Appendix F: Cotoni-Coast Dairies Weed Management Plan

INTRODUCTION

This Cotoni-Coast Dairies Weed Management Plan is a general plan for prioritizing and controlling the most invasive, non-native plant species (weeds) using an adaptive management approach. As part of this adaptive strategy, weed management priorities and strategies will be modified over time, based on inventory and monitoring results. Prioritization, implementation, and evaluation of weed treatments will be based on 1) wildfire risk due to accumulations of fine fuels around Day Use Areas and other infrastructure, 2) adverse impacts of weeds to rangeland (grassland) quality, and 3) impacts of weeds to native species and their communities, particularly special status species.

Adaptive management relies on an inventory and monitoring program that includes regular inventory of the area to detect and map the distribution, abundance, and spread of new and established infestations and monitoring to track the outcomes of implemented weed treatments. Early detection and rapid response (EDRR) is the most efficient and cost-effective method of dealing with any invasive species. In order to implement EDRR, it is critical to have the tools available to enable early detection of - and rapid response to - new weed invasions.

Photomonitoring and casual monitoring with a GPS will be used to document and quantify existing weed infestations. Regular, casual survey (patrol) with a GPS will be used to detect and document new weed invasions. Emphasis will also be placed in preventing new infestations though education and BMPs. Priorities for weed management actions will emphasize: 1) mitigation of wildfire risk by reducing fine fuel loads near potential ignition sources (e.g. tall weeds around Day Use Areas), 2) control of highly undesirable weeds that adversely impact rangelands (e.g. thistles in grasslands), and 3) control of weeds that adversely impact native vegetation and habitat of native species, particularly special status species (e.g. cape ivy in riparian zones).

Tools and methods for treating and managing invasive weeds will include: 1) manual (i.e. hand-pulling), 2) mechanical (i.e. mowing), 3) targeted livestock grazing, 4) prescribed fire; and 5) herbicide treatment. Integrated Pest Management (IPM) is an effective and environmentally sensitive approach that optimizes control of weeds, while minimizing risks to human health, beneficial and non-target organisms, and the environment. IPM focuses on managing either the ecosystem that supports the weed or the weed species directly to reduce establishment, reproduction, dispersal, and survival.

CONFORMANCE WITH APPLICABLE LAND USE PLANS

The proposed action would be subject to the Cotoni-Coast Dairies amendment to the California Coastal National Monument Resource Management Plan that is being considered in this RMPA/EA.

Relationship to statutes, regulations, and other plans

The Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 1712) states that the BLM must manage public lands according to the principles of multiple use and sustained yield. The Public Rangelands Improvement Act of 1978 requires that BLM manage, maintain, and improve the condition of public rangelands for optimal productivity. The Carson-Foley Act (43 USC 1241) of 1968 directs agency leads to enter upon lands under their jurisdiction and control noxious, invasive plant species. BLM Departmental Manual 517 prescribes policy for the use of pesticides on the lands and waters under its jurisdiction, and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended. BLM Departmental Manual 609 prescribes policy to control noxious, invasive plant species on the lands, waters, or facilities under its jurisdiction to the extent that is economically feasible, and as needed for resource protection and accomplishment of resource management objectives. BLM Manual 9011 and Handbook H-9011-1 provide policy for conducting chemical pest control programs under an Integrated Pest Management approach.

This Plan is tiered to the following documents -

- 2007 Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Final Programmatic Environmental Impact Statement
- 2016 Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement

All herbicides and adjuvants used must be approved for use on BLM land and must be registered for use in California. Herbicide application will comply with the label, BLM policy and applicable federal and state laws. Cotoni-Coast Dairies is not located within an EPA Pesticide Use Limitation Area (PULA) for any herbicide type application during any time of year.

WEED SPECIES of CONCERN at COTONI-COAST DAIRIES

Three categories of weeds have significant impacts on natural resources at C-CD, including 1) Non-native, tall, broadleaf annual in grasslands, 2) Non-native perennial vines in riparian areas, and 3) Non-native woody shrubs and large perennial grasses in coastal scrub.

1) **Non-native, tall, broadleaf annuals in grasslands** include Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana*), radish (*Raphanus sativus*), and poison hemlock (*Conium maculatum*). These weeds form tall, dense patches in grasslands and directly compete with native grasses and forbs of the native grassland vegetation type. Purple starthistle (*Centaurea calcitrapa*) is also a non-native annual species of concern that occurs in non-native grasslands. These weeds present a fine fuel fire hazard in close proximity to Day Use Areas and infrastructure and also adversely impact grassland habitat and rangeland quality. These weed species are most common at C-CD in annual grassland areas of Terrace 2 of proposed RMZs #1, #2, and #3. The estimated total project area for the control of non-native, tall, broadleaf annuals in grasslands is 600 acres.

2) **Non-native perennial vines in riparian areas** include cape ivy (*Delairea odorata*) and old man's beard (*Clematis vitalba*). These weeds form dense cloaks that smother native riparian plant species and degrade riparian vegetation structure, resulting in degradation of the wetland and riparian habitat that supports several special status fish and amphibian species. These weed species are most common in riparian areas of proposed RMZ #1 including Agua Puerca Creek and proposed RMZ #2 including San Vicente Creek and Liddell Creek. The estimated total project area for the control of non-native perennial vines in riparian areas is 100 acres.

3) **Non-native woody shrubs and large perennial grasses in coastal scrub** include French broom (*Genista monspessulana*) and pampas grass (*Cortaderia jubata*). These weeds form dense stands that directly compete with native shrub species of the coastal scrub vegetation type. These weeds are most common at C-CD in drastically disturbed areas including the quarries (abandoned) and along road edges in coastal scrub of proposed RMZs #1 and #2. The estimated total project area for the control of non-native woody shrubs and large perennial grasses in coastal scrub is 100 acres.

Prioritization of weed treatments will generally follow as: 1) Non-native, tall, broadleaf annuals in grasslands, 2) Non-native perennial vines in riparian areas, and 3) Non-native woody shrubs and large perennial grasses in coastal scrub. The methods utilized to control each weed species will be dependent upon several factors including plant growth form (herbaceous forb vs. woody shrub vs vine), plant life cycle (annual vs. perennial), habitat type (upland terrestrial vs. riparian area and wetland), potential to adversely impact non-target species, and potential to impact other resources and activities at C-CD.

METHODS of WEEDS CONTROL

Non-native, tall, broadleaf annuals in grasslands

Due to their annual life cycle, herbaceous growth form, and widespread distribution in grasslands, the control of non-native broadleaf annuals is best accomplished by livestock grazing and mowing. Cattle are present within most of the grassland area grazing allotments of C-CD. The balance in dominance between the less competitive annual grasses and more competitive non-native, tall, broadleaf annuals in grasslands of C-CD, is largely influenced by the intensity of cattle grazing. Intensive grazing favors annual grass cover and native forbs, while the lack of grazing promotes dominance of non-native, tall, broadleaf annuals (Popay and Field 1996; Hayes and Holl 2003; Stromberg et al. 2007; Sotoyome RCD 2019). Management of cattle grazing will be the primary method of control for non-native, tall, broadleaf annuals in grasslands of C-CD. Some areas of grassland within allotments at C-CD are undergrazed by cattle due to poor access across steep terrain or lack of water availability in the uplands. Range improvements are proposed including placing water troughs in upland areas and updating fencing to encourage more even grazing across the grasslands of C-CD.

