed.

Facilitated post-fire recovery may also include planting areas within the fire footprint that are recovering poorly. The need to plant areas within the fire footprint will be evaluated after at least two growing seasons. Monitoring data will be used to identify areas that are recovering poorly and to prioritize herbaceous planting efforts within the fire footprint.

Because the Dry Channel Fire is within the SSER, plant materials (seed) used for revegetation treatments must be locally collected from within the SSER boundary. The most efficient approach for collecting local seed is to contract a native seed collection company. Collections should be limited so that they do not adversely affect the surrounding ecosystem, and the availability of sufficient seed is highly weather dependent. The collection, cleaning, and storage of locally collected seed can be substantially more expensive than using commercially available seed. If the signatories to the SSER Environmental Assessment and Management Plan (DOE and BLM) agree to forgo this stipulation of the Plan, then commercial seed may be considered. If commercial seed can be used, an appropriate seed mix is provided in Table 3-1. If locally collected seed must be used, then the seed mix will be dependent on growing season conditions and seed abundance within the local plant communities.

Table 3-1. Proposed seed mix for assisted recovery of native herbaceous species on the Dry Channel Fire containment lines. This mix is also appropriate for use within the fire footprint if treatments are recommended based on monitoring results.

Grasses and Grasslikes	Lbs/acre	Lbs Needed for Containment Lines	Drill Depth
Indian Ricegrass "Rimrock" (Achnatherum hymenoides)	3	37.5	0.5-1 in for medium to fine soils; 1-3 in coarse soils
Bottlebrush Squirreltail "Sand Hollow" (Elymus elymoides)	2	25	0.25 -0.5 in
Sandberg Bluegrass (Poa secunda ssp. sandbergii)	2	25	0.25 in
Wildflowers and Forbs			
Sphaeralcea munroana	2	2	0.13-0.25 in

The preferred planting technique for the containment lines and any areas prioritized within the fire footprint is drill seeding with a properly calibrated rangeland drill (INL 2012). With respect to seedbed preparation, recontouring has been completed on the containment lines. Although the soils affected by fire suppression activities are known to be nutrient poor, the cost of soil amendments across the extent of the affected area and the risk of increased weed abundance in response to amendments preclude their use. To minimize the detrimental effects of soil compaction on revegetation success, all traffic associated with revegetation activities should be minimized to the extent possible. Supplemental water could improve germination and establishment of native seed, but the amount of traffic and the increased risk of weed spread outweigh the potential benefit of applying supplemental water at any location other than adjacent to the highway. If accelerated recovery is desired near the highway to help visually obscure containment lines, then a water truck cannon would be an efficient solution. The most effective period for applying post-planting supplemental water is the spring immediately following planting efforts.

Both natural and facilitated recovery may be impacted by livestock grazing. BLM is responsible for resting the affected portion of the allotment for at least two growing seasons or until recovery has met their programmatic objectives. Planting and aerial herbicide applications should be coordinated with BLM to ensure that restoration efforts are not impacted by grazing and to ensure that permittees are not impacted by herbicide application.

3.4. Sagebrush Habitat Restoration

Because the Dry Channel Fire was so patchy (Figure 3-3), and relatively small, the overall impact to populations of species that depend on sagebrush habitat is likely to be minimal. The potential for natural sagebrush recovery is high as patches of mature, seed-bearing shrubs are distributed throughout the fire footprint. For these reasons, sagebrush habitat restoration is not recommended throughout the fire footprint.

As discussed in Section 3.1, targeted sagebrush reestablishment in containment lines that terminate at Highway 22 should be considered to discourage vehicular use of the containment lines and to reduce introduction and establishment of invasive and noxious plant species from roads. Planting containerized stock is the preferred sagebrush restoration approach due to the relatively small amount of area proposed for planting. Seedlings should be grown in a greenhouse using locally collected seed and an approved vendor. Seedlings should be planted in the fall at a spacing of approximately 1 individual/10 ft^2 (1 individual/m^2) for 100 ft (30.5 m). This spacing approximates sagebrush density in the surrounding unburned areas and, if successful, would obscure the visual appearance of the containment lines and limit vehicle access after 5-10 years. To achieve this, approximately 850 seedlings would be needed. If the areas planted with native, herbaceous seed are watered where accessible from the highway during the

spring season after planting, sagebrush seedlings would benefit as well. Based on lead times for greenhouses and planters, the earliest possible planting date for seedlings is fall of 2026.

