

Appendix I. Biological Resources Conservation Measure Plan

Biological Resources Conservation Measure Plan



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List of Abbreviations and Acronyms

BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practices
CFR	Code of Federal Regulations
Cfs	cubic feet per second
CWD	coarse woody debris
DSL	Division of State Lands
FERC	Federal Energy Regulatory Commission
EI	Environmental Inspector
HDD	horizontal directional drill
HUC	hydrologic unit code
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MP	Milepost
NDOW	Nevada Department of Wildlife
OAR	Oregon Administrative Rules
ODFW	Oregon Department of Fish and Wildlife
OHV	off-highway vehicle
ORS	Oregon Revised Statutes
POD	Plan of Development
Project	Ruby Pipeline Project
ROW	right-of-way
RRP-Oregon	Restoration and Revegetation Plan Oregon
Ruby	Ruby Pipeline, LLC
UDWR	Utah Division of Wildlife Resources
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WGFD	Wyoming Game and Fish Department

1.0 Construction and Operation Impacts and Mitigation

This appendix outlines the construction and operation impacts of the Ruby Pipeline Project (Project) to vegetative communities, wildlife, and fisheries resources and outlines the conservation and mitigation measures that Ruby Pipeline, LLC (Ruby) would implement to minimize such impacts. Detailed impact and conservation measures for federal threatened and endangered species are addressed in a separate Biological Assessment. The preliminary mitigation approaches presented in this section are those that would be used to compensate for unavoidable Project-related impacts.

Prior to initiation of field surveys, lists of target species were developed to better focus the field effort. These lists were developed based on known habitats and historic ranges of species as derived from literature, agency communication, and best professional judgment. Agency input was requested prior to the initiation of field surveys. Species occurrence information, as confirmed by biological surveys, has been provided.

Construction of the Project would require a nominal 115-foot-wide construction right-of-way (ROW) to accommodate pipe stringing and welding, large equipment, the pipeline trench, and temporary storage of topsoil and trench spoil. Numerous mitigation measures and best management practices (BMPs) have been developed and would be employed during Project construction. The relevant state and federal regulatory agencies have been consulted and would be consulted during the construction phase of the Project.

The measures listed below may be employed during the construction phase of the Project.

- Throughout the permitting process, the various regulatory agencies, including the Federal Energy Regulatory Commission (FERC), the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS) may require additional resource protection measures in addition to those presented in the following sections to ensure that federally listed and proposed species are not adversely affected.
- Ruby would implement an environmental compliance program for the Project.

- The construction contractor would receive any alterations to FERC's standard Plans and Procedures, as approved by the appropriate agencies, including FERC.
- The contractor would be provided with detailed and specific environmental procedures and drawings to ensure compliance with FERC's and other agencies' requirements for this Project.
- Standard construction techniques would be used unless conditions warranted special methods, including those required to minimize environmental damage and any other special methods determined through consultation with federal and state agencies.
- Ruby would minimize impacts to paved roadways, wetlands and waterbodies, and railroads by using appropriate crossing methods, as described in Ruby's Procedures (Appendix F to the Plan of Development [POD]).
- Prior to any construction activities, survey crews would stake the outside limits of the construction ROW, the centerline of the pipeline trench, and temporary workspace areas. Sensitive areas to be avoided would be flagged as appropriate, and wetland boundaries would be clearly delineated using easily identifiable temporary signage.
- Substantive cutting of steep terrain (as defined by the orientation and angle of the slope) would not be performed unless needed for the safe operation of the equipment and safety of personnel.
- During periods of precipitation when soil compaction and excessive rutting become significant, many construction activities may be required to cease.
- In other areas where compaction and rutting are unavoidable, measures would be taken to adequately prepare soils for successful reclamation, including replacement of topsoil with topsoil from a local source acceptable to the landowner or land management agency.
- In areas where segregation of soils is required, topsoil and subsoil would be separated using a two-pass excavation process. The native seed base is contained in the topsoil, the depth of which varies along the Project route. Therefore, topsoil would be removed in a manner that minimizes dilution of this seed base.
- Ruby would adhere to its Noxious and Invasive Weed Control (Appendix H to the POD) plan to minimize noxious weeds and invasive plants from establishing on the areas disturbed by construction activities.
- When trench dewatering is necessary, Ruby would adhere to its Procedures to prevent heavily silt-laden water from flowing into wetlands or waterbodies. The rate of flow from dewatering pumps would be regulated to prevent erosion from runoff, and dewatering would be conducted in a manner designed to ensure that

water is allowed to infiltrate into the ground rather than flow over the surface whenever possible.

- After backfilling is complete, disturbed areas would be final-graded, and erosion controls would be implemented, including site-specific contouring and reseeding with primarily native species. Introduced species would be used as fuel breaks, as requested by a landowner or land management agency, in annual rangelands (cheatgrass areas) or when native species are unavailable.
- The surface of the ROW would be graded to conform to preexisting contours, to the greatest extent possible.
- Erosion control measures would be implemented in accordance with Ruby's Plan (Appendix D of the POD) and Procedures, other federal, state, and local agency requirements or landowner requirements, as applicable.
- Ruby's Restoration and Revegetation Plans (Appendix E of the POD) would be implemented in accordance with applicable federal, state, local regulations, and landowner agreements.
- Non-cultivated lands would be reseeded with native or introduced vegetation according to Ruby's Restoration and Revegetation Plans.
- Revegetation would be accomplished in a manner compatible with preconstruction and adjacent vegetation patterns, in accordance with 18 Code of Federal Regulations (CFR) 380.15 and FERC guidelines.
- To the greatest extent possible, streambeds would be returned to their preconstruction contours, and stream and river banks would be restored to their preconstruction condition.
- Periodic aerial and ground inspections of the Project route would be conducted, and further restoration measures would be implemented (Ruby's Restoration and Revegetation Plans (Appendix E of the POD)).
- All test water used for pipeline hydrostatic testing would be discharged in accordance with the National Pollutant Discharge Elimination System permit.
- Wetlands would be crossed following the methods outlined in Ruby's Procedures.
- All disturbed stream channels would be restored with salvaged materials (plants and substrate where practical) from construction, or with similar local materials.

The timing of construction activities would be designed to minimize impacts on species. Certain construction-related activities may begin as early as April 2010 and extend until March 2011. Ruby anticipates that all construction work would be completed by end of spring 2011. Specific construction windows are provided for each of the relevant biological groups in the following sections. In addition, heavy equipment would be

limited to daytime operation to minimize impacts on nocturnal activity. Some stationary equipment, such as pumps and air compressors, may be operated 24 hours a day.

2.0 Fisheries Resources

Ruby is committed to minimizing impacts resulting from construction and operation of the proposed pipeline. Ruby would take precautionary measures to ensure that existing stream channel alignment and morphology is maintained. Ruby intends to bury the pipeline approximately six feet below the channel elevation. Ruby would backfill the trench with materials that would minimize the scour and transport of these materials following construction. Native materials would be backfilled in the top of the trench to ensure the existing channel condition is maintained. In addition, Ruby is actively consulting with resource agencies for sensitive waterbody crossings, to ensure that their concerns are addressed.

Impacts to fisheries may occur as a result of two primary construction-related activities: pipeline stream crossing and hydrostatic testing. This section provides information regarding the potential effects of these two activities on fish species and presents mitigation measures that would reduce these potential effects. Impacts to fish and other aquatic resources can occur through three general pathways:

1. **Impacts to fertile eggs, juveniles, or adults.** Equipment moving through a stream and the trenching of a waterbody may result in increased sediment loads, high turbidity, and physical effects to fish. Fuel spills from equipment in or proximate to streams can be toxic to any of the life stages.
2. **Interference with essential life processes of spawning or migration.** In-stream construction, whether by fluming or by open-cut techniques, may delay or prevent breeding fish from reaching spawning sites upstream or delay downstream movement of juveniles. In-stream structures for support of equipment bridges over streams may similarly affect fish.
3. **Habitat degradation: short- and long-term.** Temporary, short-term habitat impacts occur with trenching at the crossing sites. Further, sediment stirred into the water column can be redeposited on downstream habitats (Reid et al. 2002, 2004). Long-term degradation of habitats could occur if the stream contours are modified in the area of the crossing, the flow patterns are changed, or if erosion of the streambed, stream banks, or adjacent upland areas introduces sediment to aquatic habitat.

2.1 In-Water Construction Activities

Impacts to fisheries associated with Project construction along the route would be primarily associated with in-water construction activity and the crossing of waterbodies. The extent of impacts on aquatic resources from Project construction would depend on the waterbody crossing method, the existing conditions at each crossing location, the mitigation measures employed, and the timing of construction. Potential short-term impacts that could degrade habitat could occur with trenching and laying of pipe at waterbody crossings. Additionally, sediment entering the water column could be re-deposited on downstream substrates. Long-term degradation of habitats could occur if stream contours are modified in the area of the crossing, changing the flow patterns, and if erosion of the bed or banks introduces sediment that becomes deposited in the stream. During all waterbody crossing activities, in-stream water flows would be maintained during and following construction.

At a minimum, Ruby would adhere to FERC's waterbody crossing requirements, including construction techniques and time limits, as detailed in Ruby's Procedures unless site-specific variances have been submitted and approved in writing by FERC and other appropriate agencies. Ruby has received specific waterbody crossing requirements from state agencies in Wyoming (Wyoming Game and Fish Department [WGFD]) and Oregon (Oregon Department of Fish and Wildlife [ODFW]) and general requirements for waterbody crossings from state agencies in Utah (Utah Division of Wildlife Resources [UDWR]) and Nevada (Nevada Department of Wildlife [NDOW]).

2.1.1 In-Water Work Windows

The Project would adhere to in-water work windows as required by individual state fisheries agencies or FERC, described below:

Wyoming

- July 1–August 31 for coldwater fisheries (WGFD)
- July 1–November 15 for coolwater and warmwater fisheries (WGFD)

Utah

- July 16–February 28 for Bonneville cutthroat trout fisheries (UDWR)
- June 1–September 30 for other cold water fisheries (FERC)
- June 1–November 30 for coolwater and warmwater fisheries (FERC)

Nevada

- June 1–August 31 for Spring and Fall spawning – specific fisheries (NDOW)

- June 1–December 31 for Spring spawning – specific fisheries (NDOW)
- July 1–December 31 for streams containing Lahontan cutthroat trout (USFWS)
- March 1–September 30 Fall spawning – specific fisheries (NDOW)

Oregon

- July 15–September 30 for Warner Valley tributaries (ODFW)
- July 15–September 30 for Goose Lake and tributaries (ODFW)
- July 1–January 31 for Lost River above Bonanza (ODFW)
- July 1–March 31 for Lost River below Bonanza (ODFW)
- October 15–March 31 for Bureau of Reclamation facilities

Ruby is proposing to cross the Hams Fork River, the Bear River East, and the Bear River West using a horizontal directional drill (HDD).

In the unlikely event that Ruby determines that construction through a waterbody is required outside of an in-water work window, Ruby would consult with the appropriate state and federal agencies to obtain clear, written authorization for such activities. This coordination may include close approximations of both beginning and completion dates of expected work, method of construction, potential impacts, and mitigation measures to minimize impacts. If such an action were to be approved, Ruby would ensure that all agency-required mitigation measures were incorporated into the construction sequence.

During installation of the pipeline, Ruby would ensure that the final placement of the pipeline is at or below a vertical elevation in the streambed that would not be scoured. For all perennial and intermittent stream crossings, the streambed composition above the crossing would consist of native streambed materials or materials of similar size and have a longitudinal stream profile similar to baseline conditions. These measures would ensure that the operation of the Project would not obstruct passage of native migratory fish.

2.1.2 Wyoming In-Water Construction Activities

The WGFD has requested that Hams Fork River, Little Muddy Creek, and North Fork Little Muddy Creek be crossed by boring underneath the stream channel from locations outside riparian zones. As described above, Ruby is proposing to cross the Hams Fork River using an HDD. Ruby is proposing to develop site-specific waterbody crossing methodologies in conjunction with the WGFD for the Little Muddy Creek and North Fork Little Muddy Creek that would minimize disturbance impacts, such as sedimentation and contamination to local and downstream aquatic resources. Ruby is proposing to utilize a dry-crossing method for these two crossings.

2.1.3 Utah In-Water Construction Activities

Ruby was provided with an in-water work window by the UDWR for streams containing Bonneville cutthroat trout (all located east of Brigham City, Utah). If Ruby receives no further waterbody crossing requirements from the UDWR, it will at a minimum adhere to this work window and FERC's waterbody crossing requirements, as detailed in Ruby's Procedures. Ruby will coordinate with the UDWR to determine site-specific requirements for stream crossings.

2.1.4 Nevada In-Water Construction Activities

Ruby has received in-water work windows from NDOW. If Ruby receives no further waterbody crossing requirements from the NDOW, it will, at a minimum, adhere to these work windows and FERC's waterbody crossing requirements, as detailed in Ruby's Procedures. Ruby will consult with the NDOW to determine site-specific requirements for stream crossings.

2.1.5 Oregon In-Water Construction Activities

Based on comments from the ODFW, Ruby may utilize a dry waterbody crossing method in streams with an active flow in Oregon. These crossing methods require that flow rates can be accommodated by either dam-and-pumps or flumes. For construction activities that involve this technique, Ruby would contact the ODFW 48 hours prior to construction, in order to provide the opportunity for the ODFW to conduct a fish salvage operation prior to dewatering. In addition, the Project would utilize fish screens in the flume pipes and pumps to minimize entrainment of fish, in accordance with ODFW screening criteria. Fish screens would be sized to avoid impingement and potential impacts to fish. This would include designing screen approach velocities to not exceed 0.4 cubic feet per second (cfs) for active (self-cleaning) pump screens and to not exceed 0.2 cfs for passive (i.e., no self-cleaning system) screens. Flow deflectors would be placed at the bottom of flume pipes and pump hoses to prevent scouring downstream and the associated degradation of water quality and condition of the channels, beds, or banks of the downstream waterbody. Sensitive and endangered shortnose and Lost River suckers impinged on the intake screen or entrained into irrigation canals would be reported to the U.S. Fish and Wildlife Service (USFWS), as well as the Bureau of Reclamation or the appropriate state agency.

