# APPENDIX F.2

# Forest Service Proposed Amendments and CMP

# Jordan Cove Natural Gas Liquefaction and Pacific Connector Gas Pipeline Project Draft EIS

**Appendix F2**

**Forest Service Proposed Amendments and CMP**

**Pacific Connector Gas Pipeline**

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# 1.0 INTRODUCTION

## 1.1 LAND AND RESOURCE MANAGEMENT PLAN AMENDMENTS

The Umpqua, Rogue River, and Winema National Forest are managed under a Land and Resource Management Plan (LRMP) or (Forest Plan) required by the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976 (NFMA) and incorporated into the agency planning regulations (36 CFR 219, [2012 version]). A land management plan provides a framework for integrated resource management and for guiding project and activity decision-making on a national forest, grassland, prairie, or other administrative unit. Consistent with the Multiple-Use Sustained-Yield Act of 1960 (MUSYA), the Forest Service manages National Forest System (NFS) lands to sustain the multiple use of its renewable resources in perpetuity while maintaining the long-term health and productivity of the land. Resources are managed through a combination of approaches and concepts for the benefit of human communities and natural resources. Land management plans guide sustainable, integrated resource management of the resources within the plan area in the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas. Plans guide management of NFS lands so that they are ecologically sustainable and contribute to social and economic sustainability; consist of ecosystems and watersheds with ecological integrity and diverse plant and animal communities; and have the capacity to provide people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future. A Forest Plan does not authorize projects or activities or commit the Forest Service to take action. A plan may constrain the agency from authorizing or carrying out projects and activities, or the manner in which they may occur.

The NFMA requires that proposed projects, including third-party proposals subject to permits or rights-of-way grants, be consistent with the Forest Plan of the National Forest (NF) where the project would occur (36 CFR 219.15). When a project is not consistent with the Forest Plan where the project would occur, the Forest Service has the following options: (1) modify the proposed project to make it consistent with the Forest Plan; (2) reject the proposal; (3) amend the Forest Plan so that the project would be consistent with the plan as amended; or (4) amend the Forest Plan contemporaneously with the approval of the project so the project would be consistent with the plan as amended. The fourth option may be limited to apply only to the project (36 CFR 219.15(c)).

For the Pacific Connector pipeline project the Forest Service worked cooperatively with the Federal Energy Regulatory Commission (FERC) staff, other cooperating agencies, and the applicant to incorporate best management practices (BMPs), design features and project requirements which would avoid, minimize, rectify, reduce or eliminate environmental consequences (40 CFR 1502.14(f) and 1508.20(a-d)). The BMPs, design features, or requirements specific to national forest system lands are included as attachments to the project proponent's Plan of Development (POD). There are 28 appendices in the POD; they include draft monitoring elements to ensure that the actions are implemented. Collectively, the POD is incorporated into the project's description, and is summarized in section 2.6.3 of the DEIS.

The Pacific Connector pipeline project, which proposes the most up-to-date engineering and technological practices for pipeline construction and operation, cannot meet some of the standards

in the Forest Plans for the Umpqua, Rogue River, and Winema NFs as amended by the Northwest Forest Plan (NWFP) (USDA USDI 1994) (see also DEIS Appendix F1). Standards are mandatory constraints on project and activity decision-making, established to help achieve or maintain desired conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 CFR 219.7(e)(1)(iii)).

Given the linear nature of the pipeline corridor and the topography of the Umpqua, Rogue River, and Winema NFs, it is difficult to avoid every circumstance that would be inconsistent with the management direction and standards and guidelines in the respective Forest Plans. Pacific Connector has cooperated with the Forest Service to make its proposal consistent with the Forest Plans as much as is feasible, but even with route adjustments, modified project design features, and BMPs, it has been determined that if the Right-of-Way Grant were approved for the proposed route crossing these national forests, the Forest Plans would require amendments.

In order to address these inconsistencies, the Forest Service is evaluating Forest Plan amendments to make provision for construction and operation of the Pacific Connector pipeline project. With the exception of boundary changes that add acres to Late Successional Reserves (LSRs) in the Umpqua and Rogue River NFs, the proposed amendments are project-specific and would apply only to the Pacific Connector pipeline project. With the amendments described below, the Pacific Connector pipeline would then be consistent with the Forest Plans.

Forest Plan amendments are guided by direction in the NFMA and its' corresponding regulations. In this appendix proposed amendments to Forest Plans are independently evaluated in the context of the provisions of the forest planning regulations at 36 CFR 219 (2012) as amended in 2016 (planning rule). On December 15, 2016 the Department of Agriculture Under Secretary for Natural Resources and Environment issued a final rule that amended the planning rule (81 FR 90723, 90737). The amendment to the planning rule clarified the Department's direction for amending Forest Plans. The Department also added a requirement for amending a plan for the responsible official to provide in the initial notice "which substantive requirements of §§ 219.8 through 219.11 are likely to be directly related to the amendment" (36 CFR 219.13(b)(2), 81 FR at 90738). This initial notice was provided in the June 26, 2018 Notice of Intent that was Filed by the FERC and the cooperating agencies. Whether a rule provision is directly related to an amendment is determined by any one of the following: the purpose for the amendment, a beneficial effect of the amendment, a substantial adverse effect of the amendment, or a lessening of plan protections by the amendment. If a proposed amendment is determined to be "directly related" to a substantive rule requirement, the Responsible Official must apply that requirement within the scope and scale of the proposed amendment and, if necessary, make adjustments to the proposed amendment to meet the requirement (36 CFR 219.13 (b)(5) and (6)). In other words, additional Forest Plan components may need to be added to the amendment. The proposed Forest Service plan amendments described in the following sections, include an evaluation of the "substantive requirements of §§ 219.8 through 219.11" that are directly related to each amendment.

## 1.2 COMPENSATORY MITIGATION PLANS

In this appendix Forest Service compensatory mitigation plans (CMPs) are also evaluated in relation to the proposed Forest Plan amendments. The CMPs are in addition to the BMPs, mitigation requirements, and project design requirements described above. Forest Service interdisciplinary teams have developed CMPs for the Pacific Connector pipeline project that are based on the respective Forest Plans, the recommendations of the (2011) northern spotted owl

(NSO) recovery plan, the recommendations of the final Southern Oregon and Northern California Coast Coho Salmon Recovery Plan (2014), applicable Late Successional Reserve (LSR) Assessments, and 5th field Watershed Analyses (WA) for watersheds where impacts of the Pacific Connector pipeline Project would occur. The CMPs are also informed by the NWFP monitoring reports and the Synthesis of Science to Inform Land Management within the Forest Plan Area (Spies et. al. 2018). Members of the interdisciplinary team used professional judgment and knowledge of the affected landscapes to develop the mitigation actions described in this appendix. Mitigation measures reduce or compensate for environmental consequences of an action. Offsite mitigation is a supplemental mitigation to address important Forest Plan management objectives that cannot be fully mitigated on-site. Proposed mitigation actions are intended to be responsive to:

- Compliance with the Aquatic Conservation Strategy of the NWFP
- Habitat for Threatened or Endangered (T&E) species including the northern spotted owl and Coho salmon
- Compliance with standards and guidelines for LSRs in the NWFP
- Direction in the National Forest Management Act 2012 planning rule's substantive requirements at 36 CFR §§ 219.8 through 219.11.
- Specific resource issues as they occur by watershed.

The CMPs discussed in this appendix are summarized in section 2.1.5 of the DEIS. They evolved from previous versions that were independently developed by the Forest Service. These previous versions are described in Appendix F of the 2015 Pacific Connector FEIS (FERC 2015). A central provision of the Forest Service CMPs is that they remain adaptable to new information and changed conditions.

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## 2.0 FOREST PLAN AMENDMENTS

Proposed amendments and related compensatory mitigation are evaluated in this section. Amendments and compensatory mitigation are unique for each forest and are addressed separately in the following sections.

### 2.1 UMPQUA NF

There are five proposed amendments to the Umpqua NF Land and Resource Management Plan (1990) (UNF LRMP) for the Pacific Connector pipeline project on the Umpqua NF. An evaluation of how the proposed amendments relate to the planning requirements in 36 CFR 219.8 – 219.11 is discussed in section 2.1.1 below. These proposed amendments are summarized in table 2.1.1-1 along with the project impacts and related project design features (PDF) and compensatory mitigation.[1] The proposed CMP projects are listed in table 2.1.1-2 and evaluated in table 2.1.1-3, table 2.1.1-4 and figure 2.1-5 below. Maps of the proposed CMP projects by watershed are displayed in figures 2.1-1 through 2.1-4.

#### 2.1.1 Evaluation of Umpqua NF Proposed Forest Plan Amendments

The proposed Pacific Connector pipeline incorporates the most up-to-date engineering and technological practices for pipeline construction and operation. However, even with following these practices, it has been determined that one Forest Plan standard associated with rare and/or isolated species (Survey and Manage), and three Forest Plan standards associated with the soil, water, and riparian resources, would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Umpqua NF LRMP as amended by the NWFP and the January 2001 Record of Decision for Amendments to the Survey and Manage Protection Buffer, and Other Mitigation Measures Standards and Guidelines (Survey and Manage ROD).

##### 2.1.1.1 Forest Plan Amendments Related to Rare Aquatic and Terrestrial Plant and Animal Communities (FS-1, UNF-4):

*Amendment FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Umpqua NF.*

One Forest Plan standard associated with rare and/or isolated species (Survey and Manage) would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Umpqua NF LRMP as amended. This standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations.

[1] The CMP for the Umpqua NF has been revised from previous versions due to changed conditions from the 2015 Stouts Creek Fire. Additional information is included in Appendix F3 which includes a Stouts Creek Fire Report that discusses the changed conditions and CMP revisions.

The proposed amendment to this standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. (Proposed amendment FS-1 on the Umpqua NF)

While the amendment would provide an exception to meeting this standard, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore, maintain or restore any effects of the pipeline's construction and operation on Survey and Manage species within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of this project-level amendment is to make the proposed Pacific Connector pipeline project consistent with the Umpqua NF LRMP. Thus, the substantive planning rule requirements that are directly related to this amendment are:

- 36 CFR 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities."

- 36 CFR 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area."

Because the proposed amendment is "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendment (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the amendment, it is important to recognize that the applicable sections of 36 CFR 219.9(a) and (b) that are described above, requires plan components to maintain or restore rare aquatic and terrestrial plant and animal communities, across the entire planning area (i.e., the Umpqua NF). This plan amendment does not alter these LRMP plan requirements for managing rare plant and animal communities across 99.98% of the Umpqua NF. The proposed pipeline construction corridor including the temporary extra work areas (TEWAs) and the uncleared storage areas (UCSAs) is approximately 205 acres of the 983,129 acre Umpqua NF. Within this 205 acre construction corridor surveys have identified 107 Survey and Manage sites that could be potentially impacted by construction activities. The proposed amendment does not waive the persistence objective for Survey and Manage species. The analysis that was conducted (see section 4.6.4.3 of the DEIS and Appendix F5) determined the Survey and Manage persistence objectives would be met. This means that for Umpqua NF lands within the project area, individual sites of Survey and Manage species may be impacted or lost to construction activities,

but affected species are expected to persist within the range of the NSO despite the loss of these individual sites.

The amendment modifies this standard so that in the 205 acres of the project construction area the project need not be in compliance with this standard' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 205 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the management requirement described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.9(a) and (b) rule requirements within the "scope and scale" of the proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.9(a) and (b) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Rare Aquatic and Terrestrial Plant and Animal Communities and Meet the Applicable 36 CFR 219.9(a) and 36 CFR 219.9 (b) Requirements*

The Forest Service has worked to inventory, analyze, and evaluate rare aquatic, terrestrial plant and animal communities that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures incorporated into amendments for Survey and Manage species are designed to minimize, maintain or restore the potential for habitat fragmentation, edge effects, and loss of long-term habitats associated with effected species. To ensure adequate restoration and revegetation of the ROW, design features are identified in the *Erosion Control and Revegetation Plan* (POD I), *Right-of-Way Clearing Plan* (POD U), *Leave Tree Protection Plan* (POD P). In addition, routing considerations were identified during project development to ensure avoidance of known populations of rare plant and animal communities (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands). As well as, Appendix F.5, *Survey and Manage Persistence Evaluations*, and proposed amendment UNF-4 Reallocation of Matrix Lands to LSR.

As a basis for Survey and Manage determinations, Appendix F.5 provides background research on Survey and Manage species that could be affected by the PCGP Project; a review of survey reports prepared by others for the PCGP Project; and processing and analysis of spatial data obtained from the Bureau of Land Management (BLM), Forest Service, and other sources over the past 12 years. Background information was used in combination with new information available as a result of surveys for the PCGP Project and recent surveys in other portions of old growth forests to discuss the currently known distribution of the species in old growth forests within the NSO range. Impacts

to sites as a result of the PCGP Project were analyzed to determine if the species would continue to have a reasonable assurance of persistence in the NSO range following implementation of the PCGP Project, taking into consideration the status and distribution of the species and general habitat in the NSO range.

Some of the required mitigation measures in the POD sections to protect rare plant and animal communities include: flagging existing snags on the edges of the construction right-of-way or TEWAs where feasible to save from clearing; snags would be saved as and used in LWD placement post-construction to benefit primary and secondary cavity nesting birds, mammals, reptiles, and amphibians; other large diameter trees on the edges of the construction right-of-way and TEWAs would also be flagged to save/protect as green recruitment or habitat/shade trees, where feasible; trees would be girdled to create snags to augment the number of snags along the right-of-way to benefit cavity nesting birds, mammals, reptiles, and amphibians. See POD's P & U and 4.7—*Land Use* of the DEIS for a complete list of applicable mitigation measures for pipeline construction. Additional measures include low ground weight (pressure) vehicles would be used; logging machinery would be restricted to the 30-foot permanent right-of-way wherever possible to prevent soil compaction; the removal of soil duff layers would be avoided in order to maintain a cushion between the soil and the logs and the logging equipment; designed skid trails would be used to restrict detrimental soil disturbance (compaction and displacement) to a smaller area of the right-of-way over the pipeline trenching area; and the temporary construction area would be restored and revegetated using native seeds, to the extent possible, and saplings (POD I).

In an effort to minimize, maintain or restore the impacts to Survey and Manage species, PCGP adopted route variations to avoid certain species identified in the Survey and Manage Persistence Evaluations by co-locating the proposed construction corridor adjacent to existing roads, through managed timber stands or otherwise avoid unique LSOG habitats to the maximum extent practicable (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands).

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized

Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*Amendment UNF-4: Reallocation of Matrix Lands to LSR*

The other proposed Forest Plan amendment related to rare aquatic and terrestrial plant and animal communities on the Umpqua NF is UNF-4. This proposed amendment would change the designation of approximately 585 acres from the Matrix land allocation to the LSR land allocation in Sections 7, 18, and 19, T.32S., R.2W.; and Sections 13 and 24, T.32S., R.3W., W.M., OR. (see figure 2.1-4). This change in land allocation is proposed as mitigation for the potential adverse impact of the Pacific Connector Pipeline project on LSR 223 on the Umpqua NF. This is a plan level amendment that would change future management direction for the lands reallocated from Matrix to LSR (for additional information on consistency with LSR Standards and Guidelines see section 4.7.3.6. and Appendix F.3 of the DEIS).

The purpose of this amendment is to make the proposed Pacific Connector pipeline project consistent with the Umpqua NF LRMP. Thus, the substantive planning rule requirements that are directly related to this amendment are:

- 36 CFR 219.8(a)(1)(i) – [the plan must include plan components to maintain or restore] "Interdependence of terrestrial and aquatic ecosystems in the plan area."
- 36 CFR 219.8(b)(1) – [the plan must include plan components to guide the plan area's contribution to social and economic sustainability] "Social, cultural and economic conditions relevant to the area influenced by the plan."
- 36 CFR219.9(b)(1) "The responsible official shall determine whether or not the plan components required by paragraph (a) of this section provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area,"
- 36 CFR 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities."

Because the proposed amendment is "directly related" to these four substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendment (36 CFR 219.13 (b)(5)). However, because this proposed amendment would simply modify the area to which existing direction applies, the existing formatting for the planning requirements listed above would be retained (36 CFR 219.13(b)(4)).

In considering the "scope and scale" of the amendment, it is important to recognize that the applicable sections of 36 CFR 219.8 and 219.9 that are described above, requires plan components to maintain or restore rare aquatic and terrestrial plant and animal communities, and provide for social and economic sustainability across the entire planning area (i.e., the Umpqua NF). This plan amendment does not alter these LRMP plan requirements across 99.94% of the Umpqua NF. The proposed land reallocation is approximately 585 acres of the 983,129 acre Umpqua NF. The proposed amendment would benefit rare aquatic and terrestrial plant and animal communities by

placing these acres in a late successional reserve where providing habitat for these species is the primary goal.

The timber probable sale quantity (directly related to economic conditions) would not be affected before the Umpqua NF LRMP is revised because the Forest has the capacity to maintain probable sale quantity without the acres of matrix lands that would be reallocated to LSR. If a linear relationship between acres and outputs is assumed, the potential effect would be less than two-tenths of one percent of the Forest's probable sale quantity since this proposed amendment would affect less than two-tenths of one percent of the Forest's matrix land base. This proposed amendment would not prevent future vegetation management activities such as thinning that would benefit LSR habitat and could also contribute to the local forest products industry.

*How the Compensatory Mitigation Actions would help to Maintain or Restore Rare Aquatic and Terrestrial Plant and Animal Communities in the Plan Area (36 CFR 219.9(a), 36 CFR 219.9 (b)).*

In addition to reallocation of 585 acres of Matrix to LSR, the CMP on the Umpqua NF includes proposals for stand density fuel breaks on 3,105 acres, stand density management on 816 acres, terrestrial habitat improvements on 478 acres and decommissioning approximately 5 miles of roads that would benefit rare plant and animal communities. The CMP on the Umpqua NF also includes proposals to improve aquatic and riparian habitat that would benefit rare aquatic plant and animal communities (see the discussion of *How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of Riparian Areas, Soils, and Soil productivity in the Plan Area (36 CFR 219.8(a)(3)(i), (36 CFR 219.8(a)(2)(ii))* below for a discussion of benefits to aquatic habitats).

Stand density fuel breaks would reduce the threat of losing late-successional habitat to fire. High intensity fire has been identified as the single factor most impacting late successional and old growth forest habitats on federal lands in the area of the NWFP. Construction of the pipeline and associated activities removes both mature and developing stands and would increase fire suppression complexity; however the corridor also provides a fuel break. Fuels reduction adjacent to the corridor would increase the effectiveness of the corridor as a fuel break. Density management would increase longevity of existing mature stands by reducing losses from disease, insects and fire. Stand density management and fuels reduction would lower the risk of loss of developing and existing mature stands and other valuable habitats to high-intensity fire.

Stand density management would enhance LSOG habitat by increasing the growth, health, and vigor of the trees remaining in the stands, and restoring species and structural diversity to those considered characteristic under a natural disturbance regime. Thinning of young stands is a recognized treatment within LSR if designed to accelerate development of late-successional habitat characteristics. The proposed treatments include 228 acres of pre-commercial thinning, 288 acres of commercial thinning and 300 acres of off-site pine removal. The Pacific Connector pipeline would result in additional fragmentation and preclude the recovery of fragmented habitat for those stands adjacent to the pipeline corridor. Both mature stands and developing stands would be removed during pipeline construction. Density management of forested stands would assist in the recovery of late-seral habitat, impact from fragmentation, reduction in edge effects and enhance resilience of mature stands over time. Accelerating development of mature forest characteristics would shorten the impacts of those biological services loss due to pipeline construction.

Terrestrial habitat improvements include proposals for large woody debris placement on 164 acres, snag creation on 324 acres, noxious weed treatments on 6.7 miles of road and 124 acres of Lupine meadow restoration. Large wood replacement would partially mitigate for the barrier effect of the corridor by creating structure across the corridor for use by small wildlife species. Placement in wood deficient areas adjacent to the corridor allows for scattering of stockpiled wood, reducing localized fuel loads while improving habitat in deficient stands. Larger logs maintain moisture longer and are less likely to be fully consumed by fire. Managing for the proposed levels provide for a greater assurance of species abundance. The objective of snag creation is to mitigate for the immediate and future impacts to snag habitat from the clearing of the pipeline right-of-way. The construction and operation of the pipeline project has the potential to create vectors for noxious weeds. The proposed noxious weed treatments are intended to reduce populations of noxious weeds that are in close proximity to the pipeline project right-of-way. The long-term benefits of meadow restoration would include the restoring of native plant populations and species diversity. Restoring native plant communities and increasing vegetation diversity generally contributes to restoring habitat for a broad group of plant and animal species.

Although the Pacific Connector project has been routed to avoid LSOG habitat as much as possible, the project would cause habitat fragmentation within LSR 223. Road decommissioning reduces the edge effects over time by revegetating road surfaces and eliminating road corridors. Revegetating selected roads in conjunction with the density management proposed for adjacent plantations would create larger blocks of late successional habitat in the future.

These projects have been designed by an interdisciplinary team of resource professionals on the Umpqua NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. They were planned within the watersheds that would be affected by the Pacific Connector pipeline project. They are a component of the PCGP application and would be a requirement of the Right-of-Way grant. Overall, these projects would help maintain and restore rare aquatic and terrestrial plant and animal communities on the Umpqua NF (see tables 2.1.1-3 and 2.1.1-4 and figures 2.1-1 through 2.1-5 for additional information).

#### 2.1.1.2 Forest Plan Amendments Related to Soil, Water and Riparian Areas (UNF-1, UNF-2, and UNF-3):

Three Forest Plan standards associated with the soil, water, and riparian resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Umpqua NF LRMP. These standards are:

- Standard & Guideline 1 (UNF LRMP IV-33). Maintain all effective shading vegetation on perennial streams. Utilize silvicultural practices to establish shade on perennial streams where currently lacking.

- Prescriptions C2-II (LRMP IV-173 par.1, 1st sentence) and C2-IV (LRMP IV-177 last par. last sentence) Utility/transportation corridors, roads or transmission lines may cross but must not parallel streams and lake shores within the riparian unit.

- Standard & Guideline 1 (UNF LRMP IV-67). The combined total amount of unacceptable soil condition (detrimental compaction, displacement, puddling or severely burned) within an activity area (e g., cutting unit, range allotment, site preparation area) should not exceed

20 percent. All roads and landings, unless rehabilitated to natural conditions, are considered to be in detrimental condition, and are included as part of this 20 percent.

The proposed amendments to these standards are:

- Standard & Guideline 1 (UNF LRMP IV-33). Maintain all effective shading vegetation on perennial streams, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Utilize silvicultural practices to establish shade on perennial streams where currently lacking. (proposed amendment UNF-1)

- Prescriptions C2-II (LRMP IV-173 par.1, 1st sentence) and C2-IV (LRMP IV-177 last par. last sentence) Utility/transportation corridors, roads or transmission lines may cross but must not parallel streams and lake shores within the riparian unit, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (proposed amendment UNF-2)

- Standard and Guideline 1 (UNF LRMP IV-67). The combined total amount of unacceptable soil condition (detrimental compaction, displacement, puddling or severely burned) within an activity area (e g., cutting unit, range allotment, site preparation area) should not exceed 20 percent. All roads and landings, unless rehabilitated to natural conditions, are considered to be in detrimental condition, and are included as part of this 20 percent, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (proposed amendment UNF-3)

While the amendments would provide an exception to meeting these standards, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on the soil, water and riparian resources within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of these three project-level amendments is to make the proposed Pacific Connector pipeline project consistent with the Umpqua NF LRMP. Thus, the substantive planning rule requirements that are directly related to these three amendments are:

- 36 CFR 219.8(a)(3)(i) – The plan must include plan components "to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity.

- 36 CFR 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore] "soils and soil productivity, including guidance to reduce soil erosion and sedimentation."

Because the three proposed amendments are "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendments (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the three amendments, it is important to recognize that the applicable sections of 36 CFR 219.8(a) that are described above, requires plan components to "maintain or restore" the soil, water and riparian resources across the entire planning area (i.e., the Umpqua NF). These plan amendments do not alter these LRMP plan requirements for managing the soil, water, and riparian resources across 99.98% of the Umpqua NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 205 acres of the 983,129 acre Umpqua NF. Of the 205 acres of pipeline corridor construction it is estimated that approximately 4 of these acres would not meet the standards for riparian area management described above and approximately 54 to 127 acres would not meet standards for soils described above.

The amendments modify three standards so that in the 205 acres of the project construction area the project need not be in compliance with these standards' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 205 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the three management requirements described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.8(a) rule requirements within the "scope and scale" of these proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.8(a) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Soil, Water, and Riparian Resources and Meet the Applicable 36 CFR 219.8(a) Requirements*

The Forest Service has worked with Pacific Connector Gas Pipeline (PCGP) to inventory, analyze, and evaluate the geologic, soil, and hydrologic resources that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration are enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures, incorporated into amendments for soil, water, and riparian resources are designed to minimize, maintain or restore the potential for soil movement, slope stability, water quality, and to ensure adequate restoration and revegetation. These measures are identified in: the *Erosion Control and Revegetation Plan* (POD I); *Right-of-Way Clearing Plan* (POD U); *Wetland and Waterbody Crossing Plan* (POD BB); the *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014); the *Stream Crossing Risk Analysis*; and *Stream Crossing Risk Analysis*

*Addendum* (GeoEngineers2017d, 2018a). PCGP would also follow the FERC's applicant prepared Wetland Procedures and the Best Management Practices for the State of Oregon. To further reduce potential for landslides on steep slopes, the Forest Service, BLM, and FERC are also recommending additional industry best management practices and measures identified from the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) be incorporated into PCGP's terms and conditions of the Right-of-Way Grant as described in the POD's identified above. See 4.2.3.3 of the DEIS for a description of soil risk and sensitivity assessment.