Within and around fenced Day Use Areas and around other infrastructure in grasslands, annual mowing will be used as the primary method to reduce fine fuel loads and wildfire risk. Mowing will also be used to reduce tall weeds along trails, roads, and fire breaks. Mowing equipment may include a mower attachment to a tractor, riding mower, walk-behind mower, or weedeaters. The total estimated annual area of non-native, tall, broadleaf annuals and non-native grasslands subject to mowing is 50 acres.

In some cases, herbicide will be used in place of grazing and mowing to treat weeds within and around Day Use Areas, other infrastructure, trails, roads, and fire breaks. The non-selective, post-emergent herbicide Glyphosate (liquid) will be broadcast applied with small-scale ground-based application methods including a backpack sprayer (spot spraying) and spray boom on a motorized vehicle (UTV; broadcast spraying). The use of Glyphosate will be primarily limited to situations where vegetation presents a wildfire risk, but the risk of wildfire caused by a blade mower would be even higher. The non-selective, pre-emergent herbicides Diuron and Tebuthiuron (solid, granular) will be locally applied by hand operated spreaders to small areas of the soil where complete removal of any herbaceous annual plant growth and bare ground is desired for several years. The application of Diuron and Tebuthiuron will be entirely limited to around Day Use Areas and infrastructure. No Diuron or Tebuthiuron treatments will be conducted in grasslands accessible to livestock.

In areas where non-native, tall broadleaf annuals are persistent in large areas of grasslands despite efforts to control them with livestock grazing and mowing, broadcast applications of selective herbicides will be conducted. The selective herbicides only control broadleaf annual plant species and do not affect grasses. These herbicide applications will be primarily undertaken in conjunction with efforts to restore non-native grassland to native grassland.

The selective, post-emergent, herbicides Dicamba and 2,4-D (liquid) will be applied to specifically control only broadleaf annual plant species (Ditomaso et al. 2013). The selective, post-emergent, herbicides Aminopyralid and Clopyralid (liquid) will be applied to specifically control only annual aster species (e.g. thistles; Ditomaso et al. 2013). All scales of ground-based application methods may be used to apply Dicamba and 2,4-D including backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); and commercial ag spray booms and equipment (broadcast spraying). All scales of ground-based and all scales of aerial application methods may be used to apply Aminopyralid and Clopyralid including backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); commercial ag spray booms and equipment (broadcast spraying); UAS (spot spraying); and helicopter (broadcast spraying). Per the herbicide product labels, there are no restrictions on grazing grasslands following application of Dicamba, 2,4-D, Aminopyralid, and Clopyralid. The total estimated annual area of non-native, tall, broadleaf annuals and non-native grasslands subject to treatment with herbicide is 50 acres.

Prescribed fire may be used to reduce fine fuel loads and the abundance on non-native grasses and forbs in order to restore native grasslands. The total estimated annual area of non-native, tall, broadleaf annuals and non-native grasslands subject to prescribed fire treatment is 10 acres.

Non-native perennial vines in riparian areas

Non-native perennial vines present special challenges to control since they are tangled with native riparian vegetation and grow from extensive rhizome systems in the soil. Additionally, they grow in very close proximity to surface water. The control of non-native perennial vines focuses on manual removal by cutting, removal, and disposal of vines, followed by application of aquatic formulations of Glyphosate and Triclopyr to resprouts (DiTomaso et al. 2013). Due to the dense riparian vegetation and close proximity to surface water, the herbicide application method is limited to a backpack sprayer (spot spraying). A UAS may be useful for spot spraying difficult to access areas, including vines far up in tree canopies. The total estimated annual area of non-native perennial vines in riparian areas subject to treatment with herbicide is 5 acres.

Non-native woody shrubs and large perennial grasses in coastal scrub

Non-native woody shrubs and large grasses typically grow on very steep slopes. Although Pampas grass has very short-lived seed (<1 year) and has no persistent seed bank, French broom has very long lived seed (50+ years) and forms a large, persistent seed bank (Ditomaso et al. 2013). Non-native woody shrubs and large grasses can be removed manually by hand pulling or mechanical grubbing (shovel, pick axe, or weed wrench). More extensive infestations may be more effectively controlled with foliar applications of Glyphosate and Triclopyr (Ditomaso et al. 2013). Due to their location on steep slopes and away from roads, a backpack sprayer (spot spraying) may be the only option for herbicide application. A UAS may be useful for spot spraying difficult to access areas. The very long-lived, persistent soil seed bank of French broom that it continually emerges from necessitates dedicated, long-term monitoring and control to achieve eradication. The total estimated annual area of non-native woody shrubs and large perennial grasses subject to treatment with herbicide is 20 acres.

HERBICIDE DESCRIPTIONS

Glyphosate

Glyphosate is a non-selective, post-emergent, systemic herbicide. It is active on all plant species. It is soluble in water and applied as a spray to foliage. The target season interval for application of Glyphosate to control any types of emergent weeds at C-CD will be any time of the year; however, application during the Winter rainy season will be avoided.

Dicamba

Dicamba is a selective, pre-emergent and post-emergent, systemic herbicide. It is active on broadleaf annuals. It is soluble in water and applied as a spray to foliage. The target season interval for application of Dicamba to control non-native broadleaf annuals in grasslands at C-CD will be Spring (March – April), when broadleaf annuals are at the rosette stage.

2,4-D

2,4-D is a selective, pre-emergent and post-emergent, systemic herbicide. It is active on broadleaf annuals. It is soluble in water and applied as a spray to foliage. The target season interval for application of 2,4-D to control non-native broadleaf annuals in grasslands at C-CD will be Spring (March – April), when broadleaf annuals are at the rosette stage.

Aminopyralid

Aminopyralid is a selective, post-emergent, systemic herbicide. It is most active on annual aster species (Asteraceae). It is soluble in water and applied as a spray to foliage. The target season interval for application of Aminopyralid to control non-native thistles in grasslands at C-CD will be Spring (March – April), when the thistles are at the rosette stage

Clopyralid

Clopyralid is a selective, post-emergent, systemic herbicide. It is most active on annual aster species (Asteraceae). It is soluble in water and applied as a spray to foliage. The target season interval for application of Clopyralid to control non-native thistles in grasslands at C-CD will be Spring (March – April), when the thistles are at the rosette stage.

Triclopyr

Triclopyr is a selective, post-emergent, systemic herbicide. It is soluble in water and applied as a spray to foliage. The target season interval for application of Triclopyr to control non-native perennial vines at C-CD will be during the Spring and Summer (March – September).