Figure 3-3. Representative example of the patchy nature of the Dry Channel Fire. Surviving mature shrubs and perennial grasses are distributed throughout the fire footprint. Photograph taken in October 2024.

A summary of proposed treatments and other actions to address ecological recovery objectives on the Dry Channel Fire can be found in Table 3-2.

Table 3-2. Summary of proposed assisted recovery treatments or actions for the Dry Channel Fire. Several proposed actions may address more than one recovery objective but are included under only the most pertinent objective.

Recovery Objective	Proposed Action(s)	Year Initiated	Criteria for Treatment
Soil Stabilization and Erosion Control	Reseed containment lines with locally collected or commercial seed using a rangeland drill	2025	Insufficient native vegetation for natural recovery (met)
	Install signs or barriers to discourage traffic on revegetated containment lines	2025	After revegetation has been completed
Cheatgrass and Noxious Weed Control	Monitor cheatgrass abundance	2025	N/A
	Treat cheatgrass with chemical herbicide aerially or ground based	2027	Cheatgrass abundance in fire footprint > background
	Complete noxious weed inventory and treat accordingly	2025	N/A
Native Herbaceous Recovery	Monitor herbaceous cover in containment lines and within the fire footprint	2025	N/A
	Reseed areas recovering poorly using a rangeland drill	2027	Background native herbaceous cover > fire footprint herbaceous cover
Sagebrush Habitat Restoration	Plant sagebrush seedlings in 5 containment lines that terminate at Highway 22	2026	Insufficient native vegetation for natural recovery (met)

4. Post-Fire Monitoring

Monitoring is a fundamental component of natural post-fire recovery, post-fire treatment, and other land management actions because it provides timely insight regarding the progress toward a desired final condition or the necessity of implementing additional actions when and where conditions are deteriorating. Effective monitoring plans are those that establish a process to collect, analyze, and use data to track the status of the natural resources of interest. Post-fire ecological monitoring informs an adaptive management approach to natural and assisted post-fire recovery. Adaptive management is rooted in the idea that proposed management decisions or treatments should be purposeful strategic actions that are built upon lessons learned. The Dry Channel Fire monitoring plan will cover the duration of the post-fire recovery plan and will be accompanied by annual reports to summarize monitoring results and identify suitable adaptive management responses when appropriate.

4.1. Monitoring Needs

This section provides a description of the proposed monitoring activities and for each natural resource recovery objective. These activities are based on the need to monitor areas at risk of poor recovery and the condition of areas where treatments are implemented. A timeline for when monitoring activities will commence and the most appropriate season for treatment are included.

Monitoring needs to address Objective 1: Soil Stabilization and Erosion Control include assessments of revegetation success on the containment lines, if implemented, and ongoing evaluation of the vegetative recovery of soils disturbed by vehicle traffic within the fire footprint. Monitoring of containment line revegetation should occur after the first growing season post-planting and periodically thereafter until a desired final condition has been reached. The benchmark for desired final condition will

be established using the mean vegetative cover and composition (excluding sagebrush) of adjacent, undisturbed plant communities in similar vegetation types. Monitoring of natural vegetation recovery on soils impacted within the fire footprint should commence during the first full growing season post-fire and continue each year through the duration of the fire recovery plan. If mean vegetation cover and composition within the fire footprint do not differ significantly from the benchmark values for those metrics in the adjacent plant communities, no additional active recovery treatments will be recommended. Additional treatment recommendations will not be made until at least two growing seasons post-fire or more, depending on weather conditions, to ensure adequate time for natural recovery.

Monitoring needs to address Objective 2: Cheatgrass and Noxious Weed Control include evaluating cheatgrass abundance within the fire footprint against cheatgrass abundance in surrounding, undisturbed plant communities. If cheatgrass cover is significantly greater in the fire footprint, then cheatgrass control treatments may be recommended. If cheatgrass control treatments are conducted, then cover values from post-treatment monitoring should be compared to pre-treatment values and to values from the surrounding benchmark plant communities to evaluate efficacy of treatments. Monitoring for a minimum of two post-fire growing seasons should be completed prior to determining whether cheatgrass treatments are warranted. Noxious weed inventories should be conducted throughout the fire footprint and around the containment lines annually for the duration of the fire recovery plan. Annual noxious weed inventories will be sufficient to determine whether noxious weed treatments are effective.