Ruby has committed to cross all streams in Oregon containing sensitive (state and federal) status and ESA-listed species using a dry-crossing method and would conduct activities during specific in-water work windows specified by the ODFW.

In the event that blasting is needed to construct any waterbody crossing, Ruby would obtain an in-water blasting permit. This permit would be acquired for the use of explosives on, under, in, or adjacent to waters of the State of Oregon that could impact fish, wildlife, or their habitat (Oregon Administrative Rules [OAR] 635-425-000).

Based upon comments from the ODFW, Ruby is developing site-specific waterbody crossing methodologies in conjunction with the ODFW for Twelvemile Creek, Twentymile Creek, Deep Creek, Drews Creek, Thomas Creek, East Branch Lost River, and Lost River.

2.2 Stream Crossing

Pipeline crossing construction can alter river and stream channels and may cause detrimental effects to fish species and aquatic ecosystems that support them. Potential impacts to listed fish species may include degradation of in-stream habitat from equipment operation, pipeline trenching or excavation, water withdrawals/diversions, or frac-out during HDD operations. Frac-outs are inadvertent releases of drilling mud directly or indirectly into the stream/rivers. Drilling mud may leak through previously unidentified fractures in the material underlying the riverbed, in the area of the mud pits or tanks or along the path of the drill, due to unfavorable ground conditions. Although drilling mud consists of naturally occurring nontoxic materials, such as bentonite clay and water, in larger quantities the release of drilling mud into a waterbody would affect fisheries or other aquatic organisms by settling and temporarily inundating the habitats used by these species. In addition, clearing and destruction of vegetation within riparian areas of the pipeline ROW would cause adverse impacts to fish and/or fish habitat through increased turbidity and/or temperature changes.

Waterbody crossing construction activities can compromise the integrity of the physical and chemical nature of fish habitat and affect biological habitat (e.g., benthic invertebrates and invertebrate drift) as well as fish behavior and physiology. Indicators of effect include: water quality (total suspended solids); physical habitat (substrate particle size and channel morphology); benthic invertebrate community structure and drift (abundance, species composition, diversity, and standing crop); and fish behavior and physiology (hierarchy, feeding, respiration rate, and loss of equilibrium).

Riparian vegetation contributes to the shading of rivers and their tributaries. It controls the amount of solar radiation that reaches the water surface, which, in turn, controls the input of heat into the stream system. Installing pipelines near waterways, or installing pipeline stream crossings, would necessitate the removal of some of the riparian growth. Once this vegetation is removed, the water will be subject to full sunlight exposure,

which would cause increases to stream temperature. Such increases would most likely not be lethal to fish populations, but may result in behavioral changes.

Ruby would use the dry-crossing method for flowing waterbody crossings containing sensitive (state and federal) and ESA-listed species. Less sediment would be generated where dry-crossing methods (e.g., flume or dam-and-pump) are employed, and direct sediment impacts would be avoided where the HDD method or horizontal bore method is used. Where the flume or dam-and-pump methods are used, temporary construction-related impacts would be limited primarily to short periods of increased turbidity during the construction of upstream and downstream dams prior to pipeline installation, and following installation of the pipeline when the dams are pulled, and flow across the restored work area is re-established (See Ruby's Procedures).

The primary impact that could occur from HDD activities is an inadvertent release of drilling mud (frac-out) directly or indirectly into the stream/rivers. Ruby would minimize the potential for frac-outs by implementing an HDD Contingency Plan. When using HDD, Ruby will conduct geological testing prior to drilling to ensure a high probability of success, ensure that the HDD Contingency Plan is in place and that such a plan requires incident clean-up materials to be on site during HDD activities, and immediately notify state emergency response centers, applicable state resource agencies, and the appropriate federal agencies (if federal lands or listed species are affected) in the event of a frac-out or spill.

Temporary increases in turbidity and downstream sedimentation due to excavation activities during stream crossing activities can cause short-term changes to downstream aquatic life and habitat. Identified effects include alterations to streambed conditions; reductions in the abundance and diversity of benthic invertebrate communities; and reductions in the abundance of fish populations. The magnitude and duration of increases in suspended sediment concentrations during construction would reflect watercourse size, volume of flow, bed material, construction activity, and sediment particle settling rate. The following mitigation measures may be employed to minimize impacts to fish from stream crossing activities.

- Ruby proposes to use open-cut crossing during in-water work windows for minor (<10 feet wide) and intermediate (10 to 100 feet wide) stream crossings containing no sensitive fish species. Ruby would adhere to FERC construction requirements limiting the in-stream construction period for open-cut crossings of minor waterbodies to 24 hours and 48 hours for intermediate waterbodies.
- For streams flowing at the time of crossing and containing sensitive fish species, Ruby would implement alternate dry-crossing techniques (dam-and-pump,

- flumed, partial diversion, or HDD), unless a site-specific plan drawing and method is approved by FERC and appropriate agencies.
- For major waterbody crossing (>100 feet), Ruby would adhere to FERC requirements, unless a site-specific plan drawing and method is approved by FERC and appropriate agencies.
 - Ruby would locate extra workspaces at least 50 feet back from waterbody boundaries unless a reduced setback is requested on a site-specific basis and a variance is issued by appropriate agencies.
 - Ruby would maintain adequate flow rates throughout construction for aquatic life and to prevent the interruption of existing downstream uses.
 - Ruby would restrict spoil placement near surface waters to the construction ROW at least 10 feet from the water's edge or within additional extra workspaces placed at least 50 feet from the water's edge.
 - Ruby proposes to allow a one-time pass through for the entire construction spread within in-stream work windows of streams with no sensitive species. Equipment would be inspected for leaks and excessive dirt prior to crossing the waterbody.
 - Ruby would prohibit storage of hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland (150 feet in Oregon), waterbody, or designated municipal watershed area or within 200 feet of a water supply well or spring, unless the location is designated for such use by an appropriate governmental authority (on BLM lands, this requires a variance request and approval from an authorized officer prior to making a change). This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.
 - Ruby would prohibit the refueling of equipment at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary, within 200 feet of any water supply well or spring, or within 500 feet from a waterbody or in an upland area at least 500 feet from a wetland boundary on land managed by the BLM. These activities can occur closer only if the Environmental Inspector finds, in advance, no reasonable alternative and the Ruby and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill. Additionally, on BLM lands, the Environmental Inspector must also make a request for a variance and receive approval by the authorized BLM officer prior to making this change. Specifically, in certain instances, refueling or fuel storage may be unavoidable due to site-specific conditions or unique construction requirements (e.g., continuously operating pumps, or refueling within wetlands). The following precautions will be taken when refueling within 100 feet of wetlands or waterbodies (150 feet in Oregon), 200 feet of water supply well or spring and

within 500 feet of streams, wetlands, or other waterbodies on land managed by the BLM:

- Adequate amounts of absorbent materials and containment booms must be kept on hand by each construction crew to enable the rapid cleanup of any spill which may occur.
- If fuel must be stored within wetlands or near streams for refueling of continuously operating pumps, secondary containment must be provided.
- Secondary containment structures must be lined with suitable plastic sheeting, provide a containment volume of at least 150 percent of the storage vessel, and allow for at least one foot of freeboard.
- Provide for adequate lighting of these locations and activities.
- Ruby would return all waterbody banks to preconstruction contours or to a stable angle of repose, as approved by the EI.

Potential incidental trapping of fish in isolated work areas and inhibition of fish passage could occur at stream crossing. The following mitigation measures would be employed to limit this impact:

- An experienced fisheries biologist, familiar with fish capture and handling techniques, would relocate any fish that became trapped within the isolated work area to an area within the main channel or to the downstream side of the stream crossing. In the Lost River, Ruby biologists would follow Bureau of Reclamation protocols when capturing and relocating endangered suckers;
- Ruby would attain necessary state and federal permits for all potential fish capture and relocation activities;
- Uninhibited fish passage will be maintained around the isolated work area at all times during construction; and
- Short-term stress and mortality of fish during relocation will be minimized through the use of careful handling techniques.

Potential harm to fish populations can result from destruction or disturbance of riparian habitat at stream crossings and personnel impacts to habitat/fishery. The following mitigation measures would be employed to limit this impact:

- Ruby would avoid exposing in-stream biota to major, sudden runoff events, through work in streams and on adjacent riparian areas during mid-to-late summer when stream flows are reduced and more stable;
- Ruby would prevent impacts on surface soils by implementing basic cleanup and restoration measures, such as replanting after mitigation measures are in place to control erosion;

- Prior to construction, Ruby would conduct a geomorphologic survey to locate any sensitive areas;
- Ruby would maintain a full-time biologist during pipeline construction to monitor for presence of identified sensitive species; and
- Ruby would place signs prohibiting pipeline construction personnel from fishing in potential sensitive species habitat, including defining possible fines for taking listed species.

Oregon Fish Passage Plans

Site-specific fish passage plans have been prepared and will be submitted to the ODFW for approval. The plans are required per Oregon state statute (Oregon Revised Statutes (ORS) 509.580 through 509.645) and corresponding Oregon Administrative Rules (OAR 635-412-0005 through 635-412-0040) for all stream crossings where native migratory fish species presently exist or have historically existed. Fish passage plans would be prepared for Twelvemile Creek, Twentymile Creek, Deep Creek, Drews Creek, McCoin Creek, Thomas Creek, East Branch Lost River, and Lost River.

Meetings have been held with the ODFW to obtain guidance on how and when the plans should be submitted.

2.3 Operations and Maintenance

Impacts associated with pipeline operations and maintenance would be relatively minor and limited to periodic clearing of vegetation occurring within the permanent ROW at waterbody crossings. If in-stream maintenance activities are required, Ruby would work with the permitting agencies to devise a work plan that would limit potential impacts to sensitive species.

2.4 Springsnails in Nevada

Ruby has identified seven springs in Nevada (six in Elko County and one in Humboldt County) that lie within the ROW or access roads. These may be potential habitat for several species of sensitive Great Basin springsnails. Ruby would fence off these springs or microalign as an avoidance measure, and will consult NDOW to discuss any further measures that may be implemented.

2.5 Aquatic Invasive Species

The New Zealand mud snail (*Potamopyrgus antipodarum*) has no natural predators or parasites in the United States and, consequently, has become an invasive species. It can endanger the food chain by outcompeting native snails and water insects for food,

leading to sharp declines in the native populations. Fish populations then suffer because the native snails and insects are their main food source.

The New Zealand mud snail invades aquatic systems by attaching itself to clothing such as boots, waders, and sandals; fishing gear, boats, and rafts; and earth-moving equipment. New Zealand mud snails are nearly impossible to contain once they have invaded an aquatic ecosystem. The snails can survive several days out of water and can withstand a wide range of temperatures. They have been known to pass unscathed through the digestive tracts of fish. The snails are self-reproducers that give birth to well-developed clones. Therefore, it only takes one New Zealand mud snail to start a new colony in a stream or river.

The highly invasive New Zealand mud snail has been identified in the Little Bear River, with the closest occurrence around 1.6 miles north of approximate MP 97.5 (Benson 2008).

2.5.1 Impact

Construction activities within the Little Bear River may facilitate the spread of the invasive New Zealand mud snail. Mud snails can become attached to vehicles and equipment and be transported from one area to another.

2.5.2 Mitigation Measures

Ruby will implement an equipment disinfection plan to incorporate one or more of the following measures during construction as equipment enters and exits each of the 25 HUC watersheds crossed by the project, as equipment exits the Little Bear River, and as equipment exits waterbodies known to contain pathogens and nonnative aquatic species that can be spread by contact with construction equipment. If one of the following measures is used and does not enter another waterbody, then it may enter another HUC without additional disinfection measures. The one or more measures that Ruby will incorporate when removing mud and debris from equipment are:

- keep the equipment dry for at least 10 days prior to use in a new HUC or another waterbody in the same HUC;
- spray or soak the equipment with 1) a 10-percent bleach solution, 2) a 1:1 solution of Formula 409 household cleaner, or 3) a 1:5 solution of Sparsquat 256 institutional cleaner, making sure to keep the equipment moist with the cleaner for at least 10 minutes; or
- spray or soak the equipment with steam or water greater than 130 degree F for at least 10 minutes.

If Ruby identifies any invasive water organism on any equipment as it leaves a waterbody or wetland, Ruby will report the sighting to the appropriate state conservation

office and implement disinfection measures on all equipment as it leaves the infected waterbody or wetland.

When utilizing Little Bear River as a water source for dust control, Ruby proposes to discharge water for dust control within upland in the same hydrologic region from which it was taken and not within wetlands or waterbodies associated with Porcupine Reservoir. The Little Bear River will not be used a water source for hydrostatic testing.

2.5.3 Lost River, Oregon

The Lost River in the Klamath Basin of Oregon is under the jurisdiction of the Bureau of Reclamation. Ruby would adhere to the Bureau of Reclamation's Mid-Pacific Region's invasive snail and mussel prevention plan when working in the Lost River.

3.0 Habitat and Vegetation

Each state crossed by the Project route has developed a state Action Plan to estimate overall habitat quality. Ruby has used this information along with field data to identify important habitats traversed by the route and to assist in developing mitigation measures for impacts.

Ruby has met the federal and state agencies for areas crossed by the Project to discuss and map habitat quality along the ROW. The Nevada meetings occurred June 16 through 19, the Wyoming meeting occurred on August 4, the Utah meetings were held on August 5 and 6 and the Oregon meetings were held on August 26 and 27, 2009. At each of these meetings, habitat categories were assigned along the Project route for sage-grouse, pygmy rabbits, big game, and other sensitive species as requested by each state. Results from these meetings would be used for construction planning and to facilitate Ruby's preparation of conservation agreements and voluntary compensatory mitigation effort to off set for habitat impacts.