Areas with soils rated moderate to very high for risk or sensitivity (39 acres total) would be recommended for more site-specific validation of the risk criteria used in the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) to confirm that specific locations merit consideration of the more aggressive soil remediation measures, such as: a 2- to 3-inch organic mulch surface application (80 percent coverage) of woodchips, logging slash, and/or straw; adaptive seed mixes and vegetation to better fit site conditions; deep subsoil decompaction with hydraulic excavators that leave constructed corridor mounded and rough with maximum water infiltration so that water cannot flow downhill for any appreciable distance; more aggressive use of constructed surface water runoff dispersion structures such as closely placed and more pronounced slope dips and water bars, etc.; more aggressive use of constructed surface runoff entrapments such as silt fencing, sediment settling basins, or straw bale structures, etc.; more aggressive placement (100 percent coverage) and depth (3 to 4 inches) of ground cover using woodchips, logging slash, straw bales, wattles (see POD's U and I). In efforts to protect soil productivity, topsoil segregation would be required for pipeline construction at wetland and waterbody crossings on NFS lands (POD U).

Some of the required mitigation measures in the POD BB and *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014) to protect wetlands and minimize, maintain or restore compaction include: limiting the construction right-of-way width to 75 feet through wetlands; placing equipment on mats; using low-pressure ground equipment; limiting equipment operation and construction traffic along the right-of-way; locating temporary workspace (TEWAS) more than 50 feet away from wetland boundaries; cutting vegetation at ground level; limiting stump removal to the construction trench; segregating the top 12 inches of soil, or to the depth of the topsoil horizon; using "push-pull" techniques in saturated wetlands; limiting the amount of time that the trench is open by not trenching until the pipe is assembled and ready for installation; not using imported rock and soils for backfill; and not using fertilizer, lime, or mulch during restoration in wetlands. PCGP must also follow the FERC Waterbody and Wetland Construction and Mitigation Procedures. See 4.3.3.2 of the DEIS for a complete list of applicable mitigation measures for pipeline construction at specific waterbody and stream crossings.

In an effort to minimize, maintain or restore the impacts to streams and riparian areas, PCGP adopted route variations to co-locate the proposed construction corridor adjacent to existing roads and along dry ridge tops (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands). In addition, PCGP has committed to limit construction at waterbody crossings to times of dry weather or low water flow. PCGP would implement the required erosion control measures at the proposed stream crossings to minimize, maintain or restore potential erosion and sedimentation impacts. The applicable mitigation measures and monitoring requirements in the POD relating to water waterbody crossings are included in the *Site Specific Forest Service Stream Crossing Prescriptions, and Wetland and Waterbody Crossing Plan* (POD BB). In addition,

applicable mitigation measures from the FERC approved applicant prepared Procedures for Wetland and Waterbody Crossings would be required.

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to: facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of Riparian Areas, Soils, and Soil productivity in the Plan Area (36 CFR 219.8(a)(3)(i), (36 CFR 219.8(a)(2)(ii)).*

Part of the CMP on the Umpqua NF includes proposals to remove eleven old culverts that may block fish passage either by poor design or by failure over time, decommission approximately 7.2 miles and storm proof approximately 11.4 miles of road.

Removing culverts that block fish passage and replacing them with fish-friendly designs can allow fish and other aquatic organisms to access previously unavailable habitat. Stream crossing replacement would directly improve stream connectivity and habitat for aquatic species by immediately restoring access to formerly inaccessible habitats. Indirectly, these projects would reduce potential sediment levels in the long term by decreasing the potential for road failure. Stream crossing projects also reduce stream velocities by increasing stream crossing sizes, eliminating flow restrictions and allowing passage to additional reaches of habitat by removing barriers to aquatic species which improves access to spawning and rearing habitat and allows unrestricted movement throughout stream reaches during seasonal changes in water levels (Hoffman 2007).

Decommissioning and storm proofing roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning and storm proofing would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project would occur.

Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads.

These projects have been designed by an interdisciplinary team of resource professionals on the Umpqua NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. They were planned within the watersheds that would be affected by the Pacific Connector pipeline project. They are a component of the PCGP application and would be a requirement of the Right-of-Way grant. Overall, these projects would help maintain and restore riparian and soil resources on the Umpqua NF (see tables 2.1.1-3 and 2.1.1-4 and figures 2.1-1 through 2.1-5 for additional information).

TABLE 2.1.1-1

**Proposed LRMP Amendments on the Umpqua NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[2] |
|---|---|---|---|---|---|---|
| FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Umpqua NF. | The Umpqua NF LRMP (UNF LRMP 1990) would be amended to exempt certain known sites within the area of the proposed Pacific Connector right-of-way grant from the Management Recommendations required by the 2001 "Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (Survey and Manage ROD) (USDA USDI 2001). For known sites within the proposed right-of-way that cannot be avoided, the 2001 Management Recommendations for protection of known sites of Survey and Manage species would not apply. For known sites located outside the proposed right-of-way but with an overlapping protection buffer only that portion of the buffer within the right-of-way would be exempt from the protection requirements of the Management Recommendations. Those Management Recommendations would remain in effect for that portion of the protection buffer that is outside of the right of way. The proposed amendment would not exempt the Forest Service from the requirements of the Survey and Manage ROD, as modified, to maintain species persistence for affected Survey and Manage species within the range of the northern spotted owl. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. The amendment would provide an exception from these standards for the Pacific Connector Project and include specific mitigation measures and project design requirements for the project. | Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities." § 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area." | 68 acres of late successional and old growth (LSOG) habitat directly impacted from construction activity[3]<br><br>205 total acres directly impacted from construction activity<br><br>107 survey and manage sites potentially impacted<br><br>This amendment would affect less than 0.02% of the Umpqua NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (J) Plant Conservation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Chapter 3, DEIS Route Design and Modifications on NFS lands<br><br>Appendix K, Survey and Manage Persistence Evaluations | Reallocation of Matrix Lands to LSR – 585 Acres<br><br>Stand Density Fuel Break - 3,105 acres<br><br>Stand Density Management – 816 acres<br><br>Terrestrial Habitat Improvements – 478 acres<br><br>Road Decommissioning in LSR – 5 miles |
| UNF-1: Project-Specific Amendment to Allow Removal of Effective Shade on Perennial Streams. | The Umpqua NF LRMP would be amended to exempt the Standards and Guidelines for Fisheries (Umpqua NF LRMP, page IV-33, Forest-Wide) to allow the removal of effective shading vegetation where perennial streams are crossed by the Pacific Connector right-of-way. This change would potentially affect an estimated total of three acres of | Standard & Guideline 1 (UNF LRMP IV-33). Maintain all effective shading vegetation on perennial streams, **with the exception of the operational right-of-way** | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(3)(i) – The plan must include plan components "to maintain or | 3 acres of effective shading vegetation would be removed | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan | Aquatic and Riparian Habitat – fish passage improvement - 11 sites<br><br>Road Decommissioning – 7.2 miles<br><br>Road Storm-proofing 11.4 miles |

[2] The compensatory mitigation listed in this column reflects the mitigation most related to the proposed amendment. It should be noted that other actions in the CMP may also be beneficial.

[3] Direct Impacts include acres cleared for construction in the construction corridor and temporary extra work areas (TEWA), as well as acres modified from uncleared storage areas (UCSA)

TABLE 2.1.1-1

**Proposed LRMP Amendments on the Umpqua NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[2] |
|---|---|---|---|---|---|---|
| | effective shading vegetation at approximately five perennial stream crossings in the East Fork of Cow Creek subwatershed from pipeline mileposts (MP) 109 to 110 in Sections 16 and 21, T.32S., R.2W., W.M., OR. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | **and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Utilize silvicultural practices to establish shade on perennial streams where currently lacking. | restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity." | This amendment would affect less than 0.001% of the Umpqua NF | POD (BB) Wetland and Waterbody Crossing Plan<br><br>Forest Service Site Specific Stream Crossing Prescriptions (NSR 2014)<br><br>Stream Crossing Risk Analysis; and Stream Crossing Risk Analysis Addendum (GeoEngineers2017d, 2018a)<br><br>Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands | |
| UNF-2: Project-Specific Amendment to Allow the Pacific Connector Pipeline Project in Riparian Areas. | The Umpqua NF LRMP would be amended to change prescriptions C2-II (LRMP IV-173) and C2-IV (LRMP IV-177) to allow the Pacific Connector pipeline route to run parallel to the East Fork of Cow Creek for approximately 0.1 mile between about pipeline MPs 109.5 and 109.6 in Section 21, T.32S., R.2W., W. M., OR. This change would potentially affect approximately one acre of riparian vegetation along the East Fork of Cow Creek. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | Prescriptions C2-II (LRMP IV-173 par.1, 1st sentence) and C2-IV (LRMP IV-177 last par. last sentence) Utility/transportation corridors, roads or transmission lines may cross but must not parallel streams and lake shores within the riparian unit, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (proposed amendment | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(3)(i) – The plan must include plan components "to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity" | Approximately one acre of riparian vegetation along the East Fork of Cow Creek would be removed<br><br>This amendment would affect less than 0.001% of the Umpqua NF and one acre of riparian reserves | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>POD (BB) Wetland and Waterbody Crossing Plan<br><br>Forest Service Site Specific Stream Crossing Prescriptions (NSR 2014)<br><br>Stream Crossing Risk Analysis; and Stream Crossing Risk Analysis Addendum (GeoEngineers2017d, 2018a)<br><br>Chapter 3, DEIS Route Design and Modifications | Aquatic and Riparian Habitat – fish habitat improvements - 11 sites<br><br>Road Decommissioning – 7.2 miles<br><br>Road Storm-proofing – 11.4 miles |

TABLE 2.1.1-1

**Proposed LRMP Amendments on the Umpqua NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[2] |
|---|---|---|---|---|---|---|
| | | | | | on Forest Service Managed Lands | |
| UNF-3: Project-Specific Amendment to Exempt Limitations on Detrimental Soil Conditions within the Pacific Connector Right-of-Way in All Management Areas. | The Umpqua NF LRMP would be amended to exempt limitations on the area affected by detrimental soil conditions from displacement and compaction within the Pacific Connector right-of-way. Standards and Guidelines for Soils (LRMP page IV-67) requires that not more than 20 percent of the project area have detrimental compaction, displacement, or puddling after completion of a project. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | Standard and Guideline 1 (UNF LRMP IV-67). The combined total amount of unacceptable soil condition (detrimental compaction, displacement, puddling or severely burned) within an activity area (e g., cutting unit, range allotment, site preparation area) should not exceed 20 percent. All roads and landings, unless rehabilitated to natural conditions, are considered to be in detrimental condition, and are included as part of this 20 percent, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore] "soils and soil productivity, including guidance to reduce soil erosion and sedimentation." | Approximately between 54 and 127 acres of detrimental soil conditions could result from the pipeline construction<br><br>This amendment would affect approximately 0.01% of the Umpqua NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Technical Report on Soil Risk and Sensitivity Assessment (NSR 2014) | Road Decommissioning – approximately 7.2 miles<br><br>Road Storm-proofing approximately 11.4 miles |
| UNF-4: Reallocation of Matrix Lands to LSR | The Umpqua NF LRMP would be amended to change the designation of approximately 585 acres from Matrix land allocations to the LSR land allocation in Sections 7, 18, and 19, T.32S., R.2W.; and Sections 13 and 24, T.32S., R.3W., W.M., OR. This change in land allocation is proposed to partially mitigate the potential adverse impact of the Pacific Connector Pipeline Project on LSR 223 on the Umpqua NF. This is a plan level amendment that would change future management direction for the lands reallocated from Matrix to LSR. | | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(1)(i) – [the plan must include plan components to maintain or restore] "Interdependence of terrestrial and aquatic ecosystems in the plan area." § 219.8(b)(1) – [the plan must include plan components to guide the plan area's contribution to social and economic | Approximately 20 acres of LSOG and 48 acres of Non-LSOG habitat would be cleared within LSR 223<br><br>This amendment would affect approximately 0.06% of the Umpqua NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan | Reallocation of Matrix Lands to LSR – approximately 296 acres of LSOG and 289 acres of Non-LSOG habitat would be reallocated from matrix to LSR 223<br><br>Stand Density Fuel Break - 3,105 acres<br><br>Stand Density Management – 816 acre<br><br>Terrestrial Habitat Improvement – 478 acres<br><br>Road Decommissioning in LSR – 5 miles |

TABLE 2.1.1-1

**Proposed LRMP Amendments on the Umpqua NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[2] |
|---|---|---|---|---|---|---|
| | | | sustainability] "Social, cultural and economic conditions relevant to the area influenced by the plan." § 219.9(b)(1) "The responsible official shall determine whether or not the plan components required by paragraph (a) of this section provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area," and § 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities." | | | |

TABLE 2.1.1-2

**Mitigation Projects to Address LRMP Objectives on the Umpqua NF**

| Unit | Watershed | Mitigation Group | Project Type | Project Name | Quantity a/ | Unit |
|---|---|---|---|---|---|---|
| Umpqua NF | Days Creek - South Umpqua | Stand Density Fuel Break | Fuels Reduction | Days Creek - South Umpqua Matrix Integrated Fuels Reduction | 194 | acres |
| | | Stand Density Fuel Break | Fuels Reduction | Days Creek - South Umpqua LSR Integrated Fuels Reduction | 254 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Days Creek - South Umpqua LSR Snag Creation | 32 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Days Creek - South Umpqua Matrix Snag Creation | 14 | acres |
| | | Terrestrial Habitat Improvement | Lupine Meadow Restoration | Upper Cow Creek Lupine Meadow Restoration | 23 | acres |
| | Elk Creek - South Umpqua | Aquatic and Riparian Habitat | Fish Passage | Elk Creek Fish Passage Culverts | 5 | sites |
| | | Road sediment reduction | Road Storm-proofing | Elk Creek Road Storm-proofing | 9.2 | miles |
| | | Road sediment reduction | Road Decommissioning | Elk Cr. Road Decommissioning | 5.9 | miles |
| | | Stand Density Fuel Break | Fuels Reduction | Elk Creek Matrix Integrated Fuels Reduction | 176 | acres |
| | | Stand Density Management | Commercial Thinning | Elk Creek LSR Enhancement | 91 | acres |
| | | Stand Density Management | Off-site Pine Removal | Elk Creek LSR Off-site Pine Removal | 300 | acres |
| | | Terrestrial Habitat Improvement | LWD Upland Placement | Elk Creek LSR LWD Placement | 99 | acres |
| | | Terrestrial Habitat Improvement | Lupine Meadow Restoration | Elk Creek LSR Lupine Meadow Restoration | 101 | acres |
| | | Terrestrial Habitat Improvement | Noxious Weed Treatment | Elk Creek Roadside Noxious Weeds | 6.7 | miles |
| | | Terrestrial Habitat Improvement | Snag Creation | Elk Creek LSR Snag Creation | 68 | acres |
| | | Fire Suppression | Water Source Improvement | Elk Creek Pump Chance | 2 | sites |
| | Evans Creek | Stand Density Fuel Break | Road Shaded Fuel Break | Evans Cr LSR Road Shaded Fuel Break | 63 | acres |
| | Trail Creek | Road sediment reduction | Road Decommissioning | Trail Creek Road Decommissioning | 0.3 | miles |
| | | Road sediment reduction | Road Storm-proofing | Trail Creek Storm-proofing | 2.2 | miles |
| | | Stand Density Fuel Break | Fuels Reduction | Trail Creek Matrix Integrated Fuels Reduction | 500 | acres |
| | | Stand Density Fuel Break | Road Shaded Fuel Break | Trail Creek LSR Road Shaded Fuel Break | 175 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Trail Creek Matrix Snag Creation | 109 | acres |
| | | Stand Density Management | Pre-commercial Thinning | Trail Creek LSR PCT Enhancement | 112 | acres |
| | Upper Cow Creek | Aquatic and Riparian Habitat | Fish Passage | Upper Cow Creek Fish Passage Culverts | 6 | sites |
| | | Fire Suppression | Water Source Improvement | Upper Cow Creek Pump Chance | 1 | site |
| | | Road Sediment Reduction | Road Closure | Upper Cow Creek Road Closure | 1.2 | miles |
| | | Road Sediment Reduction | Road Decommissioning | Upper Cow Creek Road Decommissioning | 1.0 | miles |
| | | Stand Density Fuel Break | Fuels Reduction | Upper Cow Creek LSR Integrated Fuels Reduction | 635 | acres |

TABLE 2.1.1-2

**Mitigation Projects to Address LRMP Objectives on the Umpqua NF**

| Unit | Watershed | Mitigation Group | Project Type | Project Name | Quantity a/ | Unit |
|---|---|---|---|---|---|---|
| | | Stand Density Fuel Break | Fuels Reduction | Upper Cow Creek Matrix Integrated Fuels Reduction | 730 | acres |
| | | Stand Density Fuel Break | Road Shaded Fuel Break | Upper Cow Creek LSR Road Shaded Fuel Break | 378 | acres |
| | | Stand Density Management | Commercial Thin | Upper Cow Creek LSR Enhancement | 197 | acres |
| | | Stand Density Management | Pre-commercial Thinning | Elk Creek LSR PCT Enhancement | 116 | acres |
| | | Terrestrial Habitat Improvement | LWD Upland Placement | Upper Cow Creek LSR LWD Placement | 65 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Upper Cow Creek LSR Snag Creation | 90 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Upper Cow Creek Matrix Snag Creation | 11 | acres |
| | | Reallocation of Matrix Lands to LSR | Land Re-Allocation from Matrix to LSR | LRMP Amendment UNF 4 LSR 223 Reallocation | 585 | acres |

a/ Acres are rounded to the nearest whole acre and miles to the nearest tenth of a mile.