Monitoring needs to address Objective 3: Native Herbaceous Recovery include assessing the composition of the recovering plant communities within the fire footprint and containment lines and comparing the composition of those recovering plant communities to a desired final condition. The benchmark for desired final condition will be established using the mean vegetative cover and species composition (excluding sagebrush) of adjacent, undisturbed plant communities in similar vegetation types. If, after a minimum of two years post-fire, the composition of the plant communities in the fire footprint or the containment lines differ significantly from the composition of the benchmark communities, additional management actions or active treatments may be recommended. Annual herbaceous recovery monitoring should be completed through the duration of the fire recovery plan.

Treatments proposed to address Objective 4: Sagebrush Habitat Restoration were limited to the installation of containerized sagebrush seedlings in containment lines where they terminate at Highway 22. If this treatment is implemented, seedling survivorship should be addressed at one- and five-years post-planting. If sagebrush seedling survivorship after one growing season is not greater than 25%, then additional treatments should be considered.

4.2. Monitoring Plan

This section includes a description of the proposed monitoring plan, including appropriate study designs and how they are used to support the monitoring plan. Study designs referenced in the monitoring plan contain enough detail regarding decisions about point or plot-based sampling, site selection, sample size considerations, data variables and data types so that the WFMC, U.S. Department of Energy, and stakeholders can understand why certain methodologies were selected.

Plot-based revegetation assessment methodologies will be used to evaluate vegetation recovery for soil stabilization within the fire footprint and along containment lines. The same methodology will also be used to address cheatgrass abundance and native herbaceous recovery throughout the fire footprint. The semi-quantitative approach to revegetation assessments described in NRG-24-001 will be sufficient to address the monitoring needs described here. Data collected to support semi-quantitative revegetation assessments include, plot photos, species lists, relative abundance rankings by species, and total vegetation absolute cover class estimates. Circular plots with an area of 2,153 ft^2 (200 m^2) are generally used for semi-quantitative revegetation assessments and will be appropriate for areas within the fire footprint and for areas outside the fire footprint that will be used for benchmarking. Circular plots will not fit within the boundaries of the containment lines, so plot size and shape must be adjusted so that they

cover the same amount of area but remain within the containment line boundaries. Rectangular plots roughly 13 ft x 64 ft (4 m x 50 m) will fit within containment line boundaries but may need to be slightly adjusted based on conditions observed in the field. A summary of the revegetation assessment study design is available in NRG-24-001 and the detailed revegetation assessment study design can be requested from the NRG.

To address monitoring needs for noxious weeds, NRG will conduct annual noxious weed inventories and data will be recorded using a standardized incidental noxious weed observation protocol. Inventories will consist of traversing systematically spaced transects and recording the species identity and estimated population size of all noxious weeds observed. To evaluate the efficacy of any noxious weed treatments, population sizes will be compared from years representing pre- and post-treatment. A current version of the incidental noxious weed observation protocol can be requested from the NRG.

If sagebrush seedlings are planted, sagebrush seedling survivorship will be evaluated using the same methodology used for sagebrush seedlings planted to address CCA requirements. At the time of planting, a subset of the seedling locations will be marked with a GPS receiver and revisited one- and five-years post-planting. During revisits, each seedling will be determined to be healthy, stressed, dead, or missing. These data will be summarized to evaluate sagebrush seedling survivorship and inform any subsequent adaptive management-based treatments. Additional details about the methodologies used to evaluate seedling survivorship can be found in the annual CCA implementation report (Williams et al. 2025).

An ecological monitoring plan for evaluating the recovery of the Dry Channel Fire, including a crosswalk between the monitoring needs, monitoring activities, and study plans is summarized in Table 4-1.

Table 4-1. Summary of Dry Channel natural resource recovery monitoring tasks.

Monitoring Task	Monitoring Need(s) Addressed	Study Design/ Sampling Approach	Start Date/ Frequency
Plot-based vegetation abundance and composition	Cheatgrass abundance and native herbaceous recovery	Semi-quantitative revegetation assessment protocol	Summer 2025/ Annually through summer 2029
Transect-based noxious weed inventory	Noxious weed detection	Incidental noxious weed observation protocol	Summer 2025/ Annually through summer 2029
Sagebrush seedling survivorship revisits	Sagebrush habitat restoration/containment line restoration	One- and five-year survivorship assessments	One growing season post-planting and again five years later

5. References

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