Construction of the pipeline would have short-term, temporary impacts to vegetation located within approximately 1,002.3 acres of agricultural lands, 971.4 acres of grasslands, 880.9 acres of barren/developed lands, and 200.4 acres of open water. Construction of the pipeline would have long-term impacts on vegetation located within approximately 8,553.6 acres of sagebrush steppe, 2,333.2 acres of salt desert scrub, 781.8 acres of mountain meadow/brush, 454.5 acres of mixed conifer forest, 249.0 acres of juniper woodland, and 157.1 acres of riparian forest.

Ruby proposes to limit vegetation maintenance within its permanent pipeline easement to a 50-foot-wide maintenance ROW. As a result, forested habitats within the 50-foot-wide maintenance ROW, along with all habitats in areas where aboveground facilities would be installed, would undergo vegetation conversion or removal. These habitats would be considered permanently impacted. During operation on the permanent pipeline easement, approximately 122.4 acres of mixed conifer forest, 87.1 acres of juniper woodland, and 45.7 acres of riparian forest would be permanently impacted. Permanent impacts to vegetation within the footprints of the proposed compressor stations and aboveground facilities would include approximately 61.3 acres of sagebrush steppe, 60.5 acres of salt desert scrub, 12.8 acres of agricultural lands, 3.3 acres of

barren/developed lands, and 2.9 acres of grassland. Of the total construction impact of 16,829.7 acres of habitat, 16,433.7 acres would be restored or allowed to revegetate following construction.

Operation and maintenance activities would be conducted in accordance with appropriate U.S. Department of Transportation regulations. The 50-foot permanent ROW would be periodically maintained using mowing, cutting, and trimming either through mechanical methods or by hand to maintain vegetation height of not greater than 15 feet. Maintenance activities are expected to occur approximately every three to seven years, depending on the vegetation's growth rate. Prior to any maintenance work, Ruby would consult with agencies to obtain the necessary approval. Mowing on the ROW would occur in areas where deep-rooted trees and/or plants could create a safety concern to the pipeline or limit Ruby's ability to visually inspect its pipeline (10 feet on either side of the pipeline). In areas where sagebrush has been reestablished after reclamation, no mowing or cutting of vegetation would occur. Vegetation manipulation would be considered, in consultation with the land management agency, in the event that there would be benefits by creating and maintaining fire-breaks in site specific locations as an effort to protect wildlife habitat. Vegetation clearing activities would occur outside the MBTA breeding season (March 1–July 31).

On a yearly basis, trained personnel would patrol the entire length of the Project route to identify areas of concern associated with pipeline integrity and areas that may require additional remedial actions. Patrols would be conducted through a combination of aerial and terrestrial surveys. Because the Project route would be returned to a roughened state, much of the Project route would be patrolled by aircraft. Patrol activities typically include observations of soil stability within the pipeline route, as well as searching for evidence of leaks, third-party impacts, ground movement, vandalism, and any other factor that could affect the integrity and safety of pipeline operations.

As appropriate, the following measures would be implemented to minimize impacts to vegetation and ensure successful reclamation of disturbed areas.

- The Project route would be graded to restore preconstruction contours and leave the soil in proper condition for seeding or planting.
- Restoration plans would include measures for re-establishing herbaceous or woody vegetation, controlling the establishment or spread of invasive species, weed control, and monitoring.
- Disturbed areas would be seeded in accordance with written recommendations for seed mixes, rates, and dates obtained from the land management agency, or as requested by the landowner.

- Ruby would use certified weed-free mulch, tackifiers, mats, wattles, etc. as needed during seeding, as described in the Noxious and Invasive Weed Control Plan. In addition, certified weed-free mulch would be used for mulch and sediment barriers, dewatering structures, or other purposes along the Project route, if available.
- Ruby would work with land management agencies, landowners, and FERC to periodically inspect and determine reclamation success. Ruby has the continued obligation to maintain its ROW for the life of the Project.
- Slash from timber clearing (chipped or burned) would be scattered across the Project route to return organic material to the soil and serve as erosion control. Slash would be burned according to state burning requirements and landowner, BLM, and U.S. Forest Service (USFS) stipulations.
- In agricultural areas, reclamation would be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.
- Replanting of trees within forested areas would comply with both state and federal guidelines.
- Vegetation within the upland portion of the 50-foot permanent ROW, generally centered over the pipeline, would be maintained in an herbaceous/shrub state of up to 15 feet in height. For waterbody crossings, Ruby would limit vegetation maintenance to maintain a 25-foot buffer from the stream bank.
- The construction ROW would be limited to 75 feet at wetland crossings, unless a site-specific drawing and method is approved for additional workspace.
- Temporary work space areas would be located 50 feet back from wetlands and streams unless a site-specific drawing and method have been approved showing less distance.
- Damage to drain tiles or irrigation systems resulting from construction in active agricultural areas would be corrected and monitored until restoration is successful.
- Prior to construction or disturbance, areas of known noxious weeds may be pretreated with herbicides.
- No herbicides would be used in the 50-foot permanent ROW unless invasive species infestations were to occur, in which case only landowner- or land management agency-approved herbicides would be used for eradication following required protocol for herbicide application, after coordination with local agency personnel.
- Boulders and other large rocks generated by construction activities would be used to block access to the cleared Project route by recreational and off-highway vehicles (OHVs), which have the potential to spread noxious weeds, insects, and vegetation diseases.

- Disturbed areas would be revegetated by re-spreading topsoil materials and plant species adapted to site conditions (including species recommended by affected tribes) in order to establish a long-term productive biotic community compatible with existing and proposed land uses.

3.1 Wetlands

A Preliminary Wetland Mitigation Plan has been prepared to address impacts to wetlands and waters of the United States that are temporarily and permanently affected by the Project. The goals and objectives are to replace and/or restore the wetlands and waters of the United States and riparian habitat that would be disturbed during Project construction. Temporary and permanent impacts to wetlands and riparian habitat would be mitigated and sites restored as discussed in Ruby's Preliminary Wetland Mitigation Plan. Development of the wetland mitigation or a site-specific or state-specific mitigation plan would provide the requirements for replacing the disturbed vegetation with selected native plant species with habitat-enhancement properties. Species would be selected based on the abilities of the plants to become established within existing plant communities in this region. Species composition and densities for replacement vegetation would be selected based on knowledge of the region and species identified during the wetland delineations, as well as approval from appropriate agencies.

To minimize impacts on wetlands and waters of the U.S., Ruby proposes the measures listed in its Wetland and Waterbody Construction and Mitigation Procedures (Appendix

- Ruby would reduce the ROW to 75 feet to minimize impacts through wetlands and waters of the United States, unless a site-specific drawing and method is approved for additional workspace.
- ***Ruby has provided a complete list of wetlands where Ruby would require additional workspace in wetlands and wetland locations where additional workspace is proposed to be closer than 50 feet from waterbodies.***
- A wetland specialist would determine areas where it is necessary to preserve an impermeable clay layer to preserve the characteristic of the wetland. Ruby would separate the existing clay layer from the topsoil and from the rest of the ditch spoil.
- During the backfill process the clay layer would be placed back in its original position to re-establishing the impermeable layer. Since the soils would most likely be saturated from a high water table, a large trackhoe would be used to separate the clay from the other subsoils as the ditch is excavated.

- If this method is proven infeasible, Ruby would reestablish the clay layer with a layer of bentonite or similar neutral material to ensure that vertical hydrology functions continue within the wetland.
- If required to maintain horizontal hydrology functions within the wetland, Ruby would install trench plugs in the ditchline at 200-foot intervals or possibly at the edge of the wetland.
- The top 12 inches of topsoil would be segregated from the subsoil in the area disturbed by trenching, except where standing water is present or soils are saturated or frozen.
- Immediately after backfilling, the segregated soil would be restored to its original location.
- Construction equipment operating in the wetland would be limited to that needed to clear vegetation, dig trenches, install the pipe, backfill, and restore the ROW.
- Low-ground-weight equipment would be used in saturated wetlands, or the normal equipment would be operated on prefabricated equipment mats.
- Permanent slope breakers and sediment controls would be installed in the case of slopes greater than five percent that are located fewer than 50 feet from a waterbody. They would be properly maintained or re-installed, as needed.
- Temporary erosion control methods would be used as necessary to minimize potential runoff from entering wetlands.
- Ineffective temporary erosion control methods would be replaced within 24 hours of their discovery.
- Trench breakers would be installed or the bottom of the trench would be sealed as necessary to maintain the original wetland hydrology.
- Storage of hazardous materials, chemicals, fuels, and lubricating oils would be prohibited within 100 feet of a wetland boundary (150 feet in Oregon) unless not feasible.
- Refueling of equipment would be prohibited within 100 feet of wetlands, 200 feet from seeps and wells, and 500 feet of wetlands on BLM-administered lands, unless the EI finds no reasonable alternative.
- Monitor and record the success of wetland revegetation annually for the first five years after construction or until wetland revegetation is deemed successful by appropriate agencies.
- Annual maintenance of vegetation within wetlands would be limited to a 25-foot-wide strip centered over the pipeline where vegetation would be restricted to 15 feet in height.
- Riparian areas would be restored with appropriate native trees and shrubs.
- Construction efforts would be scheduled to take advantage of drier seasons in order to minimize potential effects to wetlands.

3.2 Forested Areas Oregon

Clearing activities within Ruby's proposed construction ROW, temporary workspaces, and staging areas necessary for construction would involve the clearing of large trees. In these areas located on federal lands, any commercial timber would be cruised and appraised by the BLM and sold to Ruby at current fair market value. The BLM would accomplish this through the use of standard BLM cruising and appraising methods and the use of a negotiated lump sum timber sale contract (see Attachment A - ROW Clearing Plan).

Also in the ROW clearing areas where commercial timber would be removed for construction of the pipeline, Ruby or its contractor would remove the juniper trees to landings. If Ruby elects to utilize the juniper logs, the BLM will establish the volume of the logs removed by weighing, cruising, or scaling. The value of the juniper logs would be established by the BLM and sold to Ruby via a lump-sum negotiated contract.

In all other ROW clearing areas, Ruby would be required to leave some logs and slash for wildlife and soil requirements (see coarse woody debris requirement below). Juniper trees within 1,500 feet of designated access points would be yarded to those points and decked or piled to facilitate public firewood gathering. The rest of the material, including pine logs, juniper logs, slash, and brush would be removed from the ROW or chipped and spread on site. Maximum chip depths of material spread on the site would be no more than one inch. The value of any material utilized by Ruby, or Ruby's contractor as logs, chips, biomass, or other products would be established by the BLM and sold to Ruby via a negotiated contract. The BLM would hold title to slash and landing piles not utilized by Ruby unless a negotiated sale is conducted to remove the material or Ruby is required to remove it from the site.

In the areas along the construction ROW where commercial timber was present, coarse woody debris would be replaced on the construction ROW, as retained down wood for wildlife habitat and to aid in soil productivity. A total of 50 linear feet of wood 12 inches in diameter and larger and at least eight feet in length per piece would be spread back across the ROW on each acre of land containing commercial ponderosa pine that was impacted by ROW clearing operations.

Outside of the commercial ponderosa pine areas, juniper or noncommercial ponderosa pine logs (eight inches in diameter at the small end and larger) within 1,500 feet of designated landings would be hauled to the designated landings, limbed, and decked for public firewood use. These decks would be no more than eight feet in height.

The BLM will work with Ruby to identify high-resource-value trees that may be retained in the ROW. Such trees could include large ponderosa pine trees, large juniper trees, and trees showing signs of extensive wildlife use. High-resource value trees within the ROW would be designated to be retained with orange paint. Paint would be applied at diameter at breast height and ground/bole line. Such trees would be coordinated with Ruby to ensure that retention does not interfere with pipeline construction or safety considerations.

Impacts from cutting, clearing, and/or removing forested areas as required for clearing of the ROW would depend on the logging methods used, quantity of lumber removed, and the age of affected stands. The Project would remove approximately 1.5 million board feet of timber (based upon a 195-foot-wide pipeline ROW) necessary for ROW clearing activities through a region of the Fremont-Winema National Forest allocated to timber production. Future timber production would be lost within the 50-foot-wide permanent ROW for at least the life of the pipeline. All vegetation removed would be cleared by chainsaws and bulldozers. The logs would be sold when possible and the stumps buried within the ROW, where practical. In cases where this method of disposal would not be practical, the trees and stumps may be disposed of through alternative methods or combinations of methods, including grinding or burning under a state burning permit.

Ruby would submit a Reclamation Plan to the BLM and the USFS for approval. Following construction, previously forested areas within the temporary Project ROW would be replanted in accordance with Oregon reforestation rules (OAR 629-610-0000 through 629-610-0090), BLM Management Directions, and USFS Standards and Guidelines. Areas within 10 feet on either side of the pipeline in forested areas (50-foot-wide operational pipeline) ROW would remain cleared and maintained in an herbaceous or low shrub state.

As appropriate, Ruby would implement the following mitigation measures to reduce impacts from ROW clearing activities on timber production on federal land.