Diuron

Diuron is a non-selective, pre-emergent, systemic herbicide. It is a granular solid that is applied to the soil surface and kills all seedlings as they emerge. The target season interval for application of Diuron to Day Use Areas at C-CD to control all emerging plant seedlings will be Fall (September - October), just prior to the first fall rains.

Tebuthiuron

Tebuthiuron is a non-selective, pre-emergent, systemic herbicide. It is a granular solid that is applied to the soil surface and kills all seedlings as they emerge. The target season interval for application of Tebuthiuron to Day Use Areas at C-CD to control all emerging plant seedlings will be Fall (September - October), just prior to the first fall rains.

HERBICIDE ANALYSIS OF EFFECTS

Analysis of effects is tiered to the 2007 Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Final Programmatic Environmental Impact Statement (BLM 2007b), and the 2016 Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2016). Where relevant, site-specific effects are analyzed for conditions specific to C-CD.

Factors that Influence the Fate, Transport, and Persistence of Herbicides

The fate and transport of herbicides in soil is a function of their interaction with the soil environment, and is a complex process. Chemical, physical, and biological soil processes influence herbicide availability, phytotoxicity, and fate and transport. Herbicides dissipate from soils by immobilization through adsorption onto soil surfaces, by transport with water, or through chemical or biological degradation processes.

Adsorption to soil surfaces is the most influential factor on the fate and transport of herbicides in soils. Adsorption occurs onto clay particles and organic matter. Adsorption affects herbicide mobility and availability to organisms, which in turn influences herbicide fate. The lower the adsorption of an herbicide to soil, the higher the mobility in soil. Transport with water is the primary mode of herbicide movement off of the application area. The higher the mobility of an herbicide is in soil and the higher the rainfall (leaching), the higher the probability that an herbicide will be transported off of the application site.

Photodegradation and biodegradation are the two common degradation pathways for herbicides in the environment. Degradation of herbicide results in a chemical transformation that replaces portions of the herbicide's active ingredient chemical structure, rendering it inactive. The length of time that an herbicide remains active in the soil is called soil persistence or soil residual life. The life of herbicide in soil is typically expressed as half-life – the time it takes for half of the mass of an herbicide to degrade and disappear.

Glyphosate

Air Quality

Glyphosate is not a volatile compound, therefore it has no effects on air quality.

Soil Resources

Glyphosate is soluble in water. It is strongly adsorbed to soil and has no mobility in soil. The herbicide is inactivated by adsorption to soil. Glyphosate has a half-life in soil of 47 days. Glyphosate has no direct effect on soil resources.

Water Resources and Quality

Non-aquatic formulations of Glyphosate will be applied in terrestrial uplands. Aquatic formulations of Glyphosate will be applied in wetlands and riparian areas. Glyphosate applied in terrestrial uplands is strongly adsorbed to soil and deactivated. Glyphosate applied in wetlands and riparian zones dissipates rapidly from surface water through adsorption to soil. Due to the rapid, strong attraction and binding to soil particles, Glyphosate does not remain dissolved in water as runoff from terrestrial uplands or in wetlands and riparian zones. Therefore, Glyphosate has no effect on water resources or water quality.

Wetland and Riparian Areas

Non-aquatic formulations of Glyphosate will be applied in terrestrial uplands. Aquatic formulations of Glyphosate will be applied in wetlands and riparian areas. Glyphosate applied in

terrestrial uplands is strongly adsorbed to soil and deactivated. Glyphosate applied in wetlands and riparian zones dissipates rapidly from surface water through adsorption to soil. Due to the rapid, strong attraction and binding to soil particles, Glyphosate does not remain dissolved in water as runoff from terrestrial uplands or in wetlands and riparian zones. Therefore, Glyphosate has no effect on water resources in wetlands and riparian areas. Spot spray applications of Glyphosate to non-native perennial vines in wetlands and riparian areas has the potential for some overspray and impact to non-target, native vegetation. The undesirable impact to non-target, native vegetation would be localized and short-term and the native vegetation would rapidly recover.

Vegetation

Non-aquatic formulations of Glyphosate will be applied in terrestrial uplands. Aquatic formulations of Glyphosate will be applied in wetlands and riparian areas. Spot spray applications of Glyphosate have the potential for some overspray and impact to non-target, native vegetation. The undesirable impact to non-target, native vegetation would be localized and short-term and the native vegetation would rapidly recover.

Fish and Other Aquatic Organisms

Non-aquatic formulations of Glyphosate will be applied in terrestrial uplands. Aquatic formulations of Glyphosate will be applied in wetlands and riparian areas. Glyphosate applied in terrestrial uplands is strongly adsorbed to soil and deactivated. Glyphosate applied in wetlands and riparian zones dissipates rapidly from surface water through adsorption to soil. Due to the rapid, strong attraction and binding to soil particles, Glyphosate does not remain dissolved in water as runoff from terrestrial uplands or in wetlands and riparian zones. Glyphosate is classified as non-toxic to practically non-toxic to freshwater amphibians, fish, and other aquatic organisms.

Wildlife Resources

Direct spray of Glyphosate to insects and small mammals poses a low risk at the typical rate and a moderate risk at the maximum application rate. Insectivores consuming large quantities of insects incidentally sprayed with Glyphosate are at low risk of exposure. Herbivores consuming large quantities of grass and other vegetation treated with Glyphosate are at low risk of exposure. Risks of exposure of wildlife to Glyphosate will be mitigated by only treating relatively small areas of vegetation in any given year, leaving the vast majority of vegetation at C-CD untreated.

Livestock

Non-aquatic formulations of Glyphosate will be applied in terrestrial uplands. Aquatic formulations of Glyphosate will be applied in wetlands and riparian areas. Cattle at C-CD spend the majority of time grazing in terrestrial uplands, primarily in grasslands, and spend little to no time in densely vegetated riparian zones. The probability of livestock encountering and consuming Glyphosate treated non-native perennial vines in the dense riparian zone vegetation is very low, therefore the overall risk of Glyphosate exposure in that setting is very low. Control of herbaceous annual plant growth with Glyphosate application will be conducted around Day Use Areas, other infrastructure, trails, roads, and fire breaks. The control may us a combination of spot spraying and narrow width broadcast spraying of strips (< 5 feet wide) along existing, developed linear

features. The majority of these Glyphosate treatment areas would be located in grasslands accessible to cattle. Cattle consuming Glyphosate contaminated vegetation face low acute risk scenarios involving the typical application rate, moderate acute risk for scenarios involving the maximum application rate, and low chronic risk for scenarios involving the maximum application rate. Based on label directions, there are no restrictions on livestock use of Glyphosate treated areas. Risks of exposure of livestock to Glyphosate will be mitigated by only treating relatively small areas of vegetation in any given year, leaving the vast majority of vegetation at C-CD untreated.

