

**APPENDIX 1: APPLICABLE STANDARD OPERATING PROCEDURES (SOPs) for HERBICIDE APPLICATION (PEIS ROD Appendix B, Table B-2, pp. B-9 thru B-14)**

**General**

1. Prepare operational and spill contingency plan in advance of treatment.
2. Conduct a pretreatment survey before applying herbicides.
3. Select herbicide that is least damaging to the environment while providing the desired results.
4. Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures.
5. Apply the least amount of herbicide needed to achieve the desired result.
6. Follow herbicide product label for use and storage.
7. Have licensed applicators apply or oversee application of herbicides.
8. Use only USEPA-approved herbicides and follow product label directions and “advisory” statements.
9. Review, understand, and conform to the “Environmental Hazards” section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment.
10. Minimize the size of application area, when feasible.
11. Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners.
12. Post treated areas and specify reentry or rest times, if appropriate.
13. Notify adjacent landowners prior to treatment.
14. Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at <http://www.cdms.net/>.
15. Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location.

16. Avoid accidental direct spray and spill conditions to minimize risks to resources.
17. 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.
18. Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas.
19. Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation.
20. Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species.

### **Air Quality**

1. Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks.
2. Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).

### **Soil**

1. Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected.
2. Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility.
3. 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**

1. Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs.
2. 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.
3. 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.

4. 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 stormwater runoff and water turbidity.
5. 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.
6. Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body.
7. Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies.
8. 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.
9. Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.

#### **Wetlands and Riparian Areas**

1. Use a selective herbicide and a wick or backpack sprayer.
2. 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**

1. 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, to maintain desirable vegetation on the treatment site.

#### **Fish and Other Aquatic Organisms**

1. 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.
2. Use appropriate application equipment/method near water bodies if the potential for off-site drift exists.

3. 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**

1. Use herbicides of low toxicity to wildlife, where feasible.
2. 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.
3. Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.

### **Threatened, Endangered and Sensitive Species**

1. Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants.
2. 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**

1. 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.
2. As directed by the herbicide product label, remove livestock from treatment sites prior to herbicide application, where applicable.
3. Use herbicides of low toxicity to livestock, where feasible.
4. 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.
5. Avoid use of diquat in riparian pasture while pasture is being used by livestock.
6. Notify permittees of the herbicide treatment project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment.
7. Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary.
8. Provide alternative forage sites for livestock, if possible.

### **Wild Horses and Burros**

1. Minimize using herbicides in areas grazed by wild horses and burros.
2. Use herbicides of low toxicity to wild horses and burros, where feasible.
3. Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with herbicide product label directions for livestock.
4. Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources.

### **Cultural Resources and Paleontological Resources**

1. 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.
2. 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.
3. Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments.
4. Work with tribes to minimize impacts to these resources.
5. Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.

### **Visual Resources**

1. 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).
2. 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.

### **Wilderness and Other Special Areas**

1. Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds.
2. Use the “minimum tool” to treat noxious and invasive vegetation, relying primarily on the use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock.
3. Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness.
4. Give preference to herbicides that have the least impact on non-target species and the wilderness environment.
5. Implement herbicide treatments during periods of low human use, where feasible.

### **Recreation**

1. Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species.
2. Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas.
3. Adhere to entry restrictions identified on the herbicide product label for public and worker access.
4. Post signs noting exclusion areas and the duration of exclusion, if necessary.

### **Social and Economic Values**

1. Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment.
2. Control public access until potential treatment hazards no longer exist, per herbicide product label instructions.
3. Observe restricted entry intervals specified by the herbicide product label.
4. 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.

5. 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.

### **Human Health and Safety**

1. Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted.
2. Use protective equipment as directed by the herbicide product label.
3. Post treated areas with appropriate signs at common public access areas.
4. Observe restricted entry intervals specified by the herbicide product label.
5. Have a copy of MSDSs at work site.
6. Contain and clean up spills and request help as needed.
7. Secure containers during transport.
8. Dispose of unwanted herbicides promptly and correctly.