- Ruby would be responsible for logging and marketing the harvested timber.
- ROW clearing methods would implement logging techniques to minimize disturbance to sensitive areas such as wetlands and riparian areas at the time of actual harvest. Logging techniques would be proposed by the contractor and subject to appropriate company and agency approval.
- All tree felling and vegetation clearing would occur within the approved construction work areas. Trees within the construction work areas would be directionally sheared or felled away from existing trees so as to prevent damage to residual trees. To facilitate minimizing resource damage to the felled trees as

- well as the residual trees, occasional tree tops may extend out past the clearing limits of the ROW. This could occur because of the lean of the tree or for safety factors. These tops would be skidded back into the ROW to keep vegetation within the confines of the Project boundaries.
- Logs would be decked along the ROW so as to minimize damage to any residual trees. Logs planned for removal from the site would be hauled off the site as soon as practical following yarding.
 - When a stream is encountered along the ROW, Ruby would attempt to skid away from the stream on both sides. If there is no alternative to crossing the stream, then matting of the stream will be required to minimize the impacts to the stream. Skidding logs across the matting that is placed across the stream would minimize or prevent sediment delivery.
 - All clearing of timber from the Project route would be conducted in accordance with the landowner/land management agency requirements. Merchantable timber would be removed and sold according to landowner/land management agency direction except for trees required by agency representatives to be left to meet resource objectives.
 - Most timber removal would be accomplished through ground skidding and cable yarding. Where ground skidding is used, the following measures would be employed to minimize soil disturbance (compaction and displacement):
 - Equipment customary to the local area would be used to yard the logs, which may be low-ground-weight (pressure) vehicles. Equipment used on the Project would be the same type of equipment that is used in conventional logging of adjacent timber stands within the local forest resource area.
 - Ruby would make every attempt to minimize impacts to soils and duff layers within the ROW. Where possible, Ruby will suspend one end of the log to minimize soil disturbances. However, where slopes are in excess of 50%, the logs would need to be moved up the slope via cable with no suspension.
 - Ruby would attempt to keep skidding impacts to a minimum. Ruby's pipeline construction equipment would impact the entire construction ROW, so there is no benefit to designating skid trails within the construction ROW. If skidding needs to occur off of the construction ROW, then the requirement for designated skid trails would apply. Ruby would rip or disc areas where skid trails and pipeline construction cause surface or subsurface compaction.
 - Logging slash would be hauled to staging areas adjacent to the construction ROW to be hauled off, used in restoration efforts, left for firewood, or burned/chipped at the appropriate time. No slash burning will be permitted on

- BLM-administered lands in the KFRA. Slash used for restoration efforts would be placed in designated areas along the edge of the ROW and then scattered or redistributed across the ROW during final cleanup and reclamation (following seeding). Any burning of slash would be completed in compliance with the applicable state smoke management regulations and registration requirements. Material designated to remain on site to meet resource concerns would be placed in designated areas along the edge of the ROW and then scattered/redistributed across the ROW during final cleanup and reclamation (following seeding).
- Although Ruby's contractor would attempt to cut the stumps flush with the ground outside of the ditch line, the stumps would need to be removed from the majority of the construction ROW to create a safe working area and allow for the returning of spoil, subsoil, and topsoil materials appropriately across the ROW.
 - Forested areas disturbed by the Project would be replanted according to state and federal (BLM and USFS) requirements. Planting would occur on all forestlands disturbed by the Project that are located more than 10 feet from the centerline of the permanent ROW of the pipeline to negate the possibility of tree roots affecting Ruby's ability to safely maintain the pipeline.
 - Ruby would follow USFS procedures for disposal of merchantable timber cut from USFS lands for construction of the Project as described in 36 CFR 223.12 during its ROW clearing activities. This regulation authorizes the USFS, under the issuance of an ROW or special use authorization, to sell the timber directly to Ruby at the current appraised value. Ruby intends to negotiate one contract covering the Fremont-Winema National Forest crossed by the Project.
 - ROW clearing debris (including, but not limited to, root wads, tree tops, tree limbs, and un-merchantable tree pieces) may be left on the ROW for erosion control, OHV control, soil productivity. Stockpiling or burning of this material would not be allowed on Fremont-Winema National Forest lands.
 - On Fremont-Winema National Forest lands and within 50 feet of residual stumps, Ruby will maintain a buffer of 25 feet around streams and riparian areas and then treat the following stumps with Borax (Sporax) to prevent Annosus root rot:
 - All large ponderosa pine over 24 inches diameter at stump;
 - Only in dry sites (list the unit number), ponderosa pine over 12 inches diameter at stump; and
 - All white fir over 16 inches diameter at stump.
 - Burning of rootwads/stumps would not be allowed on KFRA BLM-administered lands. Rootwads/stumps on KFRA BLM lands would be removed from the site or ground up and spread across ROW (no more than one inch deep) or buried as directed by the BLM.

Refer to Attachment A “Right-of-Way Clearing Plan for Klamath Falls Resource Area BLM Lands” for further detail regarding forest clearing in Oregon.

3.3 Vegetation Pathogens

Within the Project area, various insect pests could occur, including Douglas-fir beetle, fir engraver, flatheaded borer, and western pine beetle. Other tree stand diseases that may occur or have potential to occur within the Project area are annosus root rot, butt rot, laminated root rot, dwarf mistletoe, and sudden oak death. Aerial surveys of all forested land in Oregon are conducted annually by the USFS and Oregon Department of Forestry to determine insect and disease activity status. Survey data would be obtained from the agencies to determine if the listed insect and/or disease activity occurs within 0.5 mile of the Project route. Treatment would be predicated on data obtained from these surveys.

Insects and diseases can adversely affect a forest if Project-associated activities introduce new or spread existing infestations. Trees damaged during clearing activities and/or have soil compacted over their roots, may be more susceptible to infestation. In addition, equipment can transport insects or disease into or out of an area. The use of the ROW and roads can spread or introduce insects or disease to new areas. The spread of insects or disease within the Project area would result in both short- and long-term effects, such as reduced species diversity due to invasion or infestation and a loss of habitat function for wildlife.

The following mitigation measures would be implemented for each specific insect or disease as identified in areas prior to construction activities.

- Douglas-fir beetle – Methylcyclohexenone capsules (a natural beetle repellent) would be applied to trees along the edge of the construction ROW. This treatment would occur before beetle flight in April to protect remaining stands of Douglas fir and to prevent the spread of Douglas fir beetle. No Douglas fir down wood measuring 12 inches or larger in diameter would be left in areas on USFS land where there are known infestations of Douglas fir beetle.
- Fir engraver – When clearing the construction ROW within true fir stands, Ruby would utilize logging practices that directionally fall timber into the ROW, as well as store logs away from trees adjacent to the ROW to minimize or prevent damage to standing trees. Additionally, since fresh slash greater than four inches provides breeding material for the beetles and can contribute to outbreaks, Ruby would use the BLM and USFS fuel loading specifications to minimize slash accumulations.

- Flatheaded borer – Ruby would minimize damage to adjacent trees when clearing and maintaining the ROW, including felling trees within the ROW away from adjacent, standing trees. The proposed pipeline route through KFRA BLM lands is an area where the BLM typically requires borax treatment of freshly cut stumps. If the stumps are not physically removed, the KFRA BLM will require borax treatment of stumps.
- Western pine beetle – Ruby would remove infested trees in overstocked, infested stands, prior to beetle emergence in early June to reduce potential for infestation, as feasible. Additionally, if a mature ponderosa pine tree is identified with western pine beetle infestation within, but on the edge of the construction ROW and would not pose a safety or construction hazards, it would be retained for future snag recruitment to benefit wildlife.
- Laminated root rot – Infested stands would be documented and revegetated with resistant conifer species (native cedars, pines, and spruces).
- Dwarf mistletoe – In the event that dwarf mistletoe is found within the Project area, Ruby would consult with the relevant agencies to determine the appropriate plan to minimize its spread.
- Sites infected with annosus root and butt rot have been documented. Management to reduce tree loss from *F. annosus* varies depending on tree species affected. To reduce the spread of annosus root rot in the Project area overall, dry borax would be applied to freshly cut stumps and wounds inflicted on trees adjacent to the construction ROW in areas identified with infestations of annosus root rot, especially when true firs and pine are the tree species present. Unless the specific strain of annosus root disease is known (p-type strain or s-type strain), cut surfaces of all susceptible species would be treated in areas where the disease may be occurring to prevent spread. P-type strain occurs mainly on pines and incense cedar, but also on hardwoods and brush; the s-type strain infects spruces, firs, Douglas fir, western red-cedar, and hemlocks.

3.4 Noxious Weeds and Invasive Species

Noxious weeds are opportunistic and often exotic (non-indigenous) plant species that readily invade disturbed areas, often producing monocultures and preventing native plant species from establishing communities. Noxious weeds also degrade most agriculture and many natural resources, including soil and water, wildlife habitat, and recreational and wilderness values. Federal Invasive Species Executive Order 13112 (U.S. 1999) defines invasive plants as an “alien” (non-native) species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Multiple noxious weeds were documented along the Project route during field surveys conducted in 2008. Occurrences of these species increase the potential for new or expanded growth of noxious weeds as direct consequence of pipeline construction.

- Ruby has developed a Noxious and Invasive Weed Control Plan (Appendix H of the POD), which incorporates recommendations from the Natural Resources Conservation Service, BLM, and USFS. The plan provides procedures to minimize the potential introduction or spread of weeds along the ROW.

3.5 Sensitive Plants

Impacts to sensitive plant species within the Project area could include the direct removal and/or crushing of individual plants within the Project route, temporary work areas, and at aboveground facilities.

During surveys of the ROW, one sensitive plant, salt heliotrope (*Heliotropium curassavicum*), was identified within the survey ROW in Lake County, Oregon. One federally listed plant species, Ute ladies'-tresses (*Spiranthes diluvialis*), has the potential to occur along the Project ROW in Wyoming and Utah, but was not observed.

3.5.1 Ute Ladies'-Tresses

Ruby evaluated 35 sites within the Project route and one compressor station site for their potential to support Ute ladies'-tresses and ranked such sites as having high, medium, or low potential. No individuals or populations of Ute ladies'-tresses were observed at any of the surveyed locations, although 18 locations along the Project route were determined to exhibit moderate potential to support the species. The remaining 17 locations within the proposed pipeline ROW and the compressor station site were determined to exhibit low or no potential to support Ute ladies'-tresses.

Ruby conducted additional protocol surveys for the Ute ladies'-tresses in August and September 2009. Sites visited in 2009 included 21 wetland areas crossed by proposed access road corridors; one wetland area included within the proposed Glencoe Junction staging yard; one wetland area included within the proposed contractor/construction yard north of Corinne, Utah; and two wetland areas crossed by proposed reroutes of the pipeline corridor. In addition, 14 of the 18 sites that were characterized as exhibiting moderate quality habitat potential for the orchid species during the survey in 2008 were revisited to search for individuals or populations of the species. The remaining four sites exhibiting moderate habitat quality in 2008 were not revisited in 2009 because pipe line reroutes now avoided these wetland areas. No Ute ladies'-tresses were identified during the 2009 surveys.

Clearing and grading activities could temporarily remove habitat that could support Ute ladies'-tresses populations. If Ute ladies'-tresses are found during construction, work will be stopped until consultation with the USFWS determines the appropriate measures to be followed. Pre-construction surveys would be completed again in habitat that supports the species to confirm its presence or absence. While the likelihood of encountering this plant species during pipeline construction is low, suitable BMPs and additional mitigation measures would be employed to avoid or minimize damage to any plants that are encountered.

As appropriate, the following mitigation measures would be employed to reduce the level of impacts to the species if encountered during Project activities.

- Ruby would retain a botanist to survey prior to clearing in potential habitat along the Project to ensure that no Ute ladies'-tresses populations were overlooked or are newly colonizing along the Project; this botanist would be required to report any populations of Ute ladies'-tresses found during pipeline construction. Should this species be discovered prior to or during construction, activities in this area would be stopped and the USFWS would be contacted to determine the appropriate measures to be taken.
- In accordance with the FEIS, Ruby would not start construction in any area where Ute ladies'-tresse are identified during preconstruction surveys until:
 - FERC staff receives the survey report for any Ute ladies'-tresses sighting, as well as any comments from the FWS regarding project impacts on this species;
 - FERC staff completes any necessary Section 7 consultation with the FWS; and
 - Ruby has received written notification from the FERC that construction or use of mitigation may begin.

Should the Ute ladies'-tresses be identified:

- Ruby would use BMPs and additional mitigation measures based on field observation and literature review to minimize the likelihood of damage to Ute ladies'-tresses' habitat.
- Ruby would install signs and/or temporary fencing to prevent pipeline construction personnel from traversing populations of Ute ladies'-tresses.

3.5.2 Salt Heliotrope

Salt heliotrope (*Heliotropium curassavicum*) is a highly salt-tolerant species. Surveys identified six populations of the species within the Project route in Lake County, Oregon.

Ruby would mitigate for impacts to the species by replanting, using seeds collected from the population within the Project route, or purchasing seeds if available.

3.6 Habitat Fragmentation

Habitat fragmentation occurs when a large expanse of habitat is transformed into a number of smaller patches of less total area that are isolated from each other by a matrix of habitats unlike the original (URS 2000). This breaking up of contiguous areas of vegetation or habitat into smaller patches results in the creation of habitat edges along utility ROWs. Fragmentation also reduces connectivity between patches of habitat, impeding the movement of some wildlife species between those patches. Reduced connectivity negatively affects gene flow, social interaction, and other key processes necessary to the success of wildlife populations.

Fragmentation impacts to wildlife are grouped into six major categories: individual disruption, habitat avoidance, social disruption, habitat disruption, direct and indirect mortality, and population effects (URS 2000). Because they are buried, pipelines typically impact wildlife populations less than other linear ROW projects (e.g., roads). Most impacts to wildlife from construction or operation of pipeline ROWs appear to be related to increased human access. Buried pipelines with restored ROWs do not significantly affect wildlife movement. The following provides general information on the potential impacts of habitat fragmentation on migratory birds and mammals expected along the Project route.

3.6.1 Migratory Birds

Clearing vegetation along the proposed ROW would reduce potential foraging and nesting habitat for many bird species. Following construction, re-vegetation would occur; however, the shrub component that is so prevalent throughout much of the Project area would be reduced and would require long-term recovery. Similarly, forest and woodland habitats would not return to their pre-construction state within 10 feet of the pipeline centerline (within the 50-foot permanent ROW) and would require decades to recover in Project areas where they are permitted to re-establish (remaining 30 feet).

Nest predation and nest parasitism are components of the edge effect in migratory birds (Ingelfinger and Anderson 2004). Higher predation/parasitism rates are dependent on landscape context and edge type (URS 2000). Linear development projects fragment habitats with roads or utility corridors, which facilitates the encroachment of predators (Ingelfinger and Anderson 2004). Edge effect may also change the species composition in the Project area, as some species will select against edge habitats while others will select for these newly created habitats. Edge effect is greater along abrupt, man-made edges than soft, natural edges.

Refer to the Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 to be implemented by Ruby.