Paleontological and Cultural Resources

Glyphosate may be applied to any vegetation type. Risks of treatment of cultural use sites or human exposure to Glyphosate from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Glyphosate may be applied to vegetation types where the effects may be visible on the landscape. The target vegetation types where these effects may be most visible include the grasslands and coastal scrub. Control of herbaceous annual plant growth with Glyphosate application may be conducted around Day Use Areas, other infrastructure, trails, roads, and fire breaks. The control may us a combination of spot spraying and narrow width broadcast spraying of strips (< 5 feet wide) along existing, developed linear features. Treated areas may appear as brown spots and strips, paralleling and immediately adjacent to existing linear features. Since herbaceous annuals at C-CD generally senesce and turn brown in summer, the Glyphosate treated areas would only be visible for a few months, between March and May. Herbaceous annuals readily produce new growth every year, so Glyphosate treated areas of grassland would turn green again the following growing season. Glyphosate treated areas of grassland would have a negligible to minor, short-term effect on visual resources.

Control of non-native woody shrubs and large perennial grasses in coastal scrub could result in large patches of dead shrubs that may take several years to decompose. Native coastal scrub would take several years to fill in the vacant spaces. Most areas that would be targeted for the control of non-native woody shrubs and large perennial grasses, would be located in quarries (abandoned) which already appear as large disturbances on the landscape. Relative to the much larger scars of the quarries on the landscape, Glyphosate treated non-native woody shrubs and large perennial grasses would have a negligible effect on visual resources.

Recreation

Glyphosate will be applied to vegetation types in the vicinity of Day Use Areas and recreation trails. Due to the high degree of overlap of proposed recreation trails with vegetation types targeted for Glyphosate treatment, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain Day Use Areas, trails, and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety.

Social and Economic Conditions

Glyphosate will be applied to vegetation types in the vicinity of Day Use Areas and recreation trails. Due to the high degree of overlap of proposed recreation trails with vegetation types targeted for Glyphosate treatment, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Glyphosate will be applied to vegetation types in the vicinity of Day Use Areas and trails. Due to the high degree of overlap of proposed recreation trails with vegetation types targeted for Glyphosate treatment, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety. For the routine application scenarios at the typical and maximum application rates, Glyphosate does not present a risk to workers or the public. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Dicamba

Air Quality

Dicamba is not a volatile compound, therefore it has no effects on air quality.

Soil Resources

Dicamba is soluble in water. It has high mobility in soil and does not bind to soil. Dicamba degrades to 3,6-dichlorosalicyclic acid, which does bind strongly to soil. Dicamba has a half-life in soil of 14 days. Dicamba has no direct effect on soil resources.

Water Resources and Quality

Dicamba will not be applied to wetlands and riparian zones. Dicamba will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Dicamba has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of Dicamba will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Dicamba should fully degrade. The half-life in soil is 14 days and the dry season is a minimum of 210 days.

Wetland and Riparian Areas

Dicamba will not be applied to wetlands and riparian zones. Dicamba will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Dicamba has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of Dicamba will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Dicamba should fully degrade. The half-life in soil is 14 days and the dry season is a minimum of 210 days.

Vegetation

Dicamba will be broadcast applied to grasslands to control non-native broadleaf annuals including thistles, mustard, radish, and poison hemlock. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); and commercial ag spray booms and equipment (broadcast spraying). No special status broadleaf annual plant species are known or suspected to occur in grasslands at C-CD. Due to the specificity of Dicamba to broadleaf annuals and the lack of native broadleaf annuals in the annual grasslands at C-CD, broadcast treatments of Dicamba are expected to primarily impact non-native broadleaf annuals. No grass species will be affected by the Dicamba treatments. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent contamination of surface water by spray drift.

Fish and Other Aquatic Organisms

Dicamba will not be applied to wetlands and riparian zones. Dicamba will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Dicamba has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of Dicamba will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Dicamba should fully degrade. The half-life in soil is 14 days and the dry season is a minimum of 210 days.

Wildlife Resources

Dicamba will only be applied to grasslands in terrestrial uplands. Direct spray of Dicamba at both typical and maximum application rates poses a moderate risk to insects and small mammals. Insectivores consuming large quantities of insects incidentally sprayed with Dicamba are at risk of exposure. Herbivores consuming large quantities of grass and other vegetation treated with Dicamba are at risk of exposure. Risks of exposure of wildlife to Dicamba will be mitigated by only treating relatively small portions of grazing allotments in any given year, leaving the majority of grasslands untreated.

Livestock

Dicamba will only be applied to grasslands in terrestrial uplands. Most of the treated grasslands would be within rangeland allotments grazed by cattle. Dicamba presents some risk to livestock under direct spray and ingestion scenarios. Risks of exposure of cattle to Dicamba will be mitigated by only treating portions of grazing allotments in any given year, removing cattle from the treatment areas prior to herbicide application, and temporarily restricting cattle from the treatment areas for one year. The half-life of Dicamba is 14 days and a year (365 days) of exclusion of cattle from grazing in the treatment areas should be more than sufficient to mitigate exposure risk.

Paleontological and Cultural Resources

Dicamba will only be applied to grasslands in terrestrial uplands. Risks of treatment of cultural use sites or human exposure to Dicamba from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Dicamba will be broadcast applied to grasslands to control non-native broadleaf annuals. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); and commercial ag spray booms and equipment (broadcast spraying). Due to the specificity of Dicamba to broadleaf annuals, broadcast treatments of Dicamba are expected to only adversely impact non-native thistles, mustard, radish, and poison hemlock. All other grassland species will not be impacted and therefore, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

Dicamba will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety.

Social and Economic Conditions

Dicamba will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent visitor exposure to herbicide. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Dicamba will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to prevent visitor exposure to herbicide. Certain trails and other recreation areas may

be posted as temporarily closed during active herbicide application, for visitor safety. For the routine application scenarios at the typical and maximum application rates, Dicamba does not present a risk to workers or the public. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

2,4-D

Air Quality

2,4-D is not a volatile compound, therefore it has no effects on air quality.

Soil Resources

2,4-D is soluble in water. It has high mobility in soil and does not bind to soil. 2,4-D has a half-life in soil of 10 days. 2,4-D has no direct effect on soil resources.

Water Resources and Quality

2,4-D will not be applied to wetlands and riparian zones. 2,4-D will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. 2,4-D has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of 2,4-D will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time, the 2,4-D should fully degrade. The half-life in soil is 10 days and the dry season is a minimum of 210 days.

Wetland and Riparian Areas

2,4-D will not be applied to wetlands and riparian zones. 2,4-D will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. 2,4-D has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of 2,4-D will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time 2,4-D should fully degrade. The half-life in soil is 10 days and the dry season is a minimum of 210 days.

Vegetation

2,4-D will be broadcast applied to grasslands to control non-native broadleaf annuals including thistles, mustard, radish, and poison hemlock. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); and commercial ag

spray booms and equipment (broadcast spraying). No special status broadleaf annual plant species known or suspected to occur in grasslands at C-CD. Due to the specificity of 2,4-D to broadleaf annuals and the lack of native broadleaf annuals in the annual grasslands at C-CD, broadcast treatments of 2,4-D are expected to primarily impact non-native broadleaf annuals. No grass species will be affected by the 2,4-D treatments. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift.