**Figure 2.1-1. Map of CMP Projects in the Days Creek Watershed on the Umpqua NF**

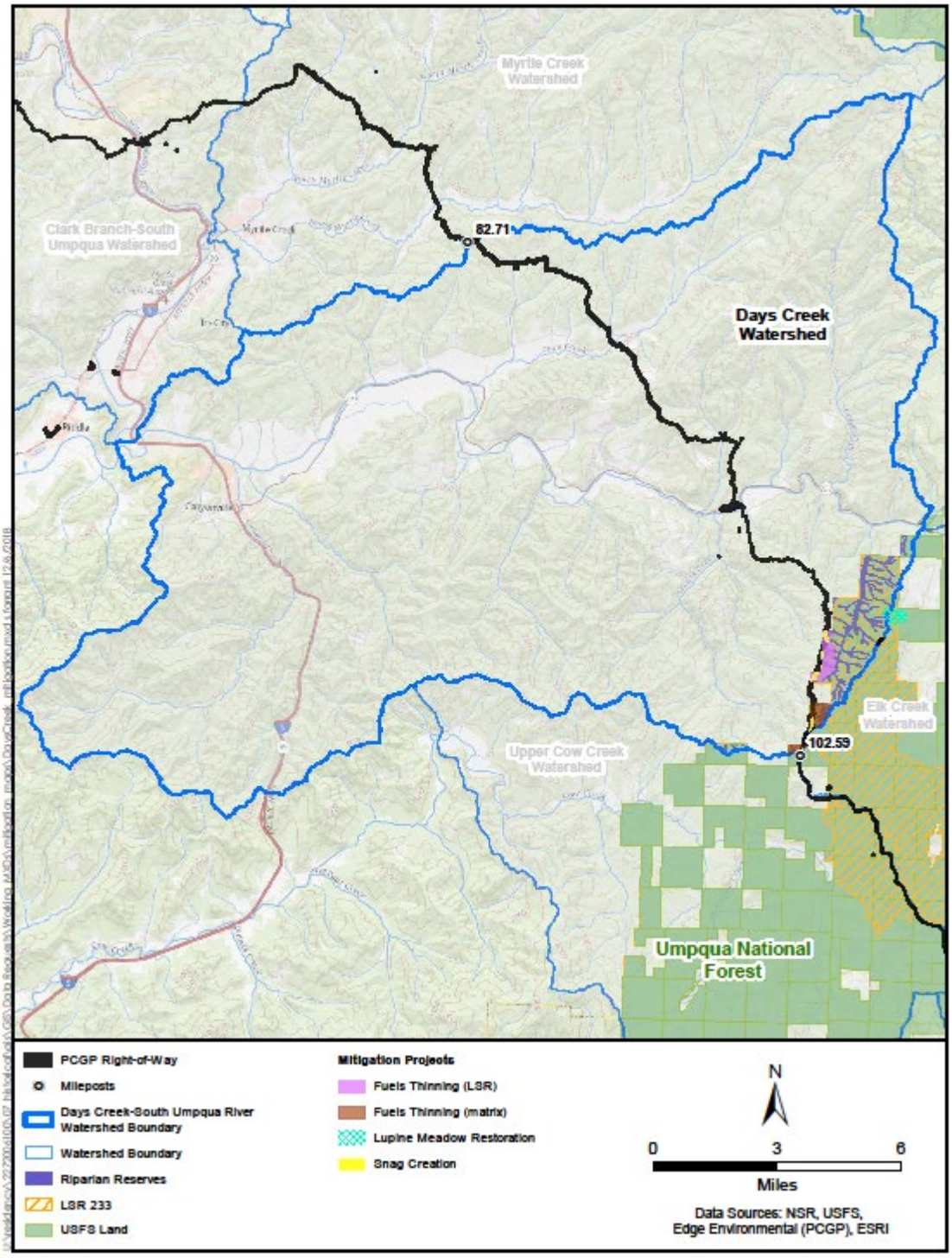


**Figure 2.1-2. Map of CMP Projects in the ELK Creek Watershed on the Umpqua NF**

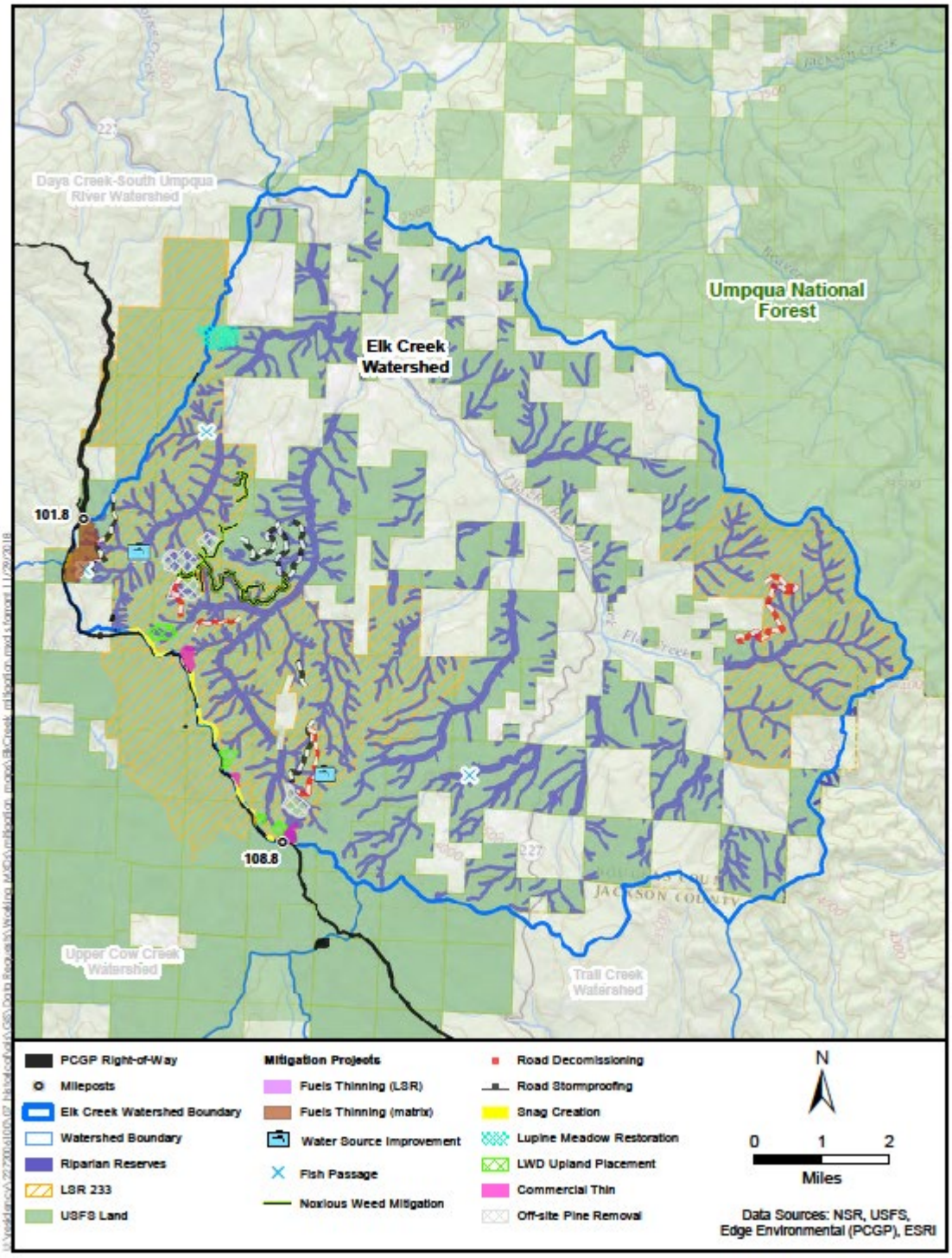


**Figure 2.1-3. Map of CMP Projects in the Upper Cow Creek Watershed on the Umpqua NF**

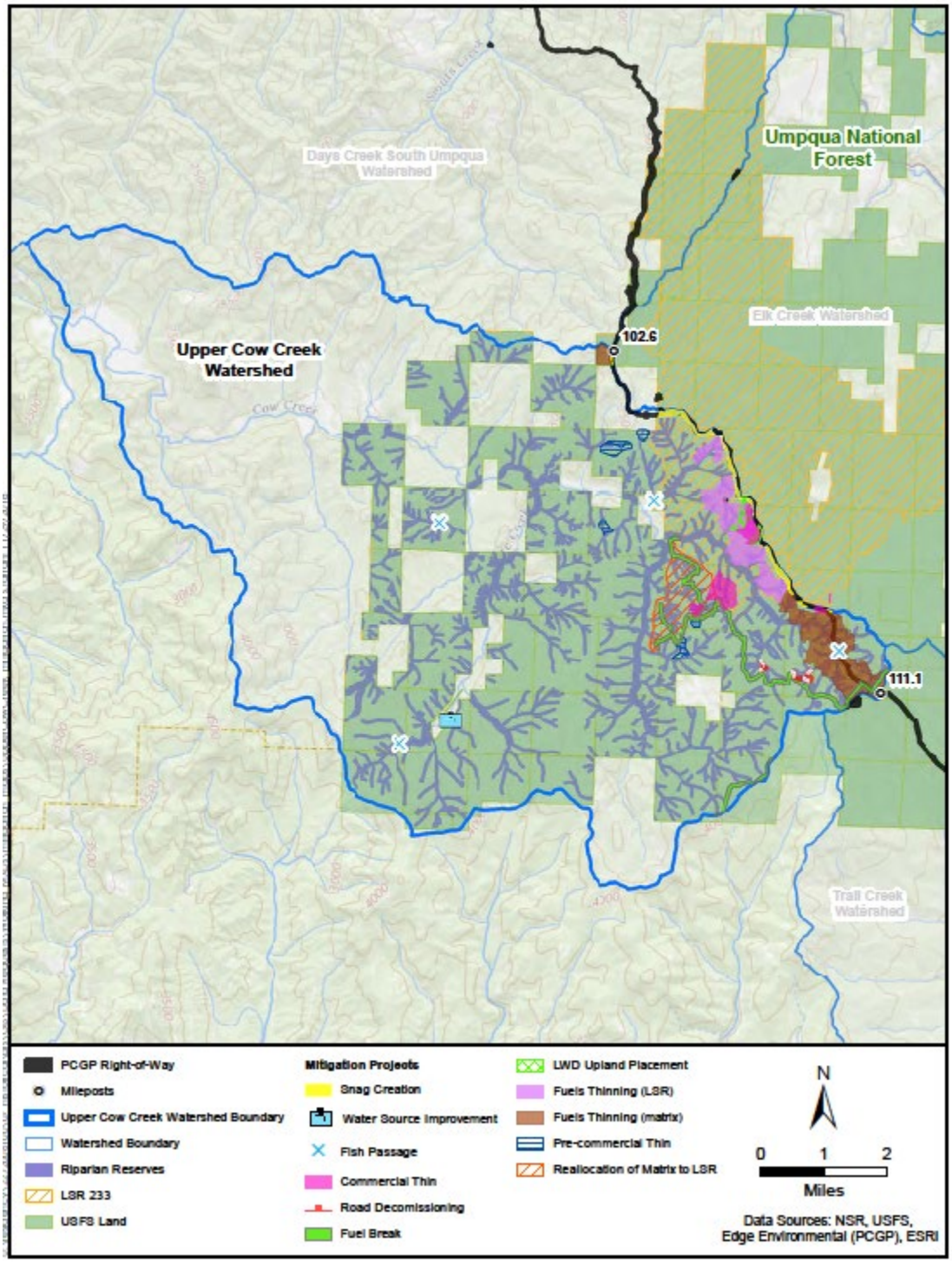


**Figure 2.1-4. Map of CMP Projects in the Trail Creek Watershed on the Umpqua NF**

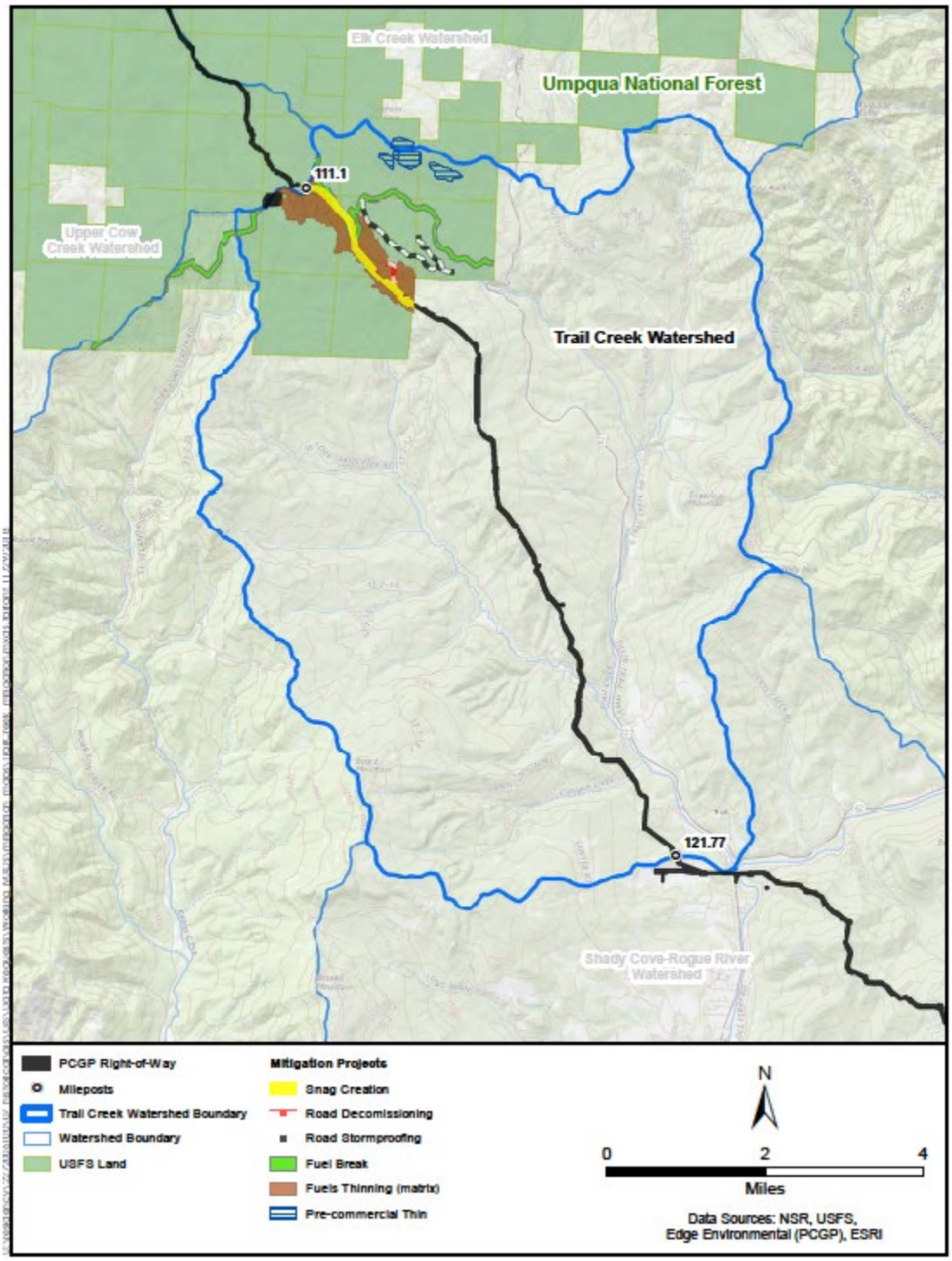


TABLE 2.1.1-3

**Evaluation of Umpqua NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| Aquatic and Riparian Habitat | Fish Passage | 11 Sites | Old culverts may block fish passage either by poor design or by failure over time. Removing these blockages and replacing them with fish-friendly designs can allow fish and other aquatic organisms to access previously unavailable habitat. This is responsive to ACS Objectives 1, 2, 3, and 9 (see appendix F4). | Short-term adverse effects: Removing old culverts and restoring stream/road crossings would result in short-term adverse effects since it involves the use of heavy equipment in and around the stream channel. The work would be done during low summer flow periods to minimize impacts to aquatic species and PDFs would be designed to minimize disturbance for Northern Spotted Owl (NSO).<br>Long-term beneficial effects: Stream crossing replacement would directly improve stream connectivity and habitat for aquatic species by immediately restoring access to formerly inaccessible habitats. Indirectly, these projects would reduce potential sediment levels in the long term by decreasing the potential for road failure. Stream crossing projects also reduce stream velocities by increasing stream crossing sizes, eliminating flow restrictions and allowing passage to additional reaches of habitat by removing barriers to aquatic species which improves access to spawning and rearing habitat and allows unrestricted movement throughout stream reaches during seasonal changes in water levels (Hoffman 2007). |
| Road Sediment Reduction | Road Closure<br><br>Road Decommissioning<br><br>Road Stormproofing | 1.2 Miles<br><br>7.2 Miles<br><br>11.4 Miles | Road closure reduces fine grained sediments by eliminating traffic impacts. Decommissioning roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project occur. Storm-proofing reduces sediment from roads by increasing the resistance of a road to failure during high intensity rainfall events. Storm-proofing strategies include improving drainage, reducing diversion potential at culverts, out-sloping road surfaces, and replacing culverts with hardened low water fords. | Short-term adverse effects: Road decommissioning methods generally include actions utilizing mechanized construction equipment to physically stabilize the road prism, restore natural drainage patterns, and allow for revegetation of the roadbed. Mechanized construction equipment might include excavators, backhoes and truck mounted loaders. Road closure is a method of preventing access to a road so that regular maintenance is no longer needed and future erosion is largely prevented by restoring drainage patterns if necessary and eliminating road traffic. Road decommissioning has the potential to cause short-term degradation of water quality by increasing sediment delivery to streams as roads are de-compacted by heavy equipment, culverts and cross drains are removed, and other restoration activities are implemented. The use of heavy mechanized equipment near streams could disturb the stream influence zone, deliver sediment, create turbidity, and cause stream bank erosion. There is also the potential of an accidental fuel/oil spill. These projects may cause a short-term degradation of water quality due to sediment input and chemical contamination. Stream bank condition and habitat substrate may also be adversely affected in the short term. However with careful project design and seasonal timing, these affects are expected to be of a limited extent and duration. Road decommissioning would create noise from heavy equipment that could disturb NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for both NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>Long-term beneficial effects: Proposed road decommissioning and stormproofing would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project would occur. Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads. |
| Fire Suppression | Water Source Improvement | 3 Sites | The pipeline project would create fire suppression complexity by creation of a continuous corridor of early seral plant communities. High intensity stand-replacement fire has been identified as the single largest factor causing the loss of LSOG forests in the first | Short-term adverse effects: By employing appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. |

TABLE 2.1.1-3

**Evaluation of Umpqua NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| | | | 15 years of implementation of the Northwest Forest Plan (NWFP; Moeur et al. 2011). Pump chance developments and helicopter dipping ponds provide readily available water sources to support fire suppression efforts. | Long-term beneficial effects: Pump chance developments provide readily available water sources to support fire suppression efforts. These projects would help to reduce the threat of losing late-successional habitat to stand-replacement fire. |
| Stand Density Fuel Break | Fuels Reduction<br><br>Road Shaded Fuel Break | 2,489 Acres<br><br>616 acres | High intensity fire has been identified as the single factor most impacting late successional and old growth forest habitats on federal lands in the area of the NWFP. Construction of the pipeline and associated activities removes both mature and developing stands and will increase fire suppression complexity, however the corridor also provides a fuel break. Fuels reduction adjacent to the corridor will increase the effectiveness of the corridor as a fuel break. Density management will increase longevity of existing mature stands by reducing losses from disease, insects and fire. Stand density management and fuels reduction will lower the risk of loss of developing and existing mature stands and other valuable habitats to high-intensity fire. | Short-term adverse effects: Stand density management and fuels reduction activities include the use of heavy equipment for cutting, skidding, slash piling, and hauling forest vegetation. Soil erosion risk would increase with the proposed activities because bare soil would be exposed during implementation. As the amount of bare/compacted soil increases, so does the risk of soil movement. Impacts caused by heavy equipment would increase the amount of detrimental soil damage within the treatment areas. By maintaining proper amounts of protective groundcover along with appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. Stand density fuels reduction treatments would not be expected to adversely affect nesting habitat for the NSO since the treatments would not remove constituent elements of their nesting habitat. The proposed treatments could temporarily impact acres of dispersal habitat. This habitat would be impacted by reduction of canopy cover as well as the loss of some down wood, shrubs and snags, which provide habitat for prey species. Integrated stand density treatments would create noise from heavy equipment that could disturb the NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>Long-term beneficial effects: By creating less dense stands with less tree competition, residual trees would benefit from the increased availability of sunlight, nutrients, and water. With the increase of available nutrients, trees should be more vigorous and less susceptible to large scale insect/disease outbreaks. The proposed treatments would move the vegetation towards conditions that would have occurred under a natural disturbance regime. This would lower flame lengths, reduce fire spread and lower the probability of tree mortality in the event of a wildfire, leading to more successful suppression efforts. Aerial delivered retardant or water would be more effective in lighter fuels and a more open canopy, making it safer for firefighters to successfully anchor and contain wildfires. These actions would reduce the threat of losing late-successional habitat to fire. |
| Stand Density Management | Pre-commercial Thinning LSR<br><br>Commercial Thin LSR<br><br>Off-site Pine Removal | 228 Acres<br><br>288 Acres<br><br>300 Acres | Pacific Connector pipeline will cause direct impacts to existing interior, developing interior habitat. The project will result in additional fragmentation and preclude the recovery of fragmented habitat for those stands adjacent to the pipeline corridor. Both mature stands and developing stands will be removed during pipeline construction. Density management of forested stands will assist in the recovery of late-seral habitat, impact from fragmentation, reduction in edge effects and enhance resilience of mature stands. Accelerating development of mature forest characteristics will shorten the impacts of those biological services loss due to pipeline construction. Stand density management is intended to enhance LSOG habitat by increasing the growth, health, and vigor of the trees remaining in the stands; restoring stand density, species diversity, and structural diversity | Short-term adverse effects: Stand density management activities include the use of heavy equipment for cutting, skidding, slash piling, and hauling forest vegetation. Soil erosion risk would increase with the proposed activities because bare soil would be exposed during implementation. As the amount of bare/compacted soil increases, so does the risk of soil movement. Impacts caused by heavy equipment would increase the amount of detrimental soil damage within the treatment areas. By maintaining proper amounts of protective groundcover along with appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. Stand treatments would not be expected to adversely affect nesting habitat for the NSO since the treatments would not remove constituent elements of their nesting habitat. The proposed treatments could temporarily impact acres of dispersal habitat. This habitat would be impacted by reduction of canopy cover as well as the loss of some down wood, shrubs and snags, which provide habitat for prey species. Integrated stand density treatments would create noise from heavy equipment that could disturb the NSO. The potential for disturbance is mainly associated |

TABLE 2.1.1-3

**Evaluation of Umpqua NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| | | | to those considered characteristic under a natural disturbance regime. Thinning of young stands is a recognized treatment within LSR if designed to accelerate development of late-successional habitat characteristics. | with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>Long-term beneficial effects: By creating less dense stands with less tree competition, residual trees would benefit from the increased availability of sunlight, nutrients, and water. With the increase of available nutrients, trees should be more vigorous and less susceptible to large scale insect/disease outbreaks. The proposed treatments would enhance LSOG habitat by increasing the growth, health, and vigor of the trees remaining in the stands; restoring stand density, species diversity, and structural diversity to those considered characteristic under a natural disturbance regime. |
| Terrestrial Habitat Improvement | LWD Upland Placement LSR | 164 Acres | The objective is to mitigate for the loss of recruitment of large down wood to adjacent stands and within the construction clearing zone. The project will forgo the development of large down wood for the life of the project and for decades after. Downed wood is a critical component of mature forest ecosystems. Large wood replacement will partially mitigate for the barrier effect of the corridor by creating structure across the corridor for use by small wildlife species. Placement in wood deficient areas adjacent to the corridor allows for scattering of stockpiled wood, reducing localized fuel loads while improving habitat in deficient stands. Larger logs maintain moisture longer and are less likely to be fully consumed by fire. Managing for the proposed levels provide for a greater assurance of species abundance. | Short-term adverse effects: Placement of LWD within and adjacent to the pipeline corridor would typically be done with heavy equipment that would drag the material into place. Heavy equipment use would increase the amount of detrimental soil damage within the treatment areas. By maintaining proper amounts of protective groundcover along with appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. LWD placement would create noise from heavy equipment that could disturb the NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>Long-term beneficial effects: Beneficial effects include improving habitat for late-successional and other species and providing for long-term soil productivity. |
| Terrestrial Habitat Improvement | Snag Creation | 324 Acres | Objective is to mitigate immediate and future impacts to snag habitat from the clearing of the pipeline right-of-way. The project prevents development of large snags during the life of the project and for decades after. Corridor construction will result in loss of snag habitat. As snags are a critical component of spotted owl habitat, replacement is needed. Replacement would be immediate though there would be a 10 year delay as snag decay develops. | Short-term adverse effects: Snag creation typically employs the use of chainsaws or inoculum to kill live trees. As such there is little if any ground disturbance and only minimal noise disturbance. The potential for noise disturbance is mainly associated with breeding behavior at active NSO nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels. Any adverse environmental impacts would be de minimus and very short term.<br>Long-term beneficial effects: Beneficial impacts include the improvement of habitat for snag dependent species and in particular those species dependent on LSOG forests. Long-term benefits would also accrue as the created snags decay over time and eventually provide for LWD on the forest floor improving habitat for many other species and contributing to long-term soil productivity. |
| Terrestrial Habitat Improvement | Noxious Weed Treatments | 6.7 Miles | The construction and operation of the pipeline project has the potential to create vectors for noxious weeds. These treatments are intended to reduce populations of noxious weeds that are in close proximity to the pipeline project right-of-way, as well as restore meadow habitats in the fifth-field watersheds that are currently impacted by noxious weeds | Short-term adverse effects: Treatments typically involve the cutting, pulling or spraying of noxious weeds. Since the work is typically done by hand there is minimal if any ground or noise disturbance. All activities would be conducted consistent with the most recent direction and plans for weed management and integrated vegetation management on BLM and Forest Service lands to minimize adverse impacts to plant and animal communities as well as water quality and aquatic habitats.<br>Long-term beneficial effects: Long-term benefits would include the restoring of native plant populations and species diversity. Restoring native plant communities and increasing vegetation diversity generally contributes to restoring habitat for a broad group of plant and animal species. |

TABLE 2.1.1-3

**Evaluation of Umpqua NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| Terrestrial Habitat Improvement | Lupine Meadow Restoration | 124 Acres | The Objective is to mitigate impacts to Unique habitats affected by the project. There will be loss of forest habitat buffering the unique habitats and disruption to soil horizons enhancing the opportunities for non -native plant species. These impacts cannot be fully mitigated on site; therefore, restoration activities such as burning, removal of encroaching conifers, and noxious weed control would be applied to a meadow located in LSR 223. | Short-term adverse effects: Treatments typically involve the cutting, pulling or spraying of noxious weeds and control burning. Since the work is typically done by hand there is minimal if any ground or noise disturbance. All activities would be conducted consistent with the most recent direction and plans for weed management and smoke management on Forest Service lands to minimize adverse impacts to plant and animal communities as well as water quality and aquatic habitats.<br>Long-term beneficial effects: Long-term benefits would include the restoring of native plant populations and species diversity. Restoring native plant communities and increasing vegetation diversity generally contributes to restoring habitat for a broad group of plant and animal species. |
| Reallocation of Matrix Lands to LSR | Reallocation of Matrix to LSR | 585 Acres | This mitigation group contributes to the "neutral to beneficial" standard for new developments in LSRs by adding acres to the LSR land allocation to offset the long-term loss of habitat due to the construction and operation of the pipeline project. It compensates for the removal of suitable nesting, roosting, and foraging NSO habitat by adding additional LSOG acres to the LSR land allocation. Reallocation of matrix lands to LSR also contributes to ACS objectives and may benefit Survey and Manage species by providing additional habitat that is managed to create LSOG stand conditions over time. | Short-term adverse effects: The reallocation of matrix lands to LSR is an administrative action that would not have any immediate environmental consequences on the ground.<br><br>Long-term beneficial effects: The proposed reallocation would change the management direction of approximately 585 acres from one of multiple uses with an emphasis on timber management to a management emphasis focusing on the creation and maintenance of late-successional forest habitat. Over time, this reallocation would benefit species dependent on late-successional forests through management actions that would be designed to improve or maintain late-successional habitat conditions. |

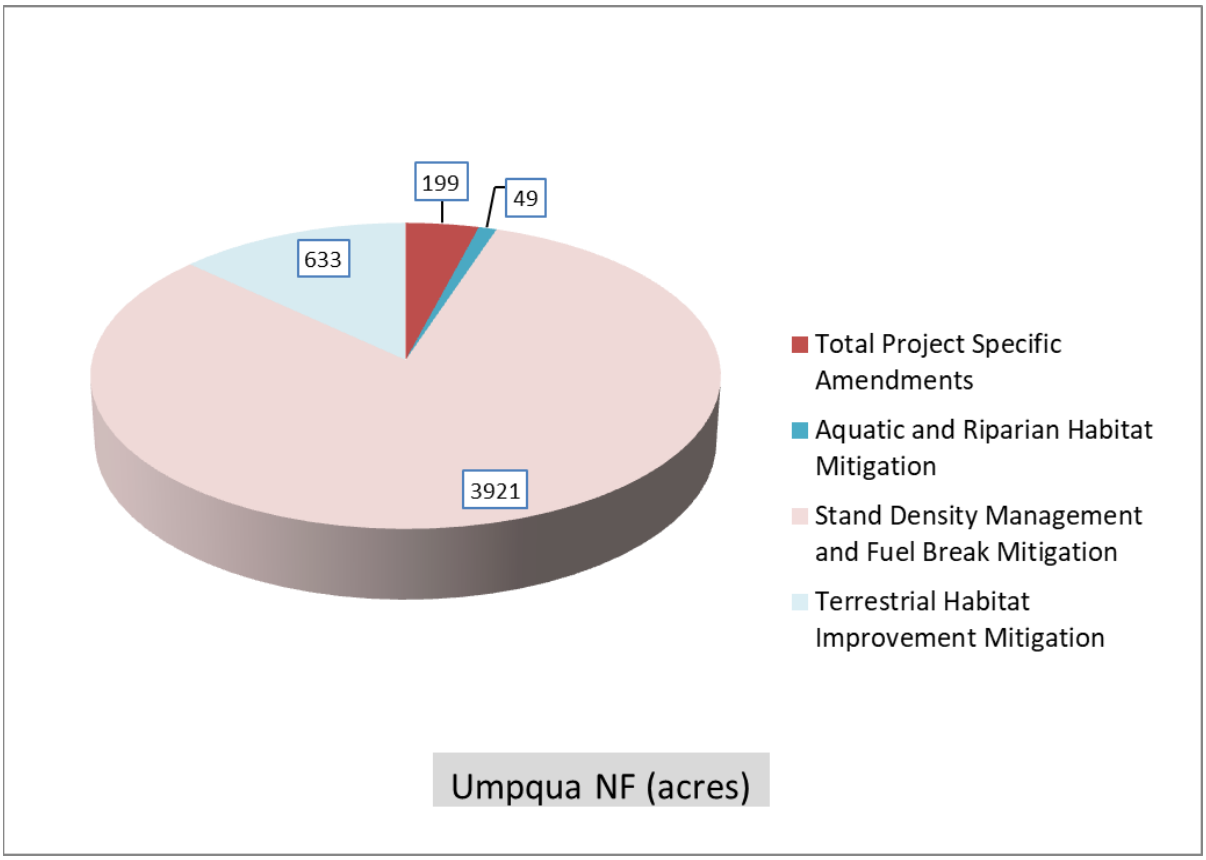
TABLE 2.1.1-4

**Comparison of Total Acres of Project-Specific Amendments and Compensatory Mitigation on the Umpqua NF**

| Amendments and Compensatory Mitigation | Acres |
|---|---|
| Total Project Specific Amendments[1] | 199 |
| Aquatic and Riparian Habitat Mitigation[2] | 49 |
| Stand Density Management and Fuel Break Mitigation | 3921 |
| Terrestrial Habitat Improvement Mitigation | 633 |

Data Source: USFS GIS Data Layers
1) Includes amendments FS-1, UNF-1, UNF-2 and UNF-3
2) Includes road sediment reduction actions and assumes a 20 foot wide treatment area

**Figure 2.1-5. Comparison of Total Acres of Proposed Project Specific Amendments and Compensatory Mitigation on the Umpqua NF**



## 2.2 ROGUE RIVER NF

There are seven proposed forest plan amendments for the Pacific Connector pipeline project on the Rogue River NF. An evaluation of how the proposed amendments relate to the planning requirements in 36 CFR 219.8 – 219.11 is discussed in section 2.2.1 below. These proposed amendments are summarized in table 2.2.1-1 along with the project impacts and related project design features (PDF) and compensatory mitigation. The proposed CMP projects are listed in table 2.2.1-2 and evaluated in table 2.2.1-3, table 2.2.1-4, and figure 2.2-2 below. A map of the proposed CMP projects by watershed is displayed in figure 2.2-1.