3.6.2 Mammals

Pipeline ROWs act as barriers to movement for some mammals. Without concealing vegetative cover, some species may be unwilling to cross a cleared corridor. Factors such as species, ROW width, and the degree of vegetative cover are important factors for this issue. In some instances, pipeline ROWs may facilitate movement by acting as corridors for travel; however, this may make those species more vulnerable to hunting and predation.

3.6.3 Mitigation

Mitigation measures for habitat fragmentation fall into two broad categories: avoidance and vegetation management. Ruby would employ both measures by routing around important habitat, where practicable, and using the following mitigation measures to minimize impacts to species from fragmentation.

- Ruby would limit the maintained ROW to a width of 50 feet.
- Ruby's siting policy has been directed at minimizing the removal of vegetation to the greatest extent possible for construction.
- State-specific Reclamation Plans have been developed that include elements to enhance wildlife use of the Project route.
- Measures would be employed to create small shrub patches in the Project ROW and maintain shrubs along the Project route forest interface to reduce edge effects.
- Ruby would work with the contractors to develop plan to reduce "hard" edges by using zig-zag clearing patterns in heavily forested areas.
- The use of zig-zag clearing patterns outside the construction ROW would have full agency/landowner approval.
- In prairie/grassland habitats, Ruby would develop a reasonable maintenance schedule for removal of shrubs and saplings that create edges.
- Ruby would not mow sagebrush areas that have been restored.

4.0 Terrestrial Fauna

Terrestrial wildlife resources would be impacted directly and indirectly by various phases of the Project on both short-term and long-term bases. Ruby initiated field surveys for wildlife species in 2008, with follow-up surveys for sensitive species in 2009. Additionally, pre-construction surveys in some areas for select species would be needed immediately prior to ground disturbance. These surveys would follow-up any known observations of species from 2008 and 2009 Ruby field surveys. These species include nesting raptors, nesting migratory birds, greater sage-grouse, sharp-tailed grouse, burrowing owls, mountain plovers, yellow-billed cuckoo, pygmy rabbits, black-footed ferret, white-tailed prairie dog, boreal toad, and Columbia spotted frog. Pre-construction surveys for sharp-tailed grouse in Utah and Nevada and greater sage-grouse in Wyoming, Utah, and Nevada were completed in March/April 2009. Pre-construction surveys for nesting raptors (including burrowing owls) along a two-mile-wide corridor centered on the ROW and access roads were completed spring/early summer 2009. Northern goshawk surveys, using audio playback techniques, were completed in the Fremont-Winema National Forest in Oregon in June and July 2009. Based on 2008 survey results, pygmy rabbit follow-up surveys were completed spring 2009. Pre-construction surveys for mountain plover in Wyoming were completed June 2009. Pre-construction surveys for yellow-billed cuckoos in Utah were completed August/September 2009. White-tailed prairie dog and black-footed ferret surveys were conducted in Wyoming and Utah in summer/early fall 2009. Pre-construction surveys for boreal toad in Utah and Columbia spotted frogs in Nevada and Oregon were completed in summer 2009. Potential impacts and mitigation measures to minimize these impacts are outlined below.

Short-term impacts to wildlife would occur during construction and would extend beyond the construction period in habitats that do not return to pre-construction conditions within three years (e.g., sagebrush steppe, forests, woodlands, etc.) following reclamation efforts. Long-term impacts to wildlife would extend through the life of the Project and beyond if supporting capabilities of that habitat are not fully restored. Direct impacts to wildlife habitat, whether through removal, conversion, or alteration of key components or due to close proximity of disturbances, can indirectly affect wildlife populations. Compared to the effects of direct impact, such indirect impact to wildlife is often more subtle and difficult to document. Indirect impacts also may be expressed over the long

term, with some time lag between onset of impact and detection of the impact to wildlife populations. In addition to variability over time, indirect impacts to wildlife due to habitat impacts may be variable over space, such that the expression of the impact may occur some distance away from the impact source.

Direct mortality of wildlife could occur during pipeline construction activities and maintenance operations. Wildlife could be killed by construction vehicles traveling to and from the Project. Species most susceptible to vehicle-related mortality include those that are inconspicuous (such as salamanders, frogs, snakes, and small mammals) and those whose behavioral activity patterns make them more vulnerable (e.g., nocturnal). Species most susceptible to mortality from clearing and grading operations during construction are those with limited mobility (such as amphibians) and burrowing species (such as pygmy rabbits, mice and voles, weasels, beaver, frogs and toads, and snakes).

Wildlife would be displaced from habitats that are cleared of vegetation and from areas adjacent to construction sites due to increased noise and human presence. Activities associated with construction of the Project could decrease individuals' reproductive success by increasing neonate or nest abandonment and possibly by interfering with breeding behaviors, sustenance, and growth of young, conception rates, and fetal survival. These direct impacts would negatively affect population growth through diminished rates of survivorship and fecundity. Both short- and long-term impacts would occur to species associated with waterbodies and riparian areas. Removal of riparian vegetation along stream edges that are crossed by the Project would increase sedimentation into the waterbody and/or increase water temperatures. Changes in hydrology also would occur within wetlands and waterbodies used for breeding, which would limit dispersal or reduce breeding habitat. These modifications to riparian habitat could directly cause mortality of reptiles and amphibians, cause disturbance and/or displacement, and indirectly lower breeding success and survival.

Nesting migratory birds and wildlife would be affected by habitat removal. Based on the magnitude of the Project and the seasonal constraints that the Project would face, only limited modification of the construction schedule would be possible. However, in recognition of its obligation to protect migratory birds under the Migratory Bird Treaty Act (MBTA), Ruby is coordinating with the USFWS to develop appropriate conservation and protection measures for migratory birds and to establish a protocol for addressing the potential unavoidable disruption of nesting activity. These measures are outlined in the Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186, which would be implemented by Ruby.

In consultation with federal and state agencies, Ruby has avoided or minimized impacts to wildlife by implementing the following measures.

- Ruby has rerouted sections of the pipeline.
- Ruby has restricted widths of the pipeline ROW in environmentally sensitive locations to minimize impacts to habitat.
- For the portion of the Project that is within the jurisdiction of the BLM Kemmerer Field Office, Ruby would limit the time trenches are open to 10 days or less.
- For the remainder of the Project, Ruby would attempt to adhere to the 10-day limit, but the topography and other construction constraints may make that infeasible. At locations where the ditch would need to remain open for extended periods, the open ditch would be fenced with temporary safety fence or protected with other means so wild animals or livestock would not become trapped.
- All fences on the Project would be cut for construction access with temporary “gaps” installed for control of livestock and wildlife. Refer to Appendix E of the POD for fencing/grazing alternatives.
- Ruby would restore affected habitats to the maximum extent practicable,
- Ruby would reduce impact over time by minimizing future disturbances (i.e., routine vegetation maintenance every three to five years, as necessary to maintain vegetation height at 15 feet. This maintenance will likely not occur in shrub communities such as sagebrush steppe).
- Ruby would construct the communication towers in accordance with the USFWS’ *Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers*.

4.1 Special Status Species

4.1.1 Black-footed Ferret

Loss of habitat has been identified as the primary impact to black-footed ferrets’ viability and survival. Conversion of grasslands to agricultural uses, widespread prairie dog eradication programs, and plague have reduced ferret habitat to less than two percent of what once existed. Remaining habitat is now fragmented, with prairie dog towns separated by great expanses of cropland and human development.

The requirement to conduct ferret-specific surveys was based on the USFWS’s “Black-Footed, Ferret Survey Guidelines” (April 1989), which direct that if black-tailed prairie dog or white-tailed prairie dog towns greater than 80 and 200 acres, respectively, are not found, then ferret surveys are not required. Although 2008 surveys noted prairie dog towns along the route, Ruby conducted additional surveys in 2009 to document all

prairie dog towns within 0.5 mile of the Project ROW and access roads to determine if towns would meet the acreage criteria. Based upon survey results, Ruby conducted black-footed ferret surveys along portions of the ROW in Wyoming from August 4–12, 2009 and in Utah from August 25–30, 2009. Ruby did not observe any black-footed ferrets during its surveys. As per USFWS regulations, construction must commence within one year of survey dates; otherwise, Ruby would be required to re-survey these areas for black-footed ferrets.

Information indicates a moderate to low potential for occurrence of black-footed ferrets in areas proximal to the Project route in Wyoming and Utah. Because historical data from these states indicate that the species has occurred near the Project route in the past, there remains a remote possibility that Project construction and operation could affect individuals. Should ferrets occur in the Project vicinity, the conservation measures described in the bullet list below would be used to reduce or eliminate potential effects.

Standard pipeline construction techniques would be employed along the pipeline route. Clearing, grading, and subsequent ditching activities would remove grassland, steppe, and shrub-steppe habitat within the portion of the Project route (MP 0 to MP 60) that has been shown to potentially support ferret populations. Trees, brush, and shrubs within the construction route would be cut or scraped at or near the ground level.

As indicated, the black-footed ferret's potential to occur near the Project in Wyoming and Utah is moderate to low. As a result, no mortality to individuals would be anticipated, although indirect impacts would result from temporary loss of habitat that supports prey species (e.g., prairie dog). In addition, if ferrets occur within 0.25 mile of the Project, increased noise and human presence at work site locations may disrupt normal behavioral patterns. Similar constraints and/or conservation measures related to increased noise and human presence may apply to any pipeline maintenance activities if black-footed ferret breeding areas are identified within 0.25 mile of the Project. Effects could occur if construction were to take place during the breeding season or when females are caring for young. Construction personnel would coordinate with the USFWS to establish authorization for construction if activities are required during the mating season within 0.25 mile of suitable breeding habitat. Breeding activity generally occurs in March through May.

The following mitigation measures may be employed to minimize impact to ferrets where appropriate.

- Maintain a biologist during construction to observe potential black-footed ferret habitat or populations in the vicinity of the Project route, if appropriate.

- Consult with appropriate state and federal agencies to avoid black-footed ferret populations, should they be encountered within the Project route.
- Designate a construction period for black-footed ferret colonies occurring within 0.25 mile of the Project route to avoid the March to May breeding and rearing season.
- Prohibit all pipeline construction personnel from hunting in potential black-ferret habitat (i.e., prairie dog habitat).
- Prohibit all pipeline personnel from driving vehicles off ROW through habitat or conducting any other activities that may result in take of black-footed ferret.

4.1.2 White-tailed Prairie Dog

Ruby conducted white-tailed prairie dog surveys in conjunction with black-footed ferret surveys in suitable habitat from approximate MPs 0 to 61 between July and October 2009. The study area was based upon field observations, correspondence with federal and state biologists, and Wyoming and Utah Natural Heritage data and included the ROW and associated access roads. Surveys were conducted according to USFWS ferret and prairie dog protocol by experienced biologists. More than 50 white-tailed prairie dog towns were delineated in this study area. To limit construction-related impacts on white-tailed prairie dog colonies within the construction ROW, Ruby would modify the ROW configuration (e.g., use the opposite side of the ROW to operate vehicle traffic) or reduce the construction ROW width to 75 feet where crossing known colonies to avoid white-tailed prairie dog burrows to the greatest extent possible. In addition, where a colony only occurs along the edge of the construction ROW, the colony edge would be flagged or exclusion fencing would be erected to avoid impacts on burrows.

4.1.3 Pygmy Rabbit

Please refer to Appendix S of the POD (Pygmy Rabbit and Greater Sage-grouse Conservation Plan) for further detail.

4.1.4 Mountain Plover

Ruby conducted mountain plover presence/absence surveys in suitable habitat from approximate MPs 0 to 12 and 20 to 26 in May/June 2009. This study area was determined through consultation with state and federal biologists, Natural Heritage data, and field observations. Surveys were conducted according to USFWS protocol by experienced avian biologists. No mountain plovers were observed during these surveys. Seasonal restrictions within suitable habitat are from April 10 to July 10. Should Ruby plan to construct in any of this suitable habitat within the seasonally restricted dates, presence/absence surveys would be conducted prior to ground disturbance. Ruby

would then consult with the appropriate resource management agency to determine subsequent actions in the event that surveys resulted in presence of mountain plovers.

4.1.5 Greater Sage-grouse

Please refer to Appendix S of the POD for further detail.

4.1.6 Sharp-tailed Grouse

Ruby consulted with the UDWR regarding impacts to sharp-tailed grouse populations located in eastern Utah. The UDWR recommended that aerial surveys for lek sites be completed following the UDWR survey protocols. These surveys were completed in late April/early May 2009. A biologist from the UDWR participated in these aerial surveys. Consultation is ongoing with the UDWR to develop mitigation measures. The following are possible mitigation measures that would be implemented; however, the UDWR would have final approval of these measures:

- Avoid human activity within four miles of an occupied lek between 8:00 p.m. and 8:00 a.m. from March 15 to June 15 in Cache County, and March 15 to June 1 for leks in Box Elder County.

4.1.7 Yellow-billed Cuckoo

Ruby conducted yellow-billed cuckoo presence/absence surveys at four locations in Cache County, Utah from approximate MPs 92 to 95 in the early morning on August 18 and September 1, 2009. This study area was determined through consultation with state and federal biologists. Surveys were conducted according to USFWS protocol by experienced avian biologists. No yellow-billed cuckoos were seen or heard during these surveys. If yellow-billed cuckoos are observed prior to or during construction, Ruby will consult with the appropriate resource management agency to determine subsequent actions.

4.1.8 Boreal Toad

Ruby conducted boreal toad presence/absence surveys in suitable habitat from approximate MPs 69.5 to 76.5 and 85.5 to 85.7 in June 2009. This study area was determined through consultation with state and federal biologists, Natural Heritage data, and field observations. Surveys were conducted according to USFWS-approved protocol by experienced wildlife biologists. Surveys were conducted three times at each site (two diurnal visits and one nocturnal visit). No boreal toads were observed during these surveys. Ruby would consult with the appropriate resource management agency to determine subsequent actions in the event that boreal toads are observed prior or during construction.

4.1.9 Columbia Spotted Frog

Ruby conducted Columbia spotted frog presence/absence surveys in suitable habitat in three HUCs (Upper Humboldt, North Fork Humboldt, and South Fork Owyhee) traversed by the Project in Elko County, Nevada, and in the Warner Basin in Lake County, Oregon, and extreme northwestern Nevada in August and September of 2009. Ruby also collected incidental observations during baseline environmental surveys in 2009. These study areas were determined in consultation with NDOW and ODFW biologists. All surveys were conducted by experienced field biologists, and surveyors in Elko County were trained by NDOW prior to conducting surveys. NDOW-trained personnel also conducted surveys in the Warner Basin. Ruby biologists performed Visual Encounter Surveys adapted from protocols employed by NDOW and other agencies (Toiyabe Spotted Frog Technical Team 2004). Columbia spotted frogs were observed in Elko County, Nevada, and Lake County, Oregon. Ruby would adhere to in-water work windows to minimize disturbance to frogs at these locations.

4.2 Big Game

Construction impacts on big game species, including elk, moose, mule deer, pronghorn, and bighorn sheep would include an incremental increase in habitat fragmentation as well as a loss of potential forage. The Project's impact on designated big game habitats would include approximately 549 acres of crucial winter habitat in Wyoming, 1,631 acres of crucial winter habitat in Utah, 2,676 acres of crucial winter and mule deer migration habitat in Nevada, and 1,318 acres of winter habitat in Oregon. Forage species utilized by big game are expected to reestablish quickly, depending on weather conditions and grazing management practices, which would affect reclamation success. In most instances, suitable habitat adjacent to the construction areas would be available for wildlife species until vegetation has been reestablished.

Indirect impacts on big game species include those caused by increased human activity (e.g., noise levels), dispersal of noxious and invasive weeds, and dust produced by gravel road traffic. Increased noise levels and human presence would likely result in reduced use of the construction area by big game. Species temporarily displaced by increased construction noise and human presence would likely return upon completion of the Project. As such, displacement would be short-term and not significant since Ruby will mitigate for habitat impacts by completing restoration of all areas disturbed by construction.

To protect important big game winter habitat, Ruby would comply with agency seasonal restrictions for winter range. The BLM can grant exceptions to seasonal restrictions if the BLM wildlife biologist, in consultation with the state wildlife agencies, determines that

granting an exception would not jeopardize the population being protected. Coordination with BLM and USFS is ongoing regarding construction in winter habitat.

Ruby would implement the following mitigation measures to protect big game winter ranges where appropriate:

- Within big game winter ranges disturbed by the Project, Ruby would seed disturbed areas with preferred big game forage species, as recommended by the BLM, USFWS, and state wildlife agencies.
- Ruby would control noxious weeds on the ROW on all lands crossed, including both summer and winter rangelands, to help maintain native forage species.
- To minimize potential impact of open trenches within agency-identified big game migration corridors, Ruby would install or leave crossovers every 1,200 feet with exit ramps. Ruby would also leave crossovers in areas around water sources or active livestock/wildlife trails. At water sources, at a minimum, Ruby would install one crossover on each side of the source if the source is a stream. Crossovers would also be left in place at existing roads or active two-track roads to allow for vehicle crossings. Each crossover would be sloped on each side to act as an escape ramp for any livestock/wildlife that happens to become trapped in the trench. Ruby would also inspect the open ditch line daily to ensure that livestock/wildlife is not trapped in the open trench.
- A 10-foot gap would be left in spoil and topsoil stockpiles at all hard or soft plug locations, and a corresponding gap in the welded pipe string would be left in these locations. Suitable ramps would also be installed from the bottom of the trench to the top to allow any wildlife that enters the trench to escape. The ramps would be spaced at approximately 0.5-mile intervals at big game migrations corridors or within winter range areas.
- After construction is complete, Ruby would install OHV barriers to reduce unauthorized public access and to maximize big game use of the ROW. These barriers may include dirt/rock berms, log barriers, signs, and locked gates. Slash from clearing operations would also be redistributed on the ROW, which would help discourage OHV travel.
- To reduce potential impacts to big game species, Ruby has agreed to avoid construction activities in designated crucial winter big game ranges. Should Ruby find it necessary to construct within this time period, it would seek written authorization from the BLM, USFS, and FERC. Crucial winter range restrictions would include:

Jurisdiction	Habitat Type	Restriction
Wyoming	Big Game Crucial Winter	November 15 to April 30
Utah	Big Game Crucial Winter (elk, moose, mule deer)	December 1 to April 30
Nevada: Winnemucca District and Surprise Field Office	Deer Migration Corridor	November 15 to January 31
	Deer Winter Range	December 1 to March 31
	Deer Migration Corridor	April 1 to May 15
	Pronghorn Kidding and Summer Range	July 15 to September 30
Nevada: Elko District	Deer Migration Corridor	October 1 to November 30
		March 1 to April 30
		March 15 to May 15
	Deer Winter Range	November 1 to December 1
	Deer Fawning/Summer Range	May 15 to August 31
Elk Calving/Summer Range	May 15 to August 31	
Elk Winter Range	December 1 to February 28	
Oregon	Big Game Winter	November 1 to April 1

4.3 Raptors

Raptors that occur in the Ruby Pipeline Project area include eagles (golden and bald), accipiters (northern goshawk, and Cooper's and sharp-shinned hawks), falcons (peregrine and prairie falcons, American kestrel, and merlin), *Buteos* (red-tailed, ferruginous and Swainson's hawks), northern harrier, osprey, turkey vulture, and several species of owls. Raptors require nesting protection during construction activities. Except where a site-specific modification is authorized by USFWS and BLM on a case-by-case basis, Ruby would comply with the spatial and seasonal buffers presented in Table 4-1 unless a site-specific variance is authorized. Ruby has committed to adhere to the most restrictive buffers based on each states guidelines and guidance.

Table 4-1 Raptor Nest Buffers

Species	Spatial Buffer (miles)	Seasonal Buffer
Bald eagle	1.0	Jan 1 – Aug 31
Golden eagle	0.75	Jan 1 – Aug 31
Northern goshawk	0.75	March 1 – Aug 15
Northern harrier	0.75	April 1 – Aug 15
Cooper's hawk	0.75	March 15 – Aug 31
Ferruginous hawk	1.0	March 1 – Aug 1 (Feb 1 – July 31 (WY))
Red-tailed hawk	0.75	March 15 – Aug 15
Sharp-shinned hawk	0.75	March 15 – Aug 31
Swainson's hawk	0.75	March 15 – Aug 31
Turkey vulture	0.75	May 1 – Aug 15
Peregrine falcon	1.0	Feb 1 – Aug 31
Prairie falcon	0.75	April 1 – Aug 31
Merlin	0.75	April 1 – Aug 31
American kestrel	300 ft	April 1 – Aug 15
Osprey	0.75	April 1 – Aug 31
Boreal owl	0.75	Feb 1 – July 31
Burrowing owl	0.75	March 1 – Aug 31 (April 15 – Sept 15, or until chicks fledge (WY))
Flammulated owl	0.75	April 1 – Sept 30
Great gray owl	0.25	March 1 – June 30
Great horned owl	0.75	Dec 1 – Sept 30

Table 4-1 Raptor Nest Buffers

Species	Spatial Buffer (miles)	Seasonal Buffer
Long-eared owl	0.75	Feb 1 – Aug 15
Northern saw-whet owl	0.75	March 1 – Aug 31
Short-eared owl	0.75	March 1 – Aug 1
Mexican spotted owl	0.75	March 1 – Aug 31
Northern pygmy owl	0.75	April 1 – Aug 1
Western screech owl	0.75	March 1 – Aug 15
Common barn-owl	300 ft	Feb 1 – Sept 15

Source: USFWS - Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbance, and WGFD.

As noted above, the seasonal and spatial restrictions identified in Table 4-1, are subject to modification on a site-specific basis depending on the specific species, the topography, habitat features, and level of disturbance. In seeking site-specific modifications to the Table 4-1 restrictions, Ruby would follow the approach set out in the USFWS Utah Field Office's manual, which includes:

- Resource Identification,
- Assessment of Level of Impact,
- Protection of Habitat Components,
- Provision for Reasonable Protection of raptor nesting, and
- Mitigation and Documentation.

Ruby would conduct an aerial survey or ground survey immediately prior to construction at each raptor nest to determine activity. Each active nesting site would be evaluated for potential level of impact. Considerations would include species using the nest, nesting status, distance from the Project route, local land use patterns, topography, and aspect of the nest in relation to the construction ROW. It is expected that most impacts would be considered indirect impacts due to noise disturbance in the ROW and, potentially, minimal degradation of adjacent habitats. It is unlikely that nests would be directly impacted. This assessment would be conducted by Ruby and reviewed by USFWS and BLM resource specialists.

Table 4-1 exhibits both seasonal and special buffers zones for raptor species. In general, construction activities are scheduled to avoid the most critical stages of breeding activity, the mating and egg laying stages. By this time, raptor chicks should have hatched and been in the nest for several weeks. Each active nest identified during the aerial surveys would be evaluated for the appropriateness of the seasonal and spatial buffers that are recommended in the guidelines. Ruby would coordinate with the appropriate state and federal agencies to develop specific conservation measures for each nest site that occurs within agency designated buffer, if Ruby cannot avoid construction during the designated nesting season.

In the event that a conflict with this period arises due to Project constraints, Ruby would request that construction be allowed within the recommended spatial and seasonal buffer zones. Based on a specific location, resource managers may request that specific mitigation measures be employed to ensure that no take of raptor species occurs. Ruby would work with resource managers on a case-by-case basis to determine the appropriate and prudent mitigation measures in these situations. For any sites where the recommended seasonal and spatial buffers cannot be adhered to, Ruby would coordinate with the appropriate resource management agencies and would propose monitoring of active sites by an accredited biologist during construction activities to assess impacts. Following completion of construction activities, Ruby would submit to resource agencies a summary report of the active nests in the Project area, specific treatment of each nest, behavior observed, and apparent health and status of each nest through the completion of the breeding season.

4.3.1 Bald Eagle

Active bald eagle nests were identified in Wyoming (Uinta County) and Oregon (Lake and Klamath counties) during 2009 aerial surveys. Ruby would apply a one-mile spatial buffer and a seasonal buffer (Table 4-1) to protect these nests. Please refer to the Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 for more details on conservation measures to be employed by Ruby for bald eagles. Ruby would also consider the recommendations of the National Bald Eagle Management Guidelines (USFWS 2007); however, it should be noted that the spatial buffers Ruby has committed to are more stringent than those recommended by the Guidelines.

For portions of the ROW where blasting may be required, Ruby would survey bald eagle nest sites within one mile (and other raptor nests within 0.5 mile) of the specific blasting sites prior to pipeline construction to determine if these nests are active. Based on those surveys, if any nests are determined to be active bald eagle nests, Ruby would

coordinate with appropriate agencies. Ruby may be required to develop a site-specific blasting plan to avoid take under the MBTA and/or the Bald and Golden Eagle Protection Act (BGEPA). Avoidance or minimization measures that may be recommended by the USFWS include delaying blasting activities, buffering or muffling the blasting area, or some other measure to ensure compliance with the MBTA and/or BGEPA.

4.3.2 Golden Eagle

Golden eagles are known to breed in the general area of the Project, and confirmed nesting locations occur within 0.75 mile of the Project. Species like the golden eagle often utilize several different nesting locations. Therefore, each year the species could utilize a different nest location, all with different aspects. The potential impact to a given nesting pair as a result of the construction activities would be based on which particular nest an eagle pair is using and its specific relationship to the ROW, including aspect, line of sight, and distance. Aerial surveys conducted in 2009 found active golden eagle nests in the vicinity of the ROW in Wyoming (Lincoln County), Utah (Rich County), and Nevada (Elko, Humboldt, and Washoe counties). Ruby would adhere to the spatial and seasonal buffers identified for golden eagle nests. If Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for this species.

4.3.3 Osprey

Osprey are known breeders in southern Oregon in the general vicinity of the Project. Three active osprey nests were observed along the ROW in Lake County during 2009 aerial surveys. Ruby would adhere to the seasonal and spatial buffers identified for osprey nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.4 Peregrine Falcon

Peregrine falcons are known to occur in the general vicinity of the Project, and individual falcons were observed during 2008 surveys. The peregrine falcon alternates nesting locations and often utilizes vacant nests of other raptor species. Therefore, each year the species could utilize a different nest location. The potential impact to a given nesting pair as a result of the construction activities would be based on what nest the falcon pair is using and its specific relationship to the ROW, including aspect, line of sight, and distance. The impact would also depend upon the phase of construction within a particular spread. Impacts to this species are not expected since 2008 and 2009 surveys failed to locate active peregrine falcon nests.

4.3.5 Prairie Falcon

Ruby surveys encountered prairie falcons throughout Nevada during 2008. Aerial surveys in 2009 documented active nests in Utah (Rich and Box Elder counties), Nevada (Elko, Humboldt, and Washoe counties), and Oregon (Lake County). Ruby would adhere to the seasonal and spatial buffers identified for prairie falcon nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.6 American Kestrel

American kestrels are a common and widespread breeder in North America. Surveys conducted in 2009 documented active nests in Utah (Box Elder County) and Nevada (Elko and Humboldt counties). Ruby would adhere to the seasonal and spatial buffers identified for prairie falcon nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.7 Northern Harrier

Northern harriers were observed during 2008 surveys in the vicinity of the ROW. Therefore, there is a potential for impacts to this species. Completed 2009 aerial surveys found active northern harrier nests in Wyoming (Lincoln and Uinta counties) and Nevada (Humboldt County). Ruby would adhere to the seasonal and spatial buffers identified for northern harrier nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.8 Northern Goshawk

Ruby conducted protocol level surveys for goshawks in areas along the ROW where suitable habitat occurred, including within the Wasatch-Cache National Forest in Utah and the Fremont-Winema National Forest in Oregon in 2008. Survey results did not document species occurrence within 0.75 mile from the ROW. Northern goshawk nests were not found during 2009 aerial surveys. Following agency recommended protocol, further intensive surveying of the Fremont-Winema National Forest in Oregon were conducted June and July 2009. These surveys located two active nests in Lake County. Ruby would adhere to the seasonal and spatial buffers identified for northern goshawk nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species. Although no northern goshawk nests were observed on Wasatch-Cache National Forest lands, Ruby would adhere to the guidelines outlined in the Conservation Strategy and Agreement for the Management

of Northern Goshawk Habitat in Utah (1998) if nests are documented prior to construction.