Fish and Other Aquatic Organisms

2,4-D will not be applied to wetlands and riparian zones. 2,4-D will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. 2,4-D has high potential to leach with surface water and to leach to groundwater due to its high mobility in soil. Leaching of 2,4-D will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time 2,4-D should fully degrade. The half-life in soil is 10 days and the dry season is a minimum of 210 days.

Wildlife Resources

2,4-D will only be applied to grasslands in terrestrial uplands. Direct spray of 2,4-D at both typical and maximum application rates poses a moderate risk to insects and small mammals. Insectivores consuming large quantities of insects incidentally sprayed with 2,4-D are at risk of exposure. Herbivores consuming large quantities of grass and other vegetation treated with 2,4-D are at risk of exposure. Risks of exposure of wildlife to 2,4-D will be mitigated by only treating relatively small portions of grazing allotments in any given year, leaving the majority of grasslands untreated.

Livestock

2,4-D will only be applied to grasslands in terrestrial uplands. Most of the treated grasslands would be within rangeland allotments grazed by cattle. 2,4-D presents some risk to livestock under direct spray and ingestion scenarios. Risks of exposure of cattle to 2,4-D will be mitigated by only treating portions of grazing allotments in any given year, removing cattle from the treatment areas prior to herbicide application, and temporarily restricting cattle from the treatment areas for one year. The half-life of 2,4-D is 10 days and a year (365 days) of exclusion of cattle from grazing in the treatment areas should be more than sufficient to mitigate exposure risk.

Paleontological and Cultural Resources

2,4-D will only be applied to grasslands in terrestrial uplands. Risks of treatment of cultural use sites or human exposure to 2,4-D from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

2,4-D will be broadcast applied to grasslands to control non-native broadleaf annuals. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); and commercial ag spray booms and equipment (broadcast spraying). Due to the specificity of 2,4-D to broadleaf annuals, broadcast treatments of 2,4-D are expected to only adversely impact non-native thistles, mustard, radish, and poison hemlock. All other grassland species will not be impacted and therefore, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

2,4-D will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety.

Social and Economic Conditions

2,4-D will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent visitor exposure to herbicide. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

2,4-D will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to prevent visitor exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety. Workers face low to moderate risk from direct spray of 2,4-D at the maximum application rates. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Aminopyralid

Air Quality

Aminopyralid is not a volatile compound, therefore it has no direct effects on air quality. Localized, brief, minor to negligible impacts to air quality are possible due to activities that support the herbicide applications. These may include exhaust emissions from motorized vehicles and particulate emissions (dust) from vehicle travel on unpaved roads.

Soil Resources

Aminopyralid is soluble in water. It has moderate mobility in soil and only weakly binds to soil. Aminopyralid has a half-life in soil of 32 days. Aminopyralid has no direct effect on soil resources.

Water Resources and Quality

Aminopyralid will not be applied to wetlands and riparian zones. Aminopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Aminopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Aminopyralid will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Aminopyralid should fully degrade. The half-life in soil is 32 days and the dry season is a minimum of 210 days.

Wetland and Riparian Areas

Aminopyralid will not be applied to wetlands and riparian zones. Aminopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Aminopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Aminopyralid will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Aminopyralid should fully degrade. The half-life in soil is 32 days and the dry season is a minimum of 210 days.

Vegetation

Aminopyralid will be broadcast applied to grasslands to control non-native annual thistles. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); commercial ag spray booms and equipment (broadcast spraying); UAS (spot spraying); and helicopter (broadcast spraying). No special status annual plant species in the Asteraceae family are known or suspected to occur in grasslands at C-CD. Due to the high specificity of Aminopyralid to annual asters, broadcast treatments of Aminopyralid are expected to only adversely impact non-native annual thistles. All other grassland species should not be impacted. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift.

Fish and Other Aquatic Organisms

Aminopyralid will not be applied to wetlands and riparian zones. Aminopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Aminopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Aminopyralid will

be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Aminopyralid should fully degrade. The half-life in soil is 40 days and the dry season is a minimum of 210 days.

Wildlife Resources

Aminopyralid will only be applied to grasslands in terrestrial uplands. Aminopyralid applied at typical label rates is not likely to pose a risk to terrestrial animals.

Livestock

Aminopyralid will only be applied to grasslands in terrestrial uplands. Most of the treated grasslands would be within rangeland allotments grazed by cattle. Aminopyralid applied at typical label rates is not likely to pose a risk to terrestrial animals. Application of Aminopyralid at the maximum application rate poses a low chronic risk to large mammals consuming Aminopyralid contaminated vegetation. The most likely livestock risk scenario would be the consumption of contaminated grass across large areas by livestock. Risks of exposure of cattle to Aminopyralid will be mitigated by only treating portions of grazing allotments in any given year, removing cattle from the treatment areas prior to herbicide application, and temporarily restricting cattle from the treatment areas for one year. The half-life of Aminopyralid is 40 days and a year (365 days) of exclusion of cattle from grazing in the treatment areas should be more than sufficient to mitigate exposure risk.

Paleontological and Cultural Resources

Aminopyralid will only be applied to grasslands in terrestrial uplands. Risks of treatment of cultural use sites or human exposure to Aminopyralid from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Aminopyralid will be broadcast applied to grasslands to control non-native annual thistles. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); commercial ag spray booms and equipment (broadcast spraying); UAS (spot spraying); and helicopter (broadcast spraying). Due to the high specificity of Aminopyralid to annual asters, broadcast treatments of Aminopyralid are expected to only adversely impact non-native annual thistles. All other grassland species should not be impacted and therefore, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

Aminopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety.

Social and Economic Conditions

Aminopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent visitor exposure to herbicide. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Aminopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to prevent visitor exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety. There are no risks to public or occupational receptors associated with most of the anticipated typical and accidental exposure scenarios for Aminopyralid. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Clopyralid

Air Quality

Clopyralid is not a volatile compound, therefore it has no direct effects on air quality. Localized, brief, minor to negligible impacts to air quality are possible due to activities that support the herbicide applications. These may include exhaust emissions from motorized vehicles and particulate emissions (dust) from vehicle travel on unpaved roads.

Soil Resources

Clopyralid is soluble in water. It has moderate mobility in soil and only weakly binds to soil. Clopyralid has a half-life in soil of 40 days. Clopyralid has no direct effect on soil resources.

Water Resources and Quality

Clopyralid will not be applied to wetlands and riparian zones. Clopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Clopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Clopyralid will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Clopyralid should fully degrade. The half-life in soil is 40 days and the dry season is a minimum of 210 days.

Wetland and Riparian Areas

Clopyralid will not be applied to wetlands and riparian zones. Clopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Clopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Clopyralid will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Clopyralid should fully degrade. The half-life in soil is 40 days and the dry season is a minimum of 210 days.