### 2.2.1 Evaluation of Rogue River NF Proposed Forest Plan Amendments

The proposed Pacific Connector pipeline incorporates the most up-to-date engineering and technological practices for pipeline construction and operation. However, even with following these practices, it has been determined that one Forest Plan standard associated with rare and/or isolated species (Survey and Manage), two Forest Plan standards associated with the soil, water, and riparian resources, and four Forest Plan standards associated with visual resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Rogue River NF LRMP as amended by the NWFP and the January 2001 Survey and Manage ROD.

#### 2.2.1.1 Forest Plan Amendments Related to Rare Aquatic and Terrestrial Plant and Animal Communities (FS-1, RRNF-7):

*Amendment FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Rogue River NF.*

One Forest Plan standard associated with rare and/or isolated species (Survey and Manage) would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Rogue River NF LRMP as amended by the NWFP and the January 2001 Survey and Manage ROD. This standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations.

The proposed amendment to this standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. (Proposed amendment FS-1 on the Rogue River NF)

While the amendment would provide an exception to meeting this standard, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on Survey and Manage species within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of this project-level amendment is to make the proposed Pacific Connector pipeline project consistent with the Rogue River NF LRMP. Thus, the substantive planning rule requirements that are directly related to this amendment are:

- 36 CFR 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities."
- 36 CFR 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area."

Because the proposed amendment is "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendment (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the amendment, it is important to recognize that the applicable sections of 36 CFR 219.9(a) and (b) that are described above, requires plan components to maintain or restore rare aquatic and terrestrial plant and animal communities, across the entire planning area (i.e., the Rogue River NF). This plan amendment does not alter these LRMP plan requirements for managing rare plant and animal communities across 99.97% of the Rogue River NF. The proposed pipeline construction corridor including the temporary extra work areas (TEWAs) and the uncleared storage areas (UCSAs) is approximately 206 acres of the 628,443 acre Rogue River NF. Within this 206 acre construction corridor surveys have identified 36 Survey and Manage sites that could be potentially impacted by construction activities. The proposed amendment does not waive the persistence objective for Survey and Manage species. The analysis that was conducted (see section 4.6.4.3 of the DEIS and Appendix F.5) determined the Survey and Manage persistence objectives would be met. This means that for Rogue River NF lands within the project area, individual sites of Survey and Manage species may be impacted or lost to construction activities, but affected species are expected to persist within the range of the NSO despite the loss of these individual sites.

The amendment modifies this standard so that in the 206 acres of the project construction area the project need not be in compliance with this standard' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 206 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the management requirement described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.9(a) and (b) rule requirements within the "scope and scale"

of the proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.9(a) and (b) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Rare Aquatic and Terrestrial Plant and Animal Communities and Meet the Applicable 36 CFR 219.9(a) and 36 CFR 219.9 (b) Requirements*

The Forest Service has worked to inventory, analyze, and evaluate rare aquatic, terrestrial plant and animal communities that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures incorporated into amendments for Survey and Manage species are designed to minimize, maintain or restore the potential for habitat fragmentation, edge effects, and loss of long-term habitats associated with effected species. To ensure adequate restoration and revegetation of the ROW, design features are identified in the *Erosion Control and Revegetation Plan* (POD I), *Right-of-Way Clearing Plan* (POD U), *Leave Tree Protection Plan* (POD P). In addition, routing considerations were identified during project development to ensure avoidance of known populations of rare plant and animal communities (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands). As well as, Appendix F.5, *Survey and Manage Persistence Evaluations*, and proposed amendment RRNF-7 Reallocation of Matrix Lands to LSR.

As a basis for Survey and Manage determinations, Appendix F.5 provides background research on Survey and Manage species that could be affected by the PCGP Project; a review of survey reports prepared by others for the PCGP Project; and processing and analysis of spatial data obtained from the Bureau of Land Management (BLM), Forest Service, and other sources over the past 12 years. Background information was used in combination with new information available as a result of surveys for the PCGP Project and recent surveys in other portions of old growth forests to discuss the currently known distribution of the species in old growth forests within the NSO range. Impacts to sites as a result of the PCGP Project were analyzed to determine if the species would continue to have a reasonable assurance of persistence in the NSO range following implementation of the PCGP Project, taking into consideration the status and distribution of the species and general habitat in the NSO range.

Some of the required mitigation measures in the POD sections to protect rare plant and animal communities include: flagging existing snags on the edges of the construction right-of-way or TEWAs where feasible to save from clearing; snags would be saved as and used in LWD placement post-construction to benefit primary and secondary cavity nesting birds, mammals, reptiles, and amphibians; other large diameter trees on the edges of the construction right-of-way and TEWAs would also be flagged to save/protect as green recruitment or habitat/shade trees, where feasible; trees would be girdled to create snags to augment the number of snags along the right-of-way to benefit cavity nesting birds, mammals, reptiles, and amphibians. See POD's P &

U and 4.7—*Land Use* of the DEIS for a complete list of applicable mitigation measures for pipeline construction. Additional measures include low ground weight (pressure) vehicles would be used; logging machinery would be restricted to the 30-foot permanent right-of-way wherever possible to prevent soil compaction; the removal of soil duff layers would be avoided in order to maintain a cushion between the soil and the logs and the logging equipment; designed skid trails would be used to restrict detrimental soil disturbance (compaction and displacement) to a smaller area of the right-of-way over the pipeline trenching area; and the temporary construction area would be restored and revegetated using native seeds, to the extent possible, and saplings (POD I).

In an effort to minimize, maintain or restore the impacts to Survey and Manage species, PCGP adopted route variations to avoid certain species identified in the Survey and Manage Persistence Evaluations by co-locating the proposed construction corridor adjacent to existing roads, through managed timber stands or otherwise avoid unique LSOG habitats to the maximum extent practicable (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands).

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*Amendment RRNF-7: Reallocation of Matrix Lands to LSR*

The other proposed Forest Plan amendment related to rare aquatic and terrestrial plant and animal communities on the Rogue River NF is RRNF-7. This proposed amendment would change the designation of approximately 522 acres from the Matrix land allocation to the LSR land allocation in Section 32, T.36S., R.4E. W.M., OR. (see figure 2.2-1). This change in land allocation is proposed as mitigation for the potential adverse impact of the Pacific Connector Pipeline project on LSR 227 on the Rogue River NF. This is a plan level amendment that would change future management direction for the lands reallocated from Matrix to LSR (for additional information on

consistency with LSR Standards and Guidelines see section 4.7.3.6. and Appendix F.3 of the DEIS).

The purpose of this amendment is to make the proposed Pacific Connector pipeline project consistent with the Rogue River NF LRMP. Thus, the substantive planning rule requirements that are directly related to this amendment are:

- 36 CFR 219.8(a)(1)(i) – [the plan must include plan components to maintain or restore] "Interdependence of terrestrial and aquatic ecosystems in the plan area."
- 36 CFR 219.8(b)(1) – [the plan must include plan components to guide the plan area's contribution to social and economic sustainability] "Social, cultural and economic conditions relevant to the area influenced by the plan."
- 36 CFR219.9(b)(1) "The responsible official shall determine whether or not the plan components required by paragraph (a) of this section provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area,"
- 36 CFR 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities."

Because the proposed amendment is "directly related" to these four substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendment (36 CFR 219.13 (b)(5)). However, because this proposed amendment would simply modify the area to which existing direction applies, the existing formatting for the planning requirements listed above would be retained (36 CFR 219.13(b)(4)).

In considering the "scope and scale" of the amendment, it is important to recognize that the applicable sections of 36 CFR 219.8 and 219.9 that are described above, requires plan components to maintain or restore rare aquatic and terrestrial plant and animal communities, and provide for social and economic sustainability across the entire planning area (i.e., the Rogue River NF). This plan amendment does not alter these LRMP plan requirements across 99.92% of the Rogue River NF. The proposed land reallocation is approximately 522 acres of the 628,443 acre Rogue River NF. The proposed amendment would benefit rare aquatic and terrestrial plant and animal communities by placing these acres in a late successional reserve where providing habitat for these species is the primary goal.

The timber probable sale quantity (directly related to economic conditions) would not be affected before the Rogue River NF LRMP is revised because the Forest has the capacity to maintain probable sale quantity without the acres of matrix lands that would be reallocated to LSR. If a linear relationship between acres and outputs is assumed, the potential effect would be less than one-half of one percent of the Forest's probable sale quantity since this proposed amendment would affect less than one-half of one percent of the Forest's matrix land base. This proposed amendment would not prevent future vegetation management activities such as thinning that would benefit LSR habitat and could also contribute to the local forest products industry.

*How the Compensatory Mitigation Actions would help to Maintain or Restore Rare Aquatic and Terrestrial Plant and Animal Communities in the Plan Area (36 CFR 219.9(a), 36 CFR 219.9 (b)).*

In addition to the reallocation of 522 acres of Matrix to LSR, the CMP on the Rogue River NF includes proposals for stand density management on 618 acres, terrestrial habitat improvements on 1153 acres and decommissioning approximately 57.5 miles of roads that would benefit rare plant and animal communities. The CMP on the Rogue River NF also includes proposals to improve aquatic and riparian habitat that would benefit rare aquatic plant and animal communities (see the discussion of *How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of Riparian Areas, Soils, and Soil productivity in the Plan Area (36 CFR 219.8(a)(3)(i), (36 CFR 219.8(a)(2)(ii))* below for a discussion of benefits to aquatic habitats).

Stand density management would enhance LSOG habitat by increasing the growth, health, and vigor of the trees remaining in the stands, and restoring species and structural diversity to those considered characteristic under a natural disturbance regime. Thinning of young stands is a recognized treatment within LSR if designed to accelerate development of late-successional habitat characteristics. The proposed treatments include 618 acres of pre-commercial thinning. The Pacific Connector pipeline would result in additional fragmentation and preclude the recovery of fragmented habitat for those stands adjacent to the pipeline corridor. Both mature stands and developing stands would be removed during pipeline construction. Density management of forested stands would assist in the recovery of late-seral habitat, impact from fragmentation, reduction in edge effects and enhance resilience of mature stands over time. Accelerating development of mature forest characteristics would shorten the impacts of those biological services loss due to pipeline construction.

Terrestrial habitat improvements include proposals for large woody debris placement on 511 acres, snag creation on 622 acres, and 20 acres of habitat planting for the Mardon Skipper butterfly. Large wood replacement would partially mitigate for the barrier effect of the corridor by creating structure across the corridor for use by small wildlife species. Placement in wood deficient areas adjacent to the corridor allows for scattering of stockpiled wood, reducing localized fuel loads while improving habitat in deficient stands. Larger logs maintain moisture longer and are less likely to be fully consumed by fire. Managing for the proposed levels provide for a greater assurance of species abundance. The objective of snag creation is to mitigate for the immediate and future impacts to snag habitat from the clearing of the pipeline right-of-way. The Dead Indian Plateau region is one of four known sites for Mardon Skipper butterflies in the world. It is also adjacent to a known site for Short-horned grasshoppers. Both of these species are on the Regional Forester's Sensitive Species list. As a long-term opening, the pipeline corridor would provide a unique opportunity to develop habitat for these two species. Planting the corridor with plants preferred by these species has the potential to increase the habitat and local range for both species. This action would provide both short-term and long-term habitat for the local population of Mardon Skipper butterflies and Short-horned grasshoppers.

Although the Pacific Connector project has been routed to avoid LSOG habitat as much as possible, the project would cause habitat fragmentation within LSR 227. Road decommissioning reduces the edge effects over time by revegetating road surfaces and eliminating road corridors. Revegetating selected roads in conjunction with the density management proposed for adjacent plantations would create larger blocks of late successional habitat in the future.

These projects have been designed by an interdisciplinary team of resource professionals on the Rogue River NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA

Fisheries, and State agencies. They were planned within the watersheds that would be affected by the Pacific Connector pipeline project. They are a component of the PCGP application and would be a requirement of the Right-of-Way grant. Overall, these projects would help maintain and restore rare aquatic and terrestrial plant and animal communities on the Rogue River NF (see tables 2.2.1-3 and 2.2.1-4 and figures 2.2-1 and 2.2-2 for additional information).

#### 2.2.1.2 Forest Plan Amendments Related to Soil, Water and Riparian Areas (RRNF -5, RRNF-6):

Two Forest Plan standards associated with the soil, water, and riparian resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Rogue River NF LRMP. These standards are:

- Management Prescription 26 Restricted Riparian Standard & Guidelines for Facilities (10), (RRNF LRMP 4-308). Helispots and transmission corridors should be located outside this management area.

- Standard & Guideline for Soils (3) (RRNF LRMP 4-41, 4-83, 4-97, 4-123, 4-177, 4-307). No more than 10 percent of an activity area should be compacted, puddled or displaced upon completion of project (not including permanent roads or landings). No more than 20 percent of the area should be displaced or compacted under circumstances resulting from previous management practices, including roads and landings. Permanent recreation facilities or other permanent facilities are exempt.

The proposed amendments to these standards are:

- Management Prescription 26 Restricted Riparian Standard & Guidelines for Facilities (10), (RRNF LRMP 4-308). Helispots and transmission corridors should be located outside this management area, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented**. (Proposed amendment RRNF-5)

- Standard & Guideline for Soils (3) (RRNF LRMP 4-41, 4-83, 4-97, 4-123, 4-177, 4-307). No more than 10 percent of an activity area should be compacted, puddled or displaced upon completion of project (not including permanent roads or landings). No more than 20 percent of the area should be displaced or compacted under circumstances resulting from previous management practices, including roads and landings, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Permanent recreation facilities or other permanent facilities are exempt. (Proposed amendment RRNF-6)

While the amendments would provide an exception to meeting these standards, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on the soil, water and riparian resources within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of these two project-level amendments is to make the proposed Pacific Connector pipeline project consistent with the Rogue River NF LRMP. Thus, the substantive planning rule requirements that are directly related to these three amendments are:

- 36 CFR 219.8(a)(3)(i) – The plan must include plan components "to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity
- 36 CFR 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore] "soils and soil productivity, including guidance to reduce soil erosion and sedimentation."

Because the two proposed amendments are "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendments (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the two amendments, it is important to recognize that the applicable sections of 36 CFR 219.8(a) that are described above, requires plan components to "maintain or restore" the soil, water and riparian resources across the entire planning area (i.e., the Rogue River NF). These plan amendments do not alter these LRMP plan requirements for managing the soil, water, and riparian resources across 99.97% of the Rogue River NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 206 acres of the 628,443 acre Rogue River NF. Of the 206 acres of pipeline corridor construction it is estimated that approximately 2.5 of these acres would not meet the standards for riparian area management described above and approximately 62 to 144 acres would not meet standards for soils described above.

The amendments modify two standards so that in the 206 acres of the project construction area the project need not be in compliance with these standards' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 206 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the two management requirements described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.8(a) rule requirements within the "scope and scale" of these proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.8(a) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Soil, Water, and Riparian Resources and Meet the Applicable 36 CFR 219.8(a) Requirements.*

The Forest Service has worked with Pacific Connector Gas Pipeline (PCGP) to inventory, analyze, and evaluate the geologic, soil, and hydrologic resources that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration are

enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures, incorporated into amendments for soil, water, and riparian resources are designed to minimize, maintain or restore the potential for soil movement, slope stability, water quality, and to ensure adequate restoration and revegetation. These measures are identified in: the *Erosion Control and Revegetation Plan* (POD I); *Right-of-Way Clearing Plan* (POD U); *Wetland and Waterbody Crossing Plan* (POD BB); the *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014); the *Stream Crossing Risk Analysis*; and *Stream Crossing Risk Analysis Addendum* (GeoEngineers2017d, 2018a). PCGP would also follow the FERC's applicant prepared Wetland Procedures and the Best Management Practices for the State of Oregon. To further reduce potential for landslides on steep slopes, the Forest Service, BLM, and FERC are also recommending additional industry best management practices and measures identified from the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) be incorporated into PCGP's terms and conditions of the Right-of-Way Grant as described in the POD's identified above. See 4.2.3.3 of the DEIS for a description of soil risk and sensitivity assessment.

Areas with soils rated moderate to very high for risk or sensitivity (17 acres total) would be recommended for more site-specific validation of the risk criteria used in the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) to confirm that specific locations merit consideration of the more aggressive soil remediation measures, such as: a 2- to 3-inch organic mulch surface application (80 percent coverage) of woodchips, logging slash, and/or straw; adaptive seed mixes and vegetation to better fit site conditions; deep subsoil decompaction with hydraulic excavators that leave constructed corridor mounded and rough with maximum water infiltration so that water cannot flow downhill for any appreciable distance; more aggressive use of constructed surface water runoff dispersion structures such as closely placed and more pronounced slope dips and water bars, etc.; more aggressive use of constructed surface runoff entrapments such as silt fencing, sediment settling basins, or straw bale structures, etc.; more aggressive placement (100 percent coverage) and depth (3 to 4 inches) of ground cover using woodchips, logging slash, straw bales, wattles (see POD's U and I). In efforts to protect soil productivity, topsoil segregation would be required for pipeline construction at wetland and waterbody crossings on NFS lands (POD U).

Some of the required mitigation measures in the POD BB and *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014) to protect wetlands and minimize, maintain or restore compaction include: limiting the construction right-of-way width to 75 feet through wetlands; placing equipment on mats; using low-pressure ground equipment; limiting equipment operation and construction traffic along the right-of-way; locating temporary workspace (TEWAS) more than 50 feet away from wetland boundaries; cutting vegetation at ground level; limiting stump removal to the construction trench; segregating the top 12 inches of soil, or to the depth of the topsoil horizon; using "push-pull" techniques in saturated wetlands; limiting the amount of time that the trench is open by not trenching until the pipe is assembled and ready for installation; not using imported rock and soils for backfill; and not using fertilizer, lime, or mulch during restoration in wetlands. PCGP must also follow the FERC Waterbody and Wetland Construction and Mitigation Procedures. See 4.3.3.2 of the DEIS for a complete list of applicable mitigation measures for pipeline construction at specific waterbody and stream crossings.

In an effort to minimize, maintain or restore the impacts to streams and riparian areas, PCGP adopted route variations to co-locate the proposed construction corridor adjacent to existing roads and along dry ridge tops (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands). In addition, PCGP has committed to limit construction at waterbody crossings to times of dry weather or low water flow. PCGP would implement the required erosion control measures at the proposed stream crossings to minimize, maintain or restore potential erosion and sedimentation impacts. The applicable mitigation measures and monitoring requirements in the POD relating to water waterbody crossings are included in the *Site Specific Forest Service Stream Crossing Prescriptions, and Wetland and Waterbody Crossing Plan* (POD BB). In addition, applicable mitigation measures from the FERC approved applicant prepared Procedures for Wetland and Waterbody Crossings would be required.

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to: facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of Riparian Areas, Soils, and Soil Productivity in the Plan Area (36 CFR 219.8(a)(3)(i), 36 CFR 219.8(a)(2)(ii)).*

Part of the CMP on the Rogue River NF includes proposals to place large woody debris in-stream for 1.5 miles, repair stream crossings at 32 sites, and decommission approximately 57.5 miles of road.

Placement of LWD in streams adds structural complexity to aquatic systems by creating pools and riffles, trapping fine sediments and can contribute to reductions in stream temperatures over time (Tippery et al. 2010). Placing LWD in streams affects channel morphology, the routing and storage of water and sediment, and provides structure and complexity to stream systems. Complex pools and side channels created by instream wood provide overwintering habitat to stream

salmonids and other aquatic organisms (Solazzi et. al. 2000). They also provide cover from predators during summer low flow periods when predation is at its highest. Providing more stream channel structure results in better over wintering habitat, improved summer pool habitat, and more abundant spawning gravels.

Restoring stream crossings reconnects aquatic habitats by allowing the passage of aquatic biota and restoring riparian vegetation. Stream crossing replacement would directly improve stream connectivity and habitat for aquatic species by immediately restoring access to formerly inaccessible habitats. Indirectly, these projects would reduce potential sediment levels in the long term by decreasing the potential for road failure. Stream crossing projects also reduce stream velocities by increasing stream crossing sizes, eliminating flow restrictions and allowing passage to additional reaches of habitat by removing barriers to aquatic species which improves access to spawning and rearing habitat and allows unrestricted movement throughout stream reaches during seasonal changes in water levels (Hoffman 2007).

Decommissioning roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning and stormproofing would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project would occur. Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads.

These projects have been designed by an interdisciplinary team of resource professionals on the Rogue River NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. They were planned within the watersheds that would be affected by the Pacific Connector pipeline project. They are a component of the PCGP application and would be a requirement of the Right-of-Way grant. Overall, these projects would help maintain and restore riparian and soil resources on the Rogue River NF (see tables 2.2.1-3 and 2.2.1-4 and figures 2.2-1 and 2.2-2 for additional information).

#### 2.2.1.3 Forest Plan Amendments Related Visual Resources (RRNF -2, RRNF-3, RRNF-4):

Four Forest Plan standards associated with visual resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Rogue River NF LRMP. These standards are:

- Management Strategy 6, Foreground Retention, Standard and Guideline (1), (RRNF LRMP 4-72). Manage the area for Retention Visual Quality Objective. Catastrophic occurrences may dictate a need for short term departure from Retention. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met.

- Management Strategy 7, Foreground Partial Retention, Standard and Guideline (4), (RRNF LRMP 4-86). Correct unacceptable form, line, color or texture as a result of management activities either during the operation or within two years after completion of the activity.

- Management Strategy 7, Foreground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-86). Manage the area for Partial Retention Visual Quality Objective. Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective. Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met.

- Management Strategy 9, Middle Ground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-112). Manage the area for Partial Retention Visual Quality Objective. Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective. Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met.

The proposed amendments to these standards are:

- Management Strategy 6, Foreground Retention, Standard and Guideline (1), (RRNF LRMP 4-72). Manage the area for Retention Visual Quality Objective **(VQO), with the exception of the Pacific Connector Pipeline right-of-way, where the VQO would be amended to Foreground Partial Retention where the pipeline would cross the Big Elk Road. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Catastrophic occurrences may dictate a need for short term departure from Retention. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met. (Proposed amendment RRNF-2)

- Management Strategy 7, Foreground Partial Retention, Standard and Guideline (4), (RRNF LRMP 4-86). Correct unacceptable form, line, color or texture as a result of management activities either during the operation or within two years after completion of the activity, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the amended VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses the Big Elk Road. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (Proposed amendment RRNF-2)

- Management Strategy 7, Foreground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-86). Manage the area for Partial Retention Visual Quality Objective. Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective **(VQO), with the exception of the Pacific Connector Pipeline right-of-way, where the VQO would be amended to Modification where the pipeline would cross the Pacific Crest Trail. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met. (proposed amendment RRNF-3)

- Management Strategy 7, Foreground Partial Retention, Standard and Guideline (4), (RRNF LRMP 4-86). Correct unacceptable form, line, color or texture as a result of management

activities either during the operation or within two years after completion of the activity, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the amended VQO within 15 - 20 years after completion of the construction phase of the project where the pipeline crosses the Pacific Crest Trail. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (Proposed amendment RRNF-3)

- Management Strategy 9, Middle Ground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-112). Manage the area for Partial Retention Visual Quality Objective, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline is adjacent to Highway 140.[4] The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective. Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met. (Proposed amendment RRNF-4)

While the amendments would provide an exception to meeting these standards, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on the visual resources within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of these five project-level amendments is to make the proposed Pacific Connector pipeline project consistent with the Rogue River NF LRMP. Thus, the substantive planning rule requirements that are directly related to these five amendments are:

- 36 CFR 219.10(a)(1) – […the responsible official shall consider: …] "(1) Aesthetic values,… scenery,... viewsheds...".

- 36 CFR 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…"

Because the proposed amendments are "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendments (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the five amendments, it is important to recognize that the applicable sections of 36 CFR 219.10 that are described above, requires plan components to provide for aesthetic values and scenic character across the entire planning area (i.e., the Rogue River NF). These plan amendments do not alter these LRMP plan requirements for managing visual resources across 99.99% of the Rogue River NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 206 acres of the 628,443 acre

[4] Duration of impact specifications are found in the National Forest Landscape Management Handbook 462 (USDA Forest Service 1974). The recommended duration to meet standards for Middleground Partial Retention is 3 years (see RRNF LRMP FEIS p. III-119).

Rogue River NF. Of the 206 acres of pipeline corridor construction it is estimated that approximately 19 of these acres would not meet the standards for visual resources described above.

The amendments modify four standards so that in the 206 acres of the project construction area the project need not be in compliance with these standards' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 206 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the four management requirements described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.10 rule requirements within the "scope and scale" of these proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.10 requirements are being addressed.