4.3.9 Cooper's Hawk

Completed 2009 aerial surveys found Cooper's hawk nests across Nevada (Elko, Humboldt, and Washoe counties). Ruby would adhere to the seasonal and spatial buffers identified for Cooper's hawk nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.10 Red-tailed Hawk

Aerial surveys conducted in 2009 identified widespread red-tailed hawks nesting within 0.75 mile of the ROW. Active nests were recorded in Wyoming (Lincoln and Uinta counties), Utah (Rich, Cache, and Box Elder counties), Nevada (Elko and Humboldt counties), and Oregon (Lake and Klamath counties). Ruby would adhere to the seasonal and spatial buffers identified for red-tailed hawk nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.11 Ferruginous Hawk

Ferruginous hawks are known to breed in the general area of the Project. Active ferruginous hawk nests were identified during 2009 aerial surveys. Nests were located in Utah (Box Elder County) and Nevada (Elko and Humboldt counties). Ruby would adhere to the seasonal and spatial buffers identified for ferruginous hawk nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.12 Swainson's Hawk

Completed 2009 aerial surveys found active Swainson's hawk nests in Utah (Box Elder County) and Nevada (Elko and Humboldt County). Ruby would adhere to the seasonal and spatial buffers identified for Swainson's hawk nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.13 Burrowing Owl

Active burrowing owl burrows were identified on the ROW in Wyoming (Lincoln County), Utah (Box Elder County), and Nevada (Elko and Humboldt counties) during 2009

surveys. The construction schedule may overlap with the later stages of young rearing for the owl. Ruby is coordinating with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

Ruby proposes a plan of action that would include passive relocation for burrowing owls prior to nesting season. Passive relocation would not involve actual capture and removal. Rather, the owls would be enticed to artificial (or natural) burrows by providing such burrows and using one-way door “traps” that allow owls to leave the burrow of concern but would not let them reenter. Relocation is most successful if the added burrows are located less than 200 meters away. Once the passive relocation has been completed all burrows within the ROW would be collapsed to assure owls do not occupy the ROW. Ruby would work with the BLM, USFWS, and state wildlife agencies to further refine the measures to move owls off the ROW prior to construction, and obtain the necessary wildlife permits (e.g., Certificate of Registration in Utah).

Passive relocation would not be utilized in Wyoming. Ruby would adhere to spatial and temporal restrictions to construction in areas where active burrowing owls exist in the Project area in Wyoming. These restrictions are identified in the Ruby Pipeline Voluntary Conservation Measures for migratory birds.

4.3.14 Great Horned Owl

Great horned owls are a widespread, but often sparsely distributed nester in the Project area. Active nests were identified during 2009 aerial surveys. Nests were located in Utah (Rich County), Nevada (Elko, Humboldt, and Washoe counties), and Oregon (Lake County). Ruby would adhere to the seasonal and spatial buffers identified for great horned owl nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.15 Great Gray Owl

At the request of the USFS, Ruby conducted great gray owl surveys in Oregon during 2008 surveys. These surveys failed to elicit any response and no nests or individuals were observed. Ruby does not anticipate impacting great gray owls during construction. If active nests are observed prior to and during construction, Ruby would adhere to the seasonal and spatial buffers identified for great gray owl nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFS, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.16 Long-eared Owl

Completed 2009 aerial surveys found active long-eared owl nests in Nevada (Elko and Washoe counties). Ruby would adhere to the seasonal and spatial buffers identified for long-eared owl nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

4.3.17 Short-eared Owl

Aerial surveys conducted in 2009 documented short-eared owl nests in Nevada (Elko and Washoe County). Ruby would adhere to the seasonal and spatial buffers identified for short-eared owl nests. In the event that Project constraints require construction within these buffers, Ruby would coordinate with the BLM, USFWS, and state wildlife agencies to develop suitable conservation measures for the species.

Please refer to the Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 for best management practices to be implemented by Ruby to avoid and minimize impacts on raptors.

4.4 Other MBTA-Protected Species

The construction of the Project would impact other birds protected under the MBTA. Habitat for one or more MBTA-protected nesting bird species is found along most of the Project route. Ruby is in the process of preparing Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186, as recommended by the USFWS, for the protection of MBTA-protected species during construction.

During construction, Ruby would avoid both temporal and spatial direct impacts to birds protected under the MBTA. Temporal avoidance (March 1–July 31) eliminates impact to nesting birds by constructing outside the nesting season. This can be accomplished by starting construction prior to the onset of nesting, so that nesting cannot be initiated that would then be impacted by construction. Spatial avoidance is used when construction occurs during the nesting season and nests are present, but construction would be avoided within a protective “buffer” around the nest.

Please refer to the Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 for avoidance, minimization, and conservation measures to be implemented by Ruby.

5.0 Construction Monitoring

A BLM/FERC joint third-party monitoring program will be implemented during construction and restoration activities for the Project.

6.0 Mitigation

Mitigation measures for biological resources resulting from construction of the Ruby Pipeline Project are outlined in Section 5.0 of the Environmental Impact Statement, in this document with regard to species-specific mitigation, Appendix S of the POD for greater sage-grouse and pygmy rabbit, as well as in Ruby Reclamation Plans (Appendix E of the POD), and in Ruby's Upland, Erosion Control, Revegetation, and Maintenance Plan (Appendix D), and Ruby's Wetland and Waterbody Construction and Mitigation Procedures (Appendix F).

Additional conservation measures are outlined in the Ruby Pipeline Cooperative Conservation Agreement for the Sage-Grouse and Pygmy Rabbit, the Ruby Pipeline Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186, and the Ruby's Endangered Species Act Conservation Action Plan for the Ruby Pipeline Project. Each of these conservation plans will be completed prior to the completion of the Record of Decision.

7.0 References

- Benson, A. J. 2008. New Zealand mudsnail sightings distribution.
<http://nas.er.usgs.gov/taxgroup/mollusks/newzealandmudsnaildistribution.asp>.
Accessed January 13, 2009.
- Conservation Strategy and Agreement for the management of northern goshawk habitat in Utah. 1998. Agreement between Utah National Forests, Bureau of Land Management, Utah Division of Wildlife Resources, United States Dept. of Interior, and U.S. Fish and Wildlife Service.
- Ingelfinger, F., and S. Anderson. 2004. Passerine response to roads associated with natural gas extraction in a sagebrush steppe habitat. *Western North American Naturalist*, Vol. 64. pp. 385-395.
- Reid, S.M., Stoklosar, S., Metikosh, S., and Evans, J. 2002. Effectiveness of Isolated Pipeline Crossing Techniques to Mitigate Sediment Impacts on Brook Trout Streams. *Water Quality Research Journal of Canada*, Vol. 37. pp.473-488.
- Reid, S.M., Ade, F., and Metikosh, S. 2004. Sediment Entrainment During Pipeline Water Crossing Construction: Predictive Models and Crossing Method Comparison. *Journal of Environmental Engineering and Science*, Vol.3. pp.81-88.
- URS. 2000. Direct Relevance to the Natural Gas Industry of the Habitat Fragmentation/Biodiversity Issue Resulting from the Construction of New Pipelines. Topical Report, October 2000.
- Toiyabe Spotted Frog Technical Team. 2004. Columbia Spotted Frog (*Rana luteiventris*) Toiyabe Great Basin Subpopulation Long-term Monitoring Plan.
- United States Federal Register. February 8, 1999. Vol. 64. No. 25. Presidential Documents. Executive Order 13112: Invasive Species.
- United States Fish and Wildlife Service (USFWS). 2007. National Bald Eagle Management Guidelines.

Attachment A. Right-of-Way Clearing Plan for Klamath Falls Resource Area BLM Lands

**Right-of-Way Clearing Plan
for Klamath Falls Resource Area BLM Lands**

Ruby Pipeline Project

June 2010

1 Introduction

This plan addresses the removal of ponderosa pine saw timber and other potential forest and woodland products, including juniper trees, juniper logs, firewood, chips, and biomass during right-of-way (ROW) clearing activities from the proposed Ruby Pipeline where it traverses Bureau of Land Management (BLM) lands in the Lakeview District's Klamath Falls Resource Area (KFRA).

2 Purpose

The purpose of this Right-of-Way Clearing Plan is to outline the methods that Ruby Pipeline, LLC (Ruby) will implement during timber and other forest products removal during ROW clearing activities within the construction ROW and extra work areas.

3 Roles and Responsibilities

The BLM has authority under 43 Code of Federal Regulations (CFR) 5400 to sell marketable timber removed during ROW clearing activities for the Ruby Project through a negotiated sale when it is determined to be impracticable to obtain competitive bids through an advertised sale. The BLM intends to sell the ROW timber directly to Ruby under lump sum timber sale contracts at not less than the current appraised value as determined by the BLM. Timber sale contracts will be prepared, offered, and administered by the BLM. Payment for the timber sold will be made lump sum in advance of cutting and removal.

The BLM will administer the timber sale contract. Ruby will be the contractor for timber removed during ROW clearing activities on federal lands, although logging would likely be done by a subcontractor. All federal timber contracts necessary for ROW clearing activities with Ruby will prohibit log export and require domestic processing consistent with existing agency policy and federal law.

In order to comply with Oregon Revised Statutes (ORS) 527.670(3), Ruby will be required to provide a written timber harvest plan to the BLM. Timber harvest plans will include such information as timber sale boundary designation, volume estimation, appraisal, and contract preparation. Ruby will file its final logging plans after completion of timber cruises and the selection of its timber removal contractor.

Ruby will be responsible for log removal and disposal of the federal timber resulting from ROW clearing activities. The BLM will be responsible for monitoring payment, log accountability, and trespass. Many of the operational requirements typically detailed in a timber sale contract, such as erosion control, road use and maintenance, slash disposal, etc., are contained in the applicable federal ROW grant and will be incorporated by

reference into the BLM timber sale contracts. Performance bonding typically required in a timber sale contract will also be included as part of the ROW grant requirements in an amount sufficient to cover operations performed under the timber sale contracts. BLM timber sale administrators will oversee ROW clearing activities to ensure that timber removal is carried out according to any site-specific requirements as well as to ensure payment and proper log accounting for specially designated revenues.

4 Timber Cruise and Valuation

The BLM estimates that between 100 and 150 thousand board feet of ponderosa pine saw timber will be cleared from approximately 25 to 30 acres of commercial forest land on Klamath Falls Resource Area BLM lands during ROW clearing activities necessary to build the pipeline. The expected volumes of harvested timber, tree types cleared, and their values will be further refined when Ruby secures a final ROW grant to proceed with the ROW construction. The timber volume estimates will be derived using professional forestry methodologies and protocols to provide a basic timber volume inventory for the proposed Ruby Project.

The BLM is required by regulation to oversee the measurement of the timber it sells. The BLM will sell its timber in lump-sum based on the cruise volume.

A final timber cruise will be conducted prior to ROW clearing in order to determine timber volumes, values, and species composition within forested lands. Timber cruise schedules will be determined with the BLM after Ruby completes survey and marking of property lines and actual ROW and extra work areas. The time needed to complete cruises will depend on actual acres, ease of access, and the volume of actual timber to be cruised. The BLM estimates that cruising of the timber would typically proceed at the approximate rate of 10 acres per day per cruising team. Cruising and appraisal of the ROW timber and development of a negotiated Timber Sale contract should take no more than 10 working days and will be conducted by forestry personnel from the Klamath Falls Resource Area Office.

If, during the removal of timber during ROW clearing activities, Ruby determines that extra work areas are not needed to accomplish pipeline construction, Ruby would notify the relevant agency's Contracting Officer in writing. If the Contracting Officer agrees that an extra work area is not needed, and, at the conclusion of construction, said areas remain fully intact, un-entered, and un-harvested, the BLM will cruise the un-harvested, intact areas and refund the appraised value to Ruby at the established contract price. If extra work areas are sporadically cleared and/or trees are scattered throughout the extra work areas, the BLM will not cruise the remaining trees, nor will Ruby receive a refund for the value of such trees.

Ruby may elect to use purchased BLM timber for environmental mitigation. The BLM will not provide credit, nor provide a refund to Ruby, for purchased timber that is used for mitigation purposes.

5 Juniper and Other Potential Forest Products

Juniper trees that are required to be removed from the ROW during pipeline construction will be dealt with in a variety of ways as outlined below.

All juniper trees required to be removed from the pipeline ROW will be cut or pushed over. Juniper trees in excess of coarse woody debris (CWD) requirements, within 1,500 feet of designated landing sites and/or extra ROW work spaces will be transported to those sites and made available for public firewood or other uses. At designated landing sites (generally access roads or existing cleared areas or identified extra storage areas) juniper logs will be limbed and decked, without stumps attached, no more than 8 feet high to facilitate firewood use.

Slash, limbs, tops, and pieces will be piled to facilitate utilization as chips or hog fuel. Any severed stumps will be removed from the site, ground up, and spread over the ROW (no more than one inch deep) or buried at locations designated by the BLM. Severed root wads would not be included in log decks or slash piles.

An exception will be 200 large juniper trees needed for fisheries/wildlife projects. These trees, with limbs and root wads attached, can be transported by Ruby from any point on the cleared pipeline ROW to points designated by the BLM for temporary storage. These trees with root wads attached will then be placed in Willow Valley Reservoir by the BLM in accordance with all applicable permits.

Another exception will be juniper trees that will be left on site to meet CWD requirements. Approximately 50 lineal feet per acre of CWD material at least 12 inches in diameter will be left on the pipeline ROW after completion of construction.

If Ruby or its contractors elect to market any of the juniper trees as logs, chips or biomass, or other products, the BLM and Ruby will enter into a negotiated contract to determine the volume, value, and best methods of disposition of such products. In the event that Ruby or its contractor elects to market such material, some portion of the juniper trees/logs will still be designated for wildlife/fisheries use and public firewood. Juniper trees and other woody material cut during the ROW clearing that are in excess of the CWD requirements and farther than 1,500 feet from the designated landings or extra storage areas to be used for decking of firewood logs, will be chipped and spread

on the ROW at depths not exceeding one inch or removed from the ROW. This material can be stored at designated sites with BLM approval. If stored at such sites, these trees will be treated as described above to facilitate utilization and firewood use.

6 Reserving Snags and Other High-Resource-Value Trees

Prior to clearing operations, Ruby would flag existing snags in forested areas on the edges of the construction ROW, storage areas and/or extra work areas, to protect from removal during timber cutting, where feasible. Also during this process, the BLM will work with Ruby to identify additional high-resource-value trees that may be retained within the ROW. These trees would also contribute to a “feathering effect” for the edge of the ROW. Such trees could include large ponderosa pine trees, large juniper trees, fast growing trees or clumps of trees, and trees showing signs of extensive wildlife use. High-resource-value trees within the ROW would be designated with orange paint. Paint would be applied above and below stump height. Such trees would be coordinated with Ruby to ensure that retention does not interfere with pipeline construction or safety considerations.

7 Hazard Trees

Hazard trees will be identified by Ruby for removal prior to construction activities when possible. Hazard trees are those trees at risk of falling on workers or vehicles and thus would require removal for safety reasons. A tree may be at risk of falling for a number of reasons, including its location and the presence of defects, insects, disease, work activities, and weather conditions. Such trees would be felled in advance of road construction/reconstruction or maintenance and clearing where possible. Additionally, hazard trees could be created from trees felled during the project. This would occur if trees outside of approved construction areas are damaged during felling of harvested timber. This could result in growth loss and Ruby would compensate the agency for any trees removed and any loss in timber productivity.

Hazard trees would be designated by qualified agency representatives, or agency-approved third-party personnel. Hazard trees would be directionally felled, using chainsaws, away from the construction ROW if trees are to be left and towards the construction ROW if trees are to be removed. Compliance monitors in the field would review, and approve as appropriate, requests to remove hazard trees outside the approved construction area.

The extent or existence of hazard trees will be identified following the creation of the construction ROW, extra work areas, or new access roads by Ruby or on roads that have not triggered land management agency hazard tree removal based on limited road use.

If hazard trees are identified after construction or clearing has started, Ruby and BLM personnel will coordinate felling and/or removal. Ruby will notify BLM personnel for approval to fell such trees.

8 Felling and Yarding

Trees to be felled within the proposed ROW and identified extra work areas include ponderosa pine trees and western juniper trees. The ponderosa pines will range in size from seedlings up to larger saw timber that may be 150 feet tall and 30 to 40 inches or larger in diameter at diameter at breast height. Juniper trees will range in size from seedlings to large trees that may reach heights of 80 feet and diameters over 30 inches diameter at breast height.

Ruby will ensure that all operations and tree felling occurs within the FERC-certificated construction work area limits, and those trees within the certificated construction work area limits would be felled or sheared to prevent damage to adjacent trees, facilities, or structures. This may not be practical in steep areas where trees often must be felled on the contour to reduce breakage. However, most of the forested portion of Lakeview District BLM lands on the proposed ROW is relatively flat.

Some extra work areas that are already vacant areas adjacent to existing roads may be identified for log storage and decking (landings). In addition, some juniper trees identified for use as wildlife trees, logs, and/or slash and other debris from clearing activities may be temporarily stored in extra work areas or landings.

BLM timber contracts will include requirements for marking and branding logs and log export restrictions. As part of the written timber logging plan, Ruby will be responsible for detailing how it will handle logs to meet BLM contract stipulations for marking, branding, and conforming to export restrictions.

Trees will be felled or sheared in a manner that would minimize impact to adjacent forests or structures outside of the construction ROW. Trees would also be felled away from wetlands, waterbodies, and riparian reserves. Ruby will not remove stumps or root systems from wetlands, except along the trench line, unless necessary for safety reasons during construction. In upland forests, Ruby will also limit stump removal to the trench line and areas where grading would be necessary to create a level working surface. Any debris resulting from the cutting of trees that fall into a waterbody would be removed, if practical. Logs and slash would not be yarded across perennial streams unless fully suspended or supported by a temporary bridge crossing. Existing logs firmly embedded into the bed or banks of streams will not be disturbed, unless their removal is necessary for clearing the construction ROW, trenching, fluming or other waterbody crossing methods. Any existing logs removed from waterbodies during installation of the

pipeline will be flagged or marked and set aside for return to the waterbody during restoration. Landings for clearing operations will not be located in wetlands or riparian reserves. Where feasible, logs yarded out of wetlands or riparian zones will be skidded with at least one end suspended from the ground so as to minimize soil disturbance and compaction. Any cut timber designated for in-stream or upland wildlife habitat enhancements would be stored at the edge of the construction ROW or in extra work areas for later use during restoration activities. Where CWD is acquired for project in-stream habitat use, this material will only be obtained from the certified construction limits and will be collected outside riparian zones to maintain root structure within the riparian zone. An exception to this is where the CWD can be obtained from the trenchline or construction ROW cut areas where root systems would be removed during trench excavation or grading operations.

While Ruby would be required to pay for all merchantable trees cut within the ROW and extra storage areas authorized in the federal ROW grant, only trees within the Riparian Reserves that the government determines would cause adverse impacts if left on the ground, or those that need to be removed from the construction ROW in order for construction of the pipeline to be completed, would be removed.

Prior to any timber removal activity in riparian reserves, resource specialists from the BLM would evaluate whether felled trees should be removed and which should be retained to meet their land management objectives.

9 Logging Methods

The ROW clearing activities necessary for construction will include standard logging practices for timber in forested areas, in accordance with BLM requirements. The BLM expects that logging methods, including ground-based, cable, and helicopter may be necessary to efficiently remove timber from the construction ROW, depending on the specific location.

On KFRA BLM lands, most of the pipeline route in forested areas is expected to be logged by mechanical cutting and ground skidding equipment. Hand-felling would likely occur on steep slopes and where trees larger than 20 inches in diameter are cut. Skidding patterns would be laid out to minimize erosion. Felled trees will be whole tree yarded to designated landing sites. Felled trees too large for whole tree yarding may be bucked, but tops will be yarded to landing sites. Cable and helicopter yarding may be used in some areas that are difficult to access. Where ground skidding is used, the following measures would be employed to minimize significant detrimental soil disturbance (compaction and displacement):

- Logging machinery would be restricted to the permanent ROW (generally over the trenching area) where practical, to prevent soil compaction, subject to topographic, safety, and other construction considerations;
- The removal of soil duff layers would be avoided in order to maintain a cushion between the soil and the logs and logging equipment;
- Where skidding of logs is required outside of the ROW, all skid trails and landing sites will be designated and approved by the BLM;
- Designed skid trails (generally the centerline or trenching area of the ROW) would be used to restrict detrimental soil disturbance (compaction and displacement) to a smaller area of the construction ROW; and
- Ruby may use helicopters for logging and pipe stringing in areas where there are steep slopes and limited access to the ROW.

10 Slash Disposal

On KFRA BLM lands, the typical size of commercial pine trees to be cleared in forested areas along the pipeline route would be small enough to allow whole tree yarding. Where trees are too large for whole tree yarding (generally larger than 20 inches DBH) they could be bucked into shorter lengths but the tops would still be yarded to landing sites. At the landings, merchantable logs would be temporarily stored pending hauling. Slash (tops, limbs, cull logs, etc.) would be piled or decked as directed by the BLM. Piles and decks would be arranged to facilitate utilization as biomass and/or firewood. During logging, some tree tops and limbs would be broken or crushed, creating a volume of small slash that would be impractical to remove from the construction ROW. Such slash would remain on the ROW if the amounts are not excessive. If the BLM determines that the amounts are excessive, such slash would be brought to designated landing sites. Some of the slash on the ground could act as erosion control between construction ROW clearing and pipeline installation.

In the commercial pine stands, some large woody debris would be left on the construction ROW, as retained down wood for wildlife habitat and to aid in soil productivity. At least 50 lineal feet of down wood 12 inches and larger in diameter and at least 8 feet in length would be left (after completion of construction) on every of acre pipeline ROW within the commercial forest lands (approximately 25–30 acres).

Most juniper trees that will be cleared from the pipeline ROW can be yarded or removed as whole trees. On KFRA BLM lands, juniper trees within 1,500 feet of designated access points would be brought to those points. Root wads and attached limbs and tops will be removed at extra storage sites or landings, as required. An exception would be 200 juniper trees designated for removal and subsequent use as fish habitat or erosion control. Such trees would be yarded/removed whole with root wads attached to

designated staging or landing areas. No limbing or severing of root wads would be conducted on trees needed for wildlife or erosion projects.

Slash and large woody debris from juniper clearing needed to meet CWD requirements would be stockpiled on or at the edge of the construction ROW or extra work areas or within extra work areas, and after seeding, scattered/redistributed across the construction ROW during final cleanup and restoration, according to BLM specifications. Scattering the slash across the construction ROW would hinder off-highway vehicle traffic on the reclaimed construction ROW and would act as a natural mulch to minimize erosion. In general, the equipment used for slash pull-back and spreading on the construction ROW could include track hoes and/or dozers used for pipeline construction. Specific equipment and methods would be determined based on the terrain, equipment capabilities, and consultation with BLM representatives.

On forest lands and juniper woodlands greater than 1,500 feet from access points, slash and large woody debris in excess of CWD needs would be chipped or ground and spread back across the ROW at depths not exceeding one inch or removed from the ROW.

At designated landing sites, juniper trees within 1,500 feet would be brought to the landings. These juniper trees would be limbed, and stumps would be severed and piled or decked to facilitate utilization and/or firewood use. Approximately 200 larger juniper trees would be reserved, in whole tree form, for fish habitat and erosion control work.

Severed stumps would be removed from BLM lands or ground and redistributed on the ROW to depths of less than one inch or buried at locations designated by the BLM.

11 Protecting Live Trees

Logs would not be stored next to conifer trees bordering the sides of the construction ROW in order to avoid damage to live trees. Logs planned for removal from the site would be hauled off-site as soon as practical following yarding in order to prevent disease problems, as well as potential theft. Logs may also be placed in extra work areas adjacent to standing conifers. The POD describes the measures that will be implemented during construction of the Ruby Project to identify, conserve, and protect selected trees within or along the edges of the project's certificated work limits (i.e., ROW, extra storage areas and extra work areas).

12 Best Management Practices

Ruby would implement measures to protect resources and to prevent erosion of exposed soils along the construction right-of-way between clearing and final restoration.

On Klamath Falls Resource Area BLM lands, Best Management Practices (BMPs) would be designed and implemented to meet the requirements of the Resource Management Plan. Some of the BMPs that Ruby would implement during timber and juniper clearing operations would include:

- Scarification of compacted soils to promote infiltration and reduce runoff.
- Use of slash/brush piles at appropriate locations to limit water from running off the ROW.
- Installation of temporary slope breakers on steep slopes.
- Installation of silt fences or straw bales as sediment barriers.
- Selective mulching of areas without effective surface cover.
- Limitation of all tree felling and vegetation clearing activities to the certificated construction work areas, except for hazard trees adjacent to the construction right-of-way, additional work areas, and travel corridors.
- Designation of hazard trees by qualified BLM representatives, or qualified company or third-party personnel approved by the BLM.
- Directional shearing or felling of trees within the certificated construction work areas to prevent damage to adjacent trees, facilities, or structures.
- Location of landings outside wetlands or riparian areas where possible.
- No yarding of logs and slash across perennial streams unless fully suspended over the stream and adjacent banks. Where yarding across intermittent streams is necessary, log movement would be designed to minimize sediment delivery to streams.
- No disturbance of logs firmly embedded in the bed or bank of waterbodies that are in place prior to felling timber during logging and yarding operations unless they prevent trenching and fluming operations.
- Completion of all timber clearing from the construction ROW in accordance with BLM requirements. Merchantable timber would be removed and sold according to BLM direction, except for trees left to meet resource objectives.
- In limited areas, decking and storage of logs in designated areas or extra work areas located outside of the construction ROW.
- Immediate treatment of logging slash. Material designated to remain on site to meet resource concerns would be placed in designated extra work areas along the edge of the construction ROW and then scattered/redistributed across the construction right-of-way during final cleanup and reclamation (following seeding), in accordance with BLM fuel loading specifications in order to minimize fire hazard risks.
- In upland areas, limitation of stump removal to the trenchline and areas where grading is necessary to construct a safe, level working plane.

- Seasonal restrictions for protection of various wildlife species would be implemented as described in Section 4.0 (4.3).
- Use of one lead Environmental Inspector (EI) and a minimum of one assistant EI for each construction spread. The inspectors would ensure compliance with federal, state, and local regulations and permit requirements.
 - EIs would have the authority to stop activities that violate the measures set forth in the timber harvest contracts with the federal land managers and in other permits and authorizations, and to order corrective actions.
 - When wet weather or other conditions require, Ruby's lead EI would instruct the contractor to restrict activities to avoid excessive rutting in sensitive areas.
- Replanting of forested lands disturbed by the construction of the pipeline according to state and federal (BLM) requirements. Planting would occur on all forested lands disturbed by the construction of the Ruby Project outside of 10 feet from either side of the pipeline centerline.

The EI would also utilize other effective BMPs, as discussed in the Appendix E of the Plan of Development, Restoration and Revegetation Plan Oregon (RRP-Oregon) to prevent sedimentation beyond the approved construction ROW and associated extra work areas or into waterbodies or wetlands. As stated in the RRP-Oregon, effective ground cover is considered to be the amount of cover necessary for maintaining a disturbed site in a low-hazard category for erosion. Table 10.15-1 of the RRP-Oregon provides effective ground cover requirements based on potential erosion hazard of areas disturbed by the construction of the Ruby Project. Ruby assumes that the soils within the construction ROW will be categorized within the high to very high erosion hazard classes and would apply the appropriate mulching cover requirements for these erosion hazards classes.