Vegetation

Clopyralid will be broadcast applied to grasslands to control non-native annual thistles. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); commercial ag spray booms and equipment (broadcast spraying); UAS (spot spraying); and helicopter (broadcast spraying). No special status annual plant species in the Asteraceae family are known or suspected to occur in grasslands at C-CD. Due to the high specificity of Clopyralid to annual asters, broadcast treatments of Clopyralid are expected to only adversely impact non-native annual thistles. All other grassland species should not be impacted. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift.

Fish and Other Aquatic Organisms

Clopyralid will not be applied to wetlands and riparian zones. Clopyralid will only be applied to grasslands in terrestrial uplands. Sufficient buffer zones will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent surface water contamination by spray drift. Clopyralid has moderate potential to leach with surface water and to leach to groundwater due to its moderate mobility in soil. Leaching of Clopyralid will be mitigated by the target application interval being the onset of the dry season (March – April), followed by the long dry season (April – October) during which time Clopyralid should fully degrade. The half-life in soil is 40 days and the dry season is a minimum of 210 days.

Wildlife Resources

Clopyralid will only be applied to grasslands in terrestrial uplands. Clopyralid applied at typical label rates is not likely to pose a risk to terrestrial animals.

Livestock

Clopyralid will only be applied to grasslands in terrestrial uplands. Most of the treated grasslands would be within rangeland allotments grazed by cattle. Clopyralid applied at typical label rates is not likely to pose a risk to terrestrial animals. Application of Clopyralid at the maximum application rate poses a low chronic risk to large mammals consuming Clopyralid contaminated vegetation. Risks of exposure of cattle to Clopyralid will be mitigated by only treating portions of

grazing allotments in any given year, removing cattle from the treatment area prior to herbicide application, and temporarily restricting cattle from the treatment areas for one year. The half-life of Clopyralid is 40 days and a year (365 days) of exclusion of cattle from grazing in the treatment areas should be more than sufficient to mitigate exposure risk.

Paleontological and Cultural Resources

Clopyralid will only be applied to grasslands in terrestrial uplands. Risks of treatment of cultural use sites or human exposure to Clopyralid from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Clopyralid will be broadcast applied to grasslands to control non-native annual thistles. Application methods may include backpack sprayer (spot spraying); spray boom on motorized vehicle (UTV; broadcast spraying); commercial ag spray booms and equipment (broadcast spraying); UAS (spot spraying); and helicopter (broadcast spraying). Due to the high specificity of Clopyralid to annual asters, broadcast treatments of Clopyralid are expected to only adversely impact non-native annual thistles. All other grassland species will not be impacted and therefore, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

Clopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent human exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety.

Social and Economic Conditions

Clopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to minimize disruption to recreation and to prevent visitor exposure to herbicide. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Clopyralid will only be applied to grasslands in terrestrial uplands. Due to the high degree of overlap of proposed recreation trails with the grassland areas, careful project-level planning will be necessary to prevent visitor exposure to herbicide. Certain recreation trails and other recreation areas may be posted as temporarily closed during active herbicide application, for visitor safety. There are no risks to public or occupational receptors associated with most of the anticipated typical and accidental exposure scenarios for Clopyralid. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label,

posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Triclopyr

Air Quality

Triclopyr is not a volatile compound, therefore it has no direct effects on air quality. Localized, brief, minor to negligible impacts to air quality are possible due to activities that support the herbicide applications. These may include exhaust emissions from motorized vehicles and particulate emissions (dust) from vehicle travel on unpaved roads.

Soil Resources

Triclopyr is soluble in water. It has high mobility in soil and does not bind to soil. Triclopyr salt degrades to triclopyr acid, which does bind strongly to soil. Triclopyr has a half-life in soil of 46 days. Triclopyr has no direct effect on soil resources.

Water Resources and Quality

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. No adverse effects on water quality occur from application of this herbicide at label rates directly to surface water.

Wetland and Riparian Areas

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. Spot spray applications of Triclopyr to non-native perennial vines in wetlands and riparian areas has the potential for some overspray and impact to non-target, native vegetation. The undesirable impact to non-target, native vegetation would be localized and short-term and the native vegetation would rapidly recover.

Vegetation

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. Spot spray applications of Triclopyr to non-native perennial vines in wetlands and riparian areas has the potential for some overspray and impact to non-target, native vegetation. The undesirable impact to non-target, native vegetation would be localized and short-term and the native vegetation would rapidly recover.

Fish and Other Aquatic Organisms

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. Total application rates will be relatively low due to spot treatment. When applied at the typical and maximum application rate, Triclopyr poses no risk to amphibians, fish or other aquatic invertebrates in streams or ponds under acute and chronic exposure scenarios.

Wildlife Resources

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. Acute or accidental direct spray would pose a low to moderate risk to terrestrial insects and small mammals. Consumption of contaminated vegetation would pose a low to moderate risk to large mammals. Consumption of contaminated insects would pose a low to moderate risk to small birds. Total application rates will be relatively low due to spot treatment and the small, discontinuous areas of herbicide application should reduce the exposure risk to wildlife.

Livestock

An aquatic formulation of Triclopyr will be applied to non-native perennial vines in wetlands and densely vegetated riparian zones, where livestock spend little time. Triclopyr presents some risk to livestock, particularly through the consumption of contaminated vegetation. The probability of livestock encountering and consuming treated non-native perennial vines in the dense riparian zone vegetation is very low, therefore the overall risk of Triclopyr to livestock is very low.

Paleontological and Cultural Resources

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. Risks of treatment of cultural use sites or human exposure to Triclopyr from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones. The relatively small, spot treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones where little recreation or other visitor uses will occur except for certain stretches of creeks and creek crossings. Most of the spot treatments will be conducted in dense riparian vegetation and should not impact recreation activities.

Social and Economic Conditions

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones where little recreation or other visitor uses will occur except for certain stretches of creeks and creek crossings. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

An aquatic formulation of Triclopyr will be applied in wetlands and riparian zones where little recreation or other visitor uses will occur except for certain stretches of creeks and creek crossings. Workers face low risk from directed spray of Triclopyr at the maximum application rates. Standard

operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Diuron

Air Quality

Diuron is not a volatile compound, therefore it has no direct effects on air quality. Localized, brief, minor to negligible impacts to air quality are possible due to activities that support the herbicide applications. These may include exhaust emissions from motorized vehicles and particulate emissions (dust) from vehicle travel on unpaved roads.

Soil Resources

Diuron is insoluble in water. It has moderate to low mobility in soil and only weakly binds to soil. Diuron has a half-life in soil of 90 days. Diruon has no direct effect on soil resources. Due to the long half-life and ability to completely control (remove) vegetative cover, there is potential for localized, minor, long-term soil erosion. Soil erosion would be mitigated by limiting the application of Diuron to relatively small areas which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion.

Water Resources and Quality

Diruon will not be applied to wetlands and riparian areas. Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Diuron to relatively small areas which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off site transport.