*How the Required Mitigation Measures would Consider, Minimize, Maintain or Restore Effects to Aesthetic Values and Scenic Character and Meet the Applicable 36 CFR 219.10(a) and 36 CFR 219.10(b)Requirements.*

The Forest Service has worked to inventory, analyze, and evaluate visual resources, view sheds, and aesthetics that could be affected by this project. Forest Service landscape architect provided technical support to FERC and Forest Service third-party contractors by reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures incorporated into amendments for Visual Quality Objectives, are designed to minimize, maintain or restore the potential for long-term impacts to visually sensitive areas. To ensure adequate restoration and revegetation of the ROW, design features are identified in the *Erosion Control and Revegetation Plan* (POD I), *Right-of-Way Clearing Plan* (POD U), *Leave Tree Protection Plan* (POD P), *Aesthetics Management Plan* (POD A), and *Recreation Management Plan* (POD S). In addition, routing considerations were identified during project development to ensure reduced visual impacts at the Pacific Crest Trail crossing by modifying the route to include a 45 degree angle and avoiding straight line impacts to trail users. (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands)

A visual assessment was conducted to determine the potential effects on visual resources associated with the pipeline. Representative viewpoint points (also referred to as KOPs) were identified within the view shed for the pipeline, defined as the area from which the pipeline would be potentially visible. Photographs of existing visual conditions were used in preparing computerized visual simulations for each KOP. Because the appearance of the pipeline right-of-way would change with time, a series of simulations were prepared to illustrate how the pipeline

right-of-way would look at different timeframes following construction. These KOPs would also serve as monitoring points for mitigation.

Pacific Connector produced POD A that outlined measures to reduce visual impacts along its pipeline route. To the extent feasible, PCGP would use revegetation efforts to shape and blend the pipeline easement, enhance the setting, and mimic the natural features of the landscape. These measures would consist of revegetating all disturbed areas and replanting trees in TEWAs and any other areas of the temporary construction right-of-way that were forested prior to construction (see POD I).

On Forest Service lands, PCGP would maintain a cleared 30-foot width centered over the pipe allowing the remainder of the permanent easement to be reforested. This allows trees to naturally reestablish along the edges of the permanent easement at a staggered, more natural-looking interval. Replacing slash in forested areas of the right-of-way during restoration activities would immediately affect the visual contrast in color and texture of the disturbed right-of-way areas. Over time, as the right-of-way revegetates and narrows in width and changes in form, texture and color, potential visual impacts would diminish.

Additionally, a row, or if necessary, clusters of trees and/or shrubs would be planted across the right-of-way to provide visual screens at key road and trail crossings in sensitive view sheds. For all revegetation practices, PCGP and/or its contractors would only use agency-approved tree and plant species, in compliance with management plan objectives and in consultation with agency specialists.

**Site Specific Crossing Prescriptions:**

Big Elk Road (MP 161.41). Within the Rogue River National Forest, the Pipeline crosses an area managed for Foreground Retention with high scenic integrity. PCGP would neck down to a width of 50 feet immediately adjacent to either side of the Big Elk Road crossing. The construction right-of-way would then expand from 50 feet to the full 95-foot construction right-of-way width at 100 feet from either side of the road. To ensure that the appropriate large trees are conserved on either side of Big Elk Road, PCGP's Environmental Inspectors would verify the limits of the staked construction limits in conjunction with a Forest Service representative (see POD P). PCGP would implement the mitigation recommendations detailed in Section 3.2 and 3.3 and further described in the POD I to minimize, maintain or restore potential visual effects at this road crossing, and a buffer of vegetation would mask the right-of-way on both sides of the road. PCGP would additionally revegetate the right-of-way using large native trees and shrubs to begin the mitigation process.

Pacific Crest National Scenic Trail Corridor. The area where the Pipeline intersects the PCT on the Rogue River National Forest supports a stand of old-growth forest and is managed for Foreground Partial Retention to maintain the aesthetic forest appeal for trail users. The typical construction right-of-way width is 95 feet, which could devalue this trail crossing segment during construction. To minimize, maintain or restore impacts to the scenic quality of the area, PCGP would "neck down" the construction right-of-way from 95 feet to 75 feet in width for a distance of more than 300 feet on either side of the trail. UCSAs (no tree clearing) have also been located behind these neck downs, outside of the immediate foreground visual area, to minimize, maintain or restore disturbance. These UCSAs would be used to store slash and stumps during construction that would be redistributed across the right-of-way during restoration. To further minimize,

maintain or restore potential visual impacts at the PCT crossing, the route was realigned at the request of the Forest Service to shorten the potential visual corridor down the right-of-way. Additional impact minimization measures include:

- Identifying trees along the edge of the construction right-of-way that can be saved from clearing, based on hazard tree and construction safety.
- Scalloping adjacent edges of timber as directed by the Forest Service landscape architect.
- Salvaging topsoil (duff and A horizon) to a depth of 12-inches along the trench line, segregate from spoil material, and replace during restoration.
- Minimizing grading within the 75-foot construction right-of-way based on safety requirements. Stumps would be removed, or gridded as necessary to provide a safe equipment working plane.
- Replanting a 75-foot wide visual screen on either side of the trail with nursery trees and shrubs within 6 days of final grading, dependent on seasonal planting constraints (and not within the 30 foot-operational easement). Replanting would be with mixed conifer species of differing age class per the USFS landscape plan and would include hydro-mulch seeding.
- Revegetating the remaining right-of-way with nursery trees and shrubs planted along the edges of the right-of-way in scalloped arrangement.
- Hydro-mulch seeding all disturbed soils.
- Placing logs and LWD in the construction right-of-way as directed by the USFS landscape plan.
- Using a gravity drip irrigation system with a water source from the well at Brown Mountain Shelter, to improve replanting establishment.
- Replanting would occur if mortality exceeds 30 percent.

Construction of the trail crossing would also be completed as a "tie-in" so that trenching, pipe stringing, and installation activities do not interrupt trail users for extended periods. It is expected that construction of the trail tie-in would be completed within 48 hours or less to minimize, maintain or restore potential impacts to trail users and reduce the need for trail detours.

Upon completion of construction in the area, PCGP would revegetate the construction right-of-way using native trees (not within the 30 foot-operational easement), shrubs, and plants. Section 3.0 of the POD A describes additional measures to be used on federal lands for protecting and mitigating for visual resources. PCGP would coordinate with the Forest Service and the Pacific Crest Trail Association regarding the need for and location of trail detours.

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to: facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and

review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (*Environmental Briefings and Compliance Plan*, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to visual resources and recreational resources are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Rogue River NF. | The Rogue River NF LRMP (RRNF LRMP 1990) would be amended to exempt certain known sites within the area of the proposed Pacific Connector right-of-way grant from the Management Recommendations required by the 2001 "Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (Survey and Manage ROD) For known sites within the proposed right-of-way that cannot be avoided, the 2001 Management Recommendations for protection of known sites of Survey and Manage species would not apply. For known sites located outside the proposed right-of-way but with an overlapping protection buffer only that portion of the buffer within the right-of-way would be exempt from the protection requirements of the Management Recommendations. Those Management Recommendations would remain in effect for that portion of the protection buffer that is outside of the right of way. The proposed amendment would not exempt the Forest Service from the requirements of the Survey and Manage ROD, as modified, to maintain species persistence for affected Survey and Manage species within the range of the northern spotted owl. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. The amendment would provide an exception from these standards for the Pacific Connector Project and include specific mitigation measures and project design requirements for the project. | Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities." § 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area." | 55 acres of late successional and old growth (LSOG) habitat directly impacted from construction activity[6]<br><br>206 total acres impacted from construction activity<br><br>36 survey and manage sites potentially impacted<br><br>This amendment would affect approximately 0.03% of the Rogue River NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (J) Plant Conservation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Chapter 3, DEIS Route Design and Modifications on NFS lands<br><br>Appendix K, Survey and Manage Persistence Evaluations | Reallocation of Matrix Lands to LSR – 522 Acres<br><br>Stand Density Management – 618 acres<br><br>Terrestrial Habitat Improvements – 1,153 acres<br><br>Road Decommissioning in LSR – 57.5 miles |
| RRNF-2: Project Specific Amendment of Visual Quality | The Rogue River NF LRMP would be amended to change the VQO where the Pacific Connector pipeline route crosses the Big Elk Road at about pipeline MP 161.4 in | Management Strategy 6, Foreground Retention, Standard and Guideline (1), (RRNF LRMP 4-72). Manage the area for | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § | One crossing of the Big Elk Road that | POD (A) Aesthetics Management Plan for Federal Lands | |

[5] The compensatory mitigation listed in this column reflects the mitigation most related to the proposed amendment. It should be noted that other actions in the CMP may also be beneficial.

[6] Direct Impacts include acres cleared for construction in the construction corridor and temporary extra work areas (TEWA), as well as acres modified from uncleared storage areas (UCSA)

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| Objectives (VQO) on the Big Elk Road: | Section 16, T.37S., R.4E., W.M., OR, from Foreground Retention (Management Strategy 6, LRMP page 4-72) to Foreground Partial Retention (Management Strategy 7, LRMP page 4-86) and allow 10-15 years for amended VQO to be attained. The existing Standards and Guidelines for VQO in Foreground Retention where the Pacific Connector pipeline route crosses the Big Elk Road require that VQOs be met within one year of completion of the project and that management activities not be visually evident. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment that would apply only to the Pacific Connector Pipeline Project in the vicinity of Big Elk Road and would not change future management direction for any other project. | Retention Visual Quality Objective **(VQO), with the exception of the Pacific Connector Pipeline right-of-way, where the VQO would be amended to Foreground Partial Retention where the pipeline would cross the Big Elk Road. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Catastrophic occurrences may dictate a need for short term departure from Retention. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met.<br><br>Management Strategy 7, Foreground Partial Retention, Standard and Guideline (4), (RRNF LRMP 4-86). Correct unacceptable form, line, color or texture as a result of management activities either during the operation or within two years after completion of the activity, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the amended VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses the Big Elk Road. The applicable mitigation measures identified in the POD and Pacific Connector** | 219.10(a)(1) – […the responsible official shall consider: …] "(1) Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…" | would exceed VQO standards.<br><br>This amendment would only affect approximately 5 acres (less than 0.001%) of the Rogue River NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan | |

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| | | **project design requirements must be implemented.** | | | | |
| RRNF-3: Project - Specific Amendment of VQO on the Pacific Crest Trail: | The Rogue River NF LRMP would be amended to change the VQO where the Pacific Connector pipeline route crosses the Pacific Crest Trail at about pipeline MP 168 in Section 32, T.37S., R.5E., W.M., OR, from Foreground Partial Retention (Management Strategy 7, LRMP page 4-86) to Modification (USDA Forest Service Agricultural Handbook 478) and to allow 15-20 years for amended VQOs to be attained. The existing Standards and Guidelines for VQOs in Foreground Partial Retention in the area where the Pacific Connector pipeline route crosses the Pacific Crest Trail require that visual mitigation measures meet the stated VQO within three years of the completion of the project and that management activities be visually subordinate to the landscape. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment that would apply only to the Pacific Connector Pipeline Project in the vicinity of the Pacific Crest Trail and would not change future management direction for any other project. | Management Strategy 7, Foreground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-86). Manage the area for Partial Retention Visual Quality Objective. Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective **(VQO), with the exception of the Pacific Connector Pipeline right-of-way, where the VQO would be amended to Modification where the pipeline would cross the Pacific Crest Trail. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.10(a)(1) – […the responsible official shall consider: …] "(1)Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…" | One crossing of the PCT that would exceed VQO standards<br><br>This amendment would only affect approximately 5 acres (less than 0.001 %) of the Rogue River NF | POD (A) Aesthetics Management Plan for Federal Lands<br><br>POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (S) Recreation Management Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands | |
| RRNF-4: Project-Specific Amendment of Visual Quality Objectives Adjacent to Highway 140: | The Rogue River NF LRMP would be amended to allow 10-15 years to meet the VQO of Middleground Partial Retention between Pacific Connector pipeline MPs 156.3 to 156.8 and 157.2 to 157.5 in Sections 11 and 12, T.37S., R.3E., W.M., OR. Standards and Guidelines for Middleground Partial Retention (Management Strategy 9, LRMP Page 4-112) require that VQOs for a given location be achieved within three years of completion of the project. Approximately 0.8 miles or 9 acres of the Pacific Connector right-of-way in | Management Strategy 9, Middle Ground Partial Retention, Standard and Guideline (1), (RRNF LRMP, 4-112). Manage the area for Partial Retention Visual Quality Objective, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the VQO within 10 - 15 years after completion of the construction phase of the** | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.10(a)(1) – […the responsible official shall consider: …] "(1)Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including | Approximately 0.8 miles of VQO standards along Hwy 140 would be exceeded<br><br>This amendment would only affect about 9 acres (0.001 %) of the Rogue River NF | POD (A) Aesthetics Management Plan for Federal Lands<br><br>POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan | |

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| | the Middleground Partial Retention VQO visible at distances of 0.75 to 5 miles from State Highway 140 would be affected by this amendment. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment that would apply only to the Pacific Connector Pipeline Project in Sections 11 and 12, T.37S., R.3E., W.M., OR, and would not change future management direction for any other project. | **project where the pipeline is adjacent to Highway 140.[7] The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Catastrophic occurrences may dictate a need for short-term departure from Partial Retention Visual Quality Objective. Blend and shape regeneration openings with the natural terrain to the extent possible. Assess the impacts to visual resources in all project environmental analysis. Specifically address how the visual quality objective will be met. | recreation settings, opportunities, . . . and scenic character...". | | POD (U) Right-of-Way Clearing Plan | |
| RRNF-5: Project-Specific Amendment to Allow the Pacific Connector Pipeline Project in Management Strategy 26, Restricted Riparian Areas: | The Rogue River NF LRMP would be amended to allow the Pacific Connector right-of-way to cross the Restricted Riparian land allocation. This would potentially affect approximately 2.5 acres of the Restricted Riparian Management Strategy at one perennial stream crossing on the South Fork of Little Butte Creek at about pipeline MP 162.45 in Section 15, T.37S., R.4E., W.M., OR. Standards and Guidelines for the Restricted Riparian land allocation prescribe locating transmission corridors outside of this land allocation (Management Strategy 26, LRMP page 4-308,). The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a site-specific amendment applicable only to the Pacific Connector Pipeline Project | Management Prescription 26 Restricted Riparian Standard & Guidelines for Facilities (10), (RRNF LRMP 4-308). Helispots and transmission corridors should be located outside this management area, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented**. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(3)(i) – The plan must include plan components "to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity" | approximately 2.5 acres of the Restricted Riparian Management Strategy at one perennial stream crossing on the South Fork of Little Butte Creek would be affected<br><br>This amendment would only affect approximately 2.5 acres (less than 0.001%) of the Rogue River NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>POD (BB) Wetland and Waterbody Crossing Plan<br><br>Forest Service Site Specific Stream Crossing Prescriptions (NSR 2014)<br><br>Stream Crossing Risk Analysis; and Stream Crossing Risk Analysis Addendum (GeoEngineers2017d, 2018a) | Aquatic and Riparian Habitat – Large Woody Debris Instream - 1.5 miles<br><br>Aquatic and Riparian Habitat Stream Crossing Repair - 32 Sites<br><br>Road Decommissioning – 57.5 miles |

[7] Duration of impact specifications are found in the National Forest Landscape Management Handbook 462 (USDA Forest Service 1974). The recommended duration to meet standards for Middleground Partial Retention is 3 years (see RRNF LRMP FEIS p. III-119).

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| | and would not change future management direction for any other project. | | | | Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands | |
| RRNF-6: Site-Specific Amendment to Exempt Limitations on Detrimental Soil Conditions within the Pacific Connector Right-of-Way in All Management Areas: | The Rogue River NF LRMP would be amended to exempt limitations on areas affected by detrimental soil conditions from displacement and compaction within the Pacific Connector right-of-way in all affected Management Strategies. Standards and Guidelines for detrimental soil impacts in affected Management Strategies require that no more than 10 percent of an activity area should be compacted, puddled or displaced upon completion of project (not including permanent roads or landings). No more than 20 percent of the area should be displaced or compacted under circumstances resulting from previous management practices including roads and landings. Permanent recreation facilities or other permanent facilities are exempt (RRNF LRMP 4-41, 4-83, 4-97, 4-123, 4-177, 4-307). The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | Standard & Guideline for Soils (3) (RRNF LRMP 4-41, 4-83, 4-97, 4-123, 4-177, 4-307). No more than 10 percent of an activity area should be compacted, puddled or displaced upon completion of project (not including permanent roads or landings). No more than 20 percent of the area should be displaced or compacted under circumstances resulting from previous management practices, including roads and landings, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Permanent recreation facilities or other permanent facilities are exempt. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore] "soils and soil productivity, including guidance to reduce soil erosion and sedimentation." | Approximately between 62 and 144 acres of detrimental soil conditions could result from the pipeline construction<br><br>This amendment would affect approximately 0.02% of the Rogue River NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Technical Report on Soil Risk and Sensitivity Assessment (NSR 2014) | Road Decommissioning – approximately 57.5 Miles |
| RRNF-7: Reallocation of Matrix Lands to LSR | The Rogue River NF LRMP would be amended to change the designation of approximately 522 acres from Matrix land allocations to the LSR land allocation in Section 32, T.36S., R.4E. W.M., OR. This change in land allocation is proposed to partially mitigate the potential adverse impact of the Pacific Connector Pipeline Project on LSR 227 on the Rogue River NF. This is a plan level amendment that would change future management direction for the lands reallocated from Matrix to LSR. | | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(1)(i) – [the plan must include plan components to maintain or restore] "Interdependence of terrestrial and aquatic ecosystems in the plan area." § 219.8(b)(1) – [the plan must include plan components to guide the | Approximately 55 acres of LSOG and 142 acres of Non-LSOG habitat would be cleared within LSR 227<br><br>This amendment would affect approximately 0.08% of the Rogue River NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan | Reallocation of Matrix Lands to LSR – approximately 237 acres of LSOG and 285 acres of Non-LSOG habitat would be reallocated from matrix to LSR 227<br><br>Stand Density Management – 618 acres<br><br>Terrestrial Habitat Improvement – 1,153 acres<br><br>Road Decommissioning in LSR – 57.5 miles |

TABLE 2.2.1-1

**Proposed LRMP Amendments on the Rogue River NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[5] |
|---|---|---|---|---|---|---|
| | | | plan area's contribution to social and economic sustainability] "Social, cultural and economic conditions relevant to the area influenced by the plan." § 219.9(b)(1) "The responsible official shall determine whether or not the plan components required by paragraph (a) of this section provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area", and § 219.9(a)(2)(ii)– [the plan must include plan components to maintain or restore: …] "(ii) Rare aquatic and terrestrial plant and animal communities". | | | |

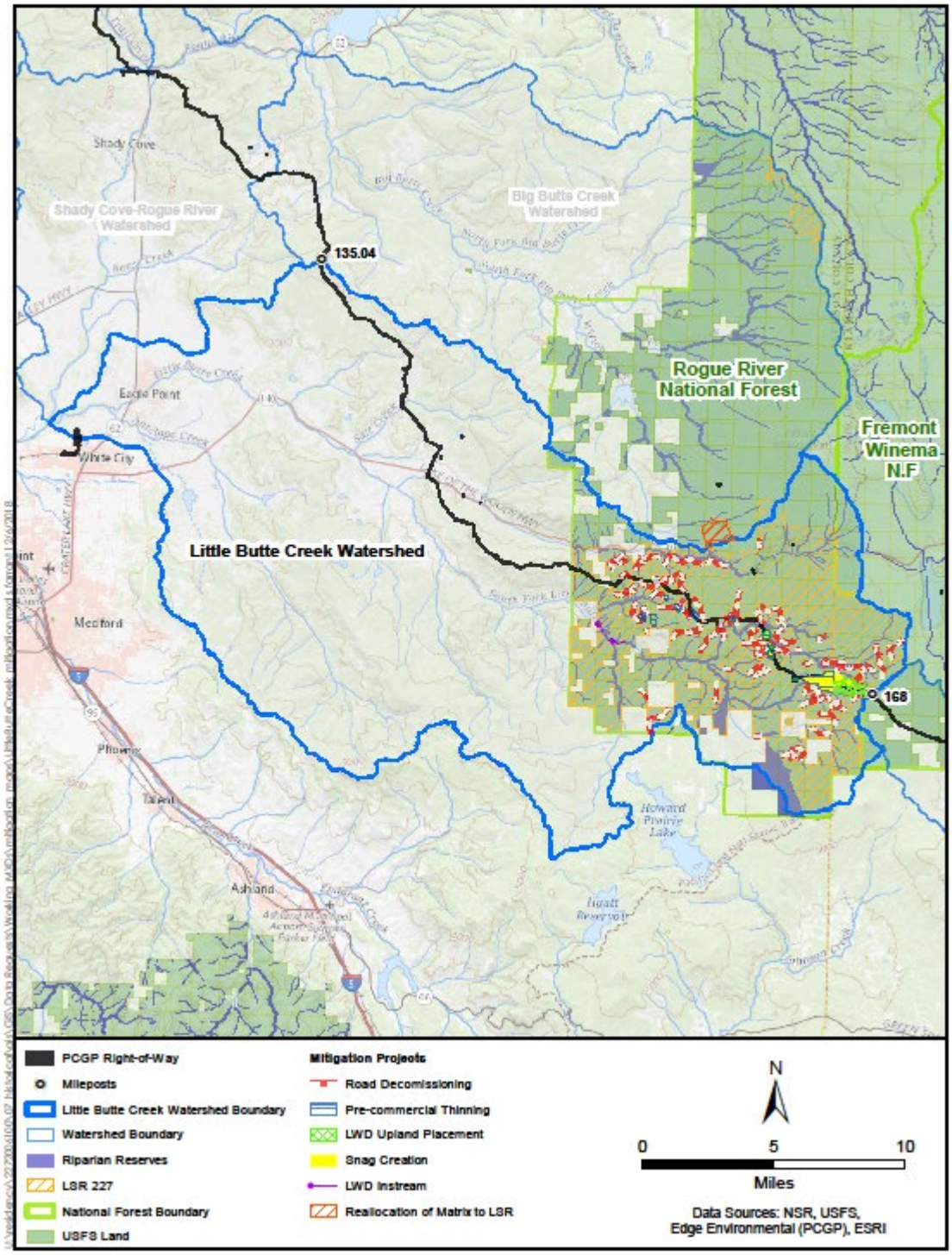
TABLE 2.2.1-2

**Mitigation Projects to Address LRMP Objectives on the Rogue River NF**

| Unit | Watershed | Mitigation Group | Project Type | Project Name | Quantity a/ | Unit |
|---|---|---|---|---|---|---|
| Rogue River NF | Little Butte Creek | Aquatic and Riparian Habitat | LWD In-stream | South Fork Little Butte Creek. LWD | 1.5 | mile |
| | | Aquatic and Riparian Habitat | Stream Crossing Repair | Little Butte Creek Stream Crossing Decommissioning | 32 | sites |
| | | Road sediment reduction | Road Decommissioning | Little Butte Creek Road Decommissioning | 57.5 | miles |
| | | Stand Density Fuel Break | Pre-commercial Thinning | Little Butte Creek LSR Pre-commercial Thin | 618 | acres |
| | | Terrestrial Habitat Improvement | Habitat Planting | Little Butte Creek Mardon Skipper Butterfly | 20 | acres |
| | | Terrestrial Habitat Improvement | LWD Upland Placement | Little Butte Creek LSR LWD Placement | 511 | acres |
| | | Terrestrial Habitat Improvement | Snag Creation | Little Butte Creek LSR Snag Creation | 622 | acres |
| | | Reallocation of Matrix Lands to LSR | Land Reallocation from Matrix to LSR | LRMP Amendment RRNF 7, LSR 227 Reallocation | 25 | acres |
| | Big Butte Creek | Reallocation of Matrix Lands to LSR | Land Reallocation from Matrix to LSR | LRMP Amendment RRNF 7, LSR 227 Reallocation | 497 | acres |

a/ Acres are rounded to the nearest whole acre and miles to the nearest tenth of a mile.

**Figure 2.2-1. Map of CMP Projects in the Little Butte Creek Watershed on the Rogue River NF[8]**




[8] The reallocation of matrix to LSR in the Big Butte Watershed is also shown on this map.

TABLE 2.2.1-3

**Summary of Rogue River NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| Aquatic and Riparian Habitat | Large Woody Debris In-stream | 1.5 Miles | Placement of LWD in streams adds structural complexity to aquatic systems by creating pools and riffles, trapping fine sediments and can contribute to reductions in stream temperatures over time (Tippery et al. 2010). This is responsive to Aquatic Conservation Strategy (ACS) objectives 2, 3, 4, and 5. | **Short-term adverse effects**: LWD in-stream refers to logs (typically greater than 20 inches in diameter), limbs, or root wads that intrude into a stream channel. Placing this material in-stream can be accomplished with ground equipment such as excavators and/or helicopters. These activities have the potential to increase suspended sediment in streams and impact riparian vegetation as a result of heavy equipment use or the dragging of materials (e.g. logs) in the stream channel. Short-term impacts to water quality would occur in the form of suspended sediment and turbidity increases during in-stream implementation. However, no lasting measureable effect to water quality would occur as any sediment plume created, would quickly dissipate as soon as in-stream activities stop. In-stream work is done during summer low flow periods when turbidity plumes are an infrequently occurring event. Project design features (PDF) would include Best Management Practices (BMP) that would prevent any indirect effects to salmonids and other stream fish from project related sediment. The placement of LWD materials in the stream by using cable systems, excavators, or helicopters would create noise that could disturb NSO. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>**Long-term beneficial effects:** Placing LWD in streams affects channel morphology, the routing and storage of water and sediment, and provides structure and complexity to stream systems. Complex pools and side channels created by instream wood provide overwintering habitat to stream salmonids and other aquatic organisms (Solazzi et. al. 2000). They also provide cover from predators during summer low flow periods when predation is at its highest. Providing more stream channel structure results in better over wintering habitat, improved summer pool habitat, and more abundant spawning gravels. |
| Aquatic and Riparian Habitat | Stream Crossing Repair | 32 Sites | Restoring stream crossings reconnects aquatic habitats by allowing the passage of aquatic biota and restoring riparian vegetation. Over time, these actions reduce sediment and restore shade. Restoration of these crossings includes riparian planting as a mitigation which will help offset the impact of shade removal at pipeline R/W crossings. | **Short-term adverse effects:** Removing old culverts and restoring stream/road crossings would result in short-term adverse effects similar to the effects described for LWD above since both involve the use of heavy equipment in and around the stream channel. Similarly the work would be done during low summer flow periods to minimize impacts to aquatic species and PDFs would be designed to minimize disturbance for Northern Spotted Owl (NSO).<br>**Long-term beneficial effects:** Stream crossing replacement would directly improve stream connectivity and habitat for aquatic species by immediately restoring access to formerly inaccessible habitats. Indirectly, these projects would reduce potential sediment levels in the long term by decreasing the potential for road failure. Stream crossing projects also reduce stream velocities by increasing stream crossing sizes, eliminating flow restrictions and allowing passage to additional reaches of habitat by removing barriers to aquatic species which improves access to spawning and rearing habitat and allows unrestricted movement throughout stream reaches during seasonal changes in water levels (Hoffman 2007). |
| Road Sediment Reduction | Road Decommissioning | 57.5 Miles | Road closure reduces fine grained sediments by eliminating traffic impacts. Decommissioning roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project occur. | **Short-term adverse effects:** Road decommissioning methods generally include actions utilizing mechanized construction equipment to physically stabilize the road prism, restore natural drainage patterns, and allow for revegetation of the roadbed. Mechanized construction equipment might include excavators, backhoes and truck mounted loaders. Road closure is a method of preventing access to a road so that regular maintenance is no longer needed and future erosion is largely prevented by restoring drainage patterns if necessary and eliminating road traffic. Road decommissioning has the potential to cause short-term degradation of water quality by increasing sediment delivery to streams as roads are de-compacted by heavy equipment, culverts and cross |

TABLE 2.2.1-3

**Summary of Rogue River NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| | | | | drains are removed, and other restoration activities are implemented. The use of heavy mechanized equipment near streams could disturb the stream influence zone, deliver sediment, create turbidity, and cause stream bank erosion. There is also the potential of an accidental fuel/oil spill. These projects may cause a short-term degradation of water quality due to sediment input and chemical contamination. Stream bank condition and habitat substrate may also be adversely affected in the short term. However with careful project design and seasonal timing, these affects are expected to be of a limited extent and duration. Road decommissioning would create noise from heavy equipment that could disturb NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>**Long-term beneficial effects**: Proposed road decommissioning would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project would occur. Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads. |
| Stand Density Management | Pre-commercial Thinning LSR | 618 Acres | There will be direct impacts to existing interior, developing interior habitat. The project will result in additional fragmentation and preclude the recovery of fragmented habitat for those stands adjacent to the pipeline corridor. Both mature stands and developing stands will be removed during pipeline construction. Density management of forested stands will assist in the recovery of late-seral habitat, impact from fragmentation, reduction in edge effects and enhance resilience of mature stands. Accelerating development of mature forest characteristics will shorten the impacts of those biological services loss due to pipeline construction. Thinning of young stands is a recognized treatment within LRSs if designed to accelerate development of late-successional habitat characteristics. | **Short-term adverse effects:** Pre-commercial stand density management activities include the use of chain saws for cutting forest vegetation. Stand treatments would not be expected to adversely affect nesting habitat for the NSO since the treatments would not remove constituent elements of their nesting habitat. The proposed treatments could temporarily impact acres of dispersal habitat. This habitat would be impacted by reduction of canopy cover. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>**Long-term beneficial effects:** By creating less dense stands with less tree competition, residual trees would benefit from the increased availability of sunlight, nutrients, and water. With the increase of available nutrients, trees should be more vigorous and less susceptible to large scale insect/disease outbreaks. The proposed treatments would enhance LSOG habitat by increasing the growth, health, and vigor of the trees remaining in the stands; restoring stand density, species diversity, and structural diversity to those considered characteristic under a natural disturbance regime. |
| Terrestrial Habitat Improvement | LWD Upland Placement LSR | 511 Acres | The objective is to mitigate for the loss of recruitment of large down wood to adjacent stands and within the construction clearing zone. The project will forgo the development of large down wood for the life of the project and for decades after. Downed wood is a critical component of mature forest ecosystems. Large wood replacement will partially mitigate for the barrier effect of the corridor by creating structure across the corridor for use by small wildlife species. Placement in wood deficient areas adjacent to the corridor allows for scattering of stockpiled wood, reducing localized fuel loads while improving | **Short-term adverse effects:** Placement of LWD within and adjacent to the pipeline corridor would typically be done with heavy equipment that would drag the material into place. Heavy equipment use would increase the amount of detrimental soil damage within the treatment areas. By maintaining proper amounts of protective groundcover along with appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. LWD placement would create noise from heavy equipment that could disturb the NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside |

TABLE 2.2.1-3

**Summary of Rogue River NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| | | | habitat in deficient stands. Larger logs maintain moisture longer and are less likely to be fully consumed by fire. Managing for the proposed levels provide for a greater assurance of species abundance. | the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>**Long-term beneficial effects:** Beneficial effects include improving habitat for late-successional and other species and providing for long-term soil productivity. |
| Terrestrial Habitat Improvement | Snag Creation | 622 Acres | Objective is to mitigate immediate and future impacts to snag habitat from the clearing of the pipeline right-of-way. The project prevents development of large snags during the life of the project and for decades after. Corridor construction will result in loss of snag habitat. As snags are a critical component of spotted owl habitat, replacement is needed. Replacement would be immediate though there would be a 10 year delay as snag decay develops. | **Short-term adverse effects:** Snag creation typically employs the use of chainsaws or inoculum to kill live trees. As such there is little if any ground disturbance and only minimal noise disturbance. The potential for noise disturbance is mainly associated with breeding behavior at active NSO nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels. Any adverse environmental impacts would be de minimus and very short term.<br>**Long-term beneficial effects**: Beneficial impacts include the improvement of habitat for snag dependent species and in particular those species dependent on LSOG forests. Long-term benefits would also accrue as the created snags decay over time and eventually provide for LWD on the forest floor improving habitat for many other species and contributing to long-term soil productivity. |
| Terrestrial Habitat Improvement | Habitat Planting | 20 Acres | The Dead Indian Plateau region is one of four known sites for Mardon Skipper butterflies in the world. It is also adjacent to a known site for Short-horned Grasshoppers. Both species are on the Regional Forester's Sensitive Species list. As a long-term opening, the pipeline corridor would provide a unique opportunity to develop habitat for these two species. Planting the corridor with plants preferred by these species has the potential to increase the habitat and local range for both species. This action would provide both short-term and long-term habitat for the local population of Mardon skipper butterflies and short-horned grasshoppers. | **Short-term adverse effects:** This activity would take place within the Pacific Connector pipeline corridor and would not result in any additional adverse impacts.<br>**Long-term beneficial effects**: Beneficial impacts include helping to re-vegetate and stabilize the pipeline corridor and improving habitat for listed or sensitive insect species. |
| Reallocation of Matrix Lands to LSR | Reallocation of Matrix to LSR | 522 Acres | This mitigation group contributes to the "neutral to beneficial" standard for new developments in LSRs by adding acres to the LSR land allocation to offset the long-term loss of habitat due to the construction and operation of the pipeline project. It compensates for the removal of suitable nesting, roosting, and foraging NSO habitat by adding additional LSOG acres to the LSR land allocation. Reallocation of matrix lands to LSR also contributes to ACS objectives and may benefit Survey and Manage species by providing additional habitat that is managed to create LSOG stand conditions over time. | **Short-term adverse effects:** The reallocation of matrix lands to LSR is an administrative action that would not have any immediate environmental consequences on the ground.<br>**Long-term beneficial effects:** The proposed reallocation would change the management direction of approximately 522 acres from one of multiple uses with an emphasis on timber management to a management emphasis focusing on the creation and maintenance of late-successional forest habitat. Over time, this reallocation would benefit species dependent on late-successional forests through management actions that would be designed to improve or maintain late-successional habitat conditions. |

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TABLE 2.2.1-4

**Comparison of Total Acres of Proposed Project-Specific Amendments and Compensatory Mitigation on the Rogue River NF**

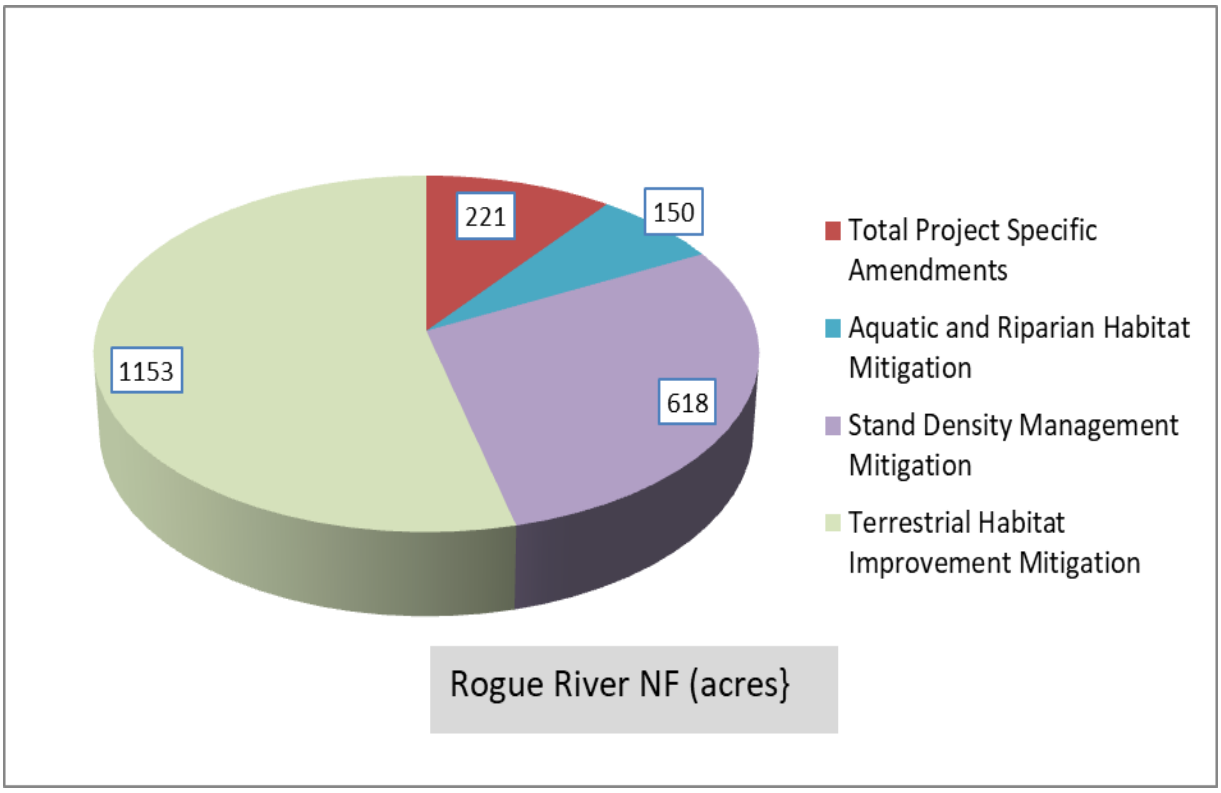
| Amendments and Compensatory Mitigation | Acres |
|---|---|
| Total Project Specific Amendments[1] | 221 |
| Aquatic and Riparian Habitat Mitigation[2] | 150 |
| Stand Density Management and Fuel Break Mitigation | 618 |
| Terrestrial Habitat Improvement Mitigation | 1153 |

Data Source: USFS GIS Data Layers

1) Includes amendments FS-1, URRNF-2, RRNF-3 RRNF-4, RRNF-5 and RRNF-6

2) Includes road sediment reduction actions and assumes a 20 foot wide treatment area

**Figure 2.2-2. Comparison of Total Acres of Proposed Project-Specific Amendments and Compensatory Mitigation on the Rogue River NF**



## 2.3 WINEMA NF

There are six proposed forest plan amendments for the Pacific Connector pipeline project on the Winema NF. An evaluation of how the proposed amendments relate to the planning requirements in 36 CFR 219.8 – 219.11 is discussed in section 2.3.1 below. These proposed amendments are summarized in table 2.3.1-1 along with the project impacts and related project design features (PDF) and compensatory mitigation. The proposed CMP projects are listed in table 2.3.1-2 and evaluated in table 2.3.1-3, table 2.3.1-4, and figure 2.3-2 below. A map of the proposed CMP projects by watershed is displayed in figure 2.3-1.

### 2.3.1 Evaluation of Winema NF Proposed Forest Plan Amendments

The proposed Pacific Connector pipeline incorporates the most up-to-date engineering and technological practices for pipeline construction and operation. However, even with following these practices, it has been determined that one Forest Plan standard associated with rare and/or isolated species (Survey and Manage), two Forest Plan standards associated with the soil, water, and riparian resources, and three Forest Plan standards associated with visual resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Winema NF LRMP as amended by the NWFP and the January 2001 Survey and Manage ROD.

#### 2.3.1.1 Forest Plan Amendments Related to Rare Aquatic and Terrestrial Plant and Animal Communities (FS-1):

*Amendment FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Winema NF.*

One Forest Plan standard associated with rare and/or isolated species (Survey and Manage) would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Winema NF LRMP as amended by the NWFP and the January 2001 Survey and Manage ROD. This standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations.

The proposed amendment to this standard is:

- Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. (Proposed amendment FS-1 on the Winema NF)

While the amendment would provide an exception to meeting this standard, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on Survey and Manage species within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of this project-level amendment is to make the proposed Pacific Connector pipeline project consistent with the Winema NF LRMP. Thus, the substantive planning rule requirements that are directly related to this amendment are:

- 36 CFR 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities."
- 36 CFR 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area."

Because the proposed amendment is "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendment (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the amendment, it is important to recognize that the applicable sections of 36 CFR 219.9(a) and (b) that are described above, requires plan components to maintain or restore rare aquatic and terrestrial plant and animal communities, across the entire planning area (i.e., the Winema NF). This plan amendment does not alter these LRMP plan requirements for managing rare plant and animal communities across 99.99% of the Winema NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 92 acres of the 1,043,547 acre Winema NF. Within this 92 acre construction corridor surveys have identified 45 Survey and Manage sites that could be potentially impacted by construction activities. The proposed amendment does not waive the persistence objective for Survey and Manage species. The analysis that was conducted (see section 4.6.4.3 of the DEIS and Appendix F.5) determined the Survey and Manage persistence objectives would be met. This means that for Winema NF lands within the project area, individual sites of Survey and Manage species may be impacted or lost to construction activities, but affected species are expected to persist within the range of the NSO despite the loss of these individual sites.

The amendment modifies this standard so that in the 92 acres of the project construction area the project need not be in compliance with this standard' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 92 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the management requirement described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.9(a) and (b) rule requirements within the "scope and scale"

of the proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.9(a) and (b) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Rare Aquatic and Terrestrial Plant and Animal Communities and Meet the Applicable 36 CFR 219.9(a) and 36 CFR 219.9 (b) Requirements*

The Forest Service has worked to inventory, analyze, and evaluate rare aquatic, terrestrial plant and animal communities that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures incorporated into amendments for Survey and Manage species are designed to minimize, maintain or restore the potential for habitat fragmentation, edge effects, and loss of long-term habitats associated with effected species. To ensure adequate restoration and revegetation of the ROW, design features are identified in the *Erosion Control and Revegetation Plan* (POD I), *Right-of-Way Clearing Plan* (POD U), *Leave Tree Protection Plan* (POD P). In addition, routing considerations were identified during project development to ensure avoidance of known populations of rare plant and animal communities (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands, as well as, Appendix F.5, *Survey and Manage Persistence Evaluations*).

As a basis for Survey and Manage determinations, Appendix F.5 provides background research on Survey and Manage species that could be affected by the PCGP Project; a review of survey reports prepared by others for the PCGP Project; and processing and analysis of spatial data obtained from the Bureau of Land Management (BLM), Forest Service, and other sources over the past 12 years. Background information was used in combination with new information available as a result of surveys for the PCGP Project and recent surveys in other portions of old growth forests to discuss the currently known distribution of the species in old growth forests within the NSO range. Impacts to sites as a result of the PCGP Project were analyzed to determine if the species would continue to have a reasonable assurance of persistence in the NSO range following implementation of the PCGP Project, taking into consideration the status and distribution of the species and general habitat in the NSO range.

Some of the required mitigation measures in the POD sections to protect rare plant and animal communities include: flagging existing snags on the edges of the construction right-of-way or TEWAs where feasible to save from clearing; snags would be saved as and used in LWD placement post-construction to benefit primary and secondary cavity nesting birds, mammals, reptiles, and amphibians; other large diameter trees on the edges of the construction right-of-way and TEWAs would also be flagged to save/protect as green recruitment or habitat/shade trees, where feasible; trees would be girdled to create snags to augment the number of snags along the right-of-way to benefit cavity nesting birds, mammals, reptiles, and amphibians. See POD's P & U and 4.7—*Land Use* of the DEIS for a complete list of applicable mitigation measures for pipeline

construction. Additional measures include low ground weight (pressure) vehicles would be used; logging machinery would be restricted to the 30-foot permanent right-of-way wherever possible to prevent soil compaction; the removal of soil duff layers would be avoided in order to maintain a cushion between the soil and the logs and the logging equipment; designed skid trails would be used to restrict detrimental soil disturbance (compaction and displacement) to a smaller area of the right-of-way over the pipeline trenching area; and the temporary construction area would be restored and revegetated using native seeds, to the extent possible, and saplings (POD I).

In an effort to minimize, maintain or restore the impacts to Survey and Manage species, PCGP adopted route variations to avoid certain species identified in the Survey and Manage Persistence Evaluations by co-locating the proposed construction corridor adjacent to existing roads, through managed timber stands or otherwise avoid unique LSOG habitats to the maximum extent practicable (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands).

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*How the Compensatory Mitigation Actions would help to Maintain or Restore Rare Aquatic and Terrestrial Plant and Animal Communities in the Plan Area (36 CFR 219.9(a), 36 CFR 219.9 (b)).*

The CMP on the Winema NF includes proposals to improve aquatic and riparian habitat that would benefit rare aquatic plant and animal communities (see the discussion of *How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of The Soils and Soil Productivity, including guidance to reduce soil erosion and sedimentation in the Plan Area (36 CFR 219.8(a)(2)(ii))* below for a discussion of benefits to aquatic habitats). The CMP also includes proposals to decommission approximately 29.2 miles of road.

Although the Pacific Connector project has been routed to avoid LSOG habitat as much as possible and is aligned along existing roads, the project would still cause some habitat fragmentation. Road decommissioning reduces the edge effects over time by revegetating road surfaces and eliminating road corridors. Revegetating selected roads could create larger blocks of late successional habitat in the future.

These projects have been designed by an interdisciplinary team of resource professionals on the Winema NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. They were planned within the watersheds that would be affected by the Pacific Connector pipeline project. They are a component of the PCGP application and would be a requirement of the Right-of-Way grant. Overall, these projects would help maintain and restore rare aquatic and terrestrial plant and animal communities on the Winema NF (see tables 2.3.1-3 and 2.3.1-4 and figures 2.3-1 and 2.3-2 for additional information).

#### 2.3.1.2 Forest Plan Amendments Related to Soil, Water and Riparian Areas (WNF -4, WNF-5):

Two Forest Plan standards associated with the soil, water, and riparian resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Winema NF LRMP. These standards are:

- Detrimental Soils Conditions, Standard and guideline 12-5, (WNF LRMP, 4-73). The cumulative effects of detrimental soil conditions should not exceed 20 percent of the total acreage within the activity area: any reason for exceeding the limitation shall be documented in an environmental assessment. Detrimental soil conditions include compaction, displacement, puddling, and moderately or severely burned soil from all activities (including roads, skid trails, and landings). Sites where the standards for displacement, puddling, and compaction are not currently met will require rehabilitation such as ripping, backblading, or fertilization. The potential for creating detrimental soil conditions will be specifically addressed through project environmental analyses. If needed, alternative management practices will be developed, and mitigating measures will be planned and implemented.

- Soil and Water, Standard & Guideline 3 (WNF LRMP 4-137). The cumulative total area of detrimental soil conditions in riparian areas shall not exceed 10 percent of the total riparian acreage within an activity area. Detrimental soil conditions include compaction, displacement, puddling, and moderately or severely burned soil.

The proposed amendments to these standards are:

- Detrimental Soils Conditions, Standard and guideline 12-5, (WNF LRMP, 4-73). The cumulative effects of detrimental soil conditions should not exceed 20 percent of the total acreage within the activity area: any reason for exceeding the limitation shall be documented in an environmental assessment, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented**. Detrimental soil conditions include compaction, displacement, puddling, and moderately or severely burned soil from all activities (including roads, skid trails, and landings). Sites where the standards for

displacement, puddling, and compaction are not currently met will require rehabilitation such as ripping, backblading, or fertilization. The potential for creating detrimental soil conditions will be specifically addressed through project environmental analyses. If needed, alternative management practices will be developed, and mitigating measures will be planned and implemented. (Proposed amendment WNF-4)

- Soil and Water, Standard & Guideline 3 (WNF LRMP 4-137). The cumulative total area of detrimental soil conditions in riparian areas shall not exceed 10 percent of the total riparian acreage within an activity area, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Permanent recreation facilities or other permanent facilities are exempt. (Proposed amendment WNF-5)

While the amendments would provide an exception to meeting these standards, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on the soil, water and riparian resources within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of these two project-level amendments is to make the proposed Pacific Connector pipeline project consistent with the Winema NF LRMP. Thus, the substantive planning rule requirements that are directly related to these two amendments are:

- 36 CFR 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore] "soils and soil productivity, including guidance to reduce soil erosion and sedimentation."

Because the two proposed amendments are "directly related" to this substantive requirement, the Responsible Official must apply the requirements within the scope and scale of the proposed amendments (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the two amendments, it is important to recognize that the applicable sections of 36 CFR 219.8(a) that are described above, requires plan components to "maintain or restore" the soil resources across the entire planning area (i.e., the Winema NF). These plan amendments do not alter these LRMP plan requirements for managing the soil resources across 99.99% of the Winema NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 92 acres of the 1,043,547 acre Winema NF. Of the 92 acres of pipeline corridor construction it is estimated that approximately 27 to 62 acres would not meet standards for soils described above.

The amendment modifies 2 standards so that in the 92 acres of the project construction area the project need not be in compliance with these standards' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 92 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the two management requirements described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures identified in the POD and Pacific Connector Project Design requirements". The inclusion of these

management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.8(a) rule requirements within the "scope and scale" of these proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.8(a) requirements are being addressed.

*How the Required Mitigation Measures would Maintain or Restore Effects to Soil, Water, and Riparian Resources and Meet the Applicable 36 CFR 219.8(a) Requirements.*

The Forest Service has worked with Pacific Connector Gas Pipeline (PCGP) to inventory, analyze, and evaluate the geologic, soil, and hydrologic resources that could be affected by this project. In addition, a third-party consultant for technical support was also utilized in reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration are enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures, incorporated into amendments for soil, water, and riparian resources are designed to minimize, maintain or restore the potential for soil movement, slope stability, water quality, and to ensure adequate restoration and revegetation. These measures are identified in: the *Erosion Control and Revegetation Plan* (POD I); *Right-of-Way Clearing Plan* (POD U); *Wetland and Waterbody Crossing Plan* (POD BB); the *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014); the *Stream Crossing Risk Analysis*; and *Stream Crossing Risk Analysis Addendum* (GeoEngineers2017d, 2018a). PCGP would also follow the FERC's applicant prepared Wetland Procedures and the Best Management Practices for the State of Oregon. To further reduce potential for landslides on steep slopes, the Forest Service, BLM, and FERC are also recommending additional industry best management practices and measures identified from the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) be incorporated into PCGP's terms and conditions of the Right-of-Way Grant as described in the POD's identified above. See 4.2.3.3 of the DEIS for a description of soil risk and sensitivity assessment.

Areas with soils rated moderate to very high for risk or sensitivity (28 acres total) would be recommended for more site-specific validation of the risk criteria used in the *Technical Report on Soil Risk and Sensitivity Assessment* (NSR 2014) to confirm that specific locations merit consideration of the more aggressive soil remediation measures, such as: a 2- to 3-inch organic mulch surface application (80 percent coverage) of woodchips, logging slash, and/or straw; adaptive seed mixes and vegetation to better fit site conditions; deep subsoil decompaction with hydraulic excavators that leave constructed corridor mounded and rough with maximum water infiltration so that water cannot flow downhill for any appreciable distance; more aggressive use of constructed surface water runoff dispersion structures such as closely placed and more pronounced slope dips and water bars, etc.; more aggressive use of constructed surface runoff entrapments such as silt fencing, sediment settling basins, or straw bale structures, etc.; more aggressive placement (100 percent coverage) and depth (3 to 4 inches) of ground cover using woodchips, logging slash, straw bales, wattles (see POD's U and I). In efforts to protect soil productivity, topsoil segregation would be required for pipeline construction at wetland and waterbody crossings on NFS lands (POD U).