Wetland and Riparian Areas

Diruon will not be applied to wetlands and riparian areas. Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Diuron to relatively small areas which would have mineral aggregate covers (gravel parking lots) to protect

from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Vegetation

Diuron will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between treatment areas (Day Use Areas and infrastructure) and native vegetation to prevent off-site transport in runoff to sensitive native vegetation. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Diuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Fish and Other Aquatic Organisms

Diruon will not be applied to wetlands and riparian areas. Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Diuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Wildlife Resources

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. There are low acute and chronic risks for ingestion scenarios for small mammals, small birds, and large mammalian carnivores. It is highly likely that the frequent disturbance associated with concentrated visitor activity around the Day Use Areas will dissuade wildlife from foraging or lingering around the treated Day Use Areas.

Livestock

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Since the Day Use Areas will be fenced and not accessible to cattle and the areas treated around other unfenced infrastructure will be small, there should be very low to no risk to cattle.

Paleontological and Cultural Resources

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Risks of treatment of cultural use sites or human exposure to Diuron from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Due to location within already developed and chronically disturbed sites, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. The once every 5-year application interval of the granular herbicide to recreation sites will not significantly disrupt recreation activity. Day Use Areas may be posted temporarily closed briefly (< 2 hours) during active herbicide application, for visitor safety.

Social and Economic Conditions

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Diuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. According to the 1991 13-State EIS, there are risks to workers and the general public associated with both routine and accidental exposures to Diuron. The majority of Diuron applied to Day Use Areas will be applied in waste areas between areas kept weed free by chronic disturbance from vehicle travel and the parking area fence line. Since the primary treatment area will generally be outside of the areas that will be encountered by the visiting public, exposure risk of Diuron is likely to be very low. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

Tebuthiuron

Air Quality

Tebuthiuron is not a volatile compound, therefore it has no direct effects on air quality. Localized, brief, minor to negligible impacts to air quality are possible due to activities that support the herbicide applications. These may include exhaust emissions from motorized vehicles and particulate emissions (dust) from vehicle travel on unpaved roads.

Soil Resources

Tebuthiuron is insoluble in water. It has moderate mobility in soil and only weakly binds to soil. Tebuthiuron has a half-life in soil of 360 days. Tebuthiuron has no direct effect on soil resources. Due to the long half-life and ability to completely control (remove) vegetative cover, there is

potential for localized, minor, long-term soil erosion. Soil erosion would be mitigated by limiting the application of Tebuthiuron to relatively small areas which would have mineral covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion.

Water Resources and Quality

Tebuthiuron will not be applied to wetlands and riparian areas. Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Tebuthiuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Wetland and Riparian Areas

Tebuthiuron will not be applied to wetlands and riparian areas. Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Tebuthiuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Vegetation

Tebuthiuron will only be applied to terrestrial uplands. A sufficient buffer zone will be maintained between treatment areas (Day Use Areas and infrastructure) and native vegetation to prevent off-site transport in runoff to sensitive native vegetation. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of Tebuthiuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Fish and Other Aquatic Organisms

Tebuthiuron will not be applied to wetlands and riparian areas. Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A sufficient buffer zone will be maintained between the upland terrestrial treatment areas and wetlands and riparian zones to prevent off-site transport in runoff to wetlands and riparian areas. In addition to the distance buffer, the potential for off-site transport will be mitigated by limiting the application of

Tebuthiuron to relatively small areas, which would have mineral aggregate covers (gravel parking lots) to protect from erosion. Additionally, areas of untreated grassland immediately adjacent to the treated areas would serve as a vegetated buffer strip to protect from any potential erosion and off-site transport.

Wildlife Resources

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. There are low acute and chronic risks for ingestion scenarios for small mammals, small birds, and large mammalian carnivores. It is highly likely that the frequent disturbance associated with concentrated visitor activity around the Day Use Areas will dissuade wildlife from foraging or lingering around the treated Day Use Areas.

Livestock

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Since the Day Use Areas will be fenced and not accessible to cattle and the areas treated around other unfenced infrastructure will be small, there should be very low to no risk to cattle.

Paleontological and Cultural Resources

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Risks of treatment of cultural use sites or human exposure to Tebuthiuron from ingestion of Native American traditional use plants will be mitigated by project-level consultation with local Tribes prior to any herbicide application.

Visual Resources

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. Due to location within already developed and chronically disturbed sites, the treatments will have no significant visual effect on the vegetation or appearance of the landscape.

Recreation

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. The once every 5 year application interval of the granular herbicide to recreation sites will not significantly disrupt recreation activity. Day Use Areas may be posted temporarily closed briefly (< 2 hours) during active herbicide application, for visitor safety.

Social and Economic Conditions

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. A wide diversity of the public is anticipated to visit C-CD for recreation with no disproportionate effects of herbicide treatments on any specific group of visitors.

Human Health and Safety

Tebuthiuron will only be applied to terrestrial uplands on Day Use Areas and around other infrastructure. According to the 1991 13-State EIS, there are risks to workers and the general

public associated with both routine and accidental exposures to Tebuthiuron. The majority of Tebuthiuron applied to Day Use Areas will be applied in waste areas between areas kept weed free by chronic disturbance from vehicle travel and the parking area fence line. Since the primary treatment area will generally be outside of the areas that will be encountered by the visiting public, exposure risk of Tebuthiuron is likely to be very low. Standard operating procedures will be followed for human safety including establishing buffer zones between treatment areas and residences and organic fields, using protective equipment as directed by the herbicide label, posting treated areas with signs, observing restricted entry intervals specified by the herbicide label, having a copy of the Safety Data Sheets at work sites, securing containers during transport, following herbicide labels during transport, following herbicide label directions for use and storage, and disposing of unwanted herbicides promptly and correctly.

HERBICIDE APPLICATION STANDARD OPERATING PROCEDURES

The Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS (PEIS) identifies the following Standard Operating Procedures (SOP) in Chapter 2 and in Appendices B and C. **Additional SOPs have been added in bold text**:

General SOP:

- Prepare spill contingency plan in advance of treatment.
- Conduct a pretreatment survey before applying herbicides.
- Select herbicide that is least damaging to the environment while providing the desired results.
- Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures.
- Apply the least amount of herbicide needed to achieve the desired result.
- Follow product label for use and storage.
- Have licensed applicators apply herbicides.
- Use only USEPA- approved herbicides and follow product label directions and “advisory” statements.
- Review, understand, and conform to the “Environmental Hazards” section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment.
- Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas.
- Minimize the size of application areas, when feasible.
- Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners.
- Post treated areas and specify reentry or rest times, if appropriate.
- Notify adjacent landowners prior to treatment.
- Keep copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs available for review at http://www.cdms.net/.

- Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location.
- Avoid accidental direct spray and spill conditions to minimize risks to resources.
- Consider surrounding land uses before aerial spraying.
- Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence).
- Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground.
- Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications) or a serious rainfall event is imminent.
- Use drift control agents and low volatile formulations.
- Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas.
- Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation.
- Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species.
- Turn off applied treatments at the completion of spray runs and during turns to start another spray run.
- Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide.
- Clean OHVs to remove seeds.

Air Quality:

- Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks.
- Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (6 mph for aerial applications) or rainfall is imminent.
- Use drift reduction agents, as appropriate, to reduce the drift hazard.
- Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]).
- Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).