Some of the required mitigation measures in the POD BB and *Forest Service Site Specific Stream Crossing Prescriptions* (NSR 2014) to protect wetlands and minimize, maintain or restore compaction include: limiting the construction right-of-way width to 75 feet through wetlands; placing equipment on mats; using low-pressure ground equipment; limiting equipment operation and construction traffic along the right-of-way; locating temporary workspace (TEWAS) more than 50 feet away from wetland boundaries; cutting vegetation at ground level; limiting stump removal to the construction trench; segregating the top 12 inches of soil, or to the depth of the topsoil horizon; using "push-pull" techniques in saturated wetlands; limiting the amount of time that the trench is open by not trenching until the pipe is assembled and ready for installation; not using imported rock and soils for backfill; and not using fertilizer, lime, or mulch during restoration in wetlands. PCGP must also follow the FERC Waterbody and Wetland Construction and Mitigation Procedures. See 4.3.3.2 of the DEIS for a complete list of applicable mitigation measures for pipeline construction at specific waterbody and stream crossings.

In an effort to minimize, maintain or restore the impacts to streams and riparian areas, PCGP adopted route variations to co-locate the proposed construction corridor adjacent to existing roads and along dry ridge tops (See Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands). In addition, PCGP has committed to limit construction at waterbody crossings to times of dry weather or low water flow. PCGP would implement the required erosion control measures at the proposed stream crossings to minimize, maintain or restore potential erosion and sedimentation impacts. The applicable mitigation measures and monitoring requirements in the POD relating to water waterbody crossings are included in the *Site Specific Forest Service Stream Crossing Prescriptions, and Wetland and Waterbody Crossing Plan* (POD BB). In addition, applicable mitigation measures from the FERC approved applicant prepared Procedures for Wetland and Waterbody Crossings would be required.

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to: facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (Environmental Briefings and Compliance Plan, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to soil, water and riparian resources, are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*How the Compensatory Mitigation Actions would help to Maintain or Restore the Ecological Integrity of The Soils and Soil Productivity, including guidance to reduce soil erosion and sedimentation in the Plan Area (36 CFR 219.8(a)(2)(ii)).*

Part of the CMP on the Winema NF includes proposals to place large woody debris in-stream for 1.0 miles, repair stream crossings at 25 sites, provide Riparian Planting for 0.5 miles, provide Riparian Fencing for 6.5 miles, and decommission approximately 29.2 miles of road.

Placement of LWD in streams adds structural complexity to aquatic systems by creating pools and riffles, trapping fine sediments and can contribute to reductions in stream temperatures over time (Tippery et al. 2010). Placing LWD in streams affects channel morphology, the routing and storage of water and sediment, and provides structure and complexity to stream systems. Complex pools and side channels created by instream wood provide overwintering habitat to stream salmonids and other aquatic organisms (Solazzi et. al. 2000). They also provide cover from predators during summer low flow periods when predation is at its highest. Providing more stream channel structure results in better over wintering habitat, improved summer pool habitat, and more abundant spawning gravels.

Riparian planting is proposed along Spencer Creek just upstream of Buck Lake. This is a meadow site that has lost streamside vegetation and has compacted soils. There is an overall need to restore health and vigor to riparian stands by maintaining and improving riparian reserve habitat. Shade provided by the plantings would contribute to moderating water temperatures in Spencer Creek. Root strength provided by new vegetation would increase bank stability, decrease erosion and sediment depositions to Spencer Creek and provide habitat for species that use riparian habitats. Riparian fencing would serve to divide the Buck Indian Allotment into pastures north and south at Clover Creek Road. This fence would keep cattle from grazing newly revegetated areas in the construction corridor, including areas where the corridor crosses Spencer Creek, thus helping to ensure that erosion control and revegetation objectives are met. It would also serve to separate anticipated increased cattle grazing of the construction corridor from the highway; greatly reducing a safety hazard for vehicles traveling the Clover Creek road.

Restoring stream crossings reconnects aquatic habitats by allowing the passage of aquatic biota and restoring riparian vegetation. Over time, these actions reduce sediment and restore shade. Restoration of these crossings includes riparian planting as a mitigation which would help offset the impact of shade removal at pipeline crossings. The proposed pipeline would cross Spencer Creek upstream of Buck Lake. It is occupied by redband trout. Spencer Creek has been identified by NMFS as habitat for federally listed Southern Oregon/Northern California Coast Coho salmon. Additionally, once fish passage is provided through the Klamath River hydro facilities, steelhead would re-colonize Spencer Creek. Improving habitat quality at Spencer Creek provides the opportunity to be pro-active in providing quality habitat for SONC Coho, mitigating for any detrimental effects to other SONC Coho habitats, while improving habitat for redband trout and other aquatic species. Spencer Creek appears on the Oregon DEQ 303(d) list as water quality impaired from increased sedimentation. Improvements at this location would immediately benefit all downstream aquatic habitats and the species associated with those habitats.

Decommissioning roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning and stormproofing would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-

related surface erosion in the watershed where the impacts from the Project would occur. Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads.

These projects have been designed by an interdisciplinary team of resource professionals on the Winema NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. These projects have been planned within the watersheds that would be affected by the Pacific Connector pipeline project. These projects have been proposed by the Applicant as part of their application and would be a requirement of the Right-of-Way grant. These projects would help maintain and restore soil resources including reducing soil erosion and sedimentation on the Winema NF (see tables 2.3.1-3 and 2.3.1-4 and figures 2.3-1 and 2.3-2 for additional information).

#### 2.3.1.3 Forest Plan Amendments Related Visual Resources (WNF -1, WNF-2, WNF-3):

Three Forest Plan standards associated with visual resources would need to be modified so that the proposed construction and operation of the Pacific Connector pipeline can be in compliance with the Winema NF LRMP. These standards are:

- Management Area 3, Lands, Standard and Guideline (4), (WNF LRMP 4-103). This management area is an avoidance area for new transportation and utility corridors.
- Management Area 3A, Foreground Retention, Standard and Guideline Scenic (1), (WNF LRMP 4-103 and 104). Evidence of management activities from projects that produce slash (tree harvest) or charred bark (underburning) will not be noticeable one year after the work has been completed.
- Management 3B, Foreground Partial Retention, Standard and Guideline Scenic (1), (WNF LRMP, 4-107). Evidence of management activities from projects that produce slash (tree harvest) or charred bark (underburning) should not be noticeable from two to three years after the work has been completed.

The proposed amendments to these standards are:

- Management Area 3, Lands, Standard and Guideline (4), (WNF LRMP 4-103). This management area is an avoidance area for new transportation and utility corridors**, with the exception of the Pacific Connector Pipeline right-of-way. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (Proposed amendment WNF-1)
- Management Area 3A, Foreground Retention, Standard and Guideline Scenic (1), (WNF LRMP 4-103 and 104). Evidence of management activities from projects that produce slash (tree harvest) or charred bark (underburning) will not be noticeable one year after the work has been completed, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses Management area 3A. The applicable**

**mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (Proposed amendment WNF-2)

- Management 3B, Foreground Partial Retention, Standard and Guideline Scenic (1), (WNF LRMP, 4-107). Evidence of management activities from projects that produce slash (tree harvest) or charred bark (underburning) should not be noticeable from two to three years after the work has been completed, **with the exception of the Pacific Connector Pipeline right-of-way, which shall attain the VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses Management area 3B. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** (proposed amendment WNF-3)

While the amendments would provide an exception to meeting these standards, there would also be requirements to do what is appropriate, applicable and feasible to minimize, maintain or restore any effects of the pipeline's construction and operation on the visual resources within the area affected by the pipeline. Consequently, each amended standard includes the requirement that the "applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented".

The purpose of these three project-level amendments is to make the proposed Pacific Connector pipeline project consistent with the Winema NF LRMP. Thus, the substantive planning rule requirements that are directly related to these three amendments are:

- 36 CFR 219.10(a)(1) – […the responsible official shall consider: …] "(1) Aesthetic values,… scenery,... viewsheds...".

- 36 CFR 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…"

Because the proposed amendments are "directly related" to these two substantive requirements, the Responsible Official must apply the requirements within the scope and scale of the proposed amendments (36 CFR 219.13 (b)(5)).

In considering the "scope and scale" of the three amendments, it is important to recognize that the applicable sections of 36 CFR 219.10 that are described above, requires plan components to provide for aesthetic values and scenic character across the entire planning area (i.e., Winema NF). These plan amendments do not alter these LRMP plan requirements for managing visual resources across 99.99% of the Winema NF. The proposed pipeline construction corridor including the TEWAs and the UCSAs is approximately 92 acres of the 1,043,547 acre Winema NF. Of the 92 acres of pipeline corridor construction it is estimated that approximately 70 of these acres would not meet the standards for visual resources described above.

The amendments modify three standards so that in the 92 acres of the project construction area the project need not be in compliance with these standards' specific requirements but instead, it is the "applicable mitigation measures identified in the POD and the Pacific Connector Project design requirements" that must be implemented. Or stated in another way, for the 92 acres of National Forest lands that would be within the operational right-of-way and construction zone for the Pacific Connector Pipeline, the three management requirements described above would be replaced with the full set of management requirements that comprise the "applicable mitigation measures

identified in the POD and Pacific Connector Project Design requirements". The inclusion of these management requirements as a part of the plan component language for the LRMP in this plan amendment, addresses the applicable 36 CFR 219.10 rule requirements within the "scope and scale" of these proposed plan amendments. The sections below describe in more detail how the applicable 36 CFR 219.10 requirements are being addressed.

*How the Required Mitigation Measures would Consider, Minimize, Maintain or Restore Effects to Aesthetic Values and Scenic Character and Meet the Applicable 36 CFR 219.10(a) and 36 CFR 219.10(b)Requirements.*

The Forest Service has worked to inventory, analyze, and evaluate visual resources, view sheds, and aesthetics that could be affected by this project. Forest Service landscape architect provided technical support to FERC and Forest Service third-party contractors by reviewing the information gathered for the project. The POD is a document developed between the FS, BLM, FERC, and PCGP that contains the design features, mitigation measures, roles and responsibilities, monitoring, and procedures for the construction and operation of the pipeline on NFS lands. In addition, FERC's applicant prepared Plan and Procedures for construction and restoration enforceable, where applicable, for additional design features and mitigation. The design requirements and mitigation measures of the POD would be required by the modified standards and incorporated into BLM's ROW grant.

The mitigation measures incorporated into amendments for Visual Quality Objectives, are designed to minimize, maintain or restore the potential for long-term impacts to visually sensitive areas. To ensure adequate restoration and revegetation of the ROW, design features are identified in the *Erosion Control and Revegetation Plan* (POD I), *Right-of-Way Clearing Plan* (POD U), *Leave Tree Protection Plan* (POD P), *Aesthetics Management Plan* (POD A), and *Recreation Management Plan* (POD S).

A visual assessment was conducted to determine the potential effects on visual resources associated with the pipeline. Representative viewpoint points (also referred to as KOPs) were identified within the view shed for the pipeline, defined as the area from which the pipeline would be potentially visible. Photographs of existing visual conditions were used in preparing computerized visual simulations for each KOP. Because the appearance of the pipeline right-of-way would change with time, a series of simulations were prepared to illustrate how the pipeline right-of-way would look at different timeframes following construction. These KOPs would also serve as monitoring points for mitigation.

Pacific Connector produced POD A that outlined measures to reduce visual impacts along its pipeline route. To the extent feasible, PCGP would use revegetation efforts to shape and blend the pipeline easement, enhance the setting, and mimic the natural features of the landscape. These measures would consist of revegetating all disturbed areas and replanting trees in TEWAs and any other areas of the temporary construction right-of-way that were forested prior to construction (see POD I).

On Forest Service lands, PCGP would maintain a cleared 30-foot width centered over the pipe allowing the remainder of the permanent easement to be reforested. This allows trees to naturally reestablish along the edges of the permanent easement at a staggered, more natural-looking interval. Replacing slash in forested areas of the right-of-way during restoration activities would immediately affect the visual contrast in color and texture of the disturbed right-of-way areas.

Over time, as the right-of-way revegetates and narrows in width and changes in form, texture and color, potential visual impacts would diminish.

Additionally, a row, or if necessary, clusters of trees and/or shrubs would be planted across the right-of-way to provide visual screens at key road and trail crossings in sensitive view sheds. For all revegetation practices, PCGP and/or its contractors would only use agency-approved tree and plant species, in compliance with management plan objectives and in consultation with agency specialists.

**Site Specific Crossing Prescriptions:**

Clover Creek Road (intersection of Dead Indian Memorial Highway and Clover Creek Road). Viewsheds in this area are managed for Foreground and Middleground Retention and Partial Retention, but also contain areas of private lands with recently harvested timber and several clusters of rural residential homes. The proposed alignment would cross the Dead Indian Memorial Highway perpendicularly in a thick forest foreground setting (at MP 168.83). PCGP would implement the mitigation recommendations detailed in Section 3.2 and 3.3 and further described in the POD I. These pipeline restoration efforts would include regrading to the approximate original contours, reseeding, scattering slash across the right-of-way, and replanting, which would minimize, maintain or restore visual contrast of the right-of-way. During restoration, PCGP would plant trees within forested areas to within 15 feet of the Pipeline, which would allow a strip of trees to establish along the easement and between the Pipeline and the road in this area. Because the Pipeline was recommended to abut the road and to eliminate the strip of trees between the road and the Pipeline easement, the Forest Service and BLM would specify if tree planting would occur on federal lands between the centerline and Clover Creek Road (but not within 15 feet of the pipeline). PCGP would also implement the mitigation recommendations in the Federal Lands Scenery Management Analysis at this location which include:

During construction of the Project, Compliance Monitors representing FERC are present on a full-time basis to inspect construction procedures and mitigation measures and provide regular feedback on compliance issues to FERC and the Forest Service. Objectives of the Compliance Monitoring program are to: facilitate the timely resolution of compliance issues in the field; provide continuous information to FERC regarding noncompliance issues and their resolution; and review, process, and track construction-related variance requests. Changes to previously approved mitigation measures, construction procedures, and construction work areas due to unforeseen or unavoidable site conditions would require various levels of regulatory approval from the applicable land management agencies. FERC would have the authority to stop any activity that violates an environmental condition of the FERC authorization issued to PCGP.

Additionally, environmental compliance oversight responsibilities for PCGP, FERC, FS and BLM are described in the POD (*Environmental Briefings and Compliance Plan*, POD G) that would apply to the construction, operation, and maintenance of the project specifically on NFS lands. The FS Authorized Officer would coordinate with the BLM in administering and enforcing ROW grant provisions and would have stop-work authority. The FS Authorized Officer's designated representatives would ensure that the stipulations and mitigation measures included in the POD that are designed to minimize, maintain or restore the effects to visual resources and recreational resources are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer would coordinate with the FS to ensure the work is being conducted in

accordance with the ROW grant and agreed upon conditions. BLM and the FS would have stop-work authority. Field variance requests would be coordinated with the Authorized Officers.

*How the Compensatory Mitigation Actions would help to Provide for Aesthetic Values and Scenic Character in the Plan Area (36 CFR 219.10(a)(1), 36 CFR 219.10(b)(i)).*

Part of the CMP on the Winema NF includes a proposal to reduce stand densities on 114 acres in a way that would help soften the visual impact of the Pacific Connector Project.

The Pacific Connector pipeline would create a hard line along the timbered edge of the corridor that does not fit with the visual objectives for the Clover Creek Road or the Dead Indian Memorial Highway. Thinning and fuels treatments can be used to soften the edge to a more natural appearing texture by restoring stand density to more natural levels and creating small openings that are consistent with the landscape. This proposal would restore stand density, species diversity, and structural diversity more characteristic under a natural disturbance regime.

This project has been designed by an interdisciplinary team of resource professionals on the Winema NF with input and coordination with the U.S. Fish and Wildlife Service, NOAA Fisheries, and State agencies. It was planned within the watersheds that would be affected by the Pacific Connector pipeline project. It is a component of the PCGP application and would be a requirement of the Right-of-Way grant. This project would help to restore visual resources on the Winema NF (see tables 2.3.1-3 and 2.3.1-4 and figures 2.3-1 and 2.3-2 for additional information).

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TABLE 2.3.1-1

**Proposed LRMP Amendments on the Winema NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[9] |
|---|---|---|---|---|---|---|
| FS-1: Project-Specific Amendment to Exempt Management Recommendations for Survey and Manage Species on the Winema NF. | The Winema River NF LRMP (WNF LRMP 1990) would be amended to exempt certain known sites within the area of the proposed Pacific Connector right-of-way grant from the Management Recommendations required by the 2001 "Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (Survey and Manage ROD). For known sites within the proposed right-of-way that cannot be avoided, the 2001 Management Recommendations for protection of known sites of Survey and Manage species would not apply. For known sites located outside the proposed right-of-way but with an overlapping protection buffer only that portion of the buffer within the right-of-way would be exempt from the protection requirements of the Management Recommendations. Those Management Recommendations would remain in effect for that portion of the protection buffer that is outside of the right of way. The proposed amendment would not exempt the Forest Service from the requirements of the Survey and Manage ROD, as modified, to maintain species persistence for affected Survey and Manage species within the range of the northern spotted owl. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. The amendment would provide an exception from these standards for the Pacific Connector Project and include specific mitigation measures and project design requirements for the project. | Management Direction: Manage All Known Sites (Survey and Manage ROD, Standards and Guidelines Page 8). Current and future known sites will be managed according to the Management Recommendation for the species, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.9(a)(2)(ii) – [the plan must include plan components to maintain or restore] "Rare aquatic and terrestrial plant and animal communities." § 219.9(b)(1) – "The responsible official shall determine whether or not the plan components required by paragraph (a) provide ecological conditions necessary to: …maintain viable populations of each species of conservation concern within the plan area." | 28 acres of late successional and old growth (LSOG) habitat directly impacted from construction activity[10]<br><br>92 total acres directly impacted from construction activity<br><br>45 survey and manage sites potentially impacted from pipeline construction<br><br>This amendment would affect less than 0.01% of the Winema NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (J) Plant Conservation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Chapter 3, DEIS Route Design and Modifications on NFS lands<br><br>Appendix K, Survey and Manage Persistence Evaluations | Road Decommissioning – approximately 29.2 Miles<br><br>LWD in-stream – 1.0 miles<br><br>Riparian Planting – 0,5 miles<br><br>Riparian Fencing – 6.5 miles<br><br>Stream Crossing Repair – 25 sites |
| WNF-1: Project - Specific Amendment to Allow Pacific Connector Pipeline Project in | The Winema NF LRMP would be amended to change the Standards and Guidelines for Management Area 3 (MA-3 ) (LRMP page 4-103-4, Lands) to allow the 95-foot-wide Pacific Connector pipeline project in MA-3 from the Forest Boundary in Section 32, T.37S., R.5E., | Management Area 3, Lands, Standard and Guideline (4), (WNF LRMP 4-103). This management area is an avoidance area for new transportation and utility | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.10(a)(1) – [the responsible official shall | Approximately 17 acres of MA-3 would be impacted | POD (A) Aesthetics Management Plan for Federal Lands | Clover Creek Visual Management – 114 acres |

[9] The compensatory mitigation listed in this column reflects the mitigation most related to the proposed amendment. It should be noted that other actions in the CMP may also be beneficial.

[10] Direct Impacts include acres cleared for construction in the construction corridor and temporary extra work areas (TEWA), as well as acres modified from uncleared storage areas (UCSA)

TABLE 2.3.1-1

**Proposed LRMP Amendments on the Winema NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[9] |
|---|---|---|---|---|---|---|
| Management Area 3 – Scenic Management: | W.M., OR, to the Clover Creek Road corridor in Section 4, T.38S, R.5. E., W.M., OR. Standards and Guidelines for MA-3 state that the area is currently an avoidance area for new utility corridors. This proposed Pacific Connector Pipeline Project is approximately 1.5 miles long and occupies approximately 17 acres within MA-3. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | corridors**, with the exception of the Pacific Connector Pipeline right-of-way. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** | consider] "Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…" | This amendment would affect approximately 0.01% of Management area 3 on the Winema NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan | |
| WNF-2: Project-Specific Amendment of VQO on the Dead Indian Memorial Highway: | The Winema NF LRMP would be amended to allow 10-15 years to achieve the VQO of Foreground Retention where the Pacific Connector right-of-way crosses the Dead Indian Memorial Highway at approximately pipeline MP 168.8 in Section 33, T.37S., R.5E., W. M., OR. Standards and Guidelines for Scenic Management, Foreground Retention (LRMP 4-103, MA 3A, Foreground Retention) requires VQOs for a given location be achieved within one year of completion of the project. The Forest Service proposes to allow 10-15 years to meet the specified VQO at this location. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment that would apply only to the Pacific Connector Pipeline Project in the vicinity of the Dead Indian Memorial Highway and would not change future management direction for any other project. | Management Area 3A, Foreground Retention, Standard and Guideline Scenic (1), (WNF LRMP 4-103 and 104). Evidence of management activities from projects that produce slash (tree harvest) or charred bark (underburning) will not be noticeable one year after the work has been completed, **with the exception of the Pacific Connector Pipeline right-of-way which shall attain the VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses Management area 3A. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.10(a)(1) – […the responsible official shall consider: …] "(1) Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,… and scenic character…". | Approximately 3 acres would be impacted by the project<br><br>This amendment would affect approximately 0.01% of Management area 3A on the Winema NF | POD (A) Aesthetics Management Plan for Federal Lands<br><br>POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan | Clover Creek Visual Management – 114 acres |
| WNF-3: Project - Specific Amendment of VQO Adjacent to | The Winema NF LRMP would be amended to allow 10-15 years to meet the VQO for Scenic Management, Foreground Partial Retention, where the Pacific Connector right-of-way is adjacent to the Clover Creek Road from | Management 3B, Foreground Partial Retention, Standard and Guideline Scenic (1), (WNF LRMP, 4-107). Evidence of management | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.10(a)(1) – […the | The project would initially affect about 50 acres of Management Area 3B. Over a period of | POD (A) Aesthetics Management Plan for Federal Lands | Clover Creek Visual Management – 114 acres |

TABLE 2.3.1-1

**Proposed LRMP Amendments on the Winema NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[9] |
|---|---|---|---|---|---|---|
| the Clover Creek Road: | approximately pipeline MP 170 to 175 in Sections 2, 3, 4, 11, and 12, T.38S., R.5E., and Sections 7 and 18, T.38S., R.6E., W.M., OR. This change would potentially affect approximately 50 acres. Standards and Guidelines for Foreground Partial Retention (LRMP, page 4-107, MA 3B) require that VQOs be met within three years of completion of a project. The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment that would apply only to the Pacific Connector Pipeline Project in the vicinity of Clover Creek Road and would not change future management direction for any other project. | activities from projects that produce slash (tree harvest) or charred bark (underburning) should not be noticeable from two to three years after the work has been completed, **with the exception of the Pacific Connector Pipeline right-of-way, which shall attain the VQO within 10 - 15 years after completion of the construction phase of the project where the pipeline crosses Management area 3B. The applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** | responsible official shall consider: …] "(1) Aesthetic values,… scenery,... viewsheds...". § 219.10(b)(i) – [the responsible official shall consider] "Sustainable recreation; including recreation settings, opportunities,…and scenic character…". | 10 to 15 years, the affected area would decrease to about 29 acres.<br><br>This amendment would affect approximately 0.3% of Management area 3B on the Winema NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (P) Leave Tree Protection Plan<br><br>POD (U) Right-of-Way Clearing Plan | |
| WNF-4: Project - Specific Amendment to Exempt Limitations on Detrimental Soil Conditions within the Pacific Connector Right-of-Way in All Management Areas: | The Winema NF LRMP would be amended to exempt restrictions on detrimental soil conditions from displacement and compaction within the Pacific Connector right-of-way in all affected management areas. Standards and Guidelines for detrimental soil impacts in all affected management areas require that no more than 20 percent of the activity area be detrimentally compacted, puddled, or displaced upon completion of a project (LRMP page 4-73, 12-5). The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | Detrimental Soils Conditions, Standard and guideline 12-5, (WNF LRMP, 4-73). The cumulative effects of detrimental soil conditions should not exceed 20 percent of the total acreage within the activity area: any reason for exceeding the limitation shall be documented in an environmental assessment, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented**. Detrimental soil conditions include compaction, displacement, puddling, and | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore…] "Soils and soil productivity, including guidance to reduce soil erosion and sedimentation" | Approximately between 24 and 56 acres of detrimental soil conditions could result from pipeline construction<br><br>This amendment would affect less than 0.01% of the Winema NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>Technical Report on Soil Risk and Sensitivity Assessment (NSR 2014) | Road Decommissioning – approximately 29.2 Miles |