Soil Resources:

- Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected.
- Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility.
- Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.

Water Resources:

- Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs.
- Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments.
- Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions.
- Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential storm water runoff and water turbidity.
- Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction.
- Minimize treating areas with high risk for groundwater contamination.
- Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body.
- Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies.
- Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies.
- Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.

Wetlands and Riparian Areas:

- Use a selective herbicide and a wick or backpack sprayer.
- Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.

Vegetation:

- Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide.
- Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes
- Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for revegetation and other activities.
- Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, needed to maintain desirable vegetation on the treatment site.

Pollinators:

- Complete vegetation treatments seasonally before pollinator foraging plants bloom.
- Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily.
- Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment.
- Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources.
- Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources.
- Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula.
- Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.

Fish and Other Aquatic Organisms:

- Use appropriate buffer zones based on label and risk assessment guidance.
- Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments.
- Use appropriate application equipment/method near water bodies if the potential for off-site drift exists.
- For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management; 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms; and 3) follow water use restrictions presented on the herbicide label.

Wildlife:

- Use herbicides of low toxicity to wildlife, where feasible.
- Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area.
- Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.

Special Status Species:

- Survey for special status species before treating an area.
- Use a selective herbicide and spray methods to minimize risks to special status plants.
- Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.

Livestock:

- Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible.
- As directed by the herbicide label, remove livestock from treatment sites prior to herbicide application, where applicable.
- Use herbicides of low toxicity to livestock, where feasible.
- Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources.
- Notify permittees of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment.
- Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary.
- Provide alternative forage sites for livestock, if possible.

Cultural Resources:

- Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act and state protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes.
- Follow BLM Handbook H-8270-1 (General Procedural Guidance for Paleontological Resource Management) to determine known Condition I and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts.
- Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. Work with tribes to minimize impacts to these resources.
- Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.

Visual Resources:

- Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation.
- Consider the surrounding land use before assigning aerial spraying as an application method.
- Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area.

- If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II).
- Lessen visual impacts by: 1) designing projects to blend in with topographic forms; 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) revegetating the site following treatment.
- When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.

Recreation:

- Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species.
- Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas.
- Adhere to entry restrictions identified on the herbicide product label for public and worker access.
- Post signs noting exclusion areas and the duration of exclusion, if necessary.
- Use herbicides during periods of low human use, where feasible.

Social & Economic:

- Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely-populated areas.
- Post treated areas and specify reentry or rest times, if appropriate.
- Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per label instructions.
- Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment.
- Control public access until potential treatment hazards no longer exist, per label instructions.
- Observe restricted entry intervals specified by the herbicide label.
- Notify local emergency personnel of proposed treatments.
- Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area.
- Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. **Herbicide applications will be limited in RMZ #4, an area identified as high cultural significance.**
- To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers.

- To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an Integrated Pest Management program for projects proposing local use of herbicides.

Rights-of-Way:

- Coordinate vegetation management activities where joint or multiple use of a ROW exists.
- Notify other public land users within or adjacent to the ROW proposed for treatment.
- Use only herbicides that are approved for use in ROW areas.

Human Health and Safety:

- Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of 100 feet for broadcast treatment applications, unless a written waiver is granted.
- **Establish a buffer between treatment areas and private, organic farms based on guidance, per 7 CFR 205.202, with a minimum buffer of 50 feet for broadcast treatment applications and a minimum buffer of 200 feet for aerial treatment applications.**
- Use protective equipment as directed by the herbicide product label.
- Post treated areas with appropriate signs at common public access areas.
- Observe restricted entry intervals specified by the herbicide product label.
- Provide public notification in newspapers or other media where the potential exists for public exposure.
- Have a copy of MSDSs at work site.
- Notify local emergency personnel of proposed treatments.
- Contain and clean up spills and request help as needed.
- Secure containers during transport.
- Follow label directions for use and storage.
- Dispose of unwanted herbicides promptly and correctly.

MITIGATION MEASURES

The 2007 PEIS also identifies the following relevant mitigation measures specific to individual resources in Chapter 2. **The relevant herbicides have text in bold**:

Water Resources and Quality & Wetland and Riparian Areas:

- Establish appropriate (herbicide specific) buffer zones to downstream water bodies, habitats, and species/populations of interest.

Vegetation:

- Minimize the use of terrestrial herbicides (especially bromacil, **diuron**, and sulfometuron methyl) in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are of concern.

- Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios.
- To protect special status plant species, implement all conservation measures for plants presented in the Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.

Fish and Other Aquatic Organisms:

- Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, that have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used.
- To protect special status fish and other aquatic organisms, implement all conservation measures for aquatic animals presented in the Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.
- Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest.
- Avoid using the adjuvant R-11 in aquatic environments, and either avoid using **glyphosate** formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to aquatic organisms.

Wildlife:

- To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of dicamba, **diuron**, **glyphosate**, hexazinone, **tebuthiuron**, or **triclopyr**, where feasible.
- Minimize the size of application areas, where practical, when applying **2,4-D**, bromacil, **diuron**, and Overdrive to limit impacts to wildlife, particularly through contamination of food items.
- Where practical, limit **glyphosate** and hexazinone to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items.
- Avoid using the adjuvant R-11 in aquatic environments, and either avoid using **glyphosate** formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to amphibians.
- Do not apply bromacil or **diuron** in rangelands and use appropriate buffer zones to limit contamination of off-site vegetation, which may serve as forage for wildlife.
- To protect special status wildlife species, implement all conservation measures for terrestrial animals presented in the Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment. Apply these measures to special status species (refer to conservation measures for a similar size and type of species, of the same trophic guild).

Livestock:

- Minimize potential risks to livestock by applying **diuron**, **glyphosate**, hexazinone, **tebuthiuron**, and **triclopyr** at the typical application rate, where feasible.
- Do not apply **2,4-D**, bromacil, dicamba, **diuron**, Overdrive, picloram, or **triclopyr** across large application areas, where feasible, to limit impacts to livestock, particularly through the contamination of food items.
- Where feasible, limit **glyphosate** and hexazinone to spot applications in rangeland.
- Do not apply bromacil or **diuron** in rangelands and use appropriate buffer zones.

Paleontological and Cultural Resources:

- Do not exceed the typical application rate when applying **2,4-D**, bromacil, diquat, **diuron**, fluridone, hexazinone, **tebuthiuron**, and **triclopyr** in known traditional use areas.
- Avoid applying bromacil or **tebuthiuron** aerially in known traditional use areas.

Human Health and Safety:

- Use the typical application rate, where feasible, when applying **2,4-D**, 2,4-DP, atrazine, bromacil, diquat, **diuron**, fluridone, fosamine, hexazinone, **tebuthiuron**, and **triclopyr** to reduce risk to occupational and public receptors.
- Avoid applying atrazine, bromacil, **diuron**, or simazine aerially.
- Evaluate **diuron** applications on a site-by-site basis to avoid risks to humans. There appear to be few scenarios where **diuron** can be applied without risk to occupational receptors.

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