TABLE 2.3.1-1

**Proposed LRMP Amendments on the Winema NF**

| Amendment | Description | Text of Proposed Amendment | Related Planning Rule Requirements | Pacific Connector pipeline Impacts | Project Design Features | Compensatory Mitigation[9] |
|---|---|---|---|---|---|---|
| | | moderately or severely burned soil from all activities (including roads, skid trails, and landings). Sites where the standards for displacement, puddling, and compaction are not currently met will require rehabilitation such as ripping, backblading, or fertilization. The potential for creating detrimental soil conditions will be specifically addressed through project environmental analyses. If needed, alternative management practices will be developed, and mitigating measures will be planned and implemented. | | | | |
| WNF-5: Project-Specific Amendment to Exempt Limitations on Detrimental Soil Conditions within the Pacific Connector Right-of-Way in Management Area 8: | The Winema NF LRMP would be amended to exempt restrictions on detrimental soil conditions from displacement and compaction within the Pacific Connector right-of-way within the Management Area 8, Riparian Area (MA-8). This change would potentially affect approximately 0.5 mile or an estimated 9.6 acres of MA-8. Standards and Guidelines for Soil and Water, MA-8 require that not more than 10 percent of the total riparian zone in an activity area be in a detrimental soil condition upon the completion of a project (LRMP page 4-137, 2). The amendment would provide an exception from these standards for the Pacific Connector Pipeline Project and include specific mitigation measures and project design requirements for the project. This is a project-specific plan amendment applicable only to the Pacific Connector Pipeline Project and would not change future management direction for any other project. | Soil and Water, Standard & Guideline 3 (WNF LRMP 4-137). The cumulative total area of detrimental soil conditions in riparian areas shall not exceed 10 percent of the total riparian acreage within an activity area, **with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline, for which the applicable mitigation measures identified in the POD and Pacific Connector project design requirements must be implemented.** Permanent recreation facilities or other permanent facilities are exempt. | The 36 CFR 219 planning rule requirements that are directly related to this amendment include: § 219.8(a)(2)(ii) – [The plan must include plan components to maintain or restore…] "Soils and soil productivity, including guidance to reduce soil erosion and sedimentation". | Approximately between 3 and 6 acres of detrimental soil conditions could result from the pipeline construction<br><br>This amendment would affect less than 0.01% of the Winema NF | POD (I) Erosion Control and Revegetation Plan<br><br>POD (U) Right-of-Way Clearing Plan<br><br>POD (BB) Wetland and Waterbody Crossing Plan<br><br>Forest Service Site Specific Stream Crossing Prescriptions (NSR 2014)<br><br>Stream Crossing Risk Analysis; and Stream Crossing Risk Analysis Addendum (GeoEngineers2017d, 2018a)<br><br>Chapter 3, DEIS Route Design and Modifications on Forest Service Managed Lands | Road Decommissioning – approximately 29.2 Miles<br><br>LWD in-stream – 1.0 miles<br><br>Riparian Planting – 0,5 miles<br><br>Riparian Fencing – 6.5 miles<br><br>Stream Crossing Repair – 25 sites |

TABLE 2.3.1-2

**Mitigation Projects to Address LRMP Objectives on the Winema**

| Unit | Watershed | Mitigation Group | Project Type | Project Name | Quantity a/ | Unit |
|---|---|---|---|---|---|---|
| Winema NF | Spencer Creek | Aquatic and Riparian Habitat | Riparian Planting | Spencer Creek Riparian Planting | 0.5 | miles |
| | | Aquatic and Riparian Habitat | Riparian Fencing | Spencer Creek Fencing | 6.5 | miles |
| | | Aquatic and Riparian Habitat | LWD In-stream | Spencer Creek In-stream LWD | 1.0 | miles |
| | | Aquatic and Riparian Habitat | Stream Crossing Repair | Spencer Creek Ford Hardening and Interpretive Sign | 1 | sites |
| | | Aquatic and Riparian Habitat | Stream Crossing Repair | Spencer Creek Stream Crossing Decommissioning | 25 | sites |
| | | Road sediment reduction | Road Decommissioning | Spencer Creek Road Decommissioning | 29.2 | miles |
| | | Visuals | Stand Density Reduction | Clover Creek Visual Management. | 114 | acres |

a/ Acres are rounded to the nearest whole acre and miles to the nearest tenth of a mile.

**Figure 2.3-1. Map of CMP Projects in the Spencer Creek Watershed on the Winema NF**

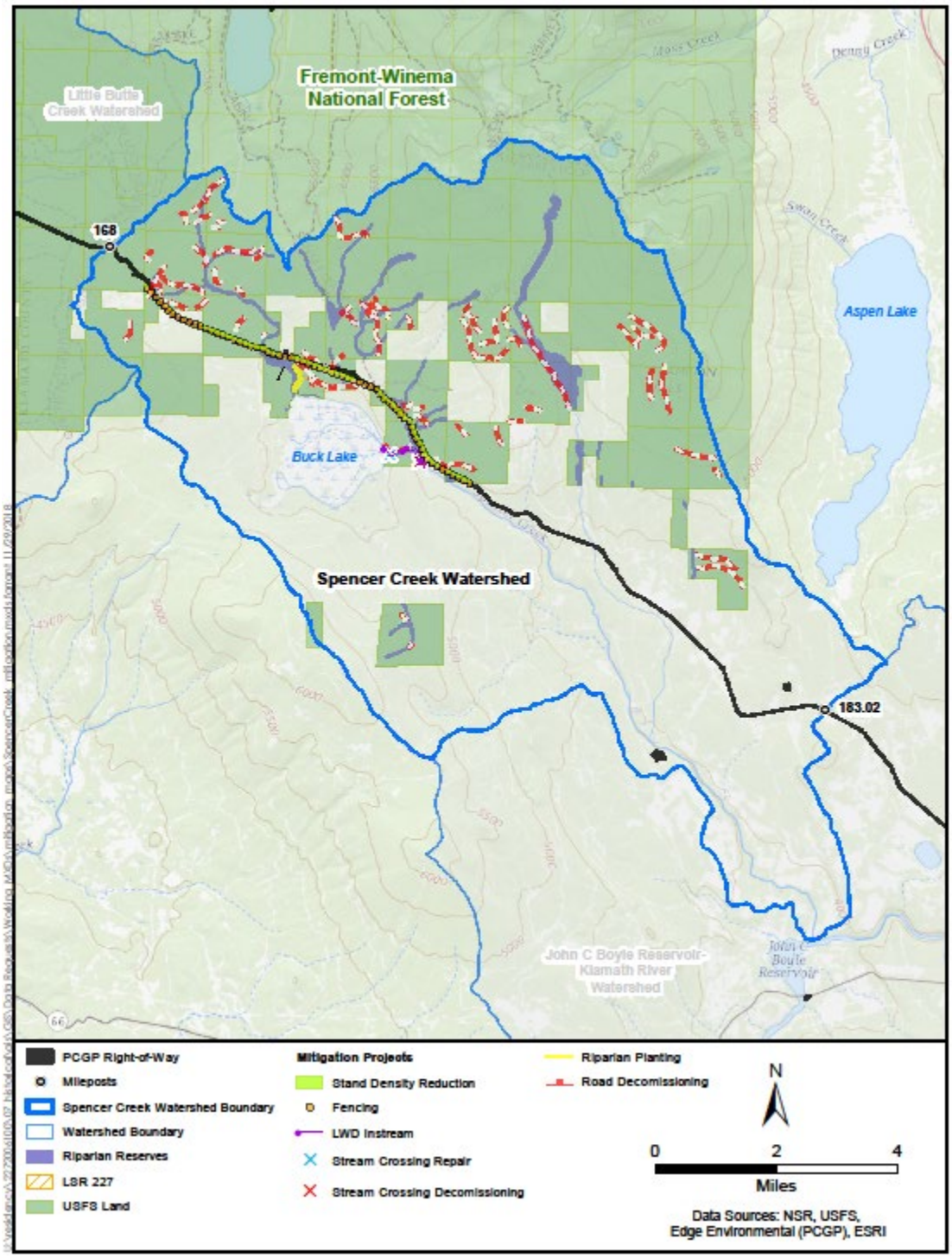

TABLE 2.3.1-3

**Evaluation of Winema NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| Aquatic and Riparian Habitat | Large Woody Debris In-stream | 1.0 Miles | Over the last century, many streams with high aquatic habitat potential have become simplified, and therefore, have a reduced capacity to provide quality habitat. Riparian stands have decreased health and vigor, resulting in increased time to develop large tree structure for wildlife, stream shade, and future instream wood. Placement of LWD in streams adds structural complexity to aquatic systems, traps fine sediments and can contribute to reductions in stream temperatures over time (Tippery et al. 2010). The BLM completed placement last year on 3 miles of Spencer Creek below this reach. Addition of this segment would complete the stream rehabilitation on the reach of Spencer Creek where the project occurs. Logs from the Pacific Connector pipeline Right of Way will be used for the project. An estimated 75 pieces are needed. A helicopter will be used to place the logs. This is responsive to Aquatic Conservation Strategy (ACS) objectives 2, 3, 4, and 5. | **Short-term adverse effects**: LWD in-stream refers to logs (typically greater than 20 inches in diameter), limbs, or root wads that intrude into a stream channel. Placing this material in-stream can be accomplished with ground equipment such as excavators and/or helicopters. These activities have the potential to increase suspended sediment in streams and impact riparian vegetation as a result of heavy equipment use or the dragging of materials (e.g. logs) in the stream channel. Short-term impacts to water quality would occur in the form of suspended sediment and turbidity increases during in-stream implementation. However, no lasting measureable effect to water quality would occur as any sediment plume created, would quickly dissipate as soon as in-stream activities stop. In-stream work is done during summer low flow periods when turbidity plumes are an infrequently occurring event. Project design features (PDF) would include Best Management Practices (BMP) that would prevent any indirect effects to salmonids and other stream fish from project related sediment. The placement of LWD materials in the stream by using helicopters would create noise that could disturb NSO. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br>**Long-term beneficial effects:** Placing LWD in streams affects channel morphology, the routing and storage of water and sediment, and provides structure and complexity to stream systems. Complex pools and side channels created by instream wood provide overwintering habitat to stream salmonids and other aquatic organisms (Solazzi et. al. 2000). They also provide cover from predators during summer low flow periods when predation is at its highest. Providing more stream channel structure results in better over wintering habitat, improved summer pool habitat, and more abundant spawning gravels. |
| Aquatic and Riparian Habitat | Stream Crossing Repair and Interpretive Sign | 25 Sites | Restoring stream crossings reconnects aquatic habitats by allowing the passage of aquatic biota and restoring riparian vegetation. Over time, these actions reduce sediment and restore shade. Restoration of these crossings includes riparian planting as a mitigation which will help offset the impact of shade removal at pipeline R/W crossings. The proposed pipeline will cross Spencer Creek upstream of Buck Lake. It is occupied by redband trout. Spencer Creek has been identified by NMFS as habitat for Federally listed Southern Oregon/Northern California Coast Coho salmon. Additionally, once fish passage is provided through the Klamath River hydro facilities, steelhead will re-colonize Spencer Creek. Improving habitat quality at Spencer Creek provides the opportunity to be pro-active in providing quality habitat for SONC Coho, mitigating for any detrimental effects to other SONC Coho habitats, while improving habitat for redband trout and other aquatic species. Spencer Creek appears on the Oregon DEQ 303(d) list as water quality impaired from increased sedimentation. Improvements at this location will immediately benefit all downstream aquatic habitats and the species associated with those habitats. This includes interpretive signage. | **Short-term adverse effects:** Removing old culverts and restoring stream/road crossings would result in short-term adverse effects from the use of heavy equipment in and around the stream channel. The work would be done during low summer flow periods to minimize impacts to aquatic species and PDFs would be designed to minimize disturbance for Northern Spotted Owl (NSO).<br>**Long-term beneficial effects:** Stream crossing replacement would directly improve stream connectivity and habitat for aquatic species by immediately restoring access to formerly inaccessible habitats. Indirectly, these projects would reduce potential sediment levels in the long term by decreasing the potential for road failure. Stream crossing projects also reduce stream velocities by increasing stream crossing sizes, eliminating flow restrictions and allowing passage to additional reaches of habitat by removing barriers to aquatic species which improves access to spawning and rearing habitat and allows unrestricted movement throughout stream reaches during seasonal changes in water levels (Hoffman 2007). |

TABLE 2.3.1-3

**Evaluation of Winema NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| Aquatic and Riparian Habitat | Riparian Planting | 0.5 Miles | Spencer Creek just upstream of Buck Lake. This is a meadow site that has lost streamside vegetation and has compacted soils. There is an overall need to restore health and vigor to riparian stands by maintaining and improving riparian reserve habitat. Shade provided by the plantings will contribute to moderating water temperatures in Spencer Creek. Root strength provided by new vegetation will increase bank stability, decrease erosion and sediment depositions to Spencer Creek and provide habitat for species that use riparian habitats. | **Short-term adverse effects**: This activity is not expected to result in any measurable adverse impacts.<br><br>**Long-term beneficial effects:** Beneficial impacts include helping to re-vegetate and stabilize riparian habitat and improving habitat for listed or sensitive species. |
| Aquatic and Riparian Habitat | Riparian Fencing | 6.5 Miles | This fence would serve to divide the Buck Indian Allotment into pastures north and south at Clover Creek Road. This fence would keep cattle from grazing newly revegetated areas in the Right of Way corridor, including areas where the corridor crosses Spencer Creek, thus helping to ensure that erosion control and revegetation objectives are met. It will also serve to separate anticipated increased cattle grazing of the ROW from the highway; greatly reducing a safety hazard for vehicles traveling the Clover Creek road. This fence would require 7-9 cattle guard crossings for Forest Roads intersecting the fence | **Short-term adverse effects**: This activity is not expected to result in any measurable adverse impacts.<br><br>**Long-term beneficial effects:** Beneficial impacts include helping to ensure erosion control and revegetation objectives are met and providing additional protection of riparian areas from cattle grazing. |
| Road Sediment Reduction | Road Decommissioning | 29.2 Miles | Road closure reduces fine grained sediments by eliminating traffic impacts. A construction corridor 75-95 wide with additional work areas will be cleared. Of this, a 30-wide route along the pipeline route will be maintained in early successional habitat. This strip of land, in a forested ecosystem, provides a barrier for movement of small animals between the remaining forest blocks and degrades neighboring habitat through edge effects and fragmentation. This is of special concern in riparian ecosystems where movement of wildlife species is concentrated. Decommissioning and planting selected roads can block up forested habitat and reduce edge effects and fragmentation in a period of about 40 years. Decommissioning roads can substantially reduce sediment delivery to streams (Madej 2000; Keppeler et al. 2007). Proposed road decommissioning would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project occur. This mitigation addresses ACS objectives 2, 4, 5, 8 & 9. | **Short-term adverse effects:** Road decommissioning methods generally include actions utilizing mechanized construction equipment to physically stabilize the road prism, restore natural drainage patterns, and allow for revegetation of the roadbed. Mechanized construction equipment might include excavators, backhoes and truck mounted loaders. Road decommissioning has the potential to cause short-term degradation of water quality by increasing sediment delivery to streams as roads are de-compacted by heavy equipment, culverts and cross drains are removed, and other restoration activities are implemented. The use of heavy mechanized equipment near streams could disturb the stream influence zone, deliver sediment, create turbidity, and cause stream bank erosion. There is also the potential of an accidental fuel/oil spill. These projects may cause a short-term degradation of water quality due to sediment input and chemical contamination. Stream bank condition and habitat substrate may also be adversely affected in the short term. However with careful project design and seasonal timing, these affects are expected to be of a limited extent and duration. Road decommissioning would create noise from heavy equipment that could disturb NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br><br>**Long-term beneficial effects**: Proposed road decommissioning would increase infiltration of precipitation, reduce surface runoff, and reduce sediment production from road-related surface erosion in the watershed where the impacts from the Project would occur. Decommissioning roads would restore natural drainage patterns and thereby avoid large volumes of added sediment to the stream network that would be likely to eventually occur. In addition limited road maintenance dollars could be focused on the remaining road systems resulting in more maintenance of culverts and ditchlines resulting in less potential for catastrophic failure. Madej (2000) concluded that by |

TABLE 2.3.1-3

**Evaluation of Winema NF Mitigation Projects by Mitigation Group and Project Type**

| Mitigation Group | Project Type | Amount | Rationale | Environmental Consequences |
|---|---|---|---|---|
| | | | | eliminating the risk of stream diversions and culvert failures, road removal treatments significantly reduce long-term sediment production from retired logging roads. |
| Visuals | Stand Density Reduction | 114 Acres | The Pacific Connector pipeline will create a hard line along the timbered edge of the corridor that does not fit with the visual objectives for the Clover Creek Road or the Dead Indian Memorial Highway. Thinning and fuels treatments can be used to soften the edge to a more natural appearing texture by restoring stand density to more natural levels and creating small openings that are consistent with landscape. Thinning of commercial sized material may be accomplished with a commercial timber sale. The mitigation is intended to supplement funding for the non-commercial part of that work for visual purposes that could not otherwise be accomplished. | **Short-term adverse effects:** Stand density management activities include the use of heavy equipment for cutting, skidding, slash piling, and hauling forest vegetation. Soil erosion risk would increase with the proposed activities because bare soil would be exposed during implementation. As the amount of bare/compacted soil increases, so does the risk of soil movement. Impacts caused by heavy equipment would increase the amount of detrimental soil damage within the treatment areas. By maintaining proper amounts of protective groundcover along with appropriate BMPs and PDFs, the risk of erosion, sediment delivery, and detrimental soil damage within the treatment areas is expected to be minimal and within LMP standards and guidelines. Stand treatments would not be expected to adversely affect nesting habitat for the NSO since the treatments would not remove constituent elements of their nesting habitat. Stand density treatments would create noise from heavy equipment that could disturb the NSO. The potential for disturbance is mainly associated with breeding behavior at active nest sites. The PDFs would focus disturbance outside the critical nesting period and beyond critical distances for NSO. These PDFs would reduce impacts from noise to acceptable levels.<br><br>**Long-term beneficial effects:** By creating less dense stands with less tree competition, residual trees would benefit from the increased availability of sunlight, nutrients, and water. With the increase of available nutrients, trees should be more vigorous and less susceptible to large scale insect/disease outbreaks. The proposed treatments would enhance visuals by softening the edges created by the pipeline and restoring stand density, species diversity, and structural diversity more characteristic under a natural disturbance regime. |

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TABLE 2.3.1-4

**Comparison of Total Acres of Proposed Project-Specific Amendments and Compensatory Mitigation on the Winema NF**

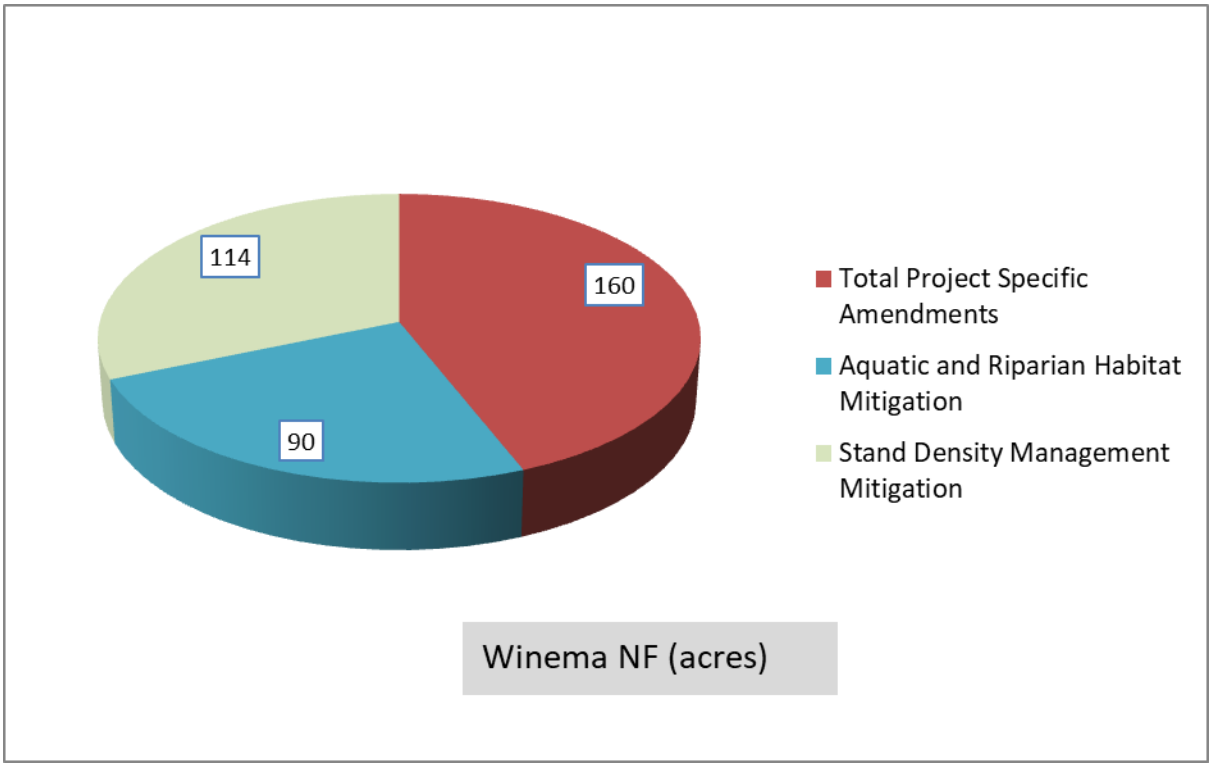
| Amendments and Compensatory Mitigation | Acres |
|---|---|
| Total Project Specific Amendments[1] | 160 |
| Aquatic and Riparian Habitat Mitigation[2] | 90 |
| Stand Density Management (Visuals) | 114 |

Data Source: USFS GIS Data Layers

1) Includes amendments FS-1, WNF-1, WNF-2 WNF-3, WNF-4 and WNF-5

2) Includes road sediment reduction, LWD, riparian fencing, and riparian planting actions and assumes a 20 foot wide treatment area

**Figure 2.3-2. Comparison of Total Acres of Proposed Project-Specific Amendments and Compensatory Mitigation on the Winema NF**



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## 3.0 REFERENCES


FERC 2015. Final Environmental Impact Statement . Jordan Cove Energy and Pacific Connector Gas Pipeline Project. September 2015

GeoEngineers, Inc. 2017d. Thermal Impacts Assessment. Pacific Connector Gas Pipeline Project Coos, Douglas, Jackson, and Klamath Counties, Oregon. File No. 122708-001- 00. August 31, 2017.

GeoEngineers. 2018a. Stream Crossing Risk Analysis Addendum. Pacific Connector Gas Pipeline Southern Oregon. April 6, 2018.

Hoffman, R., and Dunham, J., 2007, Fish Movement Ecology in High Gradient Headwater

Streams: It's Relevance to Fish Passage Restoration Through Stream Culvert Barriers: U.S. Geological Survey, OFR 2007-1140, p. 40.

Keppeler, E.T., P.H. Cafferata, et al. 2007. State forest road 600: a riparian road decommissioning case study in Jackson Demonstration State Forest. Sacramento, CA, California Dept. of Forestry & Fire Protection. Technical Report - June 2007.

Madej, M. 2000. Erosion and sediment delivery following removal of forest roads. U.S. Geological Survey Western Ecological Research Center. madej Can. J. Fish. Aquat. Sci. 57:906-914.

Mattson, D. M. (2009). Scenery Management Analysis and Mitigation Recommendations.

Moeur, Melinda; Ohmann, Janet L.; Kennedy, Robert E.; Cohen, Warren B.; Gregory, Matthew J.; Yang, Zhiqiang; Roberts, Heather M.; Spies, Thomas A.; Fiorella, Maria. 2011. Northwest Forest Plan–the first 15 years (1994–2008): status and trends of late-successional and old-growth forests. Gen. Tech. Rep. PNW-GTR-853. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station 48 p.

NSR (North State Resources, Inc.). 2009. Pacific Connector Gas Pipeline Technical Memorandum for Water Temperature Impact Assessment. Prepared for Pacific Connector Gas Pipeline by North State Resources, Inc. Redding, California. NSR 2014. Site-Specific Stream Crossing Prescriptions for Perennial Streams on BLM and National Forest System Lands. Prepared for Pacific Connector Gas Pipeline by North State Resources, Inc. Redding, California.

Solazzi M.F., Nickelson T.E., Johnson S.L., and Rodgers J.D. Effects of increasing winter rearing habitat on abundance of salmonids in two coastal Oregon streams. Can. J. Fish. Aquat. Sci. 57: 906–914 (2000)

Spies, Thomas A.; Stine, Peter A.; Gravenmier, Rebecca; Long, Jonathan W.; Reilly, Matthew J.; Mazza, Rhonda, tech. coords. 2018. Synthesis of science to inform land management within the Northwest Forest Plan area: executive summary. Gen. Tech. Rep. PNW-GTR-970. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 186 p.

Tippery, S. E., B. L Bangs and K. K. Jones. 2010. 2008 Amphibian Distribution Surveys in Wadeable Streams and Ponds in Western and Southeast Oregon. Information Report 2010-05, Oregon Department of Fish and Wildlife, Corvallis.

USDA-Forest Service: RRNF LRMP 1990. Rogue River National Forest Land and Resource Management Plan

USDA-Forest Service: UNF LRMP 1990. Umpqua National Forest Land and Resource Management Plan.

USDA-Forest Service: WNF LRMP 1990. Winema National Forest Land and Resource Management Plan.

USDA Forest Service; USDI BLM 1994. Record of decision and Standards and Guidelines for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl.

USDA and USDI 2001. Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines.