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Appendix 1 through 7 for the Land Management Plan

Nez Perce-Clearwater National Forests

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2023 Land Management Plan for the Nez Perce-Clearwater National Forests

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Appendix 1 Maps

Maps for the Nez Perce-Clearwater Land Management Plan are in a standalone document (Appendix 1).

Appendix 2 Glossary

The glossary defines terms used throughout the document. If a term's definition(s) is(are) associated with a particular species or management direction, or originates from a specific source, the source is cited or applicable direction is referenced.

Access Management: With respect to elk plan components, new decisions on the status, configuration, seasonal use, and distribution of open motorized roads or trails on National Forest System lands.

Activity Area: A land area affected by a management activity to which soil quality standards are applied. An activity area must be feasible to monitor and includes harvest units within timber sale areas, prescribed burn areas, grazing areas, or pastures within livestock allotments, riparian areas, recreation areas, and alpine areas. Temporary roads, skid trails, and landings are part of an activity area.

Activity Fuels: Fuels resulting from, or altered by, forestry practices, such as timber harvest or thinning, as opposed to naturally created fuels.

Adaptive Management: The general framework encompassing the three phases of planning: assessment, plan development, and monitoring (36 CFR 219.5). This framework supports decision-making that meets management objectives while simultaneously accruing information to improve future management by adjusting the plan or plan implementation. Adaptive management is a structured, cyclical process for planning and decision-making in the face of uncertainty and changing conditions with feedback from monitoring, which includes using the planning process to actively test assumptions, track relevant conditions over time, and measure management effectiveness.

Administrative Site: A location or facility constructed for use primarily by government employees to facilitate the administration and management of public lands. Examples on National Forest System lands include, but are not limited to, ranger stations, warehouses, and guard stations.

Administrative Pasture: A pasture for use primarily by government stock to facilitate the administration and management of public lands. Administrative pastures may also be used as a forage reserve for other administrative needs and resource management during times of drought, wildland fire, and so forth.

Adfluvial: Migration of fish between lakes to rivers.

Administrative Use: A generic term for authorized agency activity.

Aerial Retardant Avoidance Area: Mapped areas that are to be avoided during applications of fire retardant, including habitat for threatened, endanger, proposed, candidate, or sensitive species and all waterways. This national direction is mandatory and would be implemented, except in cases where human life or public safety is threatened and retardant use within avoidance areas could be reasonably expected to alleviate that threat. An interactive map can be found online at https://www.fs.fed.us/fire/retardant/index.html.

Aircraft: A device that is used or intended to be used for flight in the air. Motorized aircraft include types of aircraft such as:

Airplane—an engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings.

Helicopter — a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

Rotorcraft — a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors (14 CFR 1.1).

Air Quality Related Value (AQRV): Is any resource that is identified as sensitive to air pollution, including vegetation, soils, water, fish, cultural resources, wildlife, and visibility, and can be used to provide information about the air quality within the landscapes where they exist.

Airshed: Typically, a geographic area where the air is subject to similar conditions of air pollution. Under the Clean Air Act amendments, all national parks larger than 6,000 acres, national wilderness areas larger than 5,000 acres which existed before August 7, 1977, and certain designated tribal areas are considered Class I airsheds and are provided the most protection through limitation of additional air pollution.

Airstrip: An area of land that is used as a runway for aircraft to take off and land.

All American Road: The most scenic byways are designated All American Roads by the Department of Transportation. They must meet one out of the six intrinsic qualities. The intrinsic qualities include—archeological, cultural, historic, natural, recreational, and scenic. The designation means they have features that do not exist elsewhere in the United States and are unique and important enough to be tourist destinations unto themselves.

Allotment: A designated area of land available for permitted livestock grazing (36 CFR 222). A grazing allotment can include National Forest System and non-National Forest System lands. Permits are issued for the use of allotments or portions of allotments. Allotments are in active status when grazing permits have been issued; allotments are in vacant status when they do not have a grazing permit issued; and allotments are in closed status when they have been closed to livestock grazing by administrative decision or action (Forest Service Manual 2205).

Allotment Infrastructure: Structural improvements that are necessary for grazing management. Examples include fences and water developments.

Allotment Management Plan: A document that specifies the program of action designated to reach a given set of objectives. The plan is prepared in consultation with the permittee(s) involved; prescribes the manner in and extent to which livestock operations will be conducted to meet the multiple-use, sustained yield, economic, and other needs and objectives as determined for the lands involved; describes the type, location, ownership, and general specifications for the range improvements in place or to be installed and maintained on the lands to meet the livestock grazing and other objectives of land management; and contains such other provisions relating to livestock grazing and other objectives as may be prescribed by the Chief of the Forest Service, consistent with applicable law (36 CFR 222).

Animal Unit Month (AUM): The amount of dry forage required by one mature cow of approximately 1,000 pounds, or its equivalent, for one month, based on a forage allowance of 26 pounds per day.

At-Risk Species: Federally recognized threatened, endangered, proposed, and candidate species and species of conservation concern that are relevant to the plan area and planning process (36 CFR 219.6(b)).

Aquifer: An underground layer of water-bearing permeable rock, rock fractures, or unconsolidated material, such as gravel, sand, or silt, from which groundwater can be extracted using a water well.

Aquatic Organism Passage (AOP): Provides the ability for fish and other aquatic creatures to move up and downstream under a road.

Alpine: High elevation ecosystem dominated by grasses and low-lying shrubs.

Bare Ground: All land surface not covered by vegetation, rock, or litter.

Barrier: A physical obstruction which precludes the movement of animals or human access.

Basal Area (BA): The cross-sectional area of all stems, measured at breast height, in a stand expressed per unit of land area, usually square feet per acre.

Baseline: The environmental conditions at a specific point in time.

Best Management Practice (BMP): The method(s), measure(s), or practice(s) selected by an agency to meet its nonpoint source control needs. Best management practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Best management practices can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 CFR 219.19). The term best management practices is also used in other resource areas to describe methods or techniques found to be the most effective and practical means in achieving an objective, such as preventing or minimizing impacts from grazing or invasive weed establishment and spread, while making use of the resources.

Biodiversity: The variety and abundance of plants, animals, and other living organisms and the ecosystem processes, functions, and structures that sustain them. Biodiversity includes the relative complexity of species and communities across the landscape at a variety of scales interconnected in a way that provides for the genetic diversity to sustain the species over the long-term.

Biological Soil Crust: A complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria occurring on the soil surface in open spaces within arid and semiarid systems.

Biological Weed Control: Any technique that involves the use of natural enemies of weed plants to control the germination of weed seeds or the spread of established plants. This is a rapidly expanding area of weed control with many examples. Examples of biological weed control include sheep to control tansy ragwort or leafy spurge, the cinnabar moth and the tansy flea beetle to control tansy ragwort, the chrysolira beetle to control St. John's Wort, and the use of goats to control brush on rangeland.

Biophysical Settings: A grouping of potential vegetation types based on broad climatic and site conditions, such as temperature and moisture gradients. Also see “potential vegetation types.”

Board Foot (bf): A unit of measurement represented by a board one-foot square and one-inch thick.

Broadcast Burn: A management treatment where a prescribed fire is allowed to burn over a designated area within well-defined boundaries. A broadcast burn is used for reduction of fuel hazard, as a resource management treatment, or both.

Candidate Species: A status (1) for U.S. Fish and Wildlife Service candidate species, a species for which the U.S. Fish and Wildlife Service possesses sufficient information on vulnerability and threats to support a proposal to list as endangered or threatened but for which no proposed rule has yet been published by the U.S. Fish and Wildlife Service; and (2) for National Marine Fisheries Service candidate species, a species that is: (i) the subject of a petition to list and for which the National Marine Fisheries Service has determined that listing may be warranted, pursuant to section 4(b)(3)(A) of the

Endangered Species Act (16 United States Code (U.S.C.) 1533(b)(3)(A)) or (ii) not the subject of a petition but for which the National Marine Fisheries Service has announced in the Federal Register the initiation of a status review.

Canopy: The forest cover of branches and foliage formed by tree crowns.

Canopy Base Height (CBH): The lowest height above the ground at which there is a sufficient amount of canopy fuel to propagate fire vertically into the canopy; canopy base height is an effective value that incorporates ladder fuels, such as shrubs and understory trees.

Canopy Fuel: The live and dead foliage, live and dead branches, and lichen of trees and tall shrubs that lie above the surface fuels.

Capability: The potential of an area of land or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions, including climate, slope, landform, soils, and geology, as well as the application of management practices, such as silviculture systems or protection from fires, insects, and disease.

Carbon Pool: An area that contains an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances. May include live and dead above ground carbon; soil carbon, including coarse roots; and harvested wood products.

Carbon Stock: The amount or quantity of carbon contained in a carbon pool. For purposes of carbon stock assessment for National Forest System land management planning, carbon pools do not include carbon in fossil fuel resources, lakes, or rivers; emissions from agency operations; or public use of National Forest System lands, such as emissions from vehicles and facilities.

Cave Course: The area between lines projected from the outside walls of an underlying cave passage at a 45-degree angle to the surface.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Site: A location, managed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA/Superfund) 42 U.S.C. §9601 et seq. (1980) to clean up or prevent a release of hazardous materials into the environment.

Chemical Weed Control: Refers to any technique that involves the application of a chemical (herbicide) to weeds or soil to control the germination or growth of the weed species.

Clearcut: A harvest technique. 1) A stand in which essentially all trees have been removed in one operation. Note: depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration. 2) A regeneration or harvest method that removes essentially all trees in a stand (synonym is clearcutting). Also see regeneration method.

Climate Change: A change in the usual weather patterns that occur in a place. This change can be measured and persists for an extended amount of time, usually decades or longer. Climate change is a change in the usual weather patterns that occur in a place. This change can be measured and persists for an extended amount of time, usually decades or longer.

Climate Change Adaptation: An adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

This adaption includes initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Adaptation strategies include the following: building resistance to climate-related stressors; increasing ecosystem resilience by minimizing the severity of climate change impacts, reducing the vulnerability or increasing the adaptive capacity of ecosystem elements; and facilitating ecological transitions in response to changing environmental conditions.

Climax: The final stage of succession in a plant community. A relatively stable condition where plant species on the site are able to perpetuate themselves in the absence of a stand replacing disturbance.

Coarse Woody Debris (CWD): Woody material derived from logs, tree limbs, boles, and roots in various stages of decay that is larger than three inches in diameter.

Commercial Thinning: A treatment that selectively removes trees large enough to be sold as products, such as sawlogs, poles, or fence posts, from an overstocked stand. This treatment is usually carried out to improve the health and growth rate of the remaining crop trees and can be beneficial in reducing fire hazard.

Commercial Use or Activity: A use or activity on National Forest System lands (a) where an entry or participation fee is charged or (b) where the primary purpose is the sale of a good or service and, in either case, regardless of whether the use or activity is intended to produce a profit (36 CFR 251.51).

Communication Facility: A building, tower, or other physical improvement that is built or installed to house or support authorized communications equipment. Buildings and towers do not have to be combined to be considered a facility.

Community Wildfire Protection Plans (CWPP): Strategic plans developed by communities to address issues, such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all of the above. The Healthy Forests Restoration Act (HFRA) in 2003 includes statutory incentives for the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this opportunity, it must prepare a Community Wildfire Protection Plan.

Composition: The biological elements within the different levels of biological organization, from genes and species to communities and ecosystems.

Confidence Interval: A range of values around the estimated mean that defines a specified probability that the value of a parameter lies within it.

Cohort: A group of trees developing after a single disturbance, commonly consisting of trees of similar age, although it can include a considerable range of tree ages of seedling origin and trees that predate the disturbance.

Connectivity: The ecological conditions that exist at several spatial and temporal scales that provides landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long-distance range shifts of species, such as in response to climate change (36 CFR 219.19). Connectivity needs vary by species.

Control: With Respect to invasive species, such as plant, pathogen, vertebrate, or invertebrate species, control is defined as any activity or action taken to reduce the population, contain, limit the spread, or

reduce the effects of an invasive species. Control activities are generally directed at established free-living infestations and may not necessarily be intended to eradicate the targeted infestation in all cases.

Conserve: For the purpose of 36 CFR 219.9, "conserve" means to protect, preserve, manage, or restore natural environments and ecological communities to potentially avoid federally listing of proposed and candidate species.

Conservation: The protection, preservation, management, or restoration of natural environments, ecological communities, and species.

Consumptive Water Use: The act of removing water from an available supply and utilizing it in a manner that it is not returned to a waterbody.

Cool Season Grass: Cool season grasses start their growth early in spring and continue that growth while cool temperatures and rain prevails. Cool season grasses include various wheatgrass, needlegrass, bromegrass, and bluegrass species. They grow best when temperatures are 40 to 75 °F. They do not grow well during the hot periods in midsummer and often become semi-dormant. They may grow again in the fall as temperatures cool and late summer precipitation replenishes soil moisture. Thus, there may be two growing periods for these grasses: early spring and late summer or fall. Cool season species generally exhibit the C3 photosynthetic pathway; also known as a C3 plant.

Coppice: A forest regeneration method by which the majority of regeneration is from sprouts or root suckers. The suitable species on the Nez Perce-Clearwater for this method is limited to aspen.

Covariates to predict cow elk body fat condition: Habitat parameters that are used in scientific literature, based on best available scientific information, to model or otherwise predict female body fat condition based on elk habitat use and nutrition. An example of covariates to predict cow elk body fat condition are documented in Rowland (2018) and include percent of a landscape usable by elk, that has dietary digestible energy (kcal/g) ≥ 2.58 kcal/g. Examples of covariates that predict habitat use are nutrition, distance to nearest open motorized route, distance to nearest cover-forage edge, and slope.

Cover: The elements of the environment used by an animal for hiding. Cover varies depending upon the species or the time of year and may include a variety of vegetation types as well as topography. The amount and quality of cover needed depends on the animal's size, mobility, and reluctance or willingness to venture into relatively open areas. Cover can occur as horizontal cover, which may provide security from disturbance by humans or predators, or thermal cover, often provided by vegetation canopy, which can help animals regulate body temperature during periods of extreme heat or cold.

Cover type: The vegetation composition of an area, described by the dominant plant species. Also see forest type.

Cretaceous: A geologic period and system from 145 ± 4 to 66 million years ago.

Critical Habitat: For a threatened or endangered species, (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act (16 United States Code 1533), on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act (16 USC 1533), upon a determination by the Secretary that such areas are essential for the

conservation of the species. Endangered Species Act, Sec. 3 (5)(A), (16 USC 1532 (3)(5)(A)). Critical habitat is designated through rulemaking by the Secretary of the Interior or Commerce. Endangered Species Act, Sec. 4 (a)(3) and (b)(2) (16 United States Code 1533 (a)(3) and (b)(2)).

Critical Load: The level of atmospheric deposition below which significant harmful effects on specified sensitive elements of the environment are not expected to occur. Atmospheric deposition is the process by which particles, aerosols, dust, and gases move from the atmosphere to the earth's surface via rain, snow, fog, or dry deposition.

Crown: The part of a tree or other woody plant bearing live branches and foliage.

Crown Fire: A fire that advances from top to top of trees or shrubs more or less independent of a surface fire.

Culmination of Mean Annual Increment of growth (CMAI): See mean annual increment of growth.

Cultural Invasive Species Control: Refers to any technique that involves maintaining field conditions such that invasive species are less likely to become established or increase in number. Examples of cultural invasive species control would be avoiding overgrazing of rangeland, using well-adapted competitive forage species, and maintaining good soil fertility.

Culturally Significant Area: Areas that have spiritual, historic, scientific, or social value for past, present, or future generations, including the significance of the natural elements of land, water, and vegetation.

Culturally Significant Species: Plant and animal species whose existence and symbolic value are essential to the stability of a cultural group through time. Camas root is an example for the Nez Perce Tribe.

Dams (jurisdictional): Refer only to jurisdictional dams as defined in the Forest Service Handbook 7506. A jurisdictional dam is defined by statutes and rules as Forest Service operated dams and dams operated by the holder of a special use authorization that meet one or more of the following criteria:

- Dams with a high hazard potential classification;
- Dams with a significant hazard potential classification; and
- Dams with a low or undetermined hazard potential classification that:
- Equal or exceed 25 feet in height and exceed 15 acre-feet in storage, or
- Exceed 6 feet in height and equal or exceed 50 acre-feet in storage.

Decision Document: A record of decision, decision notice, or decision memo (36 CFR 220.3).

Dedicated Skid Trail: A pathway used repeatedly, and only, to move logs or trees from the stump to a landing, where they are processed and loaded onto trucks.

Defects: Defects are flaws in a tree that reduce its structural strength. Trees may have single or multiple defects, which may or may not be detectable.

Deferred Trail Maintenance: The backlog of trails in need of maintenance.

Deleterious: Having a harmful or injurious effect.

Density (stand): 1. a quantitative measure of stocking expressed either absolutely in terms of number of trees, basal area, or volume per unit area or relative to some standard condition, 2. A measure of the degree of crowding of trees within stocked areas commonly expressed by various growing space ratios (for example, height or spacing).

Designated Area: An area or feature identified and managed to maintain its unique special character or purpose. Some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the federal executive branch. Examples of statutorily designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, wilderness areas, and wilderness study areas. Examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and significant caves.

Designated Over-the-Snow Route: A course managed under permit or agreement or by the agency where use is encouraged, either by on-the ground marking or by publication in brochures, recreation opportunity guides, or maps (other than travel maps) or in electronic media produced or approved by the agency. The routes identified in outfitter and guide permits are designated by definition; groomed routes also are designated by definition.

Desired Condition (DC): A description of specific social, economic, or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Also see Chapter 1 of the Final Environmental Impact Statement.

Desired Plant Community: A desired plant community is selected as the one species composition of the many possible within any given ecological site or equivalent that is most compatible with management objectives for a site. This decision depends on the relative value expected to be obtained from alternative land uses, as well as the feasibility of implementing actions required to change the present vegetation to a more desirable type. It is unlikely that the desired plant community would feature substandard levels of soil protection, biotic integrity, and hydrologic function because it is assumed that maintaining site potential should be an intrinsic goal of any management plan. A desired plant community is in essence the benchmark to compare existing vegetation and provides a system to evaluate the success of current practices in meeting management objectives (U.S. Department of Agriculture 2016).

Detrimental Soil Compaction: A specific type of detrimental soil disturbance most often caused by the use of ground based mechanical equipment where soil grains are rearranged so they are brought in closer contact with one another, thereby reducing the volume of pore space and average pore size in the soil, thereby increasing soil bulk density. Effects are severe enough to reduce soil productivity over an extended period of time.

Detrimental Soil Condition: The condition where established soil quality standards are not met and the result is a significant change in soil quality.

Detrimental Soil Disturbance: Management-caused soil disturbance in vegetation management areas that persists on the landscape for an extended period of time (minimum of 40 years) unless restoration actions are taken and is severe and extensive enough to reduce soil productivity or the ability of the land to provide desired goods and services.

Detrimental Soil Displacement: A specific type of detrimental soil disturbance most often caused by mechanical removal of surface soil layers associated with land grading, temporary road construction, or land scarification. The physical removal of upper soil layers.

Desired Nonnative Species: Species that contribute to conservation or management objectives, such as providing habitat or food resources or providing desirable ecosystem functions.

Developed Recreation Site: A discrete place containing a concentration of facilities, infrastructure, and services used to provide recreation opportunities to the public and evidencing a significant investment in facilities and management. Developed recreation sites are recorded in the Forest Service Natural Resource Manager (NRM) recreation sites database with a development scale of 3, 4, or 5:

Development Scale 3 (moderate site modification) is where facilities are about equal in terms of protection of the natural site and user comfort. The contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls are usually provided. Roads may include a hard surface and formalized trails, with primary access over high-standard roads. Development density is about three family units per acre. Interpretive services are informal, if offered, but generally direct.

Development Scale 4 (heavy site modification) is where some facilities are designed strictly for comfort and the convenience of users and facility design may incorporate synthetic materials. There may be extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually is obvious, with the primary access usually over paved roads. Development density is three to five family units per acre. Plant materials are usually native. Interpretive services, if offered, are often formal or structured.

Development Scale 5 (extensive site modification) is where facilities are mostly designed for the comfort and convenience of users and usually include flush toilets and may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials are commonly used. Walks may be formal, and trails may be surfaced. Access is usually by high-speed highways. The development density is five or more family units per acre. Plant materials may be non-native. Formal interpretive services are usually available. Plant materials may be non-native, and mowed lawns and clipped shrubs are not unusual.

Diameter Breast Height (dbh): The diameter of a tree measured 4.5 feet above the ground on the uphill side of the tree, or the diameter of a log measured 4.5 feet from the large end of the log.

Discretionary: The exploration and development of leasable mineral resources are discretionary activities, meaning that leasing them may or may not be allowed.

Dispersed Camping: The practice of camping outside of a developed campground, including designated dispersed camping, dispersed vehicular camping, or back-country camping.

Dispersed Recreation: General term referring to recreation use outside developed recreation sites; this includes activities such as scenic driving, hiking, backpacking, climbing, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

Dispersed Recreation Area: A general forest area with repeated dispersed use that has little or no Forest Service investment and has a development scale of 0 to 2.

Distribution Line: The facility in an electric power system used to carry electricity from the transmission system to individual consumers. Distribution lines typically operate in a voltage range of 4kV to 46kV.

Disturbance: An event that alters the structure, composition, or function of terrestrial or aquatic habitats or any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure or function and changes resources, substrate availability, or the physical environment. Natural disturbances include, among others, drought, floods, wind, fires, wildlife grazing, and insects and pathogens; human-caused disturbances include actions such as timber harvest, livestock grazing, roads, and the introduction of exotic species.

Disturbance Activities: Activities which result in notable vegetation removal or soil disturbance, such as road construction and timber harvest.

Disturbance Regime: A description of the characteristic types of disturbance on a given landscape or the frequency, severity, size, and distribution of these characteristic disturbance types and their interactions. The natural pattern of periodic disturbances, such as fire or flooding.

Disturbance or Displacement: The repeated avoidance of humans by a species by shifting its habitat use in space or time.

Driver (ecology): See ecosystem driver.

Duff: The partially decayed organic matter on the forest floor.

Early-seral and Successional Stage (forest): The earliest stage in the sequence of plant communities that develop after a stand replacing disturbance, such as fire or regeneration harvest. On the forested communities of the Nez Perce-Clearwater, this stage typically occurs in the period from 1 to 20 or 30 years after the disturbance and is dominated by grass, forbs, shrubs, and seedling or sapling sized trees.

Early Successional Forest Patches: Specifically defined for modeling purposes as areas classified in the seedling and sapling size class (less than 5” diameter) and transitional areas reforesting following disturbance. These areas have little to no tree cover but are found on forested potential vegetation types.

Ecological Condition: The biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems. Ecological conditions include habitat and other influences on species and the environment; examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species (36 CFR 219.19).

Ecological Diversity: See “ecosystem diversity.”

Ecological Integrity: The quality or condition of an ecosystem when its dominant ecological characteristics occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence (36 CFR 219.19). Dominant ecological characteristics include composition, structure, function, connectivity, and species composition and diversity.

Ecological Site: A conceptual division of the landscape that is defined as a distinctive kind of land based on recurring soil, landform, geological, and climate characteristics that differs from other kinds of

land in its ability to produce distinctive kinds and amounts of vegetation and in its ability to respond similarly to management actions and natural disturbances (interagency definition).

Ecological Threshold: See threshold.

Ecological Sustainability: See sustainability.

Ecosystem: A spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. The term ecosystem can be used at a variety of scales; for the Land Management Plan, the ecosystem is referred to spatially at the forestwide and geographic area scales, as well as within potential vegetation types (36 CFR 219.19). An ecosystem is commonly described in terms of its:

composition: The biological elements within the different levels of biological organization, from genes and individual plant and animal species to communities, such as cover types.

structure: The organization and physical arrangement of biological elements, such as snags and down woody debris, vertical (size class and structure class) and horizontal (density) distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.

function: Ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances, including wind, fire, and floods.

connectivity: See connectivity.

Ecosystem Diversity: The variety and relative extent of ecosystems (36 CFR 219.19).

Ecosystem Driver: A natural or human-induced factor that directly or indirectly causes a change in an ecosystem. Examples include climate change, fire events, invasive species, and flooding.

Ecosystem Integrity: The ability of an ecosystem to support and maintain ecological processes and a diverse community of organisms.

Ecosystem Resilience: See resilience.

Ecosystem Services: The benefit(s) people obtain from an ecosystem, including: (1) provisioning services, such as clean air and fresh water, energy, fuel, forage, fiber, and minerals; (2) regulating services, such as long-term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation; (3) supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and (4) cultural services, such as educational, aesthetic, spiritual and cultural heritage values, recreational experiences, and tourism opportunities (36 CFR 219.19).

Ecosystem Stressor: A factor that may directly or indirectly degrade or impair ecosystem composition, structure, or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime.

Ecotone: Ecotones exist where there is a gradual blending of the two ecosystems across a broad area or they may be manifested as a sharp boundary line. Without periodic disturbance processes, such as fire, plants in competition extend themselves on one side of the ecotone as far as their ability to maintain themselves allows. Beyond this, competitors of the adjacent community can take over. As a result, the

ecotone can represent a shift in dominance. This zone shifts in location and condition based on climate influences, successional processes, and disturbance processes. Examples include transitional zones in riparian areas between terrestrial and aquatic ecosystems or between non-forested grass or shrub communities and forested communities.

Ectomycorrhizal Associations: Mutualistic associations between higher fungi and Gymnosperms or Angiosperms. They are formed predominantly on the fine root tips of the host, which are unevenly distributed throughout the soil profile, being more abundant in topsoil layers containing humus than in underlying layers of mineral soil.

Effective Separation: The spatial or temporal separation between wild sheep and domestic sheep or goats to minimize the potential for association and the probability of transmission of diseases between species (Western Association of Fish and Wildlife Agencies (WAFWA) 2012).

Eligible River: Within the Wild and Scenic River Act, eligibility is an evaluation of whether a candidate river is free-flowing and possesses one or more outstandingly remarkable values (ORVs). If found eligible, a candidate river is analyzed as to its current level of development, including water resources projects, shoreline development, and accessibility, and a tentative classification is made that it be placed into one or more of three classes—wild, scenic or recreational. Eligibility and classification represent an inventory of existing conditions.

Elk Habitat Use: The relative probability of elk to use a specified landscape and areas within the landscape. Covariates influencing elk habitat use include distance to open roads, slope, distance to forested cover, and nutritional resources.

Elk Nutrition: The dietary nutrients needed by a lactating female elk to meet its maintenance needs during summer and fall, which tends to be a period of nutritional stress in response to demands of a calf at heel. Adequate summer through fall nutrition of a lactating female ensures survival of her calf through winter and allows the female to be in sufficient condition after weaning to again produce and recruit a calf the following year in avoidance of alternate-year calf production by a female.

Electric Bikes or Ebikes: Congress enacted HB 727 in 2002, which amended the Consumer Product Safety Commissions definition of ebikes. The law defines an electric bicycle as “a two- or three-wheeled vehicle with fully operable pedals and an electric motor of less than 750 watts (1 h.p.), whose maximum speed on a paved level surface, when powered solely by such a motor while ridden by an operator who weighs 170 pounds, is less than 20 mph.” The federal law permits e-bikes to be powered by the motor alone (a “throttle-assist” e-bike) or by a combination of motor and human power (a “pedal-assist” e-bike). The State of Idaho has defined a three-tiered E-bike Classification System to differentiate the various e-bike models having varying speed capabilities.

A Class 1 electric bicycle is defined as “a bicycle equipped with a motor that provides assistance only when the rider is pedaling and that ceases to provide assistance when the bicycle reaches the speed of 20 miles per hour.”

A Class 2 electric bicycle is defined as “a bicycle equipped with a motor that may be used exclusively to propel the bicycle and that is not capable of providing assistance when the bicycle reaches the speed of 20 miles per hour.”

Class 3 electric bicycles are defined as “a bicycle equipped with a motor that provides assistance only when the rider is pedaling and that ceases to provide assistance when the bicycle reaches the speed of 28 miles per hour and is equipped with a speedometer.” Any other device not meeting the definitions above

are not considered electric bicycles that would be regulated as a bicycle and may be considered scooters or mopeds, which are classified as motor vehicles.

Endangered Species: A species that the Secretary of the Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Endangered species are listed in the 50 CFR Sections 17.11, 17.12, and 224.101.

Environmental Document: A written analysis that provides sufficient information for a responsible official to undertake an environmental review. Examples include: a categorical exclusion, an environmental assessment, and an environmental impact statement (36 CFR 219.19).

Environmental Justice Community: A community with a meaningfully greater minority or low-income population, when compared to the population as a whole. For the purposes of the Nez Perce-Clearwater plan, environmental justice communities are defined as those communities where either low-income or minority populations, or both, comprise at least 20 percent of the total community population.

Ephemeral Streams: A channel or draw reach that only carries surface flow in direct response to precipitation. An ephemeral channel may or may not have a defined bed and banks, depending on the physiographic setting, climate, and dominant weather patterns.

Epidemic (outbreak): The rapid spread, growth, and development of pathogen or insect populations that affect large numbers of a host population throughout an area at the same time.

Eradication: With respect to invasive species, including plant, pathogen, vertebrate, or invertebrate species, eradication is defined as the removal or elimination of the last remaining individual invasive species in the target infestation on a given site. It is determined to be complete when the target species is absent from the site for a continuous time period several years after the last individual was observed. Eradication of an infestation of invasive species is relative to the timeframe provided for the treatment procedures. Considering the need for multiple treatments over time, certain populations can be eradicated using proper integrated management techniques.

Erosion: The wearing away of the lands' surface by water, wind, ice, or other physical processes. It includes detachment, transport, and deposition of soil or rock fragments.

Even-aged Stand: A stand of trees composed of a single age class (cohort). Usually trees in a single age class are within 20 plus years of each other.

Even-aged System: A planned sequence of treatments designed to maintain and regenerate a stand with predominantly one age class. Treatments include clearcutting, seedtree, shelterwood, and coppice regeneration methods.

Facilities: Real property assets managed for the administration of the national forest. Examples include buildings, administrative pastures and fencing, water systems, wastewater systems, campgrounds, picnic areas, and interpretive sites. For the purpose of this document, it does not include roads, trails, dams, or airfields.

Final Regeneration Harvest: The final timber harvest in a sequence of harvests designed to regenerate a timber stand or release a regenerated stand. A final regeneration harvest could be a clearcut, removal of a shelterwood or seedtree system, or a selection cut.

Fine Fuel: The fast-drying dead or live materials, generally characterized by a comparatively high surface area-to-volume ratio, which is defined as less than 0.25 inches in diameter and having a timelag of 1 hour or less in which fuel moisture content can change by 95 percent. Fine fuels, such as grass, leaves, and needles, ignite readily and are consumed rapidly by fire when dry (National Wildlife Coordinating Group 2008).

Fire Adapted Community: A human community consisting of informed and prepared citizens collaboratively planning and acting to safely co-exist with wildland fire.

Fire Behavior: The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Control: See "fire suppression."

Fire Exclusion: The disruption of a characteristic pattern of fire intensity and occurrence, primarily through fire suppression.

Fire Frequency: The number of times that fires occur within a defined area and time period.

Fire Hazard: The potential fire behavior for a fuel type, regardless of the fuel type's weather-influenced fuel moisture content or its resistance to fireline construction. Fire behavior assessment is based on physical fuel characteristics, such as fuel arrangement, fuel load, condition of herbaceous vegetation, and presence of elevated fuels.

Fire Intensity: The amount of energy released by a fire; however, no single metric, including reaction intensity, fireline intensity, temperature, residence time, radiant energy, and others, captures all of the relevant aspects of fire energy. Fireline intensity is most frequently used in forested ecosystems.

Fire Management: All activities for the management of wildland fires to meet land management objectives. Fire management includes the entire scope of activities from planning, prevention, fuels or vegetation modification, prescribed fire, hazard mitigation, fire response, rehabilitation, monitoring and evaluation.

Fire Regime: Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as fire return interval.

Fire Risk: The probability or chance of fire starting determined by the presence and activities of causative agents.

Fire Severity: For this effort, it is the effect of fire within the fire perimeter in terms of mortality to the upper layer vegetation expressed in three levels within a given fire regime.

Low severity is defined as less than 25 percent average top-kill within a typical fire perimeter for a given vegetation type.

Mixed severity is defined as between 25 and 75 percent average top-kill within a typical fire perimeter for a given vegetation type.

High or replacement severity is defined as greater than 75 percent average top-kill within a typical fire perimeter for a given vegetation type.

Fire Suppression: The work and activities connected with fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Fire-adapted Species: A plant type that has evolutionary adaptations to survive and thrive in an ecosystem where fire is a primary driver, including tree species that are termed fire-tolerant, as well as trees and other plant species that have a myriad of other types of adaptations. Some examples of adaptations are the serotinous cones of lodgepole pine, which open only when heated in a fire; fast early tree growth for rapid site domination; rhizomatous (below ground) root systems or root crowns; seeds with hard, fire resistant seed-coats; or very lightweight, wind-dispersed seed. See also fire-tolerant species.

Fire-intolerant Tree Species: A tree type that is susceptible to severe damage or mortality in a fire event. Characteristics typically include thin bark at maturity, crowns that retain lower branches close to the ground, and less protected buds and needles. For example, subalpine fir, grand fir, and spruce are fire-intolerant species on the Nez Perce-Clearwater.

Fire-tolerant Tree Species: A tree type resistant to severe damage or mortality in a fire event. Characteristics include thick bark at maturity, readily self-pruning (lower branches are shed as the tree grows), and protected buds. Examples of fire-tolerant species on the Nez Perce-Clearwater are western larch, Ponderosa pine, and, to a lesser extent, Douglas-fir.

Fireline Intensity: The rate of energy release per unit length of the fire front expressed as British Thermal Unit per foot of fireline per second or as kilowatts per meter of fireline. This is a physical parameter that is related to flame length. This expression is commonly used to describe the power of wildland fires, but it does not necessarily follow that the severity, defined as the vegetation mortality, will be correspondingly high.

Fish Passage: A clear access for migrating fish through a potential barrier.

Flame Length: The distance between the flame tip and the midpoint of the flame depth at the base of the flame, generally the ground surface and is an indicator of fire intensity (National Wildlife Coordinating Group 2008).

Floodplain: Lowlands bordering streams, which are periodically inundated by overbank flows of water. Floodplains are composed of sediments carried by streams and deposited on land during flooding.

Flow Regime: The temporal patterns of high and low flows in a stream or river. The flow regime is a key driver in the geomorphic processes that shape river channels and floodplains. Flow regimes can influence shallow water aquifers, such as hyporheic zone, that return flow to surface waters and help shape ecological processes influencing biodiversity of aquatic and riparian organisms.

Focal Species: A small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems (36 CFR 219.19).

Food-conditioned (bear): A bear that associates humans and areas of human activity, such as campgrounds, cabins, and dwellings, with food, usually as a result of repeatedly obtaining food rewards, including garbage, camp food, pet or livestock food, and bird seed, in such areas.

Forage: The browse and nonwoody plants available to livestock or wildlife for feed.

Forage Allocations for Ecological Needs: At the allotment management planning level, a determination of forage production for the dominant ecological sites, or their equivalent, within the grazing allotment is determined. Forage allocations permitted for livestock grazing are made after analyzing the effects to other resources. Examples of resource areas taken into consideration prior to determining forage availability for livestock grazing include soil health, native plant community viability and resilience, hydrologic function, aquatic habitat quality, and the forage and cover needs of wildlife species.

Foraging Habitat: For Canada lynx, includes areas that support the primary prey (snowshoe hare) of lynx and has the vegetation structure suitable for lynx to capture prey. These conditions may occur in early successional stands following some type of disturbance or in older forests with a substantial understory of shrubs and young conifer trees. Coarse woody debris, especially in early successional stages created by harvest regeneration units and large fires, provides important cover for snowshoe hares and other prey (Interagency Lynx Biology Team 2013).

Forb: A herbaceous (herb-like) plant other than grass or grass-like plants.

Forest Connectivity: An area providing those functions for wildlife species that prefer to remain within or close to forested cover. Also see “connectivity” above.

Forest Dominance Type: A classification that reflects the most common tree species within a forest stand. The dominant species comprises at least 40 percent of the stocking, as measured by canopy cover, basal area, or trees per acre, depending on available information and stand characteristics.

Forest Floor: All organic matter generated by forest vegetation, including litter and unincorporated humus, on the mineral soil surface.

Forest Health: The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance. A useful way to communicate about the current condition of the forest, particularly about the ability of the ecosystem to respond to disturbances. Note: perception and interpretation of forest health are influenced by individual and cultural viewpoints, land management objectives, spatial and temporal scales, the relative health of the stands that comprise the forest, and the appearance of the forest at a point in time.

Forest Land: An area at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest uses. Lands developed for nonforest use include areas for crops, improved pasture, residential or administrative sites, improved roads of any width, and adjoining road clearing and power line clearings of any width.

Forest Management: The practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest. Note: forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and other forest resource values. Forest management varies in intensity from leaving the forest alone to a highly intensive regime composed of periodic silvicultural treatments.

Forest Plan: Used synonymously with Land Management Plan. See Land Management Plan.

Forest Structure: A complex three-dimensional construct consisting of the various horizontal and vertical physical elements of the forest, including tree diameters, tree heights, tree ages, stand density, canopy layers, quantity and quality of deadwood, herbaceous species, and the "clumpiness" of the stand. There is no one measure to quantify or describe structure. Often individual forest attributes are described and integrated to evaluate forest structure, such as tree sizes or ages or the number of canopy layers.

Forest System Road: See National Forest System road.

Forest Type: A category of forest usually defined by its vegetation, particularly its dominant vegetation, as based on percentage cover of trees; for example, subalpine fir or spruce and lodgepole pine.

Free-flowing River: From the Wild and Scenic River Act, as applied to any river or section of a river, means existing or flowing in a natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway. The existence, however, of low dams, diversion works, or other minor structures at the time any river is proposed for inclusion in the National System shall not automatically bar its consideration for such inclusion, provided that this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the National System.

Fuel: Any combustible material, especially petroleum-based products and wildland fuels.

Fuels Management: Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives (National Wildlife Coordinating Group 2008).

Fuel Model: A set of surface plant material characteristics organized for input to a fire model. Standard fuel models, such as Anderson (1982), have been stylized to represent specific fuel conditions. Surface plant material characteristics examples include load and surface-area-to-volume-ratio by size class, heat content, and depth.

Fuel Reduction: Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition or to lessen potential damage and resistance to control.

Fuel Treatment: Manipulation or removal of fuels to reduce the likelihood of ignition or to lessen potential damage and resistance to control. Examples include lopping, chipping, crushing, piling, and burning (National Wildlife Coordinating Group 2008).

Fuelwood: A term for wood that is used for conversion to a form of energy. Examples include firewood and biomass.

Fuels Reduction Zone: An area in which continuous high hazard fuels are broken up. These zones are designed to increase fire personnel safety and reduce resistance to fire control efforts. Fuels reduction zones may be of any size or shape. They may have a higher number of snags, down logs, and canopy closure than other fuels treatment zones. They are recognized as being a significant portion of a complete fuels' management program.

Function: Ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances, including wind, fire, and floods.

Geographic Area (GA): A spatially contiguous land area identified within the plan area. A geographic area may overlap with a management area (36 CFR 219.19).

Geographic Information System (GIS): A computer process that links database software to graphics (spatially explicit) software and provides database and analytic capabilities.

Goals (GO): Broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Also see Chapter 1.

Gradient (stream): The slope of a streambed.

Grand Exploration Motorized (GEM) Trail: A conceptual north-south motorized route connecting communities between Elk City, ID and Avery, ID. This route would be comprised primarily of existing road and trail segments, across multiple ownerships, linked together to create an approximately 240-mile route that facilitates motorized use by All Terrain and Off-Highway Vehicles.

Grazing Allotment: Per Forest Service Manual 2205, a designated area of land that is available for livestock grazing and is represented on a map. A grazing allotment can include National Forest System and non-National Forest System lands. Permits are issued for the use of allotments or portions of allotments. Allotments may be:

- *active*: Livestock grazing allotments, including pack and saddle stock allotments.
- *closed*: Areas having suitable livestock range that have been closed to livestock grazing by administrative decision or action.
- *combined*: An allotment that has been combined into another allotment and, therefore, no longer exists as an independent allotment.
- *vacant*: An allotment that does not have a current grazing permit issued.

Grazing Authorizations and Reauthorizations: Grazing permits with term status of 10 years or with temporary status of 1 year. Upon expiration of an existing grazing permit, they can be reauthorized, provided eligibility and qualification requirements are met. Upon sale of base property or permitted livestock, a grazing permit with term status may be authorized to the purchaser of base property or permitted livestock as the preferred applicant, provided eligibility and qualifications requirements are met (36 CFR 222).

Grazing Permit: Authorizes livestock to use National Forest System lands or other lands under Forest Service control for the purpose of livestock production. Term permits are issued for up to 10 years with priority for renewal at the end of the term. On-and-off grazing permits are permits with specific provisions on rangelands only part of which is National Forest System lands or other lands under Forest Service control. Private land grazing permits are permits issued to persons who control grazing lands adjacent to or within national forest proclaimed boundary and who waive exclusive grazing use of these lands to the United States for the full period the permit is to be issued (36 CFR 222). Temporary permits are issued for up to one year. Examples include livestock use permits for transportation livestock to persons engaged in commercial packing or dude ranching.

Greenline: The first line of perennial vegetation on or near the water's edge along a stream. The greenline is an important location for monitoring riparian areas because it is vulnerable to impacts from management that are related to streambank instability and channel widening or incision.

Ground Cover: The material on the soil surface that impedes raindrop impact and overland flow of water. Ground cover consists of all living and dead herbaceous and woody material in contact with the ground and all rocks greater than 0.75 inches in diameter.

Ground Fire: A term used to describe organic material, such as duff, organic soils, roots, and rotten buried logs, burning beneath the surface (National Wildlife Coordinating Group 2008).

Ground-based Logging System: A log skidding method using tracked or wheeled tractors. These tractors, or "skidders," typically operate on gentle slopes. Gentle slopes occur on slopes less than 40 percent. Steeper slopes may require cable logging systems.

Ground-disturbing Activity: An activity that results in a change in the vegetation cover or topography that may cause or contribute to sedimentation. Ground-disturbing activities include, but are not limited to, removing vegetation cover, excavating, filling, and grading.

Groundwater: Water that exists underground in saturated zones beneath the land surface.

Groundwater-dependent Ecosystem: A community of plants, animals, and other organisms whose extent and life processes depend on groundwater. Examples include riparian areas, wetlands, peatlands, groundwater-fed lakes and streams, cave and karst systems, aquifer systems, fens, springs, and seeps.

Group Selection Method: A cutting method to develop and maintain uneven-aged stands by the removal of patches of trees at periodic intervals to meet a predetermined goal of size distribution and species composition at the stand level. The patch size depends on species being regenerated. The remaining portion of the stand (matrix) is managed concurrently.

Group Use: An activity conducted on National Forest System lands that involves a group of 75 or more people, either as participants or spectators (36 CFR 251.51).

Guide: To provide services or assistance, such as supervision, protection, education, training, packing, touring, subsistence, transporting people, or interpretation, for pecuniary remuneration or other gain to individuals or groups on National Forest System lands (36 CFR 251.51).

Guideline (GDL): A constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Also see Chapter 1.

Habitat Type: An aggregation of plant communities of similar biophysical characteristics and similar function and response to disturbances. A habitat type will produce similar plant communities at climax. On the Nez Perce-Clearwater, habitat types are based upon Pfister et al (1977). Also see potential vegetation type.

Hardened Stream Crossing: A trail or travelway constructed across a stream that allows livestock to cross or to drink with minimal disturbance to the streambank and channel.

Hazard Tree: A tree that has the potential to cause property damage, personal injury or fatality in the event of a failure, where failure is the mechanical breakage of a tree or tree part. Failures often result from the interaction of defects, weather factors, ice or snow loading, or exposure to wind. Tree hazards may include dead or dying trees, dead parts of live trees, or unstable live trees due to structural defects or other factors that are within striking distance of people or property (a target). Failures result in accidents only if they strike a target.

Hazardous Fuels: A fuel complex defined by kind, arrangement, volume, condition, and location that presents a threat of ignition and resistance to control.

Hazardous Fuels Mitigation: See fuels management and fuels treatment.

Healthy Forests Restoration Act: The public law (108-148), passed in December 2003, which provides statutory processes for hazardous fuel reduction projects on certain types of at-risk National Forest System and Bureau of Land Management managed public lands. The Healthy Forests Restoration Act also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.

Heterogeneity: Exhibiting dissimilarity among members of a group (Helms 1998). In the forest structure context, vertical heterogeneity relates to trees of varying heights growing together.

High Quality Nutritional Resources: Areas that produce vegetation with Dietary Digestible Energy greater than 2.6 kcal per gram.

High Severity Fire or High Severity Fire Regime: See stand-replacing fire.

High Use Areas: Areas that receive high levels of visitor use such as trailheads and developed campgrounds.

Highly Erodible Soils: Soils that are inherently susceptible to soil erosion, whether water or wind, due to physical properties of surface soil layers, such as soil texture or the amount of rock fragments in the soil or topographic factors, including steep slopes.

Historic Climax: The plant community that existed at the time of European immigration and settlement in North America. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site. The historic climax plant community was in dynamic equilibrium with its environment. It is the plant community that was able to avoid displacement by the suite of disturbances and disturbance patterns (magnitude and frequency) that naturally occurred within the area occupied by the site.

Historic Properties: 36 CFR 800.16 defines historic properties as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or native Hawaiian organization and that meet the National Register criteria.”

Historical Range of Variation (HRV): The variation in ecological conditions resulting from disturbance regimes and other natural influences under which the ecosystem and forests evolved. Typically refers to the period prior to the dramatic changes in human land uses and patterns beginning with the influx of European-Americans about the mid-1800s. Historical range of variation is considered valuable for providing a context or frame of reference to evaluate current ecosystem conditions and understanding what an ecologically healthy and sustainable condition might look like. Also see natural range of variation.

Home Range: An area, from which intruders may or may not be excluded, to which an individual animal restricts most of its usual activities.

Hub: A specified community or site that provides various amenities, services, and information to facilitate the use, enjoyment, and travel through the Nez Perce-Clearwater National Forest and surrounding area. Hubs serve as a mechanism to promote the Nez Perce-Clearwater, local communities, and the surrounding area as a recreation destination region for outdoor adventure.

Community Hub: A city, town, or community located within or proximate to the Nez Perce-Clearwater, with commercial enterprises that provide products, services, and information that meet the needs of Forest visitors.

Primary Hub: A specific recreation site that serves as a focal point of access to a diversity of recreational opportunities. A site that provides appropriate facilities and information to facilitate the planning and enjoyment of a variety of recreational experiences readily accessible from that location.

Secondary Hub: A trailhead or specified roadtr or ail intersection that serves as a portal and point of reference to move people to motorized and non-motorized routes, use areas, and connecting routes through the Forest and surrounding area. Trail and area specific information such as trail designations, trail conditions, safety features and hazards, or other information may be provided that informs user expectations.

Hydric: Environment or habitat containing plenty of moisture and very wet.

Hydric Vegetation: See hydrophilic vegetation.

Hydrologic Connectivity: A circumstance, such as a roadway, ditch, or other drainage structure, that is directly connected to a watercourse, such that water and any associated sediment it is carrying is delivered directly to that watercourse or a natural channel network.

Hydrologic Unit Code (HUC): The United States is divided and sub-divided into successively smaller hydrologic units (watersheds) which are classified into six levels: regions (HUC 1), sub-regions (HUC 2), basin (HUC 3), subbasin (HUC 4), watershed (HUC 5), and subwatersheds (HUC 6). The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code consisting of two to twelve digits based on the levels of classification in the hydrologic unit system.

Hydrophilic Vegetation: Plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. Hydrophilic vegetation can be described as obligate wetland or facultative wetland species. Obligate wetland species are nearly always found in wetlands, with a frequency of occurrence in wetlands of 99 percent or more. Facultative wetland species occur more often than not in wetlands with a frequency of occurrence in wetlands between 67 and 99 percent of the time.

Indian Tribe: Any Indian or Alaska Native tribe, band, nation, pueblo, village, or other community that is included on a list published by the Secretary of the Interior under Section 104 of the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C. 479a-1).

Infrastructure: The collection of human-built improvements, such as roads, trails, airfields, facilities, and dams that serve the mission of the national forest.

Inherent Capability of the Plan Area: The ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural disturbances.

Inherent Scenic Attractiveness: Classification of how visually unique, distinctive, and valued specific scenery is. This refers to enduring visual qualities of the landscape, which may be enhanced by positive cultural features. Ratings that compare landscapes within ecoregions are based upon commonly-held perceptions of beauty related to land forms, rock features, vegetation patterns, and water features, along with concepts such as uniqueness, variety (including seasonal), mystery and vividness of the line, form, color, and texture of the scenery.

Class A—Distinctive: Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have strong positive attributes.

Class B—Typical or Common: Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide ordinary or common scenic quality. These landscapes have positive yet common visual attributes.

Class C—Indistinctive: Areas where landform, vegetation patterns, water characteristics, and cultural features have low scenic quality. Often, water and rock form of any consequence are missing. These landscapes have weak or very few visual attributes.

Inherent (soil) Productivity: The ability of the soil to produce a specific type and amount of native vegetation based on physical and chemical properties inherited from the unique combination of soil forming factors and processes that have occurred at a site and without the addition of soil amendments.

Initial Attack: A planned response to a wildfire given the wildfire's potential fire behavior. The objective of an initial attack is to stop the fire and put it out in a manner consistent with fire personnel and public safety and values to be protected.

Inner Gorge: A geomorphic feature that consists of a steep side slope, typically greater than 35 percent, immediately adjacent to the stream channel, below the first break in slope above the stream channel, and above which the hillslope and topography is less steep. Debris sliding and avalanching are often associated with the inner gorge.

Integrated Pest Management (IPM): A pest control strategy for invasive species based on the determination of an economic, human health, or environmental threshold that indicates when a pest population is approaching the level at which control measures are necessary to prevent a decline in the desired conditions (economic or environmental factors). In principle, integrated pest management is an ecologically based holistic strategy that relies on natural mortality factors, such as natural enemies, weather, and environmental management, and seeks control tactics that disrupt these factors as little as possible. Integrated pest management techniques are defined within four broad categories of weed control: (1) biological, (2) cultural, (3) mechanical or physical, and (4) chemical techniques. While each situation is different, the following major components are common to all integrated pest management programs: prevention, early detection and rapid response, control and management, restoration, and collaboration.

Integrated Resource Management: Multiple use management that recognizes the interdependence of ecological resources and is based on the need for integrated consideration of ecological, social, and economic factors (36 CFR 219.19).

Integrity (ecology): See ecological integrity.

Interagency Consultation: A process required by Section 7 of the Endangered Species Act whereby federal agencies proposing activities in a listed species habitat confer with the U.S. Fish and Wildlife Service about the impacts of the activity on the species.

Intermediate Harvest: A removal of trees from a stand between the time of its formation and a regeneration harvest. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

Intermittent Stream: A stream or a reach of the stream channel that flows in its natural condition only during certain times of the year or in several years and is characterized by interspersed, permanent surface water areas containing aquatic flora and fauna adapted to the relatively harsh environmental conditions found in these types of environments. Intermittent streams are identified as dashed blue lines on United States Geological Survey's 7 1/2-inch quadrangle maps. Intermittent streamflow can be the result of a discontinuous supply from springs or ground-water seepage or a discontinuous supply from surface sources, including runoff of rainfall and seasonal snowmelt, or both. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams, or travel routes for fish emigrating from lakes.

Invasive Species: A species is considered invasive if it meets two criteria: (1) it is a nonnative organism to the ecosystem under consideration and (2) its introduction causes, or is likely to cause, economic or environmental harm or harm to human, animal, or health (Executive Order 13751, 2016). Invasive species include all taxa, including plants, such as state and county designated noxious weed; vertebrates; invertebrates, such as emerald ash borer or non-native mussel larvae; and pathogens, such as blister rust or white-nose syndrome fungus. The Idaho Invasive Species Act of 2008 defines an invasive species as "species not native to Idaho, including their seeds, eggs, spores, larvae, or other biological material capable of propagation, that cause economic or environmental harm and are capable of spreading in the state." The term "invasive species" does not include crops, improved forage grasses, domestic livestock, or other beneficial nonnative organisms.

Invasive Species Treatment: Any activity or action taken to directly prevent, control, or eradicate a targeted invasive species. Treatment of an invasive species infestation may not necessarily result in the elimination of the infestation, and multiple treatments on the same site or population are sometimes required to affect a change in the status of the infestation. Treatment activities typically fall within any of the four general categories of integrated management techniques: biological treatments, cultural treatments, mechanical treatments, or chemical treatments. For example, the use of domestic goats to control invasive plants would be considered a biological treatment; the use of a pesticide to control invasive fishes would be characterized as a chemical treatment; planting of native seeds used to prevent invasive species infestations and restore a degraded site would be considered a cultural treatment technique; developing an aquatic species barrier to prevent invasive species from spreading throughout a watershed would be considered a physical treatment; and cleaning, scraping, or otherwise removing invasive species attached to equipment, structures, or vehicles would be considered a mechanical treatment designed to directly control and prevent the spread of those species.

Irretrievable: Foregone or lost production, harvest, or use of renewable natural resources. For example, when fire destroys a tree plantation, the effect is irretrievable, but the loss of site productivity as measured by the presence of trees is not irreversible.

Irreversible: The removal of resources such that they cannot be produced again. This applies most commonly to nonrenewable resources, such as minerals or cultural resources, or to resources, such as

soil productivity, that are renewable only over long periods of time. Loss of renewable resources can also be irreversible, as in the replacement of a forest with a road.

Key Ecosystem Characteristic: The dominant ecological characteristic(s) that describes the composition, structure, function, and connectivity of terrestrial, aquatic, and riparian ecosystems that are relevant to addressing important concerns about a land management plan. Key ecosystem characteristics are important to establishing or evaluating plan components that would support ecological conditions to maintain or restore the ecological integrity of ecosystems in the plan area.

Key Ecosystem Services: Ecosystem services provided by the plan area that are important in the broader landscape outside the plan area and are likely to be influenced by the land management plan.

Keystone Species: A species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.

Lacustrine: Of, relating to, or associated with lakes.

Ladder Fuel: A term to describe plant materials that provide vertical continuity between forest strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Land Management Plan: A document that guides sustainable, integrated resource management of the resources within a plan area and within the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas (36 CFR 219.1(b)). Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531), the Forest Service manages National Forest System 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. “Forest Plan” is used here synonymously with “Land Management Plan.”

Landscape: A defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area (36 CFR 219.19).

Landslide Potential: An area of land having a high potential for large or rapid landslides or flows to occur. Projecting the likelihood of such events is most often based on evidence of past land instability or mass failure events associated with unstable geologic stratigraphy. Landslide is the general term used to describe mass movement events, including slides, slumps, soil creep, debris flows, topples, and falls of soil and rock.

Landtype: A unit shown on an inventory map with relatively uniform potential for a defined set of land uses. Properties of soils landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

Large Woody Debris: Large wood pieces that are present within the bankfull channel and greater than one meter in length and at least ten centimeters in diameter one-third of the way up from the base.

Late-seral Successional Stage (forest): A late stage in the sequence of plant communities that develops after a disturbance, such as fire or harvest. On the forested communities of the Nez Perce-Clearwater, this stage may begin to develop 120 years or more after the disturbance. Forest structures can be very diverse, with a wide range in densities, number of canopy layers, and trees sizes. Usually larger trees greater than 16 inches in diameter breast height are dominant.

Legacy tree: Trees that have survived multiple disturbance events, including stand replacing fire events, that are characterized as dominant or co-dominant trees that preserve biological diversity through seeds, maintain habitat connectivity, and maintain niche microclimates (Kaufmann et al. 2007). Legacy trees are often open grown but may occur as individuals or in clumps and groups. Legacy characteristics include deep bark fissures, wide bark plates, altered bark color, flattened or rounded crowns, distinguishing branching characteristics, dead tops, and diverse crown formation. These characteristics generally start to develop in trees older than 150 years (Van Pelt 2008).

Lidar: A detection system that works on the principle of radar but uses a light from a laser.

Linkage: An area that will support a low-density population of a species during certain parts of the year that facilitates demographic or genetic connectivity between geographically separate patches of habitat suitable for that species. Linkage areas facilitate movements of an animal, such as dispersal, breeding season movements, and exploratory movements, beyond its home range. Linkage areas may include sizeable areas of non-habitat and areas influenced by human actions. Also referred to as linkage habitat, linkage area, or linkage zone.

Livestock: A type of domestic animal raised for commercial production purposes, such as cattle.

Livestock Handling Activities: Sorting, loading and unloading, or bedding livestock.

Livestock Trailing: The deliberate movement of livestock controlled by one or more herders, from one location to another. This usually occurs when moving between pastures or from private to public lands and vice versa.

Locally Adapted Species: Local seed collections or genetically appropriate cultivated varieties from local or regional environments similar to conditions that existed at the project site prior to disturbance.

Long-term Persistence: A species continues to exist in the plan area over a sufficiently long period that encompasses multiple generations of the species, the time interval between major disturbance events, the time interval to develop all successional stages of habitat types, or the time interval needed for the overall ecosystem to respond to management (Forest Service Handbook 1909.12, chapter 20, section 23.13c. 1c.).

Low Gradient, Alluvial Channels: Low-gradient stream channels made up of loose sediments called alluvium. They are able to change their shape or course over time. Low-gradient alluvial channels are often associated with Rosgen stream channel types C and E.

Low Severity Fire or Low Severity Fire Regime: Fires that burn only the lowest vegetation layer, which may be composed of grasses, herbs, low shrubs, mosses, or lichens. In forests, woodlands, or savannas, low severity fires are generally surface fires and do not cause extensive mortality in the overstory vegetation.

Lynx Habitat: An area within a boreal forest with gentle rolling topography, dense horizontal cover, deep snow, and moderate to high snowshoe hare densities of more than 0.4 hares per 2 acres. In the western United States, forest cover types dominated by Engelmann spruce, subalpine fir, and lodgepole pine provide habitat for lynx (Interagency Lynx Biology Team 2013).

Maintain: In reference to an ecological condition: To keep in existence or continuance of the desired ecological condition in terms of its desired composition, structure, and processes. Depending upon the

circumstance, ecological conditions may be maintained by active or passive management or both (36 CFR 219.19).

Management Area: A land area identified within the plan area that has the same set of applicable plan components. A management area does not have to be spatially contiguous (36 CFR 219.19).

Management System (timber): Timber management systems includes even-aged, uneven-aged, and intermediate stand or prescription unit management (36 CFR 219.19).

Mass Movement: The detachment and downslope movement of the soil or the surface mantle in the form of debris slides or avalanches or deep-seated rotational failures or slumps.

Mature Multi-story Structural Stage (forest): A phase characterized by understory reinitiation, resulting in several tree age classes and vegetation layers. Fallen trees may be present, creating gaps in the overstory canopy. In lynx habitat, these stands typically have high horizontal cover from young understory trees and lower limbs of mature trees that reach the ground or snow level (Interagency Lynx Biology Team 2013).

Mature Forest: (Current working definition in response to Executive Order 14072 Section 2 (b)): Exhibited by the entire stage of stand development from understory reinitiation stage to onset of old growth structural stage.

Mature Tree: A tree which has achieved its maximum or near-maximum mean annual rate of growth in height or diameter and capacity to produce viable seed.

MBF and MMBF: Thousand board feet and million board feet, respectively. A specialized unit of measure for the volume of lumber in the United States and Canada. One board foot is the volume of a one-foot length of a board one-foot wide and one-inch thick.

Matrix Habitat: Within designated critical habitat for Canada lynx, includes non-boreal forest types, such as hardwood forests, dry coniferous forest, grasslands, shrublands, rock, water, and other landscape conditions, that do not support snowshoe hares but which occur between patches of boreal forest such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range.

Mean Annual Increment of Growth (MAI): The total increment of increase in volume of a stand up to a given age divided by that age. A stand refers to a standing crop plus thinning removal. Culmination of mean annual increment of growth is the age in the growth cycle of an even-aged stand at which the average annual rate of increase of volume is at a maximum. In land management plans, mean annual increment is expressed in cubic measure and is based on the expected growth of stands, according to intensities and utilization guidelines in the plan (36 CFR 219.19).

Mechanical or Physical Weed Control: Refers to any technique that involves the use of mechanical or physical means to control weeds, such as hand pulling or grubbing or mowing.

Mechanized Travel or Mechanical Transport: A contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user that is powered by a living or nonliving power source. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts (FSM 2320.5(3)).

Mesic: Vegetative communities and habitats that are moderately moist.

Mid-seral Successional Stage (Forest): A mid-stage in the sequence of plant communities that develop after a disturbance, such as fire or harvest. On the forested communities of the Nez Perce-Clearwater, stands may be considered in this stage from about 40 to 90 years after the disturbance. Stand structure, such as density and number of canopy layers, can vary widely. Dominant tree sizes are typically from 5 to 15 inches diameter breast height.

Mine Reclamation: The process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the preparation and planning of mine reclamation activities occur prior to a mine being permitted or started.

Minerals: The Forest Service defines three types of mineral and energy resources:

locatable minerals: Commodities, such as gold, silver, copper, zinc, nickel, lead, and platinum, and some nonmetallic minerals, such as asbestos, gypsum, and gemstones.

salable minerals: Common varieties of sand, stone, gravel, cinders, clay, pumice and pumicite.

leasable minerals: Commodities, such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals, on acquired lands.

Mineral Encumbrances: Those outstanding mineral rights, including reserved and outstanding private mineral rights, with existing oil and gas leases and locatable mineral rights.

Minimum Impact Suppression Tactics: Guidelines for fire suppression and post-fire activities that use procedures, tools, and equipment that are commensurate with the fire's potential or existing behavior and produce the least impact to the environment without compromising safety or the effectiveness of suppression efforts.

Mitigate: To avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

Mixed-severity Fire or Mixed-severity Fire Regime: A combination of nonlethal, low-intensity to stand-replacing fire effects within the perimeter of a single fire or across consecutive events. Mixed-severity fire regimes give rise to unique patch dynamics and ecosystem responses.

Monitoring: A systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships.

Motorized Access: Roads and trails open to the public for motorized vehicles during spring, summer, or fall.

Motorized Equipment: A machine that uses a motor, engine, or other nonliving power sources. This includes, but is not limited to, machines such as chain saws, aircraft, unmanned aircraft, electric bicycles, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas-powered hand carried devices, such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.

Motorized Route: A National Forest System road or National Forest System trail that is designated for motorized use on a motor vehicle use map pursuant to 36 CFR 212.51.

Motorized Use (access): The designation of roads, trails, and areas that are open to motor vehicle use as specified in Federal Register / Volume 70, Number 216 / Wednesday, November 9, 2005 / 36 CFR Parts 212, 251, and 261, Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule.

Motorized Vehicles: Vehicles that are either motorized wheeled or motorized over snow vehicles. Electric bicycles or e-bikes are considered motorized and are not allowed on roads, trails, or in areas that prohibit motorized use.

Multiple Use: Defined by the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531) as "the management of the various renewable surface resources of the NFS so that they are used in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output." Additionally, the first paragraph of the Multiple-Use Sustained-Yield Act states, "be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that, it is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

Municipal Watershed: 36 CFR 251.9 authorizes the Chief of the Forest Service to enter into agreements with municipalities to restrict the use of National Forest System lands from which water is derived to protect the municipal water supplies (Forest Service Manual 2542) within a given watershed area.

Municipal Supply Watershed: As defined by Forest Service Manual 2542—A watershed that serves a public water system as defined in the Safe Drinking Water Act of 1974, as amended (42 U.S.C. §§ 300f, et seq.); or as defined in state safe drinking water statutes or regulations.

National Ambient Air Quality Standards (NAAQS): National air quality standards established by the U.S. Environmental Protection Agency under the authority of the Clean Air Act (40 C.F.R. 50) to protect public health and public and ecosystem welfare.

National Forest Scenic Byway: The Chief of the Forest Service can designate routes traversing National Forest System lands as national forest scenic byways.

National Forest System: Includes national forests, national grasslands, and the national tallgrass prairie (36 CFR 219.19 and 219.62); the National Forest System lands reserved or withdrawn from the public domain of the United States; all National Forest System lands acquired through purchase, exchange, donation, or other means; the national grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tennant Act (50 Stat. 525, 7 United States Code 1010–1012); and other lands, waters, or interests administered by the Forest Service or designated for administration through the Forest Service as a part of the system.

National Forest System Road (NFSR): Part of a system of permanent roads determined to be needed for the use, protection, and enjoyment of the national forest.

National Forest System Trail (NFST): Part of a system of permanent trails determined to be needed for the use, protection, and enjoyment of the national forest.

National Wild and Scenic Rivers System: A compilation of the rivers designated by Congress as wild and scenic, under the Wild and Scenic Rivers Act of 1968, by virtue of their free-flowing condition and possessing at least one outstandingly remarkable value that falls into eight categories: scenic, recreation, geologic, fish, wildlife, historic, culture, or other similar values. Rivers, or sections of rivers, so designated are identified for protection and enhancement for present and future generations by preserving their free-flowing condition from dams and other development that would diminish the quality of their outstandingly remarkable values (16 United States Code 1271, 1271–1287 and 36 CFR 219.19).

National Wilderness Preservation System: The Wilderness Act, signed into law in 1964, created the National Wilderness Preservation System and recognized wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

Native Knowledge: A way of knowing or understanding the world, including traditional ecological and social knowledge of the environment derived from multiple generations of indigenous peoples' interactions, observations, and experiences with their ecological systems. Native knowledge is place-based and culture-based knowledge in which people learn to live in and adapt to their own environment through interactions, observations, and experiences with their ecological system. This knowledge is generally not solely gained, developed by, or retained by individuals but is rather accumulated over successive generations and is expressed through oral traditions, ceremonies, stories, dances, songs, art, and other means within a cultural context.

Native Species: An organism that was historically or is present in a particular ecosystem as a result of natural migratory or evolutionary processes and not as a result of an accidental or deliberate introduction into that ecosystem. An organism's presence and evolution (adaptation) in an area are determined by climate, soil, and other biotic and abiotic factors (36 CFR 219.19).

Natural Fuels: Fuels resulting from natural processes and not directly generated or altered by land management practices.

Natural Range of Variation (NRV): The variation of ecological characteristics and processes over scales of time and space that are appropriate for a given management application. The natural range of variation is a tool for assessing the ecological integrity and does not necessarily constitute a management target or desired condition. The natural range of variation can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions.

Natural Regeneration: A renewal of a tree crop by natural seeding, sprouting, suckering, or layering.

Nonattainment Area: An area within a state that exceeds the national ambient air quality standards.

Nonconforming Uses: When used in the context of wilderness or recommended wilderness, nonconforming uses are uses or facilities within those areas that do not conform to wilderness policy nor are allowed specifically as an exception in the wilderness act which designated the area.

Nonconsumptive Water Use: The act of removing water from an available supply and utilizing it in a manner that it returns to a waterbody.

Nondiscretionary: Exploration and development of locatable mineral resources are nondiscretionary activities, meaning that the Forest Service cannot prohibit reasonably necessary activities required or the exploration, prospecting, or development of valuable mineral deposits.

Nonpoint Source Pollution: A discharge from a diffuse source, such as polluted runoff from an agricultural area or precipitation, to a water body.

Noxious Weed: A regulatory term defined through federal and individual state statutes. A noxious weed is defined by Idaho Code, Title 22, Chapter 24 as "any plant having the potential to cause injury to public health, crops, livestock, land or other property; and which is designated as noxious by the director of the Idaho department of agriculture." Noxious weeds are invasive plants capable of successfully expanding their populations into new ecosystems beyond their natural range and can create lasting impacts to native plant communities.

Nurse Plant: A plant that creates an environment that is less severe for young seedlings growing underneath it or that promotes conditions for recovery.

Nutrition Model: Predictions of dietary nutrients for a specified stand or landscape for a specified season. For the Land Management Plan, a summer through fall nutrition model is used because current research indicates that strong nutritional limitations are imposed on lactating female elk during this time period.

Nutritional Capacity: The site potential and responsiveness of a given potential vegetation type to produce dietary digestible energy or other measures of dietary nutrients needed by lactating female elk during late summer-fall. Nutritional capacity is based on nutritional site potential, which is the inherent potential of a potential vegetation type to produce summer nutrition based on soils, geology, and precipitation and nutritional responsiveness to disturbance, which is how rapidly nutrition will increase in a potential vegetation type with per unit changes in overstory canopy cover from silviculture or fire.

Nutritional Resources: Vegetation that provides forage for elk, which includes early seral forest habitats, natural meadows, grasslands, shrub fields, wet meadows, or forb lands. Early seral forest habitats include seral grass and shrubs in the 0–4.9 size class.

Objective (OBJ): A concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Also see Chapter 1.

Occupied Lynx Habitat: Per the 2006 Amendment to the Canada Lynx Conservation Assessment, mapped lynx habitat is considered occupied by lynx when:

There are at least two verified lynx observations or records since 1999 on the national forest unless they are verified to be transient individuals, or

There is evidence of lynx reproduction on the national forest.

Off-highway Vehicle (OHV): A motor vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

Old Growth Forests: Ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics, which may include tree size, accumulations of large dead woody material,

number of canopy layers, species composition, and ecosystem function. In the context of the Nez Perce-Clearwater ecosystem, the definitions for old growth are those provided within the document titled "Old Growth Forest Types of the Northern Region" (Green et al. 1992, Green et al. 2011).

Old Growth Associated Species: The group of wildlife species that is associated with old-growth forest plant communities on the Nez Perce-Clearwater.

Old Growth Habitat: A community of forest vegetation characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure will typically have multi-storied crown heights and variable crown densities. There may be a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameter. Standing large trees occur as both live and dead exhibiting a wide range of defect and breakage while the forest floor is composed of variable amounts of coarse woody material ranging from small branches to large down logs. The time it takes for a forest stand to develop into an old-growth habitat condition depends on many local variables, such as forest type, habitat type, and climate. Natural chance events involving forces of nature, such as weather, insect, disease, and fire, and the actions of man also affects the rate of development of old-growth stand conditions. Old-growth habitat may or may not meet the definition for old growth forest.

Opening (as pertaining to maximum opening size standard for timber harvest): A forest patch in a seedling or sapling size class, with an average stand diameter breast height of less than five inches, created as a result of one even-aged harvest operation, such as clearcutting and seedtree or shelterwood seed cutting. Legacy or reserve trees left to meet other desired conditions are not counted in the calculation of size class for determining the seedling or sapling classification. Adjacent seedling or sapling stands created as a result of an earlier harvest operation are not considered part of an opening.

Open and Unclaimed or Unoccupied Lands: This term is a trademark of the treaties negotiated in the 1850s. The term was applied to public domain lands held by the United States that had not been fenced or claimed through a land settlement act. Today "open and unclaimed lands" applies to lands remaining in the public domain for the purposes of hunting, gathering foods, and grazing livestock or trapping. The courts have ruled that National Forest System lands reserved from the public domain are open, unclaimed, or unoccupied land and, as such, the term applies to reserved treaty rights on National Forest System land.

Optimal: Determined by the responsible official considering other ecologic, social and economic desired conditions. An optimal condition may have short term negative impacts to achieve a long term benefit.

Outfitting or Outfitter Guide: To rent on, or deliver to, National Forest System lands for pecuniary remuneration or other gain any saddle or pack animal, vehicle, boat, camping gear, or similar supplies or equipment (36 CFR 251.51).

Outstandingly Remarkable Values (ORVs): A scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar river-related value that is unique, rare, or exemplary feature and is significant when compared with similar values from other rivers at a regional or national scale.

Open Road or Motorized Trail: For the purposes of elk or grizzly bear habitat, any linear route open to the public for motorized uses during spring, summer, or fall. This includes full sized vehicles, all-terrain vehicles, dirt bikes, or other motorized vehicles used on motorized recreation routes.

Over Snow Motorized Use: An activity involving a motor vehicle that is designed for use over snow that runs on a track or tracks or a ski or skis while in use over snow (36 CFR 212.1, Definitions).

Over Snow Standard Season: The time period with conditions suitable for over snow motorized use. The season is generally considered December 1 to March 31 of each year; however, exceptions apply in specific areas and are noted at the applicable locations, as well as in Over Snow Vehicle Use Maps for the Nez Perce-Clearwater.

Over snow vehicle: Motor vehicles designed for use over snow that run on a track or tracks or a ski or skis while in use over snow as defined in 36 CFR 212.1.

Overstory: The portion of the trees that form the uppermost canopy layer in a forest of more than one story.

Palustrine: Any inland wetland which lacks flowing water. Wetlands within this category include inland marshes and swamps, as well as bogs, fens, and floodplains.

Passive Crown Fire: A type of fire in which individual or small groups of trees torch out, but solid flaming in the canopy cannot be maintained except for short periods. A passive crown fire encompasses a wide range of crown fire behavior from the occasional torching of an isolated tree to a nearly active crown fire. Also called torching and candling.

Patch: An area distinguished from its surroundings by environmental discontinuities, such as a small area of early seral or successional forest (seedling or sapling size class) surrounded by mid-seral and late-seral or successional forest (small to large tree size classes).

Pathways: Means and routes by which invasive species are introduced into new environments. Pathways can generally be classified as either natural or human-mediated. Natural pathways are those not aided by humans and include wind and other forms of natural dispersal that can bring species to a new habitat. Human-mediated pathways are those which are created or enhanced by human activity and are intentional or unintentional. Intentional pathways are the result of a deliberate movement of a species by humans outside of its natural range, such as the introduction of biological control organisms or the movement of species for the horticultural or pet trade. Unintentional pathways are the inadvertent movement of species as a byproduct of some other human activity; for example, ballast water discharge; pests and diseases in imported plants, firewood, and other agricultural products; and the movement of recreational watercraft. The term "vector" is viewed as a biological pathway for a disease or parasite, such as an organism that transmits pathogens to various hosts and is not completely synonymous with the much broader definition of a pathway.

Peatland: A terrestrial wetland ecosystem where the production of organic matter exceeds its decomposition, resulting in a net accumulation of peat.

Perennial Stream or Reach: A stream or reach of a channel that flows continuously or nearly so throughout the year and whose upper surface is generally lower than the top of the zone of saturation in areas adjacent to the stream. These streams are identified as solid blue on the USGS 7 1/2-inch quadrangle maps.

Peripherals: Are plant species whose occurrence are at the extreme edge of their present natural range.

Permanent Road: A National Forest System road intended to remain in service to highway vehicles over the long-term. The prerequisite for design, construction, operation, and maintenance are for a

sustained service life. For example, features, such as bridges and culverts, are designed with a service life of 50 years or more. (Related: Temporary Road)

Permit (special use): A use authorization which provides permission, without conveying an interest in land, to occupy and use National Forest System land or facilities for specified purposes, which is both revocable and terminable (36 CFR 251.51).

Permit Modification: The revision of one or more grazing permit terms and conditions made in accordance with 36 CFR 222.4(a)(7) or (a)(8) or applicable CFR as revised.

Permitted Grazing: Authorizes livestock use on National Forest System lands. Authorizing permits include grazing permits for commercial livestock production purposes, outfitter or guide special-use permits with associated pack animals, or other special-use permits.

Persistence: Continued existence.

Piscicide: A pesticide chemical formulation which is poisonous to fish.

Plan: A document, or set of documents, that provides management direction for an administrative unit of the National Forest System developed under the requirements of the 2012 Planning Rule or a prior planning rule (36 CFR 219.19). Also see “Land Management Plan.”

Plan Area: The National Forest System lands covered by a land management plan (36 CFR 219.19).

Planned Wildland Fire: See prescribed burn or prescribed fire.

Plantation: A stand composed primarily of trees established by planting or artificial seeding.

Plant and Animal Community: A naturally occurring assemblage of plant and animal species living within a defined area or habitat (36 CFR 219.19).

Pleistocene: The geological epoch which lasted from about 2,580,000 to 11,700 years ago, spanning the world's recent period of repeated glaciations.

Point Source Pollution: A discharge from a known pollutant source, such as a sewage treatment plant, to a water body from a single location.

Pole: A tree at least five inches diameter breast height and smaller than eight inches diameter at breast height.

Potential Vegetation Type or Potential Vegetation Group: An assemblage of habitat types on the basis of similar biophysical environments, such as climate, hydrology, slope, and soil characteristics. This biophysical environment influences the vegetation characteristics and ecosystem processes that occur. The vegetation communities and conditions that would develop over time given no major natural or human disturbances (the climax plant community) would be similar within a particular potential vegetation type classification. See “habitat type.”

Precambrian: The largest span of time in Earth's history before the current Phanerozoic Eon. It spans from the formation of Earth about 4.6 billion years ago to the beginning of the Cambrian Period, about 541 million years ago, when hard-shelled creatures first appeared in abundance.

Precommercial Thinning: The selective felling, deadening, or removal of trees in a young stand dominated by trees less than five inches diameter breast height. Primary purposes for thinning include to accelerate the diameter increment on the remaining stems, to maintain a specific stocking or stand density range, to develop desired tree species composition, or to improve the vigor and quality of the trees that remain.

Predicted Percent Body Fat: The change in percent body fat of female elk predicted by a combination of changes to the relative probability of elk use (Rowland et al. 2018) and changes to the percent of the landscape containing high quality nutrition as predicted by the nutrition potential model (Rowland et al. 2018, Cook et al. 2017).

Prescribed Fire: A fire ignited via management actions to meet specific objectives. A written, approved prescribed fire plan must exist and the National Environmental Policy Act requirements, where applicable, must be met, prior to ignition (National Wildlife Coordinating Group 2008).

Prevention: With respect to invasive species management, prevention measures include a wide range of actions and activities to reduce or eliminate the chance of an invasive species entering or becoming established in a particular area. Preventative activities can include projects for education and awareness, as well as more traditional prevention activities such as vehicle and equipment cleaning, boat inspections, or native plant restoration plantings. Restoration activities typically prevent invasive species infestations by improving site resilience and reducing or eliminating the conditions on a site that may facilitate or promote invasive species establishment.

Productivity: The capacity of National Forest System lands and their ecological systems to provide the various renewable resources, such as timber, in certain amounts in perpetuity. In land management, productivity is an ecological term, not an economic term.

Project: An organized effort to achieve an outcome on National Forest System lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 CFR 219.19).

Projected Timber Sale Quantity (PTSQ): The estimated quantity of timber meeting applicable utilization standards that is expected to be sold during the plan period. As a subset of the projected wood sale quantity, the projected timber sale quantity includes volume from timber harvest for any purpose from lands in the plan area based on expected harvests that would be consistent with the plan components. The PTSQ is also based on the planning unit's fiscal capability and organizational capacity. Projected timber sale quantity is not a target nor a limitation on harvest and is not an objective unless the responsible official chooses to make it an objective in the plan.

Projected Wood Sale Quantity (PWSQ): The estimated quantity of timber and other wood products that is expected to be sold from the plan area for the plan period. The projected wood sale quantity consists of the projected timber sale quantity, as well as other woody material such as fuelwood, firewood, or biomass that is also expected to be available for sale. The projected wood sale quantity includes volume from timber harvest for any purpose based on expected harvests that would be consistent with the plan components. The projected wood sale quantity is also based on the planning unit's fiscal capability and organizational capacity. Projected wood sale quantity is not a target nor a limitation on harvest and is not an objective unless the responsible official chooses to make it an objective in the plan.

Proposed Action: A project, activity, or action that a federal agency aims to implement or undertake, which is the subject of an environmental analysis. Proposed action is a specific term defined under the National Environmental Policy Act.

Proposed Species: A type of animal or plant that is proposed by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service through the Federal Register to be listed for protection under Section 4 of the Endangered Species Act.

Public Involvement: A process designed to broaden the information base upon which agency decisions are made. The process involves informing the public about Forest Service activities, plans, and decisions with participation in the planning processes which lead to final decision making.

Quadratic Mean Diameter (QMD): The arithmetic mean of tree diameters within a stand.

Rangeland: Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grass-like plants, forbs, or shrubs suitable for grazing and browsing. It can include natural grasslands, savannas, meadows, and certain forb and shrub communities.

Rangeland Health: The degree to which the integrity of the soil, vegetation, and ecological processes are sustained.

Range Improvements: Any activity or program on or relating to rangelands which is designed to improve production of forage, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, or provide habitat for livestock and wildlife.

Rapid Response: With respect to invasive species (plant, pathogen, vertebrate, or invertebrate species), rapid responses are defined as the quick and immediate actions taken to eradicate, control, or contain infestations that must be completed within a relatively short time to maximize the biological and economic effectiveness against the targeted invasive species. Depending on the risk of the targeted invasive species, rapid response actions may be supported by an emergency situation determination and emergency considerations would include the geographic extent of the infestation, distance from other known infestations, mobility and rate of spread of the invasive species, threat level and potential impacts, and available treatments.

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. It is usually expressed in chains or acres per hour for a specific period in the fire's history.

Reach: A length of stream channel, lake, or inlet exhibiting, on average, uniform hydraulic properties and morphology.

Rearing Habitat: A stable and protected micro-environment for a species to birth and rear their young. For example, for juvenile westslope cutthroat trout, rearing habitat is primarily the pool environment found in streams.

Reasonable Assurance: A judgment made by the Responsible Official based on the best available scientific information and local professional experience that practices based on existing technology and knowledge are likely to deliver the intended results. Reasonable assurance applies to average and foreseeable conditions for the area and does not constitute a guarantee to achieve the intended results.

Recently Burned Forest: A forest area that has burned via natural or planned ignition in the last 10 years. These areas contain specific vegetation characteristics including recently burned snags.

Recommended Wilderness: An area that has been determined to meet the criteria to be designated as wilderness and is proposed in this land management plan by the forest supervisor to be recommended to Congress for inclusion into the National Wilderness Preservation System.

Recovery: As pertains to the Endangered Species Act, is the improvement in the status of a listed species to the point at which listing as federally endangered or threatened is no longer appropriate (36 CFR 219.19). This definition is for the purposes of the land management planning regulation at 36 CFR Part 219 and Land Management Planning Handbook 1909.12 with respect to threatened or endangered species (36 CFR 219.19).

Recovery Plan: A document that details actions or conditions necessary to promote improvement in the status of a species listed under the Endangered Species Act, to the point at which listing is no longer appropriate.

Recreation: The set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations. Also see "sustainable recreation" (36 CFR 219.19).

Recreation Development Scale: A relative scale of development that is used in Forest Service recreation management and planning to describe the level of development associated with the diverse recreation opportunity spectrum settings within the forest.

Recreation Development Scale 1: recreation sites with minimum site modification. Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access not provided or permitted. Development Scale 1 recreation sites are most associated with Primitive recreation opportunity settings.

Recreation Development Scale 2: recreation sites with little site modification. Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal. Development Scale 2 recreation sites are most associated with Semi-Primitive recreation opportunity settings for both non-motorized and motorized.

Recreation Development Scale 3: recreation sites with moderate modification. Facilities about equal for protection of natural site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced, and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal but generally direct. Development Scale 3 recreation sites are most associated with Roaded Natural recreation opportunity settings.

Recreation Development Scale 4: recreation site that are heavily modified. Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density about three to

five family units per acre. Plant materials usually native. Interpretive services often formal or structured. Development Scale 4 recreation sites are most associated with Rural recreation opportunity settings.

Recreation Development Scale 5: recreation sites with a high degree of site modification. Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density about five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually available. Designs formalized and architecture may be contemporary. Mowed lawns and clipped shrubs not unusual. Development Scale 5 recreation sites are most associated with Urban recreation opportunity settings.

Recreation Event: Any temporary event, such as race, run, ride, or tournament, which is organized using National Forest System lands and facilities where an entrance fee is required to participate. Event proponents may be for-profit or not-for-profit, individuals, or organizations.

Recreation Opportunity Spectrum (ROS): A system by which existing and desired recreation settings are defined, classified, inventoried, and monitored. Classifications are based on physical, social, and managerial setting characteristics (See ROS Setting Characteristics in the document). The underlying premise of the ROS is that visitors choose a specific setting and activity to derive desired experience(s) and other benefits. Recreation settings are divided into six distinct classes.

Primitive: Primitive settings encompass large, wild, and predominately unmodified landscapes. Their size and configuration create remoteness from the sights and sounds of human activities, management, and development. Signs and other structures are minimal and constructed of rustic, native materials. Motorized travel does not occur. Encounters with other users are very low, offering visitors the opportunity for solitude, self-reliance, closeness with nature, challenge, risk, and discovery. Many primitive settings coincide with designated wilderness areas in which mechanized equipment is not present. Additional primitive settings may also occur outside of wilderness areas. Mechanized travel and motorized equipment may occur in non-wilderness primitive settings.

Semi-primitive nonmotorized: Semi-primitive nonmotorized settings are characterized by predominantly natural or natural-appearing landscapes. The size of these areas facilitate distance from more heavily used and developed areas, creating a sense of remoteness. Interaction with other users is low. These settings provide opportunities for self-reliance and utilizing wildland skills. Motorized vehicles are not present, while mountain bikes and other mechanized equipment may be present. Although some roads may be evident, they do not dominate the landscape. Vehicular use is infrequent. Occasional administrative use occurs on these roads for the purpose of natural and cultural resource protection and management.

Semi-primitive motorized: Semi-primitive motorized classes are characterized as predominately natural or natural appearing backcountry settings. Motorized travel by off-highway vehicles or high clearance vehicles occurs on designated routes and areas. Motorized routes are typically Maintenance Level 0–2 roads or motorized trails, offering a high degree of self-reliance, challenge, and risk in exploring these large backcountry settings. Mountain bikes, other mechanized equipment, and non-motorized uses are also present. Rustic facilities for the purpose of visitor safety, sanitation, and resource protection are limited.

Roaded natural: Roaded natural settings are characterized by predominately natural-appearing settings, with moderate sights and sounds of human activities and development. The overall perception is one of

naturalness. Evidence of human activity varies from area to area and may include improved highways and high maintenance level roads; developed campgrounds and other recreation sites; small resorts and summer homes; and evidence of other multiple uses and management activities, such as livestock grazing, timber harvesting, mining, watershed restoration activities, and oil and gas operations. Roads, motorized equipment, and vehicles are common in this setting. Non-motorized uses are also present. The density of use is moderate except at developed sites, where concentrations of use are higher. Regulations pertaining to user behaviors are common but generally less restrictive than those in the rural and urban ROS classes.

Rural: Rural settings are characterized as modified natural environments. While these landscapes often contain geometric patterns created by management activities, there is a dominant sense of open green-space, typically characterized as pastoral farm and ranch lands. Facilities are common and may include resorts and summer home complexes; administrative sites and work centers; and highly developed campgrounds, interpretive sites, trailheads, picnic areas, and other recreation facilities. The sights and sounds of human activity and management are readily evident and the level of interaction with other users ranges from moderate to high.

Urban: Urban settings are characterized as highly modified landscapes, dominated by structures and other infrastructure. Clustered facilities contain amenities for user convenience and comfort. There is a preponderance of on-site regulations that direct and limit the behavior of visitors. Very high and concentrated use levels are common. These settings are typically small in overall size and not common on forest system lands. Large ski areas, visitor centers, and resorts are sometimes classified as urban ROS settings.

Recreation Setting: The social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities. The Forest Service uses the recreation opportunity spectrum to define recreation settings and categorize them into six distinct classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban. Also see “recreation opportunity” (36 CFR 219.19).

Recreational River: Within the Wild and Scenic River act, a tentative classification of those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and may have undergone some impoundments or diversion in the past.

Recreational Livestock: Includes animals used by recreation visitors to pack items while visiting the national forest. Typically includes equines, llamas, goats, sheep, and dogs.

Redundancy: The presence of multiple occurrences of ecological conditions such that not all occurrences may be eliminated by a catastrophic event.

Reforestation: The renewal of forest cover by planting, seeding, and natural means, such as seed from existing trees on the site.

Refugia: Specific site locations and habitat conditions that support populations of organisms that are limited to small fragments of their geographic range. Climate change refugia refers to areas relatively buffered from contemporary climate change over time that enable persistence of valued physical, ecological, and socio-cultural resources.

Regeneration: The renewal of a forest, whether by natural or artificial means. This term may also refer to a tree crop itself.

Regeneration Harvest: Any removal of trees intended to assist in the regeneration of a new age class or to make regeneration of a new age class possible. Regeneration harvest may be through even-aged or uneven-aged methods.

Regeneration Method: The cutting approach used to regenerate a stand. Example methods include clearcut, seedtree, and shelterwood cutting methods.

Regional Endemics: Plant species that are unique to a specific geographic region, which makes them unique and more vulnerable to extinction. Because they are only found in certain locations, they may require special conservation efforts.

Research Natural Area: A physical or biological unit in which current natural conditions are maintained insofar as possible. These conditions are ordinarily achieved by allowing natural physical and biological processes to prevail without human intervention. However, under unusual circumstances, deliberate manipulation may be used to maintain the unique feature that the research natural area was established to protect (Forest Service Manual 4063.05).

Reserved Treaty Rights: The reserved rights doctrine holds that any rights that are not specifically addressed in a treaty are reserved to the tribe. In other words, treaties outline the specific rights that the tribes gave up, not those that they retained. The courts have consistently interpreted treaties in this fashion, beginning with *United States v. Winans*, 198 U.S. 371, 25 S. Ct. 662, 49 L. Ed. 1089 (1905), in which the U.S. Supreme Court ruled that a treaty is "not a grant of rights to the Indians, but a grant of rights from them." Any right not explicitly extinguished by a treaty or a federal statute is considered to be "reserved" to the tribe.

Resilience: Influence of disturbance on subsequent stand and landscape structure and composition (DeRose and Long 2014). The capacity of a plant or animal community or ecosystem to maintain or regain normal function and development following disturbance.

Resistance: Influence of structure and composition on disturbance severity at the stand level and spread of disturbance at the landscape level (DeRose and Long 2014). The ability of a community to avoid alteration of its present state by a disturbance (Helms 1998).

Responsible Official: The official with the authority and responsibility to oversee the planning process and to approve a plan, plan amendment, and plan revision (36 CFR 219.19 and 219.62).

Restore: To renew by the process of restoration (36 CFR 219.19).

Restoration: The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions (36 CFR 219.19).

Retardant: In terms of wildfire suppression, retardant is a substance intended to slow the rate of fire spread by cooling and coating fuels, depleting the fire of oxygen, and slowing the rate of fuel combustion as the retardant’s inorganic salts change how fuels burn.

Riffle: A shallow rapid where the water flows swiftly over completely or partially submerged obstructions (rocks, etc.) to produce surface agitation but standing waves are absent.

Riparian Area: A three-dimensional ecotone of interaction that include terrestrial and aquatic ecosystems that extend into the groundwater, above the canopy, and outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at variable widths (36 CFR 219.19).

Riparian Ecosystem: A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. A riparian ecosystem is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

Riparian Management Zone (RMZ): A portion, or portions, of the watershed where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines (36 CFR 219.19). RMZ widths are defined as follows:

Category 1 - Fish-bearing streams: Riparian Management Zones consist of: the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge; or to the outer edges of the 100-year floodplain; or to the outer edges of riparian vegetation; or to a distance equal to the height of two site-potential trees; or 300 feet slope distance equaling 600 feet total, including both sides of the stream channel, whichever is greatest. If a stream contains fish at any time of the year, then this riparian management zones definition would be applied to that stream.

Category 2 - Permanently flowing non-fish bearing streams: Riparian Management Zones consist of: the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge; or to the outer edges of the 100-year floodplain; or to the outer edges of riparian vegetation; or to a distance equal to the height of one site-potential tree; or 150 feet slope distance equaling 300 feet total, including both sides of the stream channel, whichever is greatest.

Category 3 - Constructed ponds and reservoirs, and wetlands greater than one acre: Riparian Management Zones consist of: the body of water or wetland and the area to the outer edges of the riparian vegetation; or to the extent of seasonally saturated soil; or the extent of unstable and potentially unstable areas; or to a distance equal to the height of one site-potential tree; , or 150 feet slope distance from the edge of the wetland greater than one acre; or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

- Lakes and natural ponds: Riparian Management Zones consist of: The body of water and the area to the outer edges of the riparian vegetation; or to the extent of seasonally saturated soil; or to the extent of unstable and potentially unstable areas; or to a distance equal to the height of one site-potential tree; or 150 feet slope distance, whichever is greatest.

Category 4 - Seasonally flowing or intermittent streams, wetlands, seeps, and springs less than one acre, and unstable or potentially unstable areas: This category applies to features with high variability in size and site-specific characteristics. At a minimum, the riparian management zones should include:

- The extent of unstable and potentially unstable areas including earthflows.
- The stream channel extending to the top of the inner gorge.
- The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees for a given site class.

- Intermittent streams are defined as any non-permanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams, or travel routes for fish emigrating from lakes. In these instances, the guidelines for fish-bearing streams would apply to those sections of the full-extent of intermittent stream used by the fish from the mouth to the upper-most point of fish use.

Riparian Wildlife Habitat: An environment that occurs along lakes, rivers, streams, springs, and seeps where the vegetation and microclimate are influenced by year-round or seasonal water and associated high water tables. Plant and animal species in these areas are more productive and diverse than on nearby uplands, making these areas very important to many wildlife species.

Risk: A combination of the likelihood that a negative outcome will occur and the severity of the subsequent negative consequences (36 CFR 219.19).

Road: A motor vehicle route more than 50-inches wide, unless identified and managed as a trail (36 CFR 212.1, FS Manual 7705):

Decommissioned Road: the stabilization and restoration of an unneeded road to a more natural state (36 CFR 212.1).

Forest road or trail: a route, wholly or partly within or adjacent to and serving the National Forest System, that is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR 212.1—Definitions).

Maintenance Level: a term for the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (Forest Service Handbook 7709.59, 62.32).

- Level 1: These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns.

- Level 2: Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.

- Level 3: Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.

- Level 4: Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.

- Level 5: Assigned to roads that provide a high degree of user comfort and convenience.

National Forest System Road: A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority (36 CFR 212.1).

Temporary Road: A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas (36 CFR 212.1).

Road Decommissioning: Removal from the road system and taken out of service. The unneeded road corridor would be returned to the natural landscape.

Road Management Objectives (RMO): Management intent for the design, construction, operation, and maintenance of a National Forest System road. Example criteria includes roadway width, surface type, maintenance levels, speed limits, drainage design, and traffic service levels. Each road has a collection of objectives housed in the corporate database.

Roadless: The 2001 Roadless Rule established prohibitions on road construction, road reconstruction, and timber harvesting on 58.5 million acres of inventoried roadless areas on National Forest System lands. The intent of the 2001 Roadless Rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management.

Rosgen Channel Type Classification: Widely applied river classification system based on common patterns of channel morphology. The classification scheme assigns a channel type based on channel slope, width to depth ratio, bed material, entrenchment ratio and sinuosity. This method can be used to collect the raw data to assess mechanisms for predicting channel stability, erosion risk, aggradation, channel enlargement, sediment transport capacity, degradation, lateral or longitudinal migration, and hydraulic relations. As an example, *Rosgen Channel Types C and E* are low gradient streams that are very sensitive to disturbance and can be rapidly adjusted and converted to other stream types in relatively short time periods. Rosgen C and E systems rely on well-developed floodplains with dense vegetation (often sedges and rushes) that helps stabilize the banks.

Rotation: The number of years, including the regeneration period, required to establish and grow timber under an even-aged management system to a specified condition or maturity for regeneration harvest.

Sacred Site: Executive Order 13007—Indian Sacred Sites—defines an Indian Sacred Site as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Indian Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.”

Salvage Harvest: The removal of dead trees or trees damaged or dying due to injurious agents other than competition to recover the value that would otherwise be lost or to meet other resource objectives.

Sanitation Harvest: A harvest of trees for the purpose of removing insects or diseases from a stand of trees. Sanitation harvesting is used to prevent the diseases or pests from spreading to other nearby trees.

Sapling: A young tree that is larger than a seedling but smaller than a pole or small tree; typically 5 to about 25 feet tall and 1 to 5 inches diameter breast height.

Sawtimber: Logs cut from trees meeting minimum diameter, typically greater than 6 or 7 inches diameter breast height, and length requirements or trees of the same minimum diameter and of sufficient length and stem quality suitable for conversion to lumber.

Scarification: The removal of the surface organic material (duff) of an area, typically to prepare the site for reforestation.

Scenery Management System: A systematic approach to inventory, analyze, manage, and monitor the scenic resources. This system provides a process to determine the relative value and importance of the national forest scenery and assist in establishing overall resource objectives.

Scenic Character: A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. Scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity (2012 Planning Rule and 36 CFR 219.19). The scenic character description incorporates the visible natural physical and biological features, as well the context and ways the scenery is viewed and experienced. A scenic character description also includes the viewing context and associations that viewers have with that scenery based upon visible historic and cultural elements and significant and broadly relevant special places.

Scenic Integrity Objectives: Serve as thresholds of allowable visual dominance by landscape modifications and deviations from the valued scenic character and describe the lowest allowable scenic integrity level for an area. They describe the degree to which a landscape is visually perceived to be complete when compared to the scenic character of that area.

Very high: Landscapes where the valued scenic character is intact with minute, if any, deviations. The scenic character and sense of place is expressed at the highest possible level. These landscapes generally provide for ecological change only.

High: Landscapes in which the valued scenic character appears intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the scenic character so completely and at such a scale that they are not evident.

Moderate: Landscapes in which the valued scenic character appears slightly altered. Noticeable deviations must remain visually subordinate to the scenic character being viewed. Management activities are subordinate to the attributes described within the described scenic character of the area.

Low: Landscapes in which the valued scenic character appears altered. Deviations begin to dominate the scenic character being viewed but borrow valued attributes such as size, shape, edge effect and pattern of natural openings vegetation type changes or architectural styles outside of the landscape being viewed. Management activities are visible and sometimes dominant features on the landscape.

Very low: Landscape where the valued scenic character appears heavily altered. Deviations may strongly dominate the valued scenic character and do not borrow from valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes or architectural styles within or outside of the landscape being viewed. Management activities are visible and dominate the views of the overall landscape.

Scenic River: Within the Wild and Scenic River Act, a tentative classification of those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads.

Scenic Integrity: The degree of intactness and wholeness of the landscape character.

Scenic Integrity Level: A frame of reference for the degree of apparent discorant elements or deveiation from the existing character.

Scenic Integrity Objective: The minimum level of scenic integrity allowable on each acre of the forest in order to indicate whether or not the scenic character is being maintained or enhanced.

Scion: A detached living portion of a plant, such as a bud or shoot, often a branch tip, that is grafted onto the root-bearing part of another plant.

Secure Habitat: An area with low levels of human disturbance or habitat that allows a wildlife species to remain in a defined area despite an increase in stress or disturbance. The components of security habitat can include vegetation, topography, the size of the patches of vegetation, road density, distance from roads, intensity of the disturbance, and seasonal timing of the disturbance. This general definition covers most uses of the term security habitat, except for elk and grizzly bear, which have specific definitions.

Secure Habitat (big game): Areas at least 0.5-mile away from motorized routes and at least 250 acres in size.

Sediment: Any material, both mineral and organic, carried in suspension by water, which will ultimately settle to the bottom of streams.

Sediment Delivery: The delivery of sediment to a water body via overland flow, mass wasting, human activity, or some other means.

Sediment Yield: The rate of transport of sediment by a stream, generally expressed in terms of tons per year, past a designated “accounting point” in a watershed.

Seedling: A young tree that has just germinated but has not yet reached sapling size, typically 1 to 5 feet tall.

Seedling or Sapling: A size category for forest stands in which trees less than 5 inches in diameter and less than about 25 feet tall are the predominant vegetation.

Seedtree Method: A cutting technique used to regenerate a stand in which nearly all trees are removed from an area, except for a small number of trees that are left singly or in small groups.

Seedtree with Reserves: The application of the seedtree method with the intention of retaining or reserving all or a portion of the seed trees for future stand structure.

Selection Method: A cutting technique used to regenerate a forest stand and create or maintain an uneven-aged structure, by periodically removing some trees within multiple size classes either singly or in small groups or strips.

Seral: A biotic community that is developmental; a transitory stage in an ecologic succession.

Seral Structural Stage: A phase of development of an ecosystem in ecological succession from a disturbed, relatively unvegetated state to a complex, mature plant community.

Shade-intolerant: A plant species that does not grow well or dies from the effects of too much shade.

Shade-tolerant: A plant species that can develop and grow successfully in the shade of other plants.

Shelterwood Method: A cutting technique used to regenerate an even-aged stand in which some of the mature trees are left to provide protection for regeneration species. Greater numbers of trees are left in

this method than with the seedtree method. This technique may be performed uniformly throughout the stand, in strips, or in groups. Regeneration may be natural or artificial (planting).

Shelterwood with Reserves: The application of the shelterwood cutting technique with the intention of retaining or reserving all or a portion of the shelterwood trees for future stand structure.

Shrub: Perennial, multi-stemmed woody plant that is usually less than 13 to 16 feet in height. Shrubs typically have several stems arising from or near the ground but may be taller than 16 feet or single-stemmed under certain environmental conditions.

Significant Cave: A cave located on National Forest System lands, managed under authority of the Cave Resource Protection Act (CRPA), which has been determined to contain significant biota, cultural, geologic, mineralogic or paleontologic, hydrologic, recreational, educational, scientific resources or opportunities.

Silviculture: The practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values.

Silvicultural Diagnosis: The compiling, summarizing, evaluation, and analyzing of forest stand and landscape data. Includes describing desired conditions, interpreting management direction, and determining feasible alternative silvicultural systems and initial treatments. Integrates other resource conditions and considerations, such as soils, wildlife habitat, and visual sensitivity.

Silvicultural Prescription: A written document that describes management activities needed to implement one or more silvicultural treatments, or a treatment sequence. The prescription documents the results of the analysis during the diagnosis phase.

Silvicultural System: A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes cultural management practices performed during the life of the stand, such as regeneration cutting, thinning, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits.

Site Capability and Potential: See capability and potential.

Site Preparation: A general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.

Site Productivity: The combined effect of physical and climate properties, soil depth, texture, nutrient load, precipitation, temperature, slope, elevation, and aspect, on tree growth of a specific area of land.

Site Potential Tree: The average maximum height of the tallest dominant trees for a given site class.

Skid Trails: A cleared corridor used in timber harvest to transport trees by dragging along the ground to the landing or processing area.

Slash: The residue left on the ground after felling and other silvicultural operations, or that has accumulated there as a result of storms, fire, or natural pruning.

Slash Piles: Woody residue that has been moved, either mechanically or by hand, into piles for burning.

Snag: A standing dead tree usually greater than 5 feet in height and 6 inches DBH.

Social Sustainability: See sustainability (36 CFR 219.19).

Social Experience Threshold: Based on indicators that define the social and resource conditions to be managed. Encounters are commonly used to indicate visitor experience to reveal levels of unacceptable impacts such as crowding and user conflicts.

Soil Function: Any ecological service, role, or task that soil performs. The six soil functions are soil biology, soil hydrology, nutrient cycling, carbon storage, soil stability and support, and filtering and buffering.

Soil Productivity: The inherent capacity of the soil resource to support appropriate site-specific biological resource management objectives, which includes the growth of specified plants, plant communities, or a sequence of plant communities to support multiple land uses.

Soil Quality: The capacity of the soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health relative to inherent conditions prior to any activity caused soil disturbance.

Soil Restoration: Management actions taken specifically to restore soil physical, chemical, or biological properties that have been degraded due to either management caused or natural disturbances.

Source Water Protection Areas: The area delineated by a state or tribe for a public water system (PWS), or including numerous public water systems, whether the source is ground water, surface water, or both, as part of a state or tribal source water assessment and protection program (SWAP) approved by the Environmental Protection Agency under Section 1453 of the Safe Drinking Water Act (42 U.S.C. 300h-3(e)) (36 CFR §219.19) or any subsequent laws applicable to public water systems that provide water for human consumption.

Source Water Protection Plan: A written plan a community develops to document its source water protection activities, outlining the management tools the local community plans to use to protect drinking water sources.

Special Forest Products and Plant Materials: Products collected from National Forest System lands that include, but are not limited to, bark, berries, boughs, bryophytes, bulbs, burls, Christmas trees, cones, ferns, firewood, forbs, fungi (including mushrooms), grasses, mosses, nuts, pine straw, roots, sedges, seeds, transplants, tree sap, wildflowers, fence material, mine props, posts and poles, shingle and shake bolts, and rails. Special forest products do not include sawtimber, pulpwood, non-sawlog material removed in log form, cull logs, small roundwood, house logs, telephone poles, derrick poles, minerals, animals, animal parts, insects, worms, rocks, water, and soil (36 CFR 223.216).

Special Use Authorization: A written permit, term permit, lease, or easement that authorizes use or occupancy of National Forest System lands and specifies the terms and conditions under which the use or occupancy may occur (36 CFR 251.51).

Species of Conservation Concern: A species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 CFR 219.9(c)).

Spotting: Behavior of a fire producing sparks or embers that are carried by the wind and which start new fires beyond the zone of direct ignition by the main fire.

Stand: A community of trees occupying a specific area and sufficiently uniform in canopy composition, age, and size class to be a distinguishable unit, forming a single management entity.

Standard (STD): A mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. Also see Chapter 1.

Stand Density Index (SDI): A widely used measure developed to expresses relative stand density in terms of the relationship of a number of trees to stand quadratic mean diameter.

Stand-replacing Disturbance: An agent, such as fire, blowdown, insect or disease epidemic, or timber harvest, which kills or removes enough trees (usually considered 80 percent or more of the tree component) to result in an early seral or successional forest.

Stand-replacing Fire: A fire that is lethal to most of the dominant above ground vegetation and substantially changes the vegetation structure. Stand-replacement fires may occur in forests, woodlands and savannas, annual grasslands, and shrublands. They may be crown fires or high severity surface fires or ground fires.

State and Transition Models: State and transition models and concepts are typically captured in ecological site descriptions, provide decision-making tools for land managers, provide a means to represent the complex dynamics of forest and rangeland ecosystems, and are effective communication tools. They provide extensive knowledge of existing and possible forest and rangeland vegetation states, transitions, thresholds, or other barriers to change, opportunities for management intervention, and what changes can occur through mismanagement. The vegetation types are called "states," and the processes that cause states to change from one to another are called "transitions." Where states are resistant to change, they are called "steady states." An example of a steady state is where long-lived or otherwise dominant plants occur on a site. These steady-state plant communities change only as a result of such transitions as long periods of above-average moisture or drought, fire, an insect or disease outbreak, or human action. The site factors that impose this high level of stability on a site are called "thresholds."

Stem Exclusion Structural Stage (or closed canopy structural stage): A phase when trees initially grow fast and quickly occupy the growing space, creating a closed canopy. Because the trees are tall, little light reaches the forest floor so understory plants, including smaller trees, are shaded and grow more slowly. Species that need full sunlight usually die; shrubs and herbs may become dormant. New trees are precluded by a lack of sunlight or moisture (Oliver and Larson 1996).

Stocking: A measure of timber stand density as it relates to the optimum or desired density to achieve a given management objective.

Stomata: Tiny openings or pores in plant tissue that allow for gas exchange. Stomata are typically found in plant leaves but can also be found in some stems.

Storm Proofing: Non-recurring treatments on existing roads that reduce the potential for resource impacts and damage or failure of a road feature or road system, typically resulting from storm events. These treatments relate to open and stored roads and include timely road maintenance, many key road drainage measures, reducing culvert diversion potential, pulling back marginal fill slopes, the use of biotechnical and vegetative slope stabilization and erosion control, gully prevention, bridge maintenance, and many other measures. Refer to Forest Service publication SDTDC Technical Report 1277 1814 *Storm Damage Risk Reduction Guide for Low-Volume Roads*, October 2015.

Streambank Alteration or Disturbance: Streambanks that show signs of sloughing, dislodged stones or logs, or trampling from animals (does not include road crossings). Current-year alteration is discernible from previous years' alteration because of weathering effects of freeze and thaw cycles, rain events, and erosion by stream flow or vegetative regrowth. Types of alteration include shearing, trampling, and trailing.

Stressors: Factors that may directly or indirectly degrade or impair ecosystem composition, structure, or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime (36 CFR 219.19). Also see "ecosystem stressor."

Structure: The organization and physical arrangement of biological elements, such as snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity. Also see "forest structure."

Structural Stage: A particular forest condition, characterized by a set of forest structural characteristics, such as tree diameters, tree heights, tree densities, and canopy layers, that is representative of a particular period of stand development. Also see stand initiation structural stage, stem exclusion structural stage, and understory re-initiation structural stage.

Stubble Height: The height of forage plants remaining after grazing has occurred; average stubble height includes both grazed and un-grazed plants (Forest Service Handbook 2209.13 Ch. 90).

Substrate: A mineral or organic material that forms the streambed (stream bottom).

Subwatershed: A 6th level or 12 digit hydrologic unit code watershed. They range in size from 10,000 to 40,000 acres, as defined in the U.S. Geological Survey hierarchical system of watersheds.

Succession or Successional Stage (silviculture): A predictable process of changes in structure and composition of plant communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for the establishment of the next stage. The different stages in succession are often referred to as "seral" or "successional" stages.

Suitable Elk Habitat: Habitat typically occupied by elk, either seasonally or year-round. This does not include habitats elk tend not to use. For example, areas too steep for elk, aquatic habitats, cliffs, talus, sparse vegetation, and developed recreation sites.

Suitability of Lands: A determination made regarding the appropriateness of various lands within a plan area for various uses or activities, based on the desired conditions applicable to those lands. The terms suitable and suited and not suitable and not suited can be considered the same.

Summer Range: A part of the overall range of a species where the majority of individuals are located between spring green-up and the first heavy snowfall; in some areas or for some species, winter range and summer range may overlap.

Sustainability: The capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs. For purposes of this part, "ecological sustainability" refers to the capability of ecosystems to maintain ecological integrity; "economic sustainability" refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits; and "social sustainability" refers to

the capability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and support vibrant communities (36 CFR 219.19).

Sustainable Recreation: The set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations (36 CFR 219.19).

Sustained Substantial Disturbance: The use of heavy equipment or low-level helicopter flights for vegetation management actions for a total of more than 30 days throughout an entire key linkage area in a calendar year.

Sustained Yield Limit: The amount of timber, meeting applicable utilization standards, “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” (National Forest Management Act at Section 11, 16 United States Code 1611; 36 CFR 219.11(d)(6))). It is the volume that could be produced in perpetuity on lands that may be suitable for timber production. Calculation of the limit includes volume from lands that may be deemed not suitable for timber production after further analysis during the planning process. The calculation of the sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity. Volume from salvage and sanitation timber harvest is not included in calculating the sustained yield limit. The sustained yield limit is not a target but is a limitation on harvest, except when the plan allows for a departure.

System Road: See National Forest System road.

Tall Forest: In regard to fisher habitat, tall forests are stands of trees equal to or greater than 82 feet.

Tethered Logging Systems: A logging system used during timber harvest that utilizes cable winch systems on harvesters, feller bunchers, forwarders, loaders, and skidders to stabilize and assist equipment operations on steep slopes. The cable system allows the equipment to operate on slopes that would normally be considered unsafe for equipment or damaging to soils.

Temporary Road: A single-purpose road constructed, maintained, and operated for short term use, such as access to a short-lived vegetation or mining project. The road is designed and constructed to not only meet the project’s immediate traffic objectives but to be efficiently removed from service following the project. For example, temporary portable bridges would be used on crossings, slash would be stored on-site for restoration, or use of steep grades and narrow widths to minimize costs. (Related: Permanent Road)

Threatened Species: A species that the Secretary of the Interior or the Secretary of Commerce has determined is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Threatened species are listed at 50 CFR Sections 17.11, 17.12, and 223.102.

Thresholds (ecological): Points in space and time at which one or more of the primary ecological processes responsible for maintaining the sustained equilibrium of the ecological state degrades beyond the point of self-repair. Examples of thresholds include soil erosion and nutrient loss so severe that some plants cannot grow; invasion of a site by a plant that is so dominant that other plants cannot compete; and change in plant community structure—arrangement of plants on the site—so that fire, a naturally occurring event that directs ecosystem change, cannot occur or occurs in a more destructive way. In the plan area, there are some sites that have crossed a threshold where primary ecological processes have

degraded beyond the point of self-repair where meeting desired conditions is unlikely since they are not easily reversed without significant inputs of resources. These areas largely originated from unmanaged activities in the late 1800s and early 1900s. Once an ecosystem crosses a threshold, it is generally very difficult to restore the original composition, structure, and ecological processes by changes in management alone. Prohibitively expensive restoration measures, such as dam removal, plowing, or soil modifications, would generally be necessary to restore degraded ecosystems.

Timber Harvest: The removal of trees for wood fiber use and other multiple-use purposes (36 CFR 219.19).

Timber Management: The growing of, tending to, commercial harvesting of, and regeneration of crops of trees.

Timber Production: The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.19).

Torching Index: The open wind speed measured or forecasted for a standard height (20 ft) above the tallest vegetation at which crown fire activity can initiate for the specified fire environment.

Total Maximum Daily Load (TMDL): A pollution budget, including a calculation of the maximum amount of a pollutant that can occur in a waterbody and allocating the necessary reductions to one or more pollutant sources (metals, sediment, turbidity, etc.). A total maximum daily load serves as a planning tool and potential starting point for restoration or protection activities with the ultimate goal of attending or maintaining water quality standards.

Traditional Cultural Property: A cultural resource that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community. The entity evaluated for eligibility for inclusion in the National Register of Historic Places must be a tangible property; that is, a district, site, building, structure, or object as defined in 36 CFR 64.4.

Traditional Ecological Knowledge: See Native Knowledge.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Trail Class: The prescribed scale of development for a trail, representing its intended design and management standards.

Trailhead: An area that provides parking for or access to a singular trail or trails through the forest.

Trail Management Objectives: Management intent for the design, construction, operation, and maintenance of a National Forest System trail. Example criteria include trailway geometry, surface type, design considerations for allowed uses, and maintenance frequencies. Each trail has a collection of objectives housed in the corporate database.

Transitory Range (forage): Forested lands that are suitable for grazing use for a limited time following a complete or partial forest overstory removal.

Transmission Line: The facility in an electric power system used to move large amounts of power from one location to a distant location; distinguished from a distribution line by higher voltage, greater power capability, and greater length. Transmission system voltages are typically from 69kV up to 765kV.

Treaty Rights: Those rights or interests reserved in treaties for the use and benefit of tribes. The nature and extent of treaty rights are defined in each treaty. Only Congress may abolish or modify treaties or treaty rights.

Two-aged Stand: A stand containing two distinctive age classes or cohorts.

Underburning: A fire that consumes surface fuels but not trees and some large shrubs.

Understory: The trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

Understory Re-initiation Structural Stage: Establishment of a new age class of trees after overstory trees begin to die, are removed, or no longer fully occupy their growing space. The stand of trees begins to stratify into vertical layers, with some small shade-tolerant trees in the understory.

Uneven-aged Stand: A stand of trees of three or more distinct age classes, either intimately mixed or in groups.

Uneven-aged System: A planned sequence of treatments designed to regenerate or maintain a timber stand with three or more age classes. Treatments include single-tree, selection, and group selection regeneration methods.

Unmanned Aircraft System (UAS) An aircraft used or intended to be used for flight in the air that has no onboard pilot. This includes all classes of airplanes, helicopters, airships, and translational lift aircraft with control over 3 axes (FAA Interim Operational Approval Guidance 08-01-Unmanned Aircraft Systems Operations in the U.S. National Airspace System). In addition to the actual aircraft, a UAS also consists of the ground control station. Forest Service UAS operations will comply with FAA policy and regulations applicable to UAS flight operations (Forest Service Manual 5705—Definitions).

Unplanned Wildland Fire: See wildfire.

Untrammeled: A term defined in the context of the Wilderness Act as an area that is unhindered and free from human actions that intentionally control or manipulate ecological systems.

Unique or Limited Ecological Sites: Ecological sites, or their equivalent, that are limited in size or area or distribution.

Use of Wildland Fire: Management of wildfire or prescribed fire to meet resource objectives specified in Land Resource Management Plans.

Utilization Standards: Utilization standards are specifications for merchantable forest products offered in a timber sale.

Values at Risk: Ecological, social, and economic assets and resources that could be impacted by fire or fire management actions. Examples include life, property, structures, natural and cultural resources, community infrastructure, public support, economic opportunities such as tourism, and air quality.

Vegetation Interspersion: The arrangement of vegetation on the landscape in relation to elk habitat use wherein elk select hiding habitats within 1 mile of nutritional resources, such as early seral habitat and natural meadows. The preferred metric to evaluate vegetation interspersion is distance to cover or forage edge (Rowland et al. 2018).

Vegetation Management: A process that changes the composition and structure of vegetation to meet specific objectives, using such means as prescribed fire, timber harvest, or thinning. For the purposes of this document, the term does not include removing vegetation for permanent developments like mineral operations, ski runs, trails, or roads for example and does not apply to unplanned wildland fire or permitted livestock grazing.

Viable Population: A population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments (36CFR 219.19).

Viewshed: The visible portion of the landscape seen from viewpoints. Viewpoints can include residences, recreational facilities, and travel ways.

Visual Absorption Capability: A classification system used to denote the relative ability of a landscape to accept human alternations without loss of scenic quality.

Visual Magnitude: A project-specific tool for assessing and describing the relative visibility and potential effects of a landscape modification, such as a timber harvest unit or construction of a road or facility, on the scenery. It considers the distance, slope, and aspect relative to an observer, as well as the number of times an area is seen from given observation platforms.

Warm Season Grass: Warm season grasses grow during warmer periods when temperatures are 70 to 95 °F. Warm season grasses include blue grama, buffalograss, and bluestems. Warm season grasses use soil moisture more efficiently than cool season species and often can withstand drought conditions. These grasses have different leaf cellular structures that cause them to be more fibrous, contain more lignin, and be less digestible. Therefore, livestock normally prefer cool season grasses if they are at the same growth stage as warm season species. However, because cool season grasses often enter the reproductive period at about the time that warm season grasses begin growth, livestock normally seek out this new growth from warm season species. A warm season species generally exhibits the C4 photosynthetic pathway; also known as a C4 plant.

Water Quality: The physical, chemical, and biological properties of water.

Water Yield: The runoff from a watershed, including groundwater outflow.

Watershed: A region or land area drained by a single stream, river, or drainage network; a drainage basin (36 CFR 219.19).

Watershed Condition: The state of a watershed based on physical and biogeochemical characteristics and processes (36 CFR 219.19).

Watershed Condition Framework: The watershed condition framework is a comprehensive approach for proactively implementing integrated restoration on priority watersheds on national forests and grasslands.

Weighted Average or Weighted Mean: Similar to an arithmetic mean or average, where instead of all data points contributing equally to the final average, some data points contribute more than others. In

the example of patch sizes of early successional seedling or sapling forests, the data point is the patch. Patches are "weighted" by their acreage, and larger patches will contribute more to the determination of average than the smaller patches. This statistic gives insight into how large the largest patches really are and how the individual patches are distributed along the range from smallest to largest patch size.

Wetland: An area that under normal circumstances has hydrophilic vegetation, hydric soils, and wetland hydrology.

Wheeled Motor Vehicle: All types of motor vehicles as defined in 36 CFR 212.1. It does not include over snow vehicles.

Whole Tree Logging: A logging system where trees to be harvested are cut off at the base and the entire tree hauled to the landing to be processed into logs.

Wild River: Within the Wild and Scenic River Act, a tentative classification of those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shoreline essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Wild and Scenic River: A river designated by Congress as part of the National Wild and Scenic Rivers System, which was established in the Wild and Scenic Rivers Act of 1968 (16 United States Code 1271, (note) 1271–1287) (36 CFR 219.19).

Wilderness: An area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964 (16 United States Code 1131–1136).

Wildfire: An unplanned ignition caused by lightning, volcanoes, unauthorized and accidental human-caused actions, and escaped prescribed fires.

Wildland Fire: Any non-structure fire that occurs in vegetation or natural fuels. Wildland fires are categorized into two distinct types:

Wildfires—Unplanned ignitions or prescribed fires that are declared wildfires.

Prescribed Fires—Planned ignitions.

Wildland Urban Interface (WUI): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Describes an area within or adjacent to private and public property where mitigation actions can prevent damage or loss from wildfire.

Wildlife Habitat: The resource conditions present in an area that produce occupancy, including survival and reproduction needed for persistence of an organism.

Wildlife Security: The protection inherent in any situation that allows animals to remain in a defined area despite an increase in stress or disturbance associated with human activities.

Windthrow: A tree or stand of trees that have been blown over by the wind.

Winter Range: The portion of the overall area a species inhabits where the majority of individuals are found from the first heavy snowfall to spring green-up, or during a site-specific period of winter. In the Rocky Mountains, generally including the montane portion of the plan area, winter range areas tend to have a relatively low amount of snow cover.

Yarding: The operation of hauling timber from the stump to a collecting point.

Xeric: Environment or habitat containing little moisture; very dry

Appendix 3 Monitoring Plan

Introduction

The monitoring program includes monitoring, or the collection of data and information, followed by the evaluation of that information. Monitoring and evaluation are separate, sequential activities required by the National Forest Management Act to determine how well objectives have been met and how closely management standards and guidelines have been applied. Effective land management plan monitoring fosters adaptive management and more informed decisions.

Monitoring and evaluation are conducted at several scales and for many purposes, each of which has different objectives and requirements. Monitoring occurs at the scale of the national forest, the region, and even larger geographic areas. Monitoring may be the responsibility of the Forest Service, another agency, or may involve multiple agencies and organizations.

Monitoring provides the feedback for the planning cycle by testing assumptions, tracking relevant conditions over time, measuring management effectiveness, and evaluating effects of management practices. Monitoring information should enable the national forest staff to determine if a change in plan components or other plan management guidance may be needed, forming a basis for continual improvement and adaptive management. Direction for the monitoring and evaluation of plans is found under the 2012 Planning Rule at 36 Code of Federal Regulations 219.12 and in the directives at 1909.12 chapter 30.

The plan monitoring program addresses the most critical components for informed management of the Nez Perce-Clearwater's resources within the financial and technical capability of the agency. In some instances available information or data is obtained from other agencies and partnerships to expand these capabilities.

The monitoring plan is not intended to depict all monitoring, inventorying, and data gathering activities undertaken on the Nez Perce-Clearwater. Consideration and coordination with broad-scale monitoring strategies, multi-party monitoring collaboration, and cooperation with state agencies where practicable will increase efficiencies and help track changing conditions beyond the national forest boundaries to improve the effectiveness of the plan monitoring program. In addition, project and activity monitoring may be used to gather information for the plan monitoring program if it will provide relevant information to inform adaptive management. Monitoring also provides feedback to prioritize and improve the plan monitoring program and broader-scale monitoring strategy.

The monitoring plan sets out the plan monitoring questions and associated indicators and measures. Every monitoring question links to one or more goals, desired conditions, objectives, standards, or guidelines. However, not every plan component has a corresponding monitoring question.

The Forest Service used the best available scientific information in the development of the monitoring plan, giving consideration to expected budgets, and agency protocols. For example, Forest Inventory and Analysis data is the most accurate, reliable, and relevant data source for monitoring terrestrial vegetation conditions because it follows nationwide, statistically based protocols. Similarly, Pacific Fish Strategy/Inland Native Fish Strategy Biological Opinion (PIBO) data is the most accurate, reliable, and relevant data for monitoring aquatic ecosystem conditions because it uses a probabilistic sampling design. The program was initiated to evaluate the effect of land management activities on aquatic and

riparian communities at multiple scales and to determine whether management practices are effective in maintaining or improving the structure and function of riparian and aquatic conditions.

The monitoring program will include a biennial monitoring evaluation report. The biennial monitoring evaluation report will summarize the results of monitoring, evaluate the data, consider relevant information from broad-scale or other monitoring efforts, and make recommendations to the responsible official. Biennial monitoring evaluation reports help determine if and where changes are needed in plan components, other plan content, and project activities (36 CFR 219.5). The monitoring evaluation report is used to inform adaptive management of the plan area and will be made available to the public.

It is important to note that monitoring questions will have variable data collection intervals that will not correspond with the biennial monitoring evaluation report interval. Some kinds of monitoring indicators will require longer time frames for thorough evaluation of results, but a biennial review of what information has been collected will ensure timely evaluation to inform planning. The biennial monitoring evaluation does not need to evaluate all questions or indicators on a biennial basis but must focus on new data and results that provide new information regarding management effectiveness, progress towards meeting desired conditions or objectives, changing conditions, or validation (or invalidation) of assumptions.

Modifying a plan's monitoring program does not require any other change to the plan; that is, a plan need not be amended nor revised simply to facilitate monitoring pursuant to the 2012 Planning Rule. A change to a monitoring question or an indicator may be made administratively, but only after the public has had an opportunity to comment. A change to a monitoring guide or annual monitoring work plan does not require public notification. In addition, because the broader-scale monitoring strategy is comprised of questions and indicators from plan monitoring programs, a change of the broader-scale monitoring strategy questions and indicators would require a change of the relevant plan monitoring programs.

Required 2012 Planning Rule Monitoring Items

The Forest Service has discretion to set the scope, scale, and priorities for plan monitoring within the financial and technical capabilities of the administrative unit. However, they are required to include one or more monitoring question(s) and associated indicator(s) for the eight items set out in the Planning Rule at 36 CFR 219.12(a)(5) as follows:

i. The status of select watershed conditions.

ii. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.

iii. The status of focal species to assess the ecological conditions required under 36 CFR 219.9.

iv. The status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threated and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.

v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

vi. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.

vii. Progress toward meeting the desired conditions and objectives in the plan, including providing for multiple use opportunities.

viii. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a).

Social, economic, and cultural sustainability must also be addressed in the monitoring program (FSH 1909.12 Section 32.13f). The required monitoring indicators are included with the monitoring questions in the Monitoring Elements tables and are depicted with an asterisk and corresponding number from the above list. The monitoring indicators would adapt over time so as to continue utilization of best available scientific information.

Not all plan components are included in the monitoring plan for tracking. The following considerations were used to help identify plan components that warranted tracking of status or conditions:

1. **Information required by law**, such as collection of information is required through Biological Opinion Terms and Conditions, court orders, settlement agreements, etc.
2. **Magnitude of departure** from desired condition (if a concern) - Is there a high degree of disparity between existing and desired conditions? Examples: (1) a particular habitat component is at a much lower level than desired; (2) the amount of use of a particular resource or use at a particular location is much higher than desired.
3. **Degree of uncertainty** regarding the available data or uncertainty due to lack of data (FSH 1909.12 Section 32.1, 32.11). Is available information incomplete or inconclusive?
4. Long standing **management assumptions** that need to be verified or re-verified? (FSH 1909.12 Section 32.1, 32.11). Is there a high degree of uncertainty associated with management assumptions? Examples: (1) a new way of doing something where there is limited experience with the new technique; (2) actions taken in response to an unprecedented situation; (3) a lack of information or outdated information on the effects of a management action on specific habitat needs.
5. The **risk and consequences** to the resource for not having information to reduce the uncertainty, knowledge gap, or assumption.
    a. Risk of action or event occurring - Are management activities or other drivers and stressors (climate change, invasive species, insect diseases, flooding events, etc.) likely to occur that would have discernable outcomes to the resource? Is the parameter responsive to changed conditions (climate, insect, disease, invasive species, management activities, etc.)?
    b. Consequences to resource – What are consequences to resource for not having this information? That is, collection of this information will make a difference in how we manage for sustainability of the resource.
6. **Distinctive roles and contributions** within the broader landscape (FSH 1909.12 Sec. 32.1). Will monitoring respond to a key public issue? Key issues identified through scoping may warrant monitoring even if they are (1) well understood, (2) the existing condition is good and (3) management activities will have little impact. Monitoring may be necessary for educational or accountability purposes.

Focal Species

Focal Species are a small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs. Monitoring focal species provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain

the diversity of plant and animal communities and the persistence of native species in the plan area. Focal species are commonly selected on the basis of their functional role in ecosystems. The monitoring program must include one or more monitoring questions addressing the status of focal species as a means to assess the ecological conditions required under 36 CFR 219.9. Focal species for the Nez Perce-Clearwater are Western pearlshell mussel, Ponderosa pine, and elk.

Western Pearlshell Mussel

The Western pearlshell is long-lived, sedentary, and sensitive to environmental change, so it is considered an excellent indicator of water quality and overall watershed integrity. This species appears to be intolerant of sedimentation and increases in stream temperature.

Western pearlshell (*Margaritifera falcata)* is a bivalved freshwater mollusk. Like other freshwater mussels, Western pearlshell mussels rely on host fishes to reproduce and disperse. Because freshwater mussels are not able to move far on their own, their association with fish allows them to colonize new areas or repopulate areas from which they have been extirpated. During their lives, mussels may move less than a few yards from the spot where they first landed after dropping from their host fish. Documented host fishes for Western pearlshells include cutthroat trout, rainbow or steelhead trout, and Chinook salmon. Western pearlshell mussels tend to concentrate in areas of streams and rivers with consistent flows and stable substrate conditions. They are often absent or sparse in high-gradient, rocky rivers, but are frequently encountered in low-gradient creeks and rivers, perhaps because they provide a variety of habitat conditions, reliable flow, good water quality, and diverse fish communities.

Western pearlshell mussels are vulnerable to changing climate with their main sensitivity likely to stem from climate-induced changes in water quality, particularly increased water temperatures, altered flow regimes, and lessened host fish abundance. The long generation times of this species is likely to make response and recovery to adverse climate conditions more difficult.

Western pearlshell mussels have an Idaho State conservation rank of S2, which is defined as imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction. It is a Tier 2 Species of Greatest Conservation Need. The Idaho State Wildlife Action Plan provides a framework for conserving Species of Greatest Conservation Need and the habitats upon which they depend. It is the State's guiding document for managing and conserving at-risk species.

Nez Perce-Clearwater specific information and locations of mussels is lacking. Although the Forest Service and a few agencies and groups collect data related to mussels, the data is not collected consistently, and different methods are used. There is a need for a multiparty process, using an all-lands approach to monitoring Western pearlshell mussels.

The desired condition for streams that support mussels is for aquatic habitats to contribute to ecological conditions capable of supporting self-sustaining populations of native species and diverse plant, invertebrate, and vertebrate aquatic and riparian-dependent species. Aquatic habitats are key contributors for the recovery of threatened and endangered fish species and provide important habitat components for all native aquatic species.

The most effective means to improve Western pearlshell mussel habitat is to minimize impacts by following land management plan standards and guidelines and to use best management practices. Implementing water and aquatic resource objectives can restore habitat and improve riparian and stream functions.

Although many other locales are documenting declines in Western pearlshell mussel, populations on the Nez Perce-Clearwater are abundant and widely distributed. Because of their current widespread distribution and because they are sensitive to water quality changes, we are using these mussels as a biological indicator to help us monitor the integrity of aquatic habitats where they occur.

Ponderosa Pine

Ponderosa Pine is being used as a focal species to understand and track the integrity of warm dry habitats and the xeric grassland communities within them. Ponderosa pine is an indicator of the Ponderosa Pine Xeric Habitat Ecotone, which is a transitional area of vegetation between low elevation, dry site Ponderosa pine and xeric grasslands and shrublands. This ecotone is threatened by a variety of stressors, including invasive species expansion, risk of severe wildfire, and changing climate. Fire exclusion has resulted in more understory ladder fuels, higher canopy densities and forest succession. This habitat would otherwise have been maintained at more open densities by frequent low intensity fire. The ecotone supports wildlife species associated with Ponderosa pine dominated habitats, including two species of conservation concern: white-headed woodpecker and the mountain quail. Additionally, other Ponderosa pine associated species have drawn conservation interest or attention over time. Examples include species on previous Regional Forester's Sensitive Species Lists, the USFWS's Birds of Conservation Concern Lists, and the Idaho Statewide Action plan Species of Greatest Conservation Need lists. These include the pygmy nuthatch, the flammulated owl, the fringed myotis, and Lewis's woodpecker as examples. The long-term persistence of these species can be achieved by restoring and conserving these important habitats and monitoring these habitats as a focal species will track the status and progress of conserving and restoring Ponderosa pine habitats.

The warm dry broad potential vegetation group occupies the warmest and driest sites on the Nez Perce-Clearwater that support forests. A distinct subset of this group is associated with hot-dry and warm -dry habitat types occurring at lower elevations, on warm southerly aspects, canyonlands and on droughty soils. Open forest savannas may occur within this group where grasses or shrubs are dominant, and trees are widely scattered due to low intensity, high frequency fires.

Ponderosa pine is often the only tree species that can colonize the hot, dry surface conditions of a disturbed site. This distinction is especially true on the biophysical settings adjoining the Salmon River, South Fork Clearwater River, and Selway River and, to a lesser extent, along the Lochsa River.

Adjacent upslope vegetation communities are typically characterized by the xeric grasslands and xeric shrublands and woodlands. The ecotones between the hot or warm-dry Ponderosa pine habitat types and the xeric grassland, shrubland, and woodland communities provide critical habitat and niches for a variety of wildlife species.

Xeric grasslands on drier sites, such as lower elevation or southwest facing slopes, are dominated by Idaho fescue and bluebunch wheatgrass. Grasslands range in size from extensive canyon slopes to small patches within the forested communities to large open parks located on montane to foothill zones. Grasslands are dominated by cool-season perennial bunchgrasses and forbs with sparse shrub and tree representation. Various shrub and tree species may occur with low cover, typically less than 10 percent. Xeric shrublands and woodlands are typically associated with hot and dry sites or are found on steep slopes with shallow, skeletal soil.

Desired conditions for the Hot Dry and Warm Dry Ponderosa pine habitat types in the Warm Dry broad potential vegetation type group[1] include stand densities that reflect the historic fire regime, which typically included frequent underburns, so stands are open and many-aged with younger trees occurring as small even-aged groups or individuals interspersed among the larger, long-lived trees. The overstory is dominated by large Ponderosa pine and the understory is composed of native grasses, forbs, and low shrubs.

The desired condition of xeric grassland communities, such as the bluebunch wheatgrass habitat type groups, is to have vegetation dominated by native bunchgrasses while conifers are absent or occur as scattered individuals. Dominant vegetation includes bluebunch wheatgrass and Sandburg's bluegrass, along with a variety of native forbs, including arrowleaf balsamroot, lupine, phlox, and yarrow. Individual species can vary greatly in the amount of production depending on growing conditions. Plant litter is a common component and available for soil building and moisture retention. There is very little movement of plant litter off-site with natural plant mortality typically being low. Biological soil crusts are found on almost all soil types but are more commonly found in arid areas where plant cover is low and plants are more widely spaced. Bare ground is present because of the warm dry nature of these sites but at low amounts. Xeric shrubland plant communities occur infrequently on drier sites, and the desired condition is to support shrub species, such as mountain mahogany and sumac. The understory should typically be dominated by native grass species, such as bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. Canopy cover varies depending on the site and growing conditions but should typically be low to moderate.

Management of these ecotones requires increasing the resiliency of hot or warm-dry Ponderosa pine habitat types as well as maintaining the non-forested xeric plant communities along this gradient. Managed wildland fire and associated pre-fire vegetation treatments are critical tools needed to maintain these sites and associated habitat characteristics.

Conditions important to Ponderosa pine associated wildlife species include both live or dead large diameter Ponderosa pine trees that provide mast and cavities. These species seek relatively open canopy conditions, low tree density, and a diverse understory that support insect communities.

The primary threat to these systems is altered fire regimes, and specifically decreased frequency of low intensity fire & increased severity of wildfire. In dry mixed-conifer forests, decades of fire exclusion have resulted in an increase in fuels, shifts in species composition toward shade tolerant species less resistant to fire, and increases in crown fires. The change in disturbances shifts these forests away from the natural range of variability in terms of age structure, patch size, and species composition. Non-native, invasive, and noxious plants are a pervasive problem in these dry habitats.

Elk

Rocky Mountain Elk (*Cervus elaphus*) are being used as a focal species to understand and track the integrity of elk habitat and associated forage. Elk are one of Idaho's most iconic wildlife species and are one of the most highly sought-after big game animals in the state. Population declines have impacted this herd previously renowned for its abundance and trophy opportunity, which used to draw hunters from all over the country. The elk herds in the plan area play a distinctive role in the local communities and contribute to social and economic sustainability. There is a strong desire by the public, local and

[1] This is meant to include only the warmest and driest Ponderosa pine and Douglas-fir habitat types that historically experienced low severity underburns almost exclusively. This includes the Hot Dry and Warm Dry Northern Region Habitat Type Groups as described in (Milburn et al. 2015).

state governments, tribes, outfitter and guides, sportsman's groups, and other interest groups to improve habitat conditions for elk and recover and grow elk populations.

Elk are found mainly in coniferous forests interspersed with natural or man-made openings, such as mountain meadows, grasslands, burns, and harvested areas. Elk need adequate amounts of food, water, cover, and space throughout their lives to survive. These fundamental requirements change throughout the year as elk move across the landscape to use winter, summer, and transitional ranges. Positive or negative impacts to these seasonal habitats impact the distribution and abundance of elk.

Elk herd numbers are influenced by both ecological and anthropogenic factors, such as forage availability, habitat quality, predation, and hunter harvest. Threats and stressors that can affect elk or their habitat include invasive weeds, departed fire return intervals and forest succession, timber harvest activities and associated road use, livestock grazing, human development adjacent to Forest Service lands, and motorized use on roads and trails.

Two concepts, nutrition and habitat use, provide the foundation for managing elk populations. Nutrition is key to managing productive populations and is defined as the dietary nutrients needed by a lactating female elk to meet its maintenance needs during summer and fall. Habitat use is defined as the relative probability of elk use of a specified landscape and areas within the landscape.

The importance of high-quality nutritional resources is increasingly thought to be important to elk population performance. Higher amounts of high quality dietary digestible energy during the summer has been correlated to faster calf growth, better winter survival, increased calf production, earlier breeding phenology, and better calf survival.

Increased distances from open motorized routes during spring through fall may also increase predicted percent body fat of cow elk by increasing the amount of usable space at a HUC 12 scale. Larger areas of usable space may be achieved through increasing the distance to open motorized access.

The plan contains several desired conditions that direct the management of elk habitats and include an emphasis on providing moderate or high quality nutrition and in particular to provide that nutrition in areas that are usable by elk. The amount and distribution of early seral nutritional resources are consistent with the desired conditions in the Forestlands and Meadows, Grasslands, and Shrublands sections of the Land Management Plan. Plan components for elk differ within the three broad Management Areas which address different emphasis and elk needs in these land allocations. Additionally, it is desired that motorized access does not preclude use of high-quality nutritional resources or winter ranges.

On the Nez Perce-Clearwater, the most effective means to increase moderate or high-quality nutritional forage is through disturbance to forested habitats to create more early seral stage openings, particularly in those areas with higher nutritional capacity as modeled. Disturbance may include timber harvest, natural fire, prescribed fire, or other activities that reduce canopy cover.

Monitoring Elements by Resource Area

The following resource specific tables are organized to display the plan components that drive the monitoring question(s), the indicator(s) for answering the monitoring question, and the data sources. Monitoring questions are used to evaluate whether management is maintaining or moving toward or away from desired conditions. Indicators are the specific resource measures used in answering the monitoring questions. In general, the Forest Plan components listed are the primary direction being addressed by the monitoring question.

Data Source Acronyms used in the following tables include:

ALP: Automated Lands Program

AOI: Annual Operating Instructions

AqS: Aquatic Surveys

BMP: Best Management Practices

BSMS: Broad Scale Monitoring Strategy

CAT: Climate Action Tracker

eDNA: Environmental DNA

FACTS: Forest Service Activity Tracking System

FHP: Forest Health and Protection

FIA: Forest Inventory and Analysis

FSVeg: Field Sampled Vegetation

FSDMP: Forest Soil Disturbance Protocol

FTEM: Fuels Treatment Effectiveness Monitoring application

IDFG: Idaho Fish and Game

IMBCR: Integrated Monitoring in Bird Conservation Regions

INFRA: Infrastructure application

LAU: Lynx Analysis Unit

NABat: North American Bat Monitoring Program

NICE: NatureWatch, Interpretation and Conservation Education

NRM: Natural Resource Manager

NRLMD: Northern Rockies Lynx Management Direction

NVUM: National Visitor Use Monitoring

PALS: Planning Administrative Reviews and Litigation System

PIBO: PACFISH, INFISH Biological Opinion

RO: Regional Office

TCEMS: Title Claims and Encroachments Management System

TESP-IS: Threatened, Endangered, and Sensitive Plants, and Invasive Species

TIM: Timber Information Manager

VMap: Vegetation Mapping Program

WBP: White Bark Pine

WCATT: Watershed Classification Assessment Tracking Tool

WCF: Watershed Condition Framework

WIT: Watershed Improvement Tracker

Physical and Biological Ecosystems

Terrestrial Ecosystems (TE)

Table 1. Monitoring Elements for Terrestrial Ecosystems (TE)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-TE-01. Uncommon habitat elements (mineral licks, talus slopes, fractured wet bedrock, rocky outcrops, scree slopes, waterfalls, and geologic inclusions) support long term persistence of endemic species with narrow or vary narrow habitat specificity and limited distribution associated with these habitats. **FW-DC-TE-02.** Peatlands, including fens and bogs, have the necessary soil, hydrologic, water chemistry, and vegetative conditions to provide for continued development and resilience to changes in climate and other stressors. Peatlands support unique plant and animal species. **FW-GDL-TE-01.** To conserve at-risk plants, terrestrial invertebrate animals, and Coeur d'Alene salamanders that are found only near the uncommon habitat elements described in FW-DC-TE-01, activities should not remove or alter the habitat when terrestrial plant or invertebrate animal communities that have been assigned a NatureServe ranking of G1 globally critically imperiled or G2 globally imperiled are present unless designed specifically to improve conditions for these species.	**MON-TE-01** What actions have occurred to conserve rare endemic terrestrial and animal communities? *(ii)(iv)(vi)(vii)	**Rare Ecological Community Key Characteristics** Number of decisions with uncommon habitat elements within project area Number of decisions with design features to mitigate uncommon habitat elements Acres surveyed for each project with uncommon habitat elements that were surveyed for habitat quality and rare and endemic species Survey results (exact measures TBD, such as types, size and quality of uncommon habitat located, number of endemic species present, etc.) **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project decisions to conserve uncommon habitat elements and peatlands	Idaho State Heritage Database Supervisor's Office Records NRM-Wildlife Project decision documents CAT (annual)
FW-DC-TE-03. Plant communities are comprised of a diverse mix of native grass, forb, shrub, and tree species, which provide forage for pollinator species.	**MON-TE-02** What actions have occurred to provide pollinator habitat? *(vii)	**Pollinators** Number of actions that move towards the desired condition Number of decisions that include design criteria for pollinators	Project decision documents (Biennial)
FW-DC-TE-04. Vegetation reflects natural disturbance regimes. The composition, structure, function, and connectivity of native plant communities are appropriate for a given landscape and climatic setting.	See MON-MGS-01, MON-MGS-02, MON-FOR-01, and MON-FOR-02		

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-TE 05. Riparian vegetation includes native assemblages of hardwood trees, deciduous shrubs, conifers, and, where appropriate, unique coastal disjunct species. **FW-OBJ-TE-01**. Restore hardwood overstory and understory species or allow disturbance processes, such as fire or other disturbance, on 3,000 to 4,200 acres of riparian areas every 5 years.	See MON-MGS-02 and MON-FOR-02		

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Forestlands (FOR)

Table 2. Monitoring Elements for Forestlands (FOR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-FOR-01. Aspen (*Populus tremuloides*) persists as vigorous, multi-age stands over time across its range on Nez Perce-Clearwater and aspen stands cover 1 percent of the Nez Perce-Clearwater. **FW-OBJ-FOR-01.** Restore aspen on 680 acres annually across the Nez Perce-Clearwater.	**MON-FOR-01** What management actions have occurred to maintain or increase aspen persistence in the Nez Perce-Clearwater? *(ii)(vi)(vii)	**Aspen Management** Number, acres, and locations of treatments that maintain or increase aspen **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development to maintain or increase aspen persistence	FIA (5 years) FACTS (biennial) CAT
FW-DC-FOR-02. Within-Stand Characteristics of Warmest and Driest Sites. **FW-DC-FOR-03**. Warm Dry PVT Group Composition. **FW-DC-FOR-04.** Warm Dry PVT Group Within-stand Characteristics of Moister Sites. **FW-DC-FOR-05.** Warm Dry PVT Group Size Class Distribution. **FW-DC-FOR-06.** Warm Moist PVT Group Composition. **FW-DC-FOR-07.** Warm Moist PVT Group Within-Stand Characteristics. **FW-DC-FOR-08.** Warm Moist PVT Group Size Class Distribution. **FW-DC-FOR-09.** Cool Moist PVT Group Composition **FW-DC-FOR-10.** Cool Moist PVT Group Within-Stand Characteristics.	**MON-FOR-02** What is the change in forested vegetation key characteristics (species distribution, cover type, size class, very large trees, canopy cover density)? *(ii)(vi)(vii)	Report the following by Forest, MA, and PVT: **Forested Vegetation Key Characteristics** Acres by Dominance Type (60/40) plurality Acres by size class distribution Acres by species distribution Acres by canopy cover density **Landscape Changes in Forested Vegetation** Forestland Restoration Prescriptions Acres treated to promote restoration and resilience objectives **Vegetation Disturbance** Acres of vegetation disturbance (total acres,	FIA FACTS (5-year) Data from Broad Scale Monitoring Strategy (BSMS) using FIA data source CAT Project silviculture prescription review RO Audit reports (periodic) Forest Health Protection (FHP) Aerial Insect/Disease

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-FOR-11. Cool Moist PVT Group Size Class Distribution. **FW-DC-FOR-12.** Cold PVT Group Size Class Distribution. **FW-DC-FOR-13**. Cold PVT Group Composition **MA2-DC-FOR-01** – Warm Dry PVT Group - Density **MA2-DC-FOR-02** – Warm Moist PVT Group- Density. **MA2-DC-FOR-03** – Cool Moist PVT Group- Density ***MA2-DC-FOR-04** – Cold PVT Group-Density **MA2-DC-FOR-05** – Cold PVT Group – Landscape pattern and patch size **MA2-DC-FOR-06** – Warm Dry PVT Group – Landscape pattern and patch size **MA2-DC-FOR-07** – Warm Moist PVT Group – Landscape pattern and patch size **MA2-DC-FOR-08** – Cool Moist PVT Group – Landscape pattern and patch size **MA3-DC-FOR-01** – Warm Dry - Density **MA3-DC-FOR-02** – Warm Dry – Landscape pattern and patch size **MA3-DC-FOR-03** – Warm Moist – Density **MA3-DC-FOR-04** – Warm Moist – Landscape pattern and patch size **MA3-DC-FOR-05** – Cool Moist - Density **MA3-DC-FOR-06** – Cool Moist – Landscape pattern and patch size **MA3-DC-FOR-08** – Cold PVT Group - Density **MA3-OBJ-FOR-01** **MA3-OBJ-FOR-02** **MA3-OBJ-FOR-03** **MA3-OBJ-FOR-04** **MA2-OBJ-FOR-01** **MA2-OBJ-FOR-02** **MA2-OBJ-FOR-03** **MA2-OBJ-FOR-04**		including managed actions and naturally occurring disturbance) Percent size class distribution by PVT by MA (every 5 years or as VMap is updated) **Vegetation Management** Treatments Acres of timber harvest Acres of planned fire ignitions Acres of planting Acres of hand/mechanical thinning Average treatment patch size acres Average of opening patch size acres **Burn Severity** Acres of non-lethal, mixed, and lethal wildland fire severity by fire regime Insect and pathogen hazards Acres of insect and disease by hazard rating category Acres of root disease by hazard rating category Climate Change Adaptation Number and type of climate change adaptation strategies incorporated into project development	Detection Surveys VMap (5-year interval)
MA1-DC-FOR-04 Cold PVT Group. Density **MA1-DC-FOR-05** Cold PVT Group. Landscape pattern and patch size **MA1 and MA2-DC-FOR-09** Cold PVT Group, Within-stand characteristics. **MA3-DC-FOR-07** – Cold PVT Group Within-stand characteristics.	**MON-FOR-03** Are natural processes and management strategies promoting persistence and restoration of WBP?	**Whitebark Pine** Acres of Dominance Type (60/40) plurality Acres by size class distribution Acres of vegetation disturbance (total acres, managed actions and naturally occurring)	Northern Region WBP Restoration Strategy FIA FACTS CAT VMap

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
	*(iv)	Percent size class distribution by PVT by MA (every 5 years or as VMap is updated) Acres treated Acres planted **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development to promote persistence and restoration of WBP	(5-year)
MA2 and MA3-DC-FOR-10. Across All PVT Groups: Amounts of Ponderosa pine, western larch, western white pine, and whitebark pine old growth are maintained or increased from existing amounts. Amounts of western redcedar, pacific yew, and western hemlock old growth are maintained through time. **MA2 and MA3-GDL-FOR-02.** Vegetation management activities may be authorized in old growth stands where the cover type is Ponderosa pine, western larch, western white pine, pacific yew, western redcedar, western hemlock, and whitebark pine only if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors, and if the activities are not likely to immediately modify stand characteristics to the extent that the stand would no longer meet the minimum screening criteria definition of old growth type (Green et. al., 2011) see the glossary for the definitions of resistance and resilience. **MA2 and MA3-GDL-FOR-03.** To prevent fragmentation of existing old growth where the cover type is Ponderosa pine, western larch, western white pine, pacific yew, western redcedar, western hemlock, and whitebark pine, permanent road construction should be avoided in these old growth cover types unless a site-specific analysis determines the route is optimum considering other desired conditions. **MA2 and MA3-GDL-FOR-04.** To promote resilient old growth cover types, stands other than those types described MA2 and MA3-DC-FOR-10 should be managed to meet minimum screening criteria for old growth of types specified in MA2 and MA3-DC-FOR-10, if present. **MA3-STD-FOR-01.** Within old growth where the cover type is Ponderosa pine,	**MON-FOR-04** Are vegetation treatments meeting the stand characteristics of old growth? *(ii)(vii)	**Old Growth** Percent of estimated old growth based on minimum screen criteria in Green et al. (by forest and by PVT using FIA) **Old Growth Stand Characteristics** Acres and locations of vegetation management actions in old growth currently meeting Green et al. Number of times the exceptions to the guideline MA2 and MA3-GDL-FOR-03 were used (optimum location) Summary of project level monitoring that confirms old growth designation through field verification of old growth stands treated per MA2 and MA3-GDL-FOR-02 and MA 2 and MA3-GDL-FOR-04 to determine if they are still meeting Green et al. 2011	FIA (5 years) FACTS (annual) Project monitoring

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
western larch, western white pine, pacific yew, western redcedar, western hemlock, and whitebark pine, vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the minimum screening criteria of an old growth type. See glossary (Appendix 2) for old growth definition			
MA3-DC-FOR-11. Snags are present across Nez Perce-Clearwater lands, contributing to diversity of structure and habitat. Snags are unevenly distributed and dynamic over time with highest densities occurring in burned areas and those infested by insects. The lowest densities of snags occur along roads and in developed sites or other areas where the concern for human safety is elevated. A range of decay classes is represented. **FW-DC-FOR-04.** Within-stand characteristics of Mod Warm Dry and Mod Warm Mod Dry habitat type groups of the Warm Dry potential vegetation type group forestwide: These stands are single or two-storied with live legacy trees and snags from past disturbance persisting well into the next generation. These live legacy trees and snags, which are important as habitat for cavity nesting or denning wildlife, are primarily the largest Ponderosa pine, and they are present and distributed across the habitat type groups. **FW-DC-FOR-04.** Warm Dry PVT Group Within-stand Characteristics of Moister Sites. **FW-DC-FOR-07.** Warm Moist PVT Group Within-Stand Characteristics. **FW-DC-FOR-10.** Cool Moist PVT Group Within-Stand Characteristics. **MA1 and MA2-DC-FOR-09.** Within-stand characteristics for the cold potential vegetation type group **MA3-DC-FOR-07.** Within-stand characteristics for the Cold potential vegetation type group **MA2 and MA3-GDL-FOR-05**. When managing forested stands, to maintain snags (standing dead trees) over the long-term for wildlife habitat and ecosystem processes, snags should be retained and distributed to achieve the amounts specified in the tables below (Table 13). If sufficient snags are not available to meet the numbers below,	**MON-FOR-05** What is the quantity and distribution of snags? *(ii)	**Snag Retention** Report by Forest, MA, and PVT Number of snags per acre forestwide by type and size class. Summary of project level monitoring for number of snags per 100 acres assessed at the project scale, post vegetation treatments, within two years of project completion. Snag assessment may be determined by various sample designs at sufficient sample frequency to provide reliable sample estimates.	FIA (5 years) Project monitoring

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
retain additional live trees ≥15" diameter at breast height. The distribution of snags does not need to be uniform – some areas may have more snags; others may have fewer or none. Snags are retained as the number of snags per 100 acres within the project area. Guideline FW-GDL-FIRE-04 identifies exceptions to snag retention requirements for safety purposes.			
MA2 and MA3-GDL-FOR-06. Where present, a minimum of three live trees per acre ≥15" diameter at breast height should be retained within harvest units to provide future snags and large-tree structure. Retained live trees should reflect the distribution of diameters present within the project area and should focus on retention of the largest trees with the greatest potential to become a future snag. Trees retained for reasons other than snag recruitment count toward this number. The minimum is meant to be an average across an entire timber sale unit and does not mean that three live trees must be retained on every acre.	**MON-FOR-06** Are mechanical vegetation and site preparation treatments meeting tree retention guideline? *(ii)	**Live Tree Retention** Percentage of treated project areas not meeting live tree retention guidelines and rationale why the guideline was not met. (There are legitimate reasons for not meeting this for example beetle infestations, root disease, etc. The concern is that live leave trees should be alive after all treatments including site prep.)	Project records (biennial)
The following are condensed versions of the plan components. See the Land Management Plan for complete versions. **FW-DC-FOR-02.** Within-Stand Characteristics of Hot Dry and Warm Dry habitat type groups in the Warm Dry broad potential vegetation type group. Stand density reflects the historic fire regime, which typically included frequent underburns, so stands are open and many-aged with younger trees occurring as small even-aged groups or individuals interspersed among the larger, long-lived trees. The overstory is dominated by large Ponderosa pine and the understory is composed of native grasses, forbs, and low shrubs. **FW-DC-FOR-03**. Composition for Management Area 1, Management Area 2, and Management Area 3: Within the warm dry potential vegetation type group, the amount of each dominant type found in each management area reflects the ranges shown in Table 3. The Ponderosa pine dominance type increases on all aspects relative to the current condition. Douglas-fir and grand fir remain as components of many stands, but these dominance types are reduced to reflect desired conditions given in Table 3. The	**MON-FOR-07** What is change in forested veg key characteristics from naturally occurring events and management? *(ii, iii)	**Forested Vegetation Key Characteristics for Selected Ecotone Habitat Types (Focal Species)** Acres by Dominance Type (60/40) plurality Acres by size class distribution Acres by species distribution Acres by canopy cover density **Vegetation Change for Selected Ecotone Habitat Types (Focal Species)** Acres of timber harvest in the selected Ecotone habitat groups Acres of hand or mechanical thinning in the selected Ecotone habitat groups Acres of wildland fire and associated fire severity in the selected Ecotone habitat groups Acres of planned fire ignitions in the selected Ecotone habitat groups Acres of invasive species treated (accomplished acres) in	FIA FACTS VMap (5-year interval) TESP-IS (annual) MTBS

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
Warm Dry potential vegetation type group is on the drier end of sites that support western larch, so the western larch dominance type primarily increases on northerly aspects. A portion of this potential vegetation type group is dominated by seral grasses and shrubs. **MA3-OBJ-FOR-01**. Restore 18,832 acres within the warm dry potential vegetation type group through timber harvest every 5 years. **FW-DC-GS-01**. Bluebunch wheatgrass habitat type groups are dominated by native bunchgrasses while conifers are absent or occur as scattered individuals. Dominant vegetation includes bluebunch wheatgrass *(Pseudoroegneria spicata)* and Sandbeurg's bluegrass *(Poa secunda)*, along with a variety of native forbs, including arrowleaf balsamroot *(Balsamorhiza sagittata),* lupine *(Lupinus sericeus)*, phlox *(Phlox longifolia)*, and yarrow *(Achillea millefolium)*. Invasive plant species either are not present or occur with low cover. **FW-DC-GS-02**. Fescue habitat type groups are dominated by native grasses and sedges, including Idaho fescue *(Festuca idahoensis)*, prairie junegrass *(Koeleria macrantha)*, Sandberg's bluegrass, western needlegrass *(Achnatherum occidentale),* elk sedge *(Carex geyeri),* Hood's sedge *(Carex hoodii),* and assorted native forbs, including cinquefoil *(Potentilla gracilis, P. glandulosa)*, pearly pussytoes *(Antennaria anaphaloides),* biscuitroot *(Lomatium triternatum)*, buckwheat *(Eriogonum heracleoides)*, pinkfairies *(Clarkia pulchella),* and geum *(Geum triflorum).* Invasive plant species either are not present or occur with low cover. **FW-DC-GS-03**. Xeric shrubland habitat type groups are dominated by an over story of mountain mahogany *(Cercocarpus ledifolius)* and smooth sumac *(Rhus glabra)*.		the selected Ecotone habitat groups	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Carbon Storage and Climate Change (CARB)

Table 3. Monitoring Elements for Carbon Storage and Climate Change

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-CARB-01. Carbon storage and sequestration potential are sustained through maintenance or enhancement of ecosystem biodiversity and function, and forests are resilient to natural disturbance processes and changing climates.	**MON-MGS-01** Have climate change adaptation strategies been incorporated into Forest management? *(vi)	**Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development for vegetation resilience to natural disturbances and changing climate.	CAT Project decision documents

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Meadows, Grasslands, and Shrublands (GS)

Table 4. Monitoring Elements for Meadows, Grasslands, and Shrublands (GS)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
The following are condensed versions of the plan components. See the Land Management Plan for complete versions. **FW-DC-GS-01**. Bluebunch wheatgrass habitat type groups are dominated by native bunchgrasses while conifers are absent or occur as scattered individuals. Dominant vegetation includes bluebunch wheatgrass (*Pseudoroegneria spicata*) and Sandbeurg's bluegrass (*Poa secunda*), along with a variety of native forbs, including arrowleaf balsamroot (*Balsamorhiza sagittata*), lupine (*Lupinus sericeus*), phlox (*Phlox longifolia*), and yarrow (*Achillea millefolium*). Individual species can vary greatly in the amount of production depending on growing conditions. **FW-DC-GS-02.** Fescue habitat type groups are dominated by native grasses and sedges, including Idaho fescue (*Festuca idahoensis*), prairie junegrass (*Koeleria macrantha*), Sandberg's bluegrass, western needlegrass (*Achnatherum occidentale*), elk sedge (*Carex geyeri*), Hood's sedge (*Carex hoodii*), and assorted native forbs, including cinquefoil (*Potentilla gracilis*, *P. glandulosa*), pearly pussytoes	**MON-MGS-01** What is the status of key ecological conditions of non-forested vegetation types? *(ii)(iii)(iv)(vi)	**Non-forested Vegetation Key Characteristics** (reported by forest and by Broad Potential Vegetation Type) Percent and change of bare ground Percent and change of groundcover Abundance of key species (% cover) Structural Functional Group Acres of invasive plant species infestations Number of new locations of invaders of concern (acres and locations) Absolute cover of key species Acres of non-forested dominance type groups Percent of cover type of non-forested PVTs Species composition in non-forested PVTs Number, acres, and type of actions that maintain, improve, or benefit non-forested community function (weed treatments, fire, other veg	FIA (5-year intervals) FACTS TESP-IS INFRA

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
(*Antennaria anaphaloides*), biscuitroot (*Lomatium triternatum*), buckwheat (*Eriogonum heracleoides*), pinkfairies (*Clarkia pulchella*), and geum (*Geum triflorum*). **FW-DC-GS-03.** Xeric shrubland habitat type groups are dominated by an over story of mountain mahogany (*Cercocarpus ledifolius*) and smooth sumac (*Rhus glabra*). The understory vegetation is comprised of a variety of native grasses and forbs, including those species occurring within the bluebunch wheatgrass habitat type group. Canopy cover varies depending on the site and growing conditions but is typically low to moderate. **FW-DC-GS-05.** Subalpine herbaceous and shrub habitat type groups occupy harsh high elevation sites, resulting in short stature and relatively slow growth for both shrubs and herbaceous species. These communities are dominated by native grasses, sedges, forbs, and shrubs, including Idaho fescue, prairie junegrass, Cusick's bluegrass (*Poa cusickii*), Hood's sedge (*Carex hoodii*), nettleleaf horsemint (*Agastache urticifolia*), woodland strawberry (*Fragaria vesca*), shrubby cinquefoil (*Potentilla fruticosa*), and mountain heather (*Cassiope* spp.).		treatments, structures, closures, etc.) Meadows, grasslands and shrublands monitoring is also addressed in the Livestock Grazing (GRZ) section.	
FW-DC-GS-04. Wetland graminoid and riparian shrub habitat type groups are comprised of a mosaic of communities dominated by native species which tolerate and are adapted to periodic flooding and an associated seasonally high-water table. These communities may be dominated by native graminoids, such as water sedge (*Carex aquatilis*) and tufted hairgrass (*Deschampsia cespitosa*), and a variety of native forbs. Native shrubs include willow (*Salix* spp.), dogwood (*Cornus* spp.), birch (*Betula occidentalis*), cottonwood (*Populus* spp.), alder (*Alnus* spp.) and other native mesic species. Invasive plant species either are not present or occur with low cover. **FW-DC-TE-05.** Riparian vegetation includes native assemblages of hardwood trees, deciduous shrubs, conifers, and, where appropriate, unique coastal disjunct species.	**MON-MGS-02** What management actions have occurred to maintain or increase native plant communities in meadows and riparian areas? *(ii)(vi)(vii)	**Native Plant Management** Number, acres, and locations of treatments that maintain or increase native plant communities in meadows and riparian areas Acres treated in meadows to reduce conifer encroachment Acres of invasive plant species infestations Acres of invasive species treated (accomplished acres) by treatment category (revegetation, biocontrol, herbicide, manual, etc.) **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development that assist with desired conditions listed for this monitoring question. Wetland and riparian vegetation monitoring are also	NRM-WIT FACTS (biennial) FIA (10 years) Project decision documents (biennial) INFRA

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-OBJ-TE-01. Restore hardwood overstory and understory species or allow disturbance processes, such as fire or other disturbance, on 3,000 to 4,200 acres of riparian areas every 5 years. **FW-OBJ-GS-01.** Maintain existing meadows and grasslands by reducing conifer encroachment into meadows and grasslands on a minimum of 500 acres every 5 years.		addressed in the Water and Aquatic Resources (WTR), Riparian Management Zones (RMZ), Aquatic and Riparian Livestock Grazing (ARGRZ), and Livestock Grazing (GRZ) sections.	
FW-DC-GS-06. Mollisol soils are dominated by native grasses, forbs, and shrubs and are largely free of conifer trees. Early seral conifer species may occur as scattered individuals. Grasslands and shrublands on mollisol soils do not decrease in size over time from conifer encroachment. **GA-DC-SR-01.** Forest vegetation grows on soils that support and developed under forested ecosystem. Grassland soils, including mollisol soils, support healthy grassland and shrubland communities with few trees. **FW-OBJ-GS-01**. Maintain existing meadows and grasslands by reducing conifer encroachment into meadows and grasslands on a minimum of 500 acres every 5 years.	**MON-MGS-03** What management actions have occurred to maintain or move towards desired conditions? *(ii)(vii)	**Mollisol Soils** Acres treated on mollisol soils to reduce conifer encroachment Actions in grasslands that decrease encroachment (naturally occurring or management) **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development that assist with desired conditions listed for this monitoring question.	FACTS Project decision documents (biennial)
FW-DC-GS-07. Dasynotus (*Dasynotus daubenmirei*) and Pacific dogwood (*Cornus nuttallii*) persist in transitional shrubland and forested habitats throughout their ranges on the Middle Fork Clearwater River and its major tributaries. **FW-DC-GS-08.** Douglas clover (*Trifolium douglasii*) and sticky goldenweed (*Pyrrocoma hirta* var. *sonchifolia*) persist in seasonally moist meadows over basalt on the Palouse Ranger District, particularly in the headwaters of the Potlatch River. **FW-DC-TE-01.** Uncommon habitat elements (mineral licks, talus slopes, fractured wet bedrock, rocky outcrops, scree slopes, waterfalls, and geologic inclusions) support long-term persistence of endemic species with narrow or vary narrow habitat specificity and limited distribution associated with these habitats.	**MON-MGS-04** What is the status of rare plant occupancy? *(ii)(iv)(vi)(vii)	**Rare Plant Occupancy** Number of stems (by species) Acres of rare plant occupancy (by species, by habitat types) Acres of rare plant surveys conducted (include target species) Number sites present and number of sites absent **Terrestrial Invasive Encroachment** Change in acres of terrestrial invasive species infestations at and near at-risk species occurrences. **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development to maintain and restore rare plant occupancy	TESP-IS Idaho State Heritage Database CAT (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Fire Management (FIRE)

Table 5. Monitoring Elements for Fire Management (FIRE)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
FW-DC-FIRE-01. Restore and maintain landscapes: Landscapes across the Nez Perce-Clearwater are resilient to fire-related disturbances in accordance with management objectives. Natural fuel conditions emulate the structure, species mix, spatial pattern, extent, and resiliency of the historic fire regime of the area. Wildland fires burn with a range of intensity, severity, and frequency that allows ecosystems to function in a healthy and sustainable manner and meet desired conditions for other resources. **FW-DC-FIRE-02.** The full range of fire management activities, including both prescribed fire and natural wildfire, are recognized and used by Nez Perce-Clearwater administrators as an integral part of achieving ecosystem sustainability, including interrelated ecological, economic, and social components, such as improved ecosystem resilience and wildlife habitat, protection of property, other values at risk, and public safety. **FW-OBJ-FIRE-01.** Based on the historical disturbance regimes, use wildland fire and other vegetation treatments, as described in Objectives 2 and 3, to improve or maintain desired forest vegetation conditions on 530,000 to 645,000 acres per decade over the life of the plan. **FW-OBJ-FIRE-02.** Mitigate hazardous fuels on 227,242 acres per decade. Treatment includes initial entry and maintenance to ensure desired conditions are achieved. These acres are a subset of the acres in FW-OBJ-FIRE-01, not in addition to.	**MON-FIRE-01** To what extent have fuel treatments occurred? *(ii)(vi)(vii) **MON-FIRE-02** Is the amount and severity of fire within desired ranges? *(ii)(iv)vi)	**Fuel Treatment Actions** Project names, planned and accomplished acres of fuel treatment projects Acres of wildland fires managed for resource benefit **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development to restore historic fire regimes. **Fire Severity by Fire Regime** Percent area of wildfire in high, moderate, and low severity	FACTS (Annual) Project decision documentsMTBS- Monitoring Trends in Burn Severity (Bi-Annual)
FW-DC-FIRE-03. Fuels conditions adjacent to private property, administrative sites, and infrastructure promote lessened fire behavior that facilitates safe, effective fire management opportunities. Wildfire occurs at smaller scales and lesser severities in areas where resource objectives and infrastructure limit the desirability of a wildland fire event.	**MON-FIRE-03** To what extent are fuels treatments reducing threats to Wildland Urban Interface, or other high value resources?	**Fuels Treatment Effectiveness** Number and acres of fuel treatments helping control or improve management of the fire Number and acres of fuels treatments that changed fire behavior Number and acres of treatments strategically located	Fuels Treatment Effectiveness Monitoring (FTEM) application FACTS (Annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source and Storage (Interval of Data Collection)
	*(ii)(vii)	to facilitate control and management of the fire Number and acres of wildland fires intersecting fuels treatments	
FW-OBJ-FIRE-03. Allow fire to play its natural role, where appropriate and desirable, to reduce the risk of uncharacteristic and undesirable wildland fires by managing natural, unplanned ignitions to meet desired conditions and objectives as defined in the Land Management Plan on 360,258 acres per decade over the life of the plan. These acres are a subset of the acres in FW-OBJ-FIRE-01, not in addition to.	**MON-FIRE-04** To what extent have natural unplanned wildfires occurred? *(ii)(vii)	**Resource Benefit** Acres of wildland fires managed for resource benefit	FACTS (Annual)
FW-GDL-FIRE-02. To prevent expansion of invasive plant species, planned ignitions in areas highly susceptible to weed invasion should be planned and implemented with design features to address the spread of invasive species. Follow national and regional guidelines to prevent invasive species transport on wildland fire mobile equipment.	**MON-FIRE-05** To what extent have project design features been included in decision documents and implemented to reduce likelihood of invasive species establishment? *(ii)(vi)(vii)	**Invasive Species** Number of decisions proposing planned ignitions that included design features for invasive species and number that did not include design features for invasive species List of design features that were included in decision documents AND implemented after planned ignition activities	Project decision documents Project monitoring

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Invasive Species[1] (INV)

Table 6. Monitoring Elements for Invasive Species (INV)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-GL-INV-01. The Nez Perce-Clearwater actively participates in Cooperative Weed Management Areas, which are used to determine weed treatment priorities, projects, budgets, and annual programs. Public awareness is promoted using various forms of outreach through the Cooperative Weed Management Areas. **FW-GL-INV-02**. The Nez Perce-Clearwater works with federal, state, and county agencies, tribes, non-government organizations, permittees, and adjacent	**MON-INV-01** Is the Unit engaging with Cooperative Weed Management Areas and other federal, state, county, and partners? *(ii)(vii)	**Cooperative Weed Management** List partners and the category of invasive species management such as prevention; including education and outreach; EDRR; treatment; and research	Forest Supervisor's Office Records (biennial)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
landowners to support integrated pest management, including invasive species prevention, early detection, and rapid response, control and containment, restoration and rehabilitation, and inventory and monitoring activities. **FW-GL-WTR-01.** The Nez Perce-Clearwater works with appropriate agencies to control the expansion of aquatic invasive species.			
FW-DC-INV-01. Invasive species either are not present or occur at low levels to allow watersheds, vegetation communities, and aquatic ecosystems to retain their inherent resilience and resistance to respond and adjust to disturbances. Plant communities retain their historic diversity and provision of values to fauna. **FW-OBJ-INV-01.** Treat 6,000 acres annually to contain or reduce non-native invasive plant density, infestation area, or occurrence. Early detection and rapid response to new invaders will be a priority. Protection or enhancement for other resource concerns will be considered when developing invasive weed treatment priorities.	**MON-INV-02** Are invasive species disrupting the resistance and resilience of watersheds, vegetation communities, and aquatic ecosystems? *(ii)(vi)(vii)	**Invasive Species Management** Acres of invasive species treated (accomplished acres) by treatment category (revegetation, biocontrol, herbicide, manual, etc.) Acres restored, acres monitored, and percent efficacy (control) by treatment Number of locations and extent of invasive species not previously known to occur on the unit or on an early detection rapid response list with acres infested and acres treated **Aquatic Invasive Species** Number, type, and locations of aquatic invasive species occurrences **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development to maintain/restore native vegetation Invasive species monitoring is also addressed in Meadows, Grasslands, and Shrublands (GS); Fire (FIRE); Water and Aquatic Resources (WTR), and Elk (ELK) sections.	TESP-IS FACTS FIA (annual)
FW-GDL-INV-01. To reduce the probability of establishment or expansion of invasive weeds, management activities prone to significant soil disturbance or exposure should be planned and implemented with design features to address the potential spread of invasive weeds.	**MON-INV-03** To what extent have project design features been included in decision documents and implemented to	**Design Features** Number of decisions proposing ground disturbing activities that included design features for invasive species and number that did not include design features for invasive species	Project decision documents

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
	reduce the probability of invasive species establishment? *(ii)(vi)(vii)	List the design features for invasive species that were included in decision documents AND implemented during project activities	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

[1]Invasive species include plants, invertebrates, vertebrates, and pathogens.

Soil Resources (SOIL)

Table 7. Monitoring Elements for Soil Resources (SOIL)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-SOIL-01. Soil productivity and function contributes to the long-term resilience of ecosystems. **FW-STD-SOIL-01.** Land management activities shall be designed and implemented in a manner that maintains soil function and productivity. **FW-STD-SOIL-03.** Project specific best management practices and design features shall be incorporated into land management activities as a principle mechanism for protecting soil resources. **MA2 and MA3-GDL-SOIL-01.** To maintain soil productivity, ground-based equipment used for vegetation and fuels management should only operate on slopes less than 45 percent. Tractor skidding of logs should only occur on slopes less than 35 percent to limit detrimental soil disturbance. Exceptions can be authorized where soil, slope, and equipment are determined appropriate to maintain soil functions. **MA2 and MA3-GDL-SOIL-02.** To limit additional soil disturbance, temporary roads, skid trails, and landings should be located on existing disturbed areas before creating new soil disturbance, where practical and would not exacerbate erosion.	**MON-SOIL-01** What is the status of soil productivity and function for project activities? *(ii)(vii)(viii)	**Soil Productivity and Function** Report by project using pre and post monitoring survey[1] data: Percent areal extent of soils functioning properly, functioning at risk, not functioning, and percent detrimental soil disturbance Number of decisions proposing ground disturbing activities that included design features for soils and number that did not include design features for soils Acres of existing disturbed areas reused Estimates of detrimental soil disturbance in areas with greater than 35 percent slope where ground-based equipment was used	Project decision documents Project monitoring NRM-WIT (annual)
FW-DC-SOIL-02. Soil organic matter and down woody material support healthy microbial populations, protect soil from surface erosion, facilitate soil moisture retention, provide nutrients, and maintain soil development and biochemical processes.	**MON-SOIL-02** Are post management activities conserving forest floor and coarse woody	**Post-Treatment Forest Floor Conditions** Pre- and post-project average tons per acre of coarse wood material greater than 3 inches for activity areas	Project monitoring (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-GDL-SOIL-02. Project activities should provide sufficient effective ground cover such as litter, fine and coarse wood material, or vegetation with a post-implementation target of 85 percent aerial extent of an activity area to retain soil moisture, support soil development, provide nutrients, and reduce soil erosion. The depth and distribution of organic matter should reflect the amounts that occur for the local ecological type and natural wildland fire regime. **MA2 and MA3-GDL-FOR-01.** To ensure sufficient organic materials to maintain nutrient cycling and soil biology and to provide habitat structure for various terrestrial wildlife, the levels listed in Table 12 of downed coarse woody material greater than 3 inches should be retained onsite following regeneration harvest and fuels management and site preparation activities. Coarse woody material greater than 12 inches in diameter is preferred. The following amounts are recommended by Graham et al (1994) and are intended to give general direction for retention of coarse woody debris within potential vegetation type groups. If sufficient downed coarse woody material is unavailable, standing retained trees and snags may be counted toward meeting the numbers in the table below. Exceptions to vary from the ranges listed may occur in areas near administrative sites, developed recreation sites, sensitive natural resources, or historic properties. Coarse woody material should be well distributed across each treatment unit.	debris at levels that maintain dynamic soil quality? *(ii)(vii)(viii)	Pre- and post-project visual percent aerial extent ground cover estimates for activity areas	
FW-DC-SOIL-01. Soil productivity and function contributes to the long-term resilience of ecosystems. **FW-OBJ-SOIL-01.** Restore impaired soil acreage within timber harvest units annually. **FW-STD-SOIL-02.** To maintain long-term soil productivity, impaired soil function created through management activities, including fire suppression, shall be rehabilitated to reestablish soil function to the appropriate site potential. Limited short term or site-scale effects from soil rehabilitation actions may be acceptable when they support long-term benefits to soil resources. **MA2 & MA3-GDL-SOIL-03**. When conducting timber harvest activities that	**MON-SOIL-03** Were impaired soils restored to provide for improved soil function? *(ii)(vii)(viii)	**Soil Restoration** Report by project using pre and post monitoring survey[1] data: Acres and types of soil restoration treatment Miles of temporary roads constructed by project area Miles of temporary roads rehabilitated by project area Miles of system road decommissioned Effectiveness of restoration treatments – improved soil quality and function Acres of impaired soils from past management activities within or adjacent to harvest	Project decision documents Project monitoring NRM-WIT (annual) INFRA

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
have the potential to impair soil function and productivity, areas of impaired soil function from past management activities should be treated to facilitate long-term soil productivity and function. **MA2 & MA3-GDL-SOIL-05.** After a road is decommissioned or after cessation of management activities on temporary roads, soil function appropriate to the site potential should be restored, using demonstrably effective methods.		units or activity areas identified for restoration treatment Acres of impaired soils from past management activities within or adjacent to harvest units or activity areas treated through timber sale contract (area reused by purchaser and rehabilitated). Acres of impaired soils from past management activities within or adjacent to harvest units or activity areas treated through stewardship or service contracts (areas not reused by purchaser) Cost of treatments	
FW-DC-SOIL-01. Soil productivity and function contributes to the long-term resilience of ecosystems. **FW-GDL-SOIL-01.** To maintain soil stability, ground-disturbing management activities should not occur on field verified mass movement areas if they have the potential to trigger a slope failure. Vegetation management activities may be authorized to provide for long-term slope stability.	**MON-SOIL-04** Were unstable slopes identified and actions implemented to maintain slope stability? *(ii)(vii)(viii)	**Slope Failures and Terrain Stability** Report by project: Acres and number of mass movement areas that were identified during project analysis Number and types of actions to avoid impacts to mass movement areas Number and types of activities where exceptions were activated to better maintain slope stability long term	Project decision documents Project monitoring (annual)
FW-DC-SOIL-03. Volcanic ash-influenced soils are intact and retain unique properties, including high soil porosity and high water and nutrient holding capacity. **FW-STD-SOIL-03.** Project specific best management practices and design features shall be incorporated into land management activities as a principal mechanism for protecting soil resources.	**MON-SOIL-05** To what extent are soils with ash cap retaining unique properties during project activities? *(ii)(vii)(viii)	**Soils with Ash Cap** Report by project using pre and post monitoring survey[1] data: Acres of disturbed ash cap (removal, mixing with subsurface soil, compaction) Number and types of actions taken to reduce ash cap impacts Number and types of BMPs included in decision documents to minimize impacts to ash-influenced soils Effectiveness of the BMPs applied (qualitative assessment during project implementation reviews)	Project decision documents Project monitoring (annual)
FW-DC-SOIL-01. Soil productivity and function contributes to the long-term resilience of ecosystems. **FW-STD-SOIL-03.** Project specific best management practices and design features shall be incorporated into land	**MON-SOIL-06** Were severely burned soils protected during	**Severely Burned Soils** Report by project: Number of activity areas with verified high soil burn severity[2] Number and types of BMPs and project specific design	Project decision documents Project monitoring (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
management activities as a principal mechanism for protecting soil resources. **MA2 & MA3-GDL-SOIL-04.** To maintain long term soil productivity, when conducting post wildland fire vegetation management activities, avoid permanent soil impairment on soils that have verified high soil burn severity.	salvage harvest activities? *(ii)(vii)(viii)	measures used to protect soil resources	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

[1]Current direction for pre and post monitoring requires use of National Soil Disturbance Monitoring Protocol - Volumes 1 and 2 (Page-Dumroese et al. 2009a).

[2]Field guide for mapping post-fire soil burn severity RMRS-GTR-243 (Parsons et al. 2010).

Water and Aquatic Resources (WTR)

Table 8. Monitoring Elements for Water and Aquatic Resources (WTR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-GL-WTR-02. The Nez Perce-Clearwater builds and maintains partnerships to fund and implement projects that result in improved water quality and watershed and stream conditions. **FW-GL-WTR-03.** The Nez Perce-Clearwater works with partners to improve aquatic habitat, increase resiliency, and enhance ecological integrity by improving habitat for beaver where appropriate. **FW-GL-CWN-01.** The Nez Perce-Clearwater works with the Nez Perce Tribe, State of Idaho, National Marine Fisheries Service, U. S. Fish and Wildlife Service, and other governmental organizations to plan and implement projects that contribute to recovery goals for aquatic species listed under the Endangered Species Act and their designated critical habitat, such that protective measures under the Act are no longer necessary. **FW-GL-CWN-02.** The Nez Perce-Clearwater partners with federal agencies, including Section 7 consultation, as required; state agencies; tribes; counties; interested groups; and interested private landowners to recover threatened and endangered species.	**MON-WTR-01** What is the status of partnerships? * (i)(ii)(vii) and FSH 1909.12, Section 32.13f	**Partnerships** Number and types of partners Type and amount of aquatic restoration projects completed through partnerships Type and amount of aquatic restoration projects completed through partnerships to aid in the recovery of Endangered Species Act listed species Cost of aquatic restoration projects and amount contributed by partners	Supervisor's Office Records NRM-WIT (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-WTR-01. National Forest System lands provide the distribution, diversity, and complexity of watershed and landscape-scale features including natural disturbance regimes and the aquatic and riparian ecosystems to which species, populations, and communities are uniquely adapted. Watersheds and associated aquatic ecosystems retain their inherent resilience to respond and adjust to disturbances, including climate change, without long-term, adverse changes to their physical or biological integrity. **FW-DC-WTR-07**. Instream flows are sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows are retained. Stream flow regimes maintain riparian ecosystems and natural channel and floodplain dimensions. Stream channels transport sediment and woody material over time while maintaining reference dimensions (for example, bankfull width, depth, entrenchment ratio, slope, and sinuosity). **FW-DC-WTR-08.** Groundwater dependent ecosystems, including peatlands, bogs, fens, wetlands, seeps, springs, riparian areas, groundwater-fed streams and lakes, and groundwater aquifers, persist in size and seasonal and annual timing and exhibit water table elevations within the natural range of variability. Surface and groundwater flows provide late-season stream flows, cold water temperatures, and sustain the function of surface and subsurface aquatic ecosystems. **FW-OBJ-WTR-01.** Complete the actions identified in watershed restoration action plans for 15 priority watersheds as identified under the Watershed Condition Framework process every 15 years.	**MON-WTR-02** What is the status and trend of watershed condition and resiliency and what management actions have been designed and implemented to contribute to this status? *(i)(ii)(iv)(vi)(vii)	**Watershed Condition and Resilience** Number, type, amount, and locations of restoration actions completed in priority watersheds (WCF), including the identification of the watershed condition class (WCC) indicator(s) the project improved Acres or miles of restoration actions in priority watersheds (WCF) as identified in watershed restoration action plans (WRAP). Subbasin trend based on PIBO overall index values comparing managed reaches to reference reaches Number and type of climate change adaptation strategies incorporated into project development, such as number of decisions that included project specific design features to limit impacts to flow regimes or number, type, amount, and locations of restoration actions to maintain or restore subsurface flows for groundwater dependent ecosystems	PIBO INFRA NRM-WIT WCATT Project decision documents
FW-DC-WTR-02. Spatial connectivity exists within or between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling life	**MON-WTR-03** What management actions have been designed and implemented to contributed to	**Aquatic Connectivity** Acres or miles of restoration activities targeted towards reconnection of aquatic habitat and hydrologic connectivity Number of aquatic organism passage (AOPs) culverts or	INFRA NRM-WIT (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
history requirements of aquatic, riparian-associated, and many upland species of plants and animals. **FW-DC-WTR-10.** Critical habitat components (primary biological features) provide the ecological conditions necessary to achieve species recovery. Spawning, rearing, and migratory habitats are widely available and inhabited. Listed aquatic species have access to historic habitat and appropriate life history strategies (for example, bull trout resident, fluvial, adfluvial, and anadromy) are supported. **FW-OBJ-WTR-04.** Reconnect 10 to 20 miles of habitat in streams every 5 years where passage barriers created by roads or culverts are limiting the distribution of fish or other aquatic species of concern. **FW-OBJ-RMZ-01.** Improve 300 to 700 acres of riparian habitat every 5 years, through improvements that are intended to meet desired conditions for riparian management zones, such as road obliteration, riparian planting, hardwood restoration, post assisted log structures, beaver dam analogs, and reconnecting floodplains by removing road prisms or berms.	the maintenance or improvement of hydrologic connectivity and aquatic habitat connectivity? *(ii)(iv)(vi)	bridges installed, or fish passage barriers removed Miles of habitat opened above fish passage barrier crossings Number and type of climate change adaptation strategies for aquatic connectivity incorporated into project development	
FW-DC-WTR-03. Aquatic habitats contribute to ecological conditions capable of supporting self-sustaining populations of native species and diverse plant, invertebrate, and vertebrate aquatic and riparian-dependent species. Aquatic habitats are key contributors to for the recovery of threatened and endangered fish species and provide important habitat components for all native aquatic species. **FW-DC-WTR-04.** Instream habitat conditions for managed watersheds move in concert with or towards reference conditions. Aquatic habitats are diverse, with channel characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Instream habitat conditions across Nez Perce-Clearwater, such as large woody material, percent pools, residual pool depth, median particle size, and percent fines are within reference ranges as defined by agency monitoring (for example, PIBO) and match the frequency distribution of	**MON-WTR-04** What is the status and trend of aquatic habitat, stream complexity, and floodplain processes and the management actions that have been designed and implemented to contribute to this status? *(i)(ii)(iv)(vii)	**Aquatic Habitat** Trend in measured stream metrics collected primarily through PACFISH and INFISH Biological Opinion (PIBO) monitoring and summarized at the subbasin and Forest scale Residual pool depth Pool percent Median substrate size (D50) Pool fines Wood frequency Bank angle Aquatic macroinvertebrates Amount and types of restoration activities targeted towards improvement of aquatic habitat, stream complexity, channel structure, and side channel and floodplain conditions Amount and types of projects to increase thermal refugia and improve wetland/floodplain function (for example,	PIBO (5 years) Project decision documents Idaho Aquatic Invasive Species Mgt. and Control Program BARC and RAVG mapping; BAER reports

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
comparable reference sites for a given channel type, channel size, climate, and geomorphic setting. **FW-DC-WTR-06.** Sediment delivery to streams is of the types, quantities, and rates that support the natural instream sediment transport and storage rates and instream sediment substrate composition. The sediment regime in water bodies is not chronically affected by management activities to the extent that the availability of functioning spawning areas and interstitial spaces are reduced. **FW-DC-WTR-10.** Critical habitat components (primary biological features) provide the ecological conditions necessary to achieve species recovery. Spawning, rearing, and migratory habitats are widely available and inhabited. Listed aquatic species have access to historic habitat and appropriate life history strategies (for example, bull trout resident, fluvial, adfluvial, and anadromy) are supported. **FW-DC-WTR-11.** Water cooling mechanisms in unconfined channels that are dependent on the exchange of surface water and groundwater are functioning at full potential. Cooling mechanisms include dynamic scouring and bar formation, activation of side channels during high flow events, and inundation of the full floodplain extent during floods with an approximate 5 to 10-year return interval. **FW-DC-CWN-02.** Streams within the Conservation Watershed Network provide habitat that supports robust native fish populations, which can expand to and recolonize adjacent unoccupied habitats. These areas conserve key demographic processes likely to influence the sustainability of aquatic species. **FW-OBJ-WTR-02.** Enhance or restore 50-100 miles of stream habitat within unconfined channels every 5 years to maintain or restore structure, composition, and function of habitat for fisheries and other aquatic species in streams with legacy effects that caused channels to become straightened or incised, impaired beaver habitat, or diminished floodplain capacity. Activities include, but are not limited to, berm removal, large woody debris placement,		relocating roads located in meadows and floodplains to keep subsurface flow for as long as possible before it enters the stream channel) Number, type, and locations of aquatic invasive species occurrences Acres and proportion of high severity fire within RMZs. Proportion of HUC 12 watersheds experiencing high severity fire events.	

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
streamside road decommissioning, riparian planting, beaver dam analogs, and process-based restoration/floodplain restoration. **FW-OBJ-WTR-03.** Enhance or restore stream habitat on 5 miles, every 5 years, in naturally confined channels to maintain or restore step pool structure, composition, and function of habitat for fisheries and other aquatic species. Activities include, but are not limited to improving stream complexity, large wood debris or boulder placement, and riparian planting.			
FW-DC-WTR-05. Water quality, including groundwater, meets or exceeds applicable state water quality standards, fully supports designated beneficial uses, and is of sufficient quality to support surrounding communities, municipal water supplies, and natural resources. Nez Perce-Clearwater has no documented lands or areas that are delivering water, sediment, nutrients, and/or chemical pollutants that would result in conditions that violate the State of Idaho's water quality standards.	**MON-WTR-05** What is the status and trend of water quality? *(i)(ii)	**Water Quality** Number and locations of stream reaches by subbasin listed as impaired in the IDEQ 303(d)/305(b) integrated report Miles of 303(d) listed waters Miles of waters under an approved total maximum daily load (TMDL) plan	IDEQ integrated report (2 years)
FW-STD-WTR-06. To restore watersheds, management activities in watersheds with approved total maximum daily loads shall be designed to comply with the total maximum daily load allocations following project implementation.	**MON-WTR-06** Are management activities complying with total maximum daily load allocations? *(i)(ii)	**Total Maximum Daily Loads** List of management actions (acres, miles, types) completed that contributed to delisting 303(d) listed waters and contributed to meeting TMDLs List of design measures or best management practices included in project decisions to comply with the total maximum daily load allocations Number of TMDL implementation plans developed in coordination with Idaho Department of Environmental Quality Number of sites monitored on Category 4 or 5 streams to evaluate if TMDL targets or loads are achieved	NRM-WIT INFRA Forest records (annual)
FW-OBJ-TE-01. Restore hardwood overstory and understory species or allow disturbance processes, such as fire or other disturbance, on 3,000 to 4,200 acres of riparian areas every 5 years. **FW-OBJ-WTR-01.** Complete the actions identified in watershed restoration action	**MON-WTR-07** Are watershed and aquatic restoration projects being implemented at a rate consistent with Land	**Watershed and Aquatic Restoration** Comparison of amount of water, aquatic, and riparian restoration objectives implemented to other Land Management Plan objectives	Project decision documents INFRA NRM-WIT (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
plans for 15 priority watersheds as identified under the Watershed Condition Framework process every 15 years. **FW-OBJ-WTR-02.** Enhance or restore 50-100 miles of stream habitat within unconfined channels every 5 years. **FW-OBJ-WTR-03.** Enhance or restore stream habitat on 5 miles, every 5 years, in naturally confined channels. **FW-OBJ-WTR-04.** Reconnect 10 to 20 miles of habitat in streams every 5 years where passage barriers created by roads or culverts are limiting the distribution of fish or other aquatic species of concern. **FW-OBJ-WTR-05**. Improve soil and watershed conditions on 3,000-4,000 acres every 5 years, emphasizing actions in priority watersheds and Conservation Watershed Network watersheds. This includes non-system road decommissioning. **FW-OBJ-RMZ-01.** Improve 300 to 700 acres of riparian habitat every 5 years., **FW-OBJ-CWN-01.** Assess 500 miles of roads every 5 years to identify those roads, regardless of maintenance level, that may negatively impact streams, such as contributing excessive sediment or altering riparian areas or floodplains. **FW-OBJ-CWN-02.** Stormproof 15 percent of roads in Conservation Watershed Network prioritized for restoration every 5 years. **FW-OBJ-ARREC-01.** Remove, relocate, or mitigate two existing dispersed recreation sites, outside of riparian management zones every 5 years. **FW-OBJ-INF-01.** Complete 600 miles of road work, such as reconstruction; re-routing; road improvements; decommissioning; or placing roads in intermittent stored service, every 5 years. **FW-OBJ-INF-02**. Annually maintain 1,400 miles of operational maintenance level 2 through 5 roads. **FW-OBJ-REC-01.** Annually maintain to standard a minimum of 30 percent of National Forest System trail miles. **FW-OBJ-REC-02.** Reduce deferred maintenance of trails by five percent, every five years.	Management Plan objectives? *(i)(ii)(iv)(vii) and FSH 1909.12 Section 32.13f	Number, type, and location of watershed and aquatic restoration projects implemented	

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-STD-WTR-02. Project-specific best management practices (BMPs), including both Federal and state BMPs shall be incorporated into project planning as a principal mechanism for controlling non-point pollution sources, to meet soil and watershed desired conditions, and to protect beneficial uses.	**MON-WTR-08** Are appropriate BMPs incorporated in project decision documents? *(i)(vii)	**Best Management Practices** Number of decisions affecting water, fisheries, and aquatic ecosystems Number of decisions affecting water, fisheries, and aquatic ecosystems that included appropriate BMPs Number and types of design features or BMPs incorporated into project decisions to increase the potential for attainment of aquatic and riparian desired conditions Summary of National Core BMP monitoring audits	Project decision documents National Core BMP Monitoring database (annual)
FW-STD-WTR-04. Where aquatic and riparian desired conditions are being achieved, projects shall maintain those conditions. Where aquatic and riparian desired conditions are not yet achieved, and to the degree that project activities would contribute to those conditions, projects shall restore or not retard attainment of desired conditions. Short term adverse effects from project activities may occur when they support the long-term recovery of aquatic and riparian desired conditions and federally listed species. Exceptions to this standard include situations where Forest Service authorities are limited (1872 Mining Law, state water right, etc.). In those cases, project effects shall not retard attainment of desired conditions for watersheds, to the extent possible within Forest Service authorities.	**MON-WTR-09** What management actions are contributing to the attainment or retardation of aquatic and riparian desired conditions? *(i)(ii)(iv)(vi)(vii)	**Aquatic and Riparian Desired Conditions** Number of decisions affecting water, fisheries, and aquatic ecosystems that included restoration actions to move towards aquatic and riparian desired conditions. Within decisions, the type and amount of restoration actions that move towards aquatic and riparian desired conditions Within decisions, types of design features or BMPs incorporated to increase the potential for attainment of aquatic and riparian desired conditions Number of decisions that used the Stream Conditions Indicator Assessment and multiscale analysis Number of stream condition indicator assessment or multiscale analysis findings that indicate aquatic conditions improved or did not retard attainment of aquatic and riparian desired conditions.	Project decision documents (annual) Results of project level multi-scale analysis and stream condition indicator assessments across the Forests (annual)i
FW-GDL-ARGRZ-01. To maintain or improve riparian and aquatic conditions and achieve riparian desired conditions over time through adaptive management, new grazing authorizations and reauthorizations that contain low gradient, alluvial channels should require that end-of-season stubble height be 10 to 15 cm (4 to 6	**MON-WTR-10** What is the status and trend of aquatic and riparian conditions in active livestock	**Aquatic and Riparian Condition** Summary of PIBO Implementation Monitoring at Designated Monitoring Areas (for example, stubble height, bank alteration, woody browse utilization)	Allotment Administrative Summaries PIBO data for Designated Management Areas

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
inches) along the greenline. However, application of the stubble height numeric value range should only be applied where it is appropriate to reflect existing and natural conditions for the specific geo-climactic, hydrologic, and vegetative conditions where it is being applied. Alternative use and disturbance indicators and values, including those in current ESA consultation documents, may be used if they are based on current science and monitoring data and meet the purpose of this guideline. Long-term monitoring and evaluation should be used to adapt this numeric range or the use of other indicators.	grazing allotments? *(i)(ii)(iv)		(annual)
FW-GL-WL-01. The Nez Perce-Clearwater cooperates and collaborates with the U. S. Fish and Wildlife Service, other federal agencies, state agencies, and tribes on conservation strategies, recovery plans, habitat management, and ecological conditions on National Forest System lands. **FW-DC-WTR-03**. Aquatic habitats contribute to ecological conditions capable of supporting self-sustaining populations of native species and diverse plant, invertebrate, and vertebrate aquatic and riparian-dependent species. Aquatic habitats are key contributors to the recovery of threatened and endangered fish species and provide important habitat components for all native aquatic species. **FW-GDL-WTR-06**. To conserve Pacific lamprey and Western pearlshell mussel populations, individuals should be re-located to an alternative site with suitable habitat prior to de-watering channel work proposed in areas containing habitat for these species.	**MON-WTR-11** Has collaboration with other agencies and tribes occurred to develop a mussel monitoring strategy? **MON-WTR-12** What is the status of aquatic condition integrity using mussel as a focal species? *(i, ii, iii)	**Western Pearlshell Mussel (Focal Species)** List of partners and summary of collaboration Statusof mussel populations measured by mussel presence/absence, age distribution, and spatial distribution for selected stream reaches. Number of occurrences and locations were relocation of mussels has occurred due to de-watering channel work.	Forest Records Multi-party monitoring results NRM-WIT

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Conservation Watershed Network (CWN)

Table 9. Monitoring Elements for Conservation Watershed Network (CWN)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-CWN-03. Roads in the Conservation Watershed Network present minimal risk to aquatic resources. **FW-STD-ARINF-07.** In the Conservation Watershed Network and HUC12 subwatersheds with Endangered Species Act critical habitat or listed aquatic species, when constructing or reconstructing roads, projects shall result in a net decrease in the hydrologic connectivity of the road system and stream channel network. Treatment priority shall be given to roads or road segments that pose the greatest relative ecological risk to riparian and aquatic ecosystems. The net decrease is measured by project area. **FW-OBJ-CWN-01.** Conservation Watershed Networks are the highest priority for restoration actions for native fish and other aquatic species. Assess 500 miles of roads every 5 years to identify those roads, regardless of maintenance level, that may negatively impact streams, such as contributing excessive sediment or altering riparian areas or floodplains. **FW-OBJ-CWN-02.** Stormproof 15 percent of roads in Conservation Watershed Network prioritized for restoration every 5 years as funding allows to benefit threatened and endangered aquatic species and municipal watersheds. Emphasize roads with greatest risk of erosion and road prism failure, including maintenance level 1 and 2 roads.	**MON-CWN-01** What management actions have been designed and implemented to contribute to reduced impacts of system roads on aquatic resources in CWNs? *(i)(ii)(iv)(vii)	**Roads in CWN** Length of system road that affect hydrologic function in CWN watersheds where system road construction or reconstruction occurred, specifically in subwatersheds with Endangered Species Act critical habitat for aquatic species or containing listed aquatic species. Miles of road storm-proofed in CWN watersheds. Miles and location of roads treated that are near streams supporting ESA listed fish (decommission, intermittent stored service, reconstruction, road improvement, stormproofing, etc.) Miles, maintenance level, and locations of roads assessed Amount of net decrease in hydrologic connectivity of the road system in CWN watersheds if road construction or reconstruction actions have been implemented	INFRA WIT (annual)
FW-DC-CWN-01. Conservation Watershed Networks have functionally intact ecosystems that provide high-quality water and contribute to and enhance the conservation of aquatic species of conservation concern and recovery of threatened or endangered fish species. **FW-STD-CWN-01**. In Conservation Network Watersheds not meeting aquatic and riparian desired conditions, activities shall be designed and implemented in a manner that supports or contributes towards the recovery of	**MON-CWN-03** In the CWN, what management actions have been implemented and designed to contribute to the attainment of aquatic and riparian desired conditions and recovery of	**Aquatic and Riparian Desired Conditions** Number of decisions with activities located within CWN that incorporated Multiscale Analysis and the Stream Conditions Indicator Assessment Number, types, and amount of restoration actions occurring in CWNs to move towards aquatic and riparian desired conditions or contribute to the	Project decision documents Results of project level multi-scale analysis and stream condition indicator assessments within the Conservation Watershed

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
federally listed species and the achievement of these desired conditions and does not retard them when evaluated at the HUC12 subwatershed scale. Short term adverse effects from project activities may occur when they support the long-term recovery of aquatic and riparian desired conditions and federally listed species.	federally listed species, or has attainment of desired conditions been retarded in CWNs? *(i)(ii)(iv)(vi)(vii)	recovery of federally listed species Number and types of design features or BMPs incorporated into projects occurring within CWNs to increase the potential for attainment of aquatic and riparian desired conditions or contribute to the recovery of federally listed species Number of stream condition indicator assessment or multiscale analysis findings that indicate aquatic conditions improved or did not retard attainment of aquatic and riparian desired conditions within the Conservation Watershed Network. **Climate Change Adaptation** Number and type of climate change adaptation strategies incorporated into project development	Network (annual) NRM-WIT INFRA CAT (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Riparian Management Zones (RMZ)

Table 10. Monitoring Elements for Riparian Management Zones (RMZ)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-RMZ-01. RMZs reflect a natural composition of native flora and fauna and a distribution of physical, chemical, and biological conditions as compared to reference conditions. The species composition and structural diversity of native plant communities in riparian management zones provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration. Nutrients, large woody debris, and fine particulate organic matter are supplied in amounts and distributions sufficient to sustain physical complexity and stability. **FW-DC-RMZ-02.** RMZs feature key riparian processes and conditions that function consistent with local disturbance regimes, including slope	**MON-RMZ-01** What management actions have been implemented and designed to contribute to the attainment of desired conditions for riparian management zone s? *(i)(ii)(iv)(vii)	**Riparian Condition** Locations, acres, and types of actions occurring with RMZs Acres of RMZs improved through activities, including but not limited to, streamside road decommissioning, dispersed recreation site management, riparian planting, reconnecting floodplains, prescribed fire, hardwood restoration, and installation of post assisted log structures and beaver dam analogs Miles of road decommissioned, relocated, or storm-proofed within RMZs and number of road/stream crossings removed	NRM-WIT INFRA FACTS (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
stability and associated vegetative root strength, wood delivery to streams and within the RMZs, input of leaf and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality.		See also Aquatic and Riparian Livestock Grazing (ARGRZ), MON-ARGRZ-02; Terrestrial Ecosystems (TE), MON-TE-03; and Meadows, Grasslands, and Shrublands (GS), MON-MGS-01	
FW-STD-RMZ-01. Vegetation management shall only occur in riparian management zones from the edges of the active stream channel to within 150 feet within Riparian Management Zone Category 1 and to the edges of the active stream channel to 100 feet within Riparian Management Zone Category 2, 3, and 4 to restore or enhance aquatic and riparian-associated resources. Non-mechanical treatments, for example, hand fuel treatments, prescribed fire, small diameter (for example, sapling, pole) conifer thinning, may be authorized if aquatic and riparian-associated resources are maintained. Timber Harvest in this zone shall leave trees on site or use for aquatic restoration. Vegetation management may occur in the outer Riparian Management Zones to meet desired conditions for fuel loading and silvicultural desired conditions, so long as project activities retain functions of the outer Riparian Management Zone, including sediment filtering, large wood recruitment to streams, and protection of the inner Riparian Management Zone from windthrow. Vegetation management in Riparian Management Zones shall not retard attainment of aquatic and riparian desired conditions.	**MON-RMZ-02** What is the status of implementing FW-STD-RMZ-01 *(i)(ii)(iv)(vii)	**Vegetation Management in RMZs** Number of decisions that include vegetation management treatments within RMZs Number of decisions with vegetation management activities located within RMZs that incorporated Multiscale Analysis and the Stream Conditions Indicator Assessment Number of decisions for projects within an RMZ that incorporated Multiscale Analysis or the Stream Conditions Indicator Assessment in which aquatic conditions were predicted to be improved or not retarded. Locations, acres, prescriptions, and types of vegetation management actions within RMZs	NRM-WIT INFRA Project decision documents (annual)
FW-STD-RMZ-06. Direct ignition of low severity prescribed fire in riparian management zones can achieve or maintain desired conditions so long as: direct ignition within the riparian management zone will not retard attaining water, aquatic, and riparian desired conditions; and direct ignition within the riparian management zone maintains or enhances existing stream conditions and effects to threatened or endangered species and their designated critical habitat are considered.	**MON-RMZ-03** Has direct ignition in RMZs maintained or enhanced water, aquatic, and riparian desired conditions? **MON-RMZ-04** Have aquatic desired conditions been retarded? *(i)(ii)(iv)(vii)	**Prescribed Fire in RMZs** Number of prescribed fire projects with direct ignition in the RMZ that incorporated best management practices and used Management Approaches for direct ignition of prescribed fire in RMZs. Percent of projects that maintained or enhanced water, aquatic, and riparian desired conditions Percent of prescribed fire area within RMZ resulting in low severity burn effects[1]	NRM-WIT INFRA FACTS Project decision documents Project monitoring (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
		Percent of projects that have created conditions with a reduced functioning level as measured utilizing the stream condition indicator assessment	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

[1]See Burn Severity definitions in the glossary and use descriptions found in the Field guide for mapping post-fire soil burn severity RMRS-GTR-243 (Parsons et al. 2010).

Wildlife (WL)

Table 11. Monitoring Elements for Wildlife (WL)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-WL-01. The Nez Perce-Clearwater provides habitat conditions for federally listed threatened, endangered, and candidate plant and animal species that contribute to their recovery to the point at which listing is no longer appropriate. Habitat used by federally listed species provides conditions to meet their life history needs. **FW-STD-WL-01.** Canada lynx habitat shall be managed in accordance with Northern Rockies Lynx Management Direction (U.S. Department of Agriculture 2007c) and Record of Decision (U.S. Department of Agriculture 2007b).	**MON-WL-01** What is the status and trend of lynx habitat? What is the status of forest meso-carnivores (e.g., lynx, wolverine, fisher) on the Forest? *(ii)(iv)	**Lynx Suitable Habitat (from BSMS)** Stand age class Number LAU meeting NRLMD 30% suitable Number LAU not meeting NRLMD 30% suitable Lynx occupancy (trend) Report by occupied and unoccupied habitat (as mapped by Figure 1-1 NRLMD) (from BSMS) Acres of advanced regeneration and multi-story structural stages that occur within lynx habitat	Regional Office Habitat Modelling Regional Office/Rocky Mountain Mesocarnivore data or reports (biannual). Idaho State Species Diversity database FIA NRM-Wildlife (Biannual) Forest Lynx Habitat spatial layer Forest LAU boundary layer Burn severity data
FW-DC-WL-02. Ecological conditions on the Nez Perce-Clearwater contribute sustainable habitat to maintain species of conservation concern. Habitat is resilient and adaptable to stressors and likely future environments. **GA-DC-SR-02.** Habitat for Ponderosa pine associated species, including legacy trees and snags, are within desired conditions within Ponderosa	**MON-WL-02** Are Ponderosa pine habitat types important for the white-headed woodpecker trending towards desired conditions?	**White-Headed Woodpecker Habitat Conditions (Species of Conservation Concern)** Forestwide and Geographic Area acres and percent of warm dry PVT Ponderosa pine types within the 15 to 20+ inch size class. (stands of 15" for nest production and 20+ for nesting habitat).	FIA Idaho State Heritage Database IDFG data NRM-wildlife IMBCR

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
pine systems (See FW-DC-FOR-02, FW-DC-FOR-03, FW-DC-FOR-04, and FW-DC-FOR-05). Understory characteristics do not facilitate stand replacing fires and are composed of native plants that provide insect populations as forage for Ponderosa pine associated species. These habitats are resilient to changes due to climate change.		number of very large (20+ inch) individual trees within Ponderosa pine stands acres of Ponderosa pine in open park like setting (that is, not encroached with Douglas-fir and grand fir) acres of Ponderosa pine encroached with Douglas-fir and GF	eDNA Project unit surveys (annual)
FW-DC-WL-02. Ecological conditions on the Nez Perce-Clearwater contribute sustainable habitat to maintain species of conservation concern. Habitat is resilient and adaptable to stressors and likely future environments.	**MON-WL-03** What is the occupancy status of harlequin ducks (species of conservation concern) in selected stream reaches? *(ii)(iv)	**Harlequin Duck Distribution:** Presence/absence of broods in Number of occupied HUC12 watersheds Habitat quality metrics (invertebrates index)	eDNA Draft Harlequin Duck Habitat Model based on a combination of gradient and stream order (or other harlequin duck habitat model developed using best available scientific information) Project unit surveys Idaho Species Diversity Database NRM-Wildlife IDFG survey data as available (annual) Facts Activities within riparian areas in stream reaches known to be used by harlequin duck.
FW-DC-WL-02. Ecological conditions on the Nez Perce-Clearwater contribute sustainable habitat to maintain species of conservation concern. Habitat is resilient and adaptable to stressors and likely future environments. **GA-DC-SR-02.** Habitat for Ponderosa pine associated species, including legacy trees and snags, are within desired conditions within Ponderosa pine systems (See FW-DC-FOR-02, FW-DC-FOR-03, FW-DC-FOR-04, and FW-DC-FOR-05). Understory characteristics do not facilitate stand	**MON-WL-04** What is the status and trend of mountain quail riparian and shrub habitat (species of conservation concern) ? What is the status and trend of wildland fire disturbance in	**Mountain Quail Occupancy** Trend in acres of tall shrub communities or riparian habitat within the known distribution of mountain quail in the Plan Area. The acres and distribution of habitat treated to benefit mountain quail The acres of invasive weed treatments within the known distribution of mountain quail.	Idaho Species Diversity Database IDFG Survey data FACTS Activities Region 1 FIA data Non-Forested vegetation Data Riparian Habitat Layer VMAP Data

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
replacing fires and are composed of native plants that provide insect populations as forage for Ponderosa pine associated species. These habitats are resilient to changes due to climate change. **GA-OBJ-SR-01.** 100 acres of mountain quail habitat are restored in each five-year period.	mountain quail habitat? What are the efforts to treat invasive weeds within the known distribution of mountain quail habitat? *(ii)(iv)	The acres of wildland fire within the known distribution of mountain quail.	Fire Perimeters Burn Severity Data
FW-DC-WL-03. The arrangement and distribution of vegetation patches is consistent with the natural range of variation and varies widely in size, shape, and structure to provide connectivity for native wildlife. **FW-DC-WL-09.** Wide-ranging species are free to move across and between habitats, allowing for dispersal, migration, genetic interaction, and species recruitment. **MA2-DC-RWILD-02**. Recommended wilderness areas are characterized by a natural environment where ecological processes and disturbances, such as natural succession, fire, avalanches, insects, and diseases, are the primary forces affecting the composition, structure, and patterns of vegetation. **MA2-DC-RWILD-03.** Recommended wilderness areas facilitate the connectivity and movement of wildlife species across the Nez Perce-Clearwater by remaining large areas with little human activity. **MA2-DC-IRA-02.** The composition, structure, and pattern of vegetation reflect natural disturbances and follow Idaho Roadless Rule themes, as assigned. **MA2-DC-IRA-03.** Roadless areas contribute habitats for wide ranging species and connectivity for movement of wildlife. These areas also provide foraging, security, denning, and nesting habitat for wildlife.	**MON-WL-05** What management actions or design features have occurred to trend patch size and pattern towards NRV? What is the change in secure habitat? *(ii)(vi)(vii)	**Vegetation Patch Size and Connectivity** Number, types, and locations of actions that contributes to desired patch size and pattern Number, and acres, of wildland fires	Supervisor's Office Records Project decision documents (Biennial) FACTS VMap FIA (5-year interval) Secure Habitat Spatial Layer (based on INFRA roads and motorized trails data) (Biennial)
FW-DC-WL-04. The Nez Perce-Clearwater provides the ecological conditions for the long-term persistence of fisher, whose habitat generally follows the distribution of the warm moist potential vegetation type. Patches of tall forest cover approximately 50 percent of the warm moist broad potential	**MON-WL-06** What is the status of ecological conditions provided for fisher and the	**Fisher Habitat and Occupancy** The change in the amount of habitat with the spatial characteristics to support a fisher female home range of size classes ≥10" DBH within fisher habitat types found in the	Supervisor's Office Records Region 1 Existing Vegetation Classification System Vegetation Layer

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
vegetation type group, consistent with the desired conditions found Table 6 (of the LMP) Stands of tall forests, distributed across the warm moist broad potential vegetation type, provide coarse woody debris and multiple denning and resting habitat canopy layers (Sauder and Rachlow 2014).	change in fisher occupancy? What is the status of forest meso-carnivores (e.g., fisher) on the Forest? *(ii)(iv)	fisher query (See Wildlife Section of the FEIS for the query, or within best available habitat model) The amountfof 10", 15", and 20+ inch size classes within warm moist broad potential vegetation types. In fisher habitat (based on fisher query in FEIS or BASI), acres with presence of both live and dead trees 15"+ and 20+ DBH within all size classes. Number of detections/non-detections of fishers Acres of vegetation project treatments within modeled fisher habitat (Sauder Model or Best available fisher habitat model).	and FRAGSTATS (every 5 yrs.) Regional Office/Rocky Mountain Mesocarnivore database (3-year rotation) Idaho State Heritage database NRM-Wildlife R1 meso-carnivore surveys Project decision documents
FW-DC-WL-05. Bighorn sheep habitat reflects its historic distribution and connectivity and is comprised of native, high protein grass and forbs near rugged escape cover. **FW-STD-WL-02**. To prevent disease transmission between wild sheep and domestic sheep and goats, domestic sheep and goat grazing (excluding pack goats) shall not be authorized in or within 16 miles of bighorn sheep occupied core herd home ranges.	**MON-WL-07** What is status of bighorn sheep habitat and management actions within their occupied habitat? *(ii)(vii)	**Bighorn Sheep** Acres of habitat treated to decrease forested habitat within bighorn habitat Acres of invasive plant species treated within bighorn sheep habitat. Number of disease outbreaks Number of known domestic sheep contacts within 16 miles of occupied sheep areas Acres of Bighorn sheep habitat invaded by know invasive species infestations.	IDFG data FACTS INFRA NRM-WIT TESP-IS (biennial)
FW-DC-WL-06. The grizzly bear Bitterroot Recovery Zone provides the ecological conditions to support recolonization of grizzly bears. Land Management Plan land use allocations provide connectivity to allow secure passage from occupied habitat to the Bitterroot Recovery Zone.	**MON-WL-09** Is the Forest participating in the Bitterroot Ecosystem subcommittee or an equivalent science-based committee to understand best available scientific information and best practices?	**Bitterroot Recovery Zone** Number of Bitterroot Ecosystem subcommittee meetings in which the Nez Perce-Clearwater participates.	Forest records

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-WL-07. The risk of grizzly bear-human conflict is reduced through awareness. The public, Forest Service employees, contractors, volunteers, and permittees are knowledgeable of conflict prevention strategies through education and interpretation.	**MON-WL-10** How has Nez Perce-Clearwater reduced negative impacts to Grizzly Bears during project planning?	**Human-Grizzly Bear Conflict** Number of avoidance or minimization measures used during project planning Number of biological opinions with conservation recommendations regarding grizzly bear	PALS
FW-DC-WL-08. Within occupied grizzly bear habitat, developed recreation sites, administrative sites, and dispersed recreation sites where garbage disposal services are provided, facilities are equipped with necessary infrastructure so that food, garbage, and other attractants can be made inaccessible to grizzly bears to reduce the potential of human-bear conflict.	**MON-WL-11** Are appropriate measures in place to reduce human-grizzly bear conflict due to sanitation issues?	**Sanitation** Number of storage orders currently in place Number of new or improved facilities installed.	Forest Administrative Orders INFRA
FW-DC-WL-09. Wide-ranging species are free to move across and between habitats, allowing for dispersal, migration, genetic interaction, and species recruitment.	**MON-WL-12** Are travel planning projects addressing Grizzly Bear security when appropriate?	**Grizzly Bear Security** Number of travel plan decisions that include actions to address grizzly bear security.	PALS INFRA

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Wildlife-Multiple Uses (WLMU)

Table 12. Monitoring Elements for Wildlife-Multiple Uses (WLMU)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-WLMU-01. Habitat supports opportunities for hunting, fishing, trapping, gathering, observing, photography, subsistence, cultural interactions, and the exercise of treaty reserved rights. Wildlife is distributed in habitats within their respective seasonal ranges. **FW-DC-WLMU-02.** At the forest scale, habitat for wild ungulates provides conditions to meet life history requirements year-round. Vegetation in these habitats are primarily composed of native plants. **FW-DC-WLMU-03.** Pacific yew plant communities and timbered areas with mature yew-wood thickets provide moose winter habitat.	**MON-WLMU-01** What natural disturbances or management actions have occurred to maintain or increase big game habitat? Big game species: elk, moose, deer, goat, bighorn sheep *(ii)(v) and FSH 1909.12 Section 32.13f	**Big Game Habitat** Acres and types of actions taken to restore, improve habitat Acres, number, and types of actions in MA2 (ID roadless areas) Number, acres, of wildland fires for resource benefits Number of acres treated in Pacific yew plant communities and timbered areas with mature yew-wood thickets Number of activities that impacted pacific yew plants or communities.	FIA IDFG data FACTS INFRA WIT (biennial)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-WLMU-04. Natural processes contribute to the mosaic of habitats needed by ungulates. **MA2-DC-IRA-05**. Habitat configuration, distribution, and composition provide ecological conditions that increase elk herds. **FW-GDL-WLMU-02.** In order to reduce disturbance to wintering big game, management activities should be scheduled to minimize disturbance in big game winter range between December 1st and March 15th.			
FW-DC-WLMU-02. At the Forest scale, habitat for wild ungulates provides conditions to meet life history requirements year-round. Vegetation in these habitats is primarily composed of native plants. **FW-STD-WLMU-01.** When closing routes to motorized use, to ensure benefits to wildlife habitat are realized, include measures to sufficiently exclude motorized use on closed routes.	**MON-WLMU-02** What management actions have occurred to maintain or improve mountain goat habitat? *(ii)(v)	**Mountain Goat** Acres of habitat that enhanced mountain goat habitat Number of routes closed to motorized use and measures used to exclude motorized use	PALS INFRA
FW-DC-WLMU-06. Habitat conditions maintain or improve elk habitat use and provide nutritional resources sufficient to support productive elk populations. The amount and distribution of early seral nutritional resources are consistent with the desired conditions in the Forestlands and Meadows, Grasslands, and Shrublands sections. Elk habitat quality is not degraded by invasive plant species or motorized access. **FW-DC-WLMU-07.** Elk habitat is distributed throughout the planning area to support elk populations. Motorized access does not preclude use of high-quality nutritional resources or winter ranges. **MA3-DC-WLMU-01.** Ten to twenty percent of Management Area 3 is in a condition that provides moderate or high-quality nutritional forage for Elk. Areas with moderate or high-quality forage are distributed across the management area, with a portion of the moderate or high quality nutritional forage occurring greater than 0.5 miles from open motorized routes. **MA2-DC-WLMU-01.** Ten to twenty percent of Management Area 2 is in an early seral condition to provide high quality forage for elk. Areas with high	**Mon-WLMU-03** What is the change in high-quality nutritional resources usable by elk of each HUC12 watershed forest wide and within each MA? **MON- WLMU-04** Are projects increasing high and moderate quality forage resources usable for elk? **MON- WLMU-05** Have natural disturbance or management actions contributed to maintaining or improving nutrition of elk habitat in MA2? ***(ii) and FSH 1909.12 Section 32.13f**	**Nutritional Resources for Elk** Change in and amount of nutritional (≥2.6 kcal/g dietary digestible energy) resources within and outside ½ mile from a road within each HUC12 Watershed forestwide and by MA. Acres of vegetation treatment creating early seral openings within modeled moderate or high-quality nutrition potential both within and outside of ½ mile from open motorized routes forestwide and within MA. Acres of wildland fire creating early seral openings within modeled moderate or high-quality nutrition potential both within and outside ½ mile from open motorized routes forestwide and within MA. Number of projects or actions that increased high quality forage resources for elk. Acres of modeled high and moderate nutrition potential within ½ mile of new open motorized access.	FACTS Elk Nutrition Potential Model GIS layer Existing Elk Nutrition Layer (Biennial) INFRA Roads and Motorized Trails data Project decision documents

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
quality forage are distributed across the management area. **MA2-OBJ-WLMU-01**. In Management Area 2, 10,000 to 15,000 acres are improved every 5 years through vegetative treatments and wildland fire to improve nutritional forage value for elk. **MA2-GDL-WLMU-01.** To increase available habitat for elk, vegetation management projects designed to improve elk habitat should increase available summer forage in areas of moderate or high nutrition potential.		Amount of high and moderate nutrition improved by reducing open motorized access resulting in increased moderate and high-quality nutrition outside of ½ mile from an open motorized route.	
MA1-OBJ-WLMU-01. Treat 500 acres of invasive weeds in elk habitat every 5 years.	**MON-WLMU-06** Have management actions contributed to maintaining or improving invasive weed infestations of elk habitat in MA1? ***(ii) and FSH 1909.12 Section 32.13f**	**Elk Habitat (Focal Species)** Acres of invasive species treated (accomplished acres) in elk habitat in MA1 by treatment category (revegetation, biocontrol, herbicide, manual, etc.)	TESP-IS (Biennial)
MA2-DC-WLMU-02. Areas at least 5,000 acres in size exist without motorized access open to the public to maintain habitat use by elk. **MA2-STD-WL-01**. New motorized trails open to the public should not be authorized in Idaho Roadless Areas unless there are adjacent areas of 5,000 acres without open motorized system routes. This standard does not apply to: Community Protection Zones (CPZs) as defined by the Idaho Roadless Rule, areas with existing motorized access that are currently less than 5,000 acres; or existing trails that are relocated or reconstructed to mitigate negative impacts to ecological resources.	**MON-WLMU -07** How has the travel system affected secure habitat for elk? ***(ii)(iii) and FSH 1909.12 Section 32.13f**	**Elk Habitat (Focal Species)** Change in acres and number of secure habitat patches 5,000 acres or larger within Management Area 2 reduced by new motorized trails.	Project decision documents Elk Nutrition Potential Model Existing Elk Nutrition Model GIS layer FACTS INFRA Fire Perimeter layer (Biennial)
MA3-GDL-WLMU-01. To improve vital rates of female elk by increasing predicted percent body fat, treatments designed to improve elk habitat should focus on one or more of the habitat covariates likely to improve predicted cow elk body fat condition while also considering distance form open motorized routes.	**MON- WLMU-09** What is the change in predicted percent body fat of cow elk within HUC12 watersheds Forestwide and	**High Quality Forage Body Fat** Change in predicted percent body fat within HUC12 watersheds forestwide and by MA. Number and types of factors used during project work to	FACTS INFRA Supervisor's Office Records Elk Nutrition Potential Model Existing Elk Nutrition Layer

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA3-OBJ-WLMU-01. Improve habitat use for elk on 19,000 acres in Management Area 3 with moderate or high potential nutritional resources within 15 years. Treatments are preferentially focused on areas more than one half mile from roads open motorized system routes.	within each management area ? Which actions were taken to change predicted percent body fat? *(ii) and FSH 1909.12 Section 32.13f	increase predicted percent body fat of elk during projects.	GIS layer Road and Motorized Trail INFRA (Biennial)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Human Uses of Nez Perce-Clearwater

Cultural Resources (CR)

Table 13. Monitoring Elements for Cultural Resources (CR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-CR-01. Historic properties with high National Register integrity are available for present and future generations. These well-maintained properties connect communities with ancient places having a deep history, as well as sites associated with the recent past. Archaeological and historical research contributes to knowledge about history and provides a valuable perspective on past climate and environment. Traditional cultural properties and other culturally significant areas identified by tribes and local communities provide tangible links to historically rooted beliefs, customs, and practices. **FW-DC-CR-02.** Historic properties and cultural landscapes provide a greater understanding and appreciation of local, regional, and national history. Sites listed on the National Register of Historic Places add to the inventory of significant historical sites in Idaho. Restored historic buildings placed on the Forest Service facility rental program add to forest recreation program capacity and diversity and generate revenue. Historic Forest Service administrative buildings reflect agency history, identity, and function.	**MON-CR-01** What is the status of National Register Integrity? *(vii)	**Historic Properties** Number and type of enhancement projects that improved National Register integrity	INFRA FACTS (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Municipal Watersheds and Source Water Protection Areas (MWTR)

Table 14. Monitoring Elements for Municipal Watersheds and Source Water Protection Areas (MWTR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-MWTR-01. Lands that contribute to municipal watershed[1] and source water protection areas are in a condition that contributes to consistent delivery of clean water, meets the supply need of users, and meets or exceeds State of Idaho water quality standards. **FW-STD-MWTR-01.** Management activities conducted in source water protections areas shall be consistent with source water protections and goals. Short-term effects from activities in source water protection areas may be acceptable when those activities support long-term benefits to water quality.	**MON-MWTR-01** What actions have occurred in municipal watersheds and source water protection areas? *(i) and FSH 1909.12, Section 32.13f	**Municipal watersheds and source water protection areas** Acres, locations, and types of management actions or natural disturbances that occurred in municipal watersheds and source water protection areas Number of new municipal watersheds established Number and locations of stream reaches by subbasin listed as impaired in the IDEQ 303(d)/305(b) integrated report within source water protection areas Miles of 303(d) listed waters within source water protection areas Miles of waters under an approved total maximum daily load (TMDL) plan within source water protection areas	INFRA FACTS NRM-WIT (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

[1]The definition does not include communities served by a well or a confined groundwater aquifer that is unaffected by Nez Perce-Clearwater activities.

Sustainable Recreation (REC and ARREC)

Table 15. Monitoring Elements for Sustainable Recreation (REC and ARREC)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-ARREC-01. Recreation facilities and their use, including trails and dispersed sites, have minimal impacts on aquatic resources, including threatened and endangered species, designated critical habitat, and aquatic species of conservation concern. **FW-OBJ-REC-01.** Annually maintain to standard a minimum of 30 percent of National Forest System trail miles. **FW-OBJ-REC-02.** Reduce deferred maintenance of trails by five percent, every five years.**FW-OBJ-ARREC-01**.	**MON-REC-01** Are recreation facilities system trails maintained to standard and has deferred maintenance been reduced? *(v)(vii) **MON-REC-02** Are trails and dispersed sites	**System Trail Improvement and Maintenance** Number of trail fords removed or upgraded Trail numbers and miles of system trails maintained to standard annually. Trail numbers and miles of deferred maintenance accomplished. Percent reduction in deferred maintenance of trails (reported every five years)	INFRA (annually) (5 years) When becomes available

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
Mitigate, remove, or relocate a minimum of two existing dispersed recreation sites from within riparian management zones to outside of riparian management zones every 5 years.	being maintained or improved to have minimal impacts on aquatic resources? *(i)(ii)(iv)(vii)	**Dispersed Site Management** Number of dispersed sites mitigated, removed, or relocated	
FW-DC-REC-09. Nez Perce-Clearwater's trail system provides an array of trail classes for a variety of designed uses. Trail systems connect local communities through the Nez Perce-Clearwater, facilitating long-distance travel, as well as loop opportunities to accommodate short-term, day use activities.	**MON-REC-03** What trail classes and designed uses are available for public recreational use? *(v)(vii)	**Trail System** Miles of trail-by-trail class and designed use are maintained to standard for summer and winter public use.	INFRA (annually)
FW-DC-REC-13. Dispersed recreation sites are available in desirable locations, are socially and environmentally sustainable, and are compatible with the recreation opportunity spectrum classes and travel management designations.	**MON-REC-04** To what extent are litter, human waste, and impacts to resources found at selected recreation dispersed sites? *(v)(vii)	**Dispersed Site Maintenance** Litter or human waste found or not found in selected recreation dispersed sites. Type and extent of resource damage in selected recreation dispersed sites Actions implemented to reduce litter and human waste at selected dispersed sites Actions implemented to mitigate resource damage at recreation dispersed sites	PALS Through selected NEPA projects
FW-DC-REC-02. Recreation infrastructure, such as campgrounds, day-use areas, and trails, facilitates visitor enjoyment of the opportunities and experiences provided by the Nez Perce-Clearwater. **FW-DC-REC-03.** Recreation opportunities adapt to the changing social and cultural needs of the Nez Perce-Clearwater to foster a sense of place and societal relevance to natural and cultural landscapes. **FW-DC-REC-05.** Recreation activities are available to contribute to the local economy, community stability, quality of life, and diverse lifestyles in the area throughout the year.	**MON-REC-05** Do Forest recreation facilities, infrastructure and available opportunities support desired visitor use and user satisfaction consistent with land management plan desired conditions? *(v)(vii)	**Developed Sites Satisfaction** Summary of Use, Satisfaction, and Economic Ratings obtained from National Visitor Use Monitoring Program data collection	NVUM NVUM Activities NVUM Satisfaction Indicators NVUM Economic Indicators (5-year]

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Scenery (SCENERY)

Table 16. Monitoring Elements for Scenery (SCENERY)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-SCENERY-01. The Nez Perce-Clearwater's scenery reflects the natural and cultural range of variability within the landscape's varied ecological regions in relation to viewing contexts and expectations for highly valued viewsheds. This is reflected in the scenic character descriptions. **FW-DC-SCENERY-02**. The Nez Perce-Clearwater's scenery, as described by the scenic integrity objectives, reflects a range of variation that considers social and economic values, ecosystem processes, resilient landscapes, and communities. **FW-GDL-SCENERY-01.** Considering the scenic resources on Nez Perce-Clearwater, management actions should be designed consistent with the assigned scenic integrity objectives. **FW-GDL-SCENERY-04**. Management activities should be designed to rehabilitate areas with very low existing scenic integrity to support achievement of the scenic integrity objectives and long-term management and stewardship of the scenic character of the area.	**MON-SCENERY-01** Is scenic quality consistent with the scenic character descriptions and scenic integrity objectives? * (vii)	**Scenic Integrity Objectives** Number of NEPA decisions that move towards or meets Scenic Integrity Objective Number of decisions that require amending the Scenic Integrity Objective Number of Scenic Integrity Objectives met and not met (post implementation of any management activity affecting scenery)	Forest Records PALS (annual)
FW-GDL-SCENERY-02. When practicable, construction or reconstruction of facilities or structures, including those authorized under special use permits, should be consistent with the Forest Service architectural character guidance (for example, Built Environment Image Guide) for the Nez Perce-Clearwater natural setting and province. **FW-GDL-REC-01**. To compliment the natural setting, the built environment and resource conditions at new and reconstructed developed recreation sites, administrative facilities, and trails should be consistent with applicable scenic integrity objectives and the Forest Service Built Environment Image Guide. New and reconstructed trails should also be compatible with trail management objectives.	**MON-SCENERY-02** Are the built environment and resource conditions at developed recreation sites, administrative facilities, and trails consistent with scenic integrity objectives, the Build Environment Image Guide, and trail management objectives as appropriate? *(vii)	**Built Environment and Trails** Number of recreation, administrative, and trail construction and reconstruction projects that complied and number of projects that did not comply with scenic integrity objectives, the Build Environment Image Guide, and trail management objectives	PALS Forest Records (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Public Information, Interpretation, and Education (ED)

Table 17. Monitoring Elements for Public Information, Interpretation, and Education (ED)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-ED-02. A variety of educational and interpretive opportunities are available as appropriate for the development scale of the sites and through a variety of methods to reach the broadest audience. New and emerging technologies (for example, electronic media, mobile device based) are a source of interpretation to reach a variety of people of different ages and cultures.	**MON-ED-01** To what extent are new emerging technologies used in interpretation to reach a broad demographic?	**Emerging Technology Application** Number of new outreach actions using emerging technologies Number of presentations or events demonstrating use of technology to people of different ages and cultures Number of hits on websites Number of apps that are downloaded	Supervisors Office Records (annual)
FW-DC-ED-03. Opportunities are available for educators in local communities to learn about local natural resource issues and partner with the Nez Perce-Clearwater to deliver place-based outdoor learning opportunities.	**MON-ED-02** To what extent are outdoor learning opportunities provided?	**Emerging Technology Application** Number of outdoor learning opportunities provided	Supervisors Office Records NICE (annual)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Infrastructure (INF and ARINF)

Table 18. Monitoring Elements for Infrastructure (INF and ARINF)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-OBJ-INF-03. Every 2 years, complete one facilities project to improve energy efficiency or safety.	**MON-INF-01** What is the status of facilities projects that improve energy efficiency?	**Energy Efficient Facilities** Number of energy efficient facilities projects Changes in utility bill energy usage rates (by site)	INFRA Utility Bills CAT (annual)
FW-DC-ARINF-01. The transportation system has minimal impacts on aquatic and riparian conditions through reduced hydrologic connectivity of roads to streams, lower sediment delivery to streams, reduced road impact to floodplains, and improved aquatic organism passage, where transportation infrastructure affects these features.	**MON-INF-02** What is the status of road improvement and maintenance across the Nez Perce-Clearwater?	**System Road Improvement and Maintenance** Miles, location, and types of road reconstruction or road improvements Miles of operational maintenance level 2 to 5 roads maintained Number of culverts removed or upgraded	INFRA CAT

FW-DC-ARINF-02. The transportation network is resilient to the effects of climate change, including the ability to accommodate increased runoff and peak flows that may exceed historic streamflow events. **FW-STD-ARINF-07.** In the Conservation Watershed Network and HUC12 subwatersheds with Endangered Species Act critical habitat or listed aquatic species, when constructing or reconstructing roads, projects shall result in a net decrease in the hydrologic connectivity of the road system and stream channel network. Treatment priority shall be given to roads or road segments that pose the greatest relative ecological risk to riparian and aquatic ecosystems. The net decrease is measured by project area. **FW-OBJ-INF-01.** Complete 600 miles of road work, such as reconstruction; re-routing; road improvements; decommissioning; or placing roads in intermittent stored service, every 5 years. Priorities shall include reducing effects on desired aquatic and riparian conditions from chronic sediment delivery or potential future road prism failures, including previously decommissioned roads where drainage features have failed. **FW-OBJ-INF-02.** Annually maintain 1,400 miles of operational maintenance level 2 through 5 roads.	*(i)(ii)(iv)(vi)(vii)	Amount of net decrease in hydrologic connectivity of the road system by project area in CWN watersheds and HUC12 subwatersheds with Endangered Species Act critical habitat or listed aquatic species, if road construction or reconstruction actions have been implemented **Climate Change Adaptation** Number and type of climate change adaptation strategies related to roads have been incorporated into project development	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Land Ownership and Land Uses (LND)

Table 19. Monitoring Elements for Land Ownership and Land Uses (LND)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-LND-01. Land ownership, rights-of-way, and conservation easements provide access for recreation and facilitate restoration or conservation of high value resources, including habitat for at-risk species and significant cultural sites. **FW-DC-LND-03**. Road and trail rights-of-way provide reasonable public and administrative access to National Forest System lands.	**MON-LND-01** What lands management actions have occurred to facilitate Land Management Plan desired conditions? *(vii)	**Lands Management** Number, types, and locations of lands actions (for example, ownership clarifications, land surveys, non-contiguous NFS access improvements, etc.)	Lands and Lands Use database (biennial)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-LND-02. Surveys and markings of Nez Perce-Clearwater's property boundaries are prioritized adjacent to private lands, followed by boundaries of areas with special restrictions, such as designated wilderness areas.	**MON-LND-02** What is the status of management actions working to resolve trespass and encroachments? *(vii)	**Lands Trespass and Encroachment** Number of trespass/encroachments identified, resolved, or working towards resolution	TCEMS ALPS (biennial)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Ecosystem Services

Table 20. Monitoring Elements for Ecosystem Services

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-GDL-ES-01. To provide for social and economic sustainability of rural communities, access to activities such as recreation, hunting, fishing, gathering, egress and wildfire management should continue to be provided for on routes or in areas designated as open to motorized use in the summer and winter. If a route is identified as adversely affecting aquatic ecological values, rerouting and route improvement should be considered prior to closure, to preserve motorized access opportunities. If a route or area needs to be closed, alternate motorized access to maintain social and economic sustainability of rural communities should be provided.	**MON-ES-01** Has public access continued to be provided for social and economic benefit to the public? *(v)(vii) and FSH 1909.12, Section 32.13f	**Road Access** Miles of FS system road closed to motorized public use Miles of FS system road rerouted to maintain public motorized access Miles of FS system road mitigated for adverse effects to aquatic ecological values Miles of stream improved from mitigation or reroute Number, miles or acres, and type of new motorized routes constructed to provide public motorized access	INFRA NRM-WIT

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Production of Natural Resources

Timber (TBR)

Table 21. Monitoring Elements for Timber (TBR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-TBR-01. National Forest System lands of the Nez Perce-Clearwater contribute to a sustainable flow of saw timber and non-saw timber through vegetation treatments intended to restore resilient ecosystem structure and function. **FW-OBJ-TBR-01.** Offer 190–210 million board feet timber sale per year. **FW-OBJ-TBR-02**. Offer 37–43 million cubic feet in wood sale per year.	**MON-TBR-01** To what extent are commercial timber sale harvest opportunities provided to the regional timber markets? *FSH 1909.12 Section 32.13f	**Timber sales** Number of timber sale contracts offered for sale Amount of PTSQ in million board feet offered per fiscal year Amount of PWSQ in million cubic feet offered per fiscal year Quantity of salvage volume offered	TIMS (annual)
FW-DC-TBR-02. Restoration treatments and timber harvesting opportunities contribute to business and employment opportunities. Productive timber lands continue to support traditional lifestyles and generational ties to the land. A sustainable mix of timber products is offered under a variety of harvest, contract methods, and authorities to contribute to economic and social sustainability in our communities.	**MON-TBR-02** To what extent are restoration treatments contributing to local and regional economies? *(ii) (vii) and FSH 1909.12 Section 32.13f	**Restoration Treatments** Number and types of contracts awarded (for example, timber sales, stewardship, salvage, small business set aside sales, etc.)	TIMS (annual)
FW-STD-TBR-04. Timber harvest activities shall only be used when there is reasonable assurance of restocking within five years after final regeneration harvest or to meet other desired conditions (Table 21). Restocking level is prescribed in a site-specific silvicultural prescription for a project treatment unit and is determined to be adequate depending on the objectives and desired conditions for the plan area. In some instances, such as when lands are harvested to create openings for fuel breaks and vistas, to prevent encroaching trees, or to create or improve wildlife habitat, it is adequate to restock at lower numbers or not to restock. Where harvest is performed to meet	**MON-TBR-03** To what extent are restocking activities meeting certified status? *(ii)(vii)(viii)	**Restocking** Number of treatment units or stands certified Number of treatment units or stands progressing Number of treatment units or stands failed	FACTS (biennial)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
vegetation desired conditions on lands not suitable for timber production, it is adequate to restock at lower levels, so long as desired conditions are met			
FW-STD-TBR-06. The maximum opening size created by clearcutting, seed tree cutting, shelterwood seed cutting, or other cuts designed to regenerate an even-aged stand of timber in a single harvest operation shall be 40 acres. This standard applies to newly created harvest openings on National Forest System lands only and need not consider existing recently created opening on National Forest System lands, adjacent private lands, or other agency lands. Exceptions to the 40-acre maximum opening size standard may occur when determined necessary to help achieve desired ecological conditions for the plan areas. The desired conditions include providing for forest patterns, patch sizes and forest resilience both in the short- and long-term, as described in Section 2.1.3. The maximum opening size exception for the Nez Perce-Clearwater is 207 acres.	**MON-TBR-03** To what extent are harvest openings exceeding the maximum opening size? *(ii)(vi)(vii)	**Harvest Opening Maximum Exceptions** Number of exceptions requested and number granted to exceed maximum opening size Size of each exception requested and granted	FACTS (biennial)
FW-STD-TBR-09. Clearcutting will be used only where an interdisciplinary review has occurred, and the Responsible Official has concluded one of the following situations exist: • Where conducting regeneration harvest in a stand dominated by tree species of an undesired dominance type and shade intolerant tree species are planned for regeneration. Clearcutting may be used where there are insufficient numbers of the desired species to retain as a seed source for the new stand ;• Where conducting regeneration harvest in a stand of lodgepole pine; • Where conducting regeneration harvest and most or all overstory trees are infected by insects or disease, and where clearcutting is the optimal silvicultural system of ensuring future stands are not infected, as in the case of dwarf mistletoe; Where	**MON-TBR-04** To what extent are even-aged regeneration harvest methods determined to be the optimum system to move towards desired conditions? *(ii), (vi), (vii)	**Even-aged Regeneration Silviculture** Percentage of treatment acres that used even-aged regeneration harvest prescriptions	FACTS (biennial)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
a site-specific finding determines that clearcutting is the optimum system to move towards desired conditions. **FW-STD-TBR-10.** Seedtree harvest will be used only where an interdisciplinary review has occurred and the Responsible Official has concluded one of the following situations exist: •Where conducting regeneration harvest and shade intolerant tree species are planned for regeneration. Seedtree cutting may be used where a sufficient number of disease-free individuals of the desired species are available to retain as a seed source for the new cohort; • Where a site-specific finding determines that seedtree cutting is the optimum system to move towards desired conditions. **FW-STD-TBR-11.** Shelterwood harvest will be used only where an interdisciplinary review has occurred and the Responsible Official has concluded one of the following situations exist: •Where conducting regeneration harvest and shade intolerant tree species are planned for regeneration. Shelterwood cutting may be used where there are concerns over frostiness or high insolation rates on a site; • Where a stand of root disease susceptible trees exists on soils where slope stability is a concern. Shelterwood harvest may be used to produce a cohort of root disease tolerant species; • Where a site-specific finding determines that shelterwood cutting is the optimum system to move towards desired conditions.			
FW-STD-TBR-12. The quantity of timber that may be sold per decade will be less than or equal to ten times the annual sustained yield limit departure limits (See opening paragraph above). Salvage and or sanitation harvest of trees substantially damaged by fire, windthrow, or other catastrophe or	**MON-TBR-05** Is the quantity of timber sold less than or equal to 10 times the annual sustainable yield limits?	**Sustainable Yield Limits** Cubic feet per year and per decade of timber sold (defined by the first decade the plan is signed)	FACTS (annually, until decadel report)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
in imminent danger from insect or disease attack may be harvested over and above the sustained yield limit.	*(vii) and FSH 1909.12 Section 32.13f		

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Livestock Grazing (GRZ and ARGRZ)

Table 22. Monitoring Elements for Livestock Grazing (GRZ and ARGRZ)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
FW-DC-GRZ-01. Within the planning area, the Nez Perce-Clearwater provides forage for domestic livestock grazing consistent with the capacity of the land to produce sustained forage for multiple uses. **FW-DC-GRZ-02.** Transitory forage within grazing allotments is available for livestock grazing following the reduction in conifer overstory from fire and timber harvest. **FW-DC-GRZ-03.** Livestock grazing on the Nez Perce-Clearwater contributes to agricultural businesses and local employment opportunities, as well as supporting traditional lifestyles. **FW-OBJ-GRZ-01.** Annually provide conditions which support approximately 29,800 to 34,400 animal unit months, recognizing that allotment site-specific conditions may require adjustments in permitted or annually authorized animal unit months. Examples of conditions that may result in adjustments include wildland fire, drought, vacant allotment conversions, vacant allotment closures, or increases in transitory forage within grazing allotments.	**MON-GRZ-01** Are annual Animal Unit Months (AUMs) authorized at desired AUM objectives? *(vii) and FSH 1909.12 Section 32.13f	**Animal Unit Month** Annual AUMs reported by Forest and by allotment Acres of vegetation management that increase transitory forage within allotments Number, acres, and locations of treatments that maintain or increase native plant communities in grasslands within allotments Acres treated in grasslands to reduce conifer encroachment within allotments Acres of invasive plant species infestations within allotments Acres of invasive plant species infestations treated within allotments	NRM-Range FACTS TESP-IS (annually)
FW-GDL-GRZ-02. New or revised allotment management plans should include measures to protect listed threatened and endangered occupied habitat during the plant species' active growth period[1] as needed. New or revised allotment management plans should evaluate the habitat requirements for at-risk and culturally important botanical species and adjust grazing management prescriptions as necessary to ensure	**MON-GRZ-02** Are actions being implemented to protect listed threatened and endangered plant occupied habitat? *(vii)	**Occupied Habitat** Presence/absence of existing threatened or endangered plant occurrences by allotment Population trends and response to grazing management, evaluated at species specific level using species specific methods (for example, # stems, # individuals, acres of occupied habitat)	Annual Operating Instructions Allotment Administration Summaries (annually)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
plant population viability and availability across the planning area.		Location and types of specific measures to protect occupied habitat	
FW-GDL-GRZ-03. To allow forage plants to maintain vigor, root development, and soil cover, general upland forage utilization should not exceed 45 percent. Specific utilization guidelines should be applied during grazing allotment authorization or reauthorization, which consider variables such as ecological condition of the vegetation, timing and duration of use, and other resource values in the area. Forage utilization values should be adapted over time based on long-term monitoring and evaluation of conditions and trends.	**MON-GRZ-03** Are rangelands being maintained or moving towards desired resource condition in response to livestock grazing management? *(vii)	**Upland Forage Utilization** Upland forage utilization measurements by pasture, by allotment Changes in vegetation composition and cover by allotment and summarized at the Forest scale	Allotment Administration Summaries (annually) FIA (five years)
FW-STD-ARGRZ-01. Livestock grazing shall be authorized or reauthorized only when measures are included in the authorization to avoid or mitigate adverse effects to fish and riparian habitat that may result from grazing practices. Where livestock grazing is found to prevent or retard attainment of aquatic and riparian desired conditions, grazing practices shall be modified by practices such as adjusting accessibility of riparian areas to livestock, length of grazing season, stocking levels, or timing of grazing. **FW-STD-ARGRZ-02.** Where livestock trailing, bedding, watering, salting, loading, off road vehicle use for managing or gathering livestock, and other related activities in riparian management zones are adversely affecting aquatic resources, annual operating instructions shall include measures to mitigate or relocate to other areas or times. **FW-STD-ARGRZ-03.** During livestock grazing authorizations, reauthorizations, or updates to annual operating instructions, include measures to prevent trampling of fish redds of federally listed fish species and species of conservation concern.	**MON-GRZ-04** Are measures incorporated into annual operating instructions to reduce impacts to aquatic resources? *(i)(ii)(iv)	**Annual operating instructions** Number and type of grazing practice modifications incorporated into reauthorizations and new authorizations to reduce impacts to aquatic resources List of measures incorporated into annual operating instructions to reduce impacts to aquatic resources reported by allotment Number of active livestock grazing allotments containing streams with ESA or SCC fish species Number of active annual operating instructions for livestock grazing permits for allotments containing streams with ESA or SCC fish species that included measures to prevent trampling of ESA and SCC fish redds Types of measures incorporated into annual operating instructions to prevent trampling of ESA and SCC fish redds	Forest records Annual Operating Instructions NRM-Range (annually)
FW-GDL-ARGRZ-01. To maintain or improve riparian and aquatic conditions and achieve riparian desired conditions over time through adaptive management, new grazing authorizations and reauthorizations that	**MON-ARGRZ-05** Are end of season stubble heights meeting requirements	**Aquatic and Riparian Condition** Total number of active livestock grazing allotments containing low gradient (approximately <3%) streams	Allotment Administrative Summaries (annual)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
contain low gradient, alluvial channels should require that end-of-season stubble height be 10 to 15 cm (4 to 6 inches) along the greenline. However, application of the stubble height numeric value range should only be applied where it is appropriate to reflect existing and natural conditions for the specific geo-climactic, hydrologic, and vegetative conditions where it is being applied. Alternative use and disturbance indicators and values, including those in current ESA consultation documents, may be used if they are based on current science and monitoring data and meet the purpose of this guideline. Long-term monitoring and evaluation should be used to adapt this numeric range or the use of other indicators.	along the greenline on low gradient streams? *(i)(ii)(iv)	Average end of season stubble height (cm/inches) along the greenline for each allotment containing low gradient streams Number of active allotments that did and did not meet end of season stubble height (cm/inches) requirements along the greenline for each allotment containing low gradient streams	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

[1]Active growth period may be variable year to year depending on local climatic conditions.

Designated, Recommended, Geographic and Other Special Areas

Designated Wilderness (WILD)

Table 23. Monitoring Elements for Designated Wilderness (WILD)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA1-DC-WILD-01. Natural ecological processes and disturbances (for example, succession, wildfire, avalanches, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. **MA1-DC-WILD-02.** Wilderness areas provide opportunities for visitors to experience solitude and unconfined and primitive recreation with a limited amount of human influence. **MA1-STD-WILD-01.** Management activities within designated wilderness areas shall preserve wilderness character as required by the Wilderness Act, each wilderness area's enabling legislation and its specific management plan.	**MON-WILD-01** Have management activities in designated wilderness areas preserve natural environment, wilderness character, and opportunities for solitude, and primitive and unconfined recreation? *(ii) (vii)	**Wilderness Character** Score on National Wilderness Stewardship Performance elements related to the five qualities of wilderness character: Untrammeled, Natural, Undeveloped, Solitude or Primitive and Unconfined Recreation, and Other Features of Value Management actions implemented to get to a score of 60 or better on the National Wilderness Stewardship score sheet. Score on National Wilderness Stewardship Performance elements related to solitude and primitive and unconfined recreation	INFRA (annual) Minimum Requirement Analysis Worksheets Wilderness Character Monitoring Report National Wilderness Stewardship Performance Score sheet Annual

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Recommended Wilderness (RWILD)

Table 24. Monitoring Elements for Recommended Wilderness (RWILD)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA2-DC-RWILD-01. Recommended wilderness areas maintain their existing wilderness characteristics to preserve opportunities for inclusion in the National Wilderness Preservation System.	**MON-RWILD-01** What changes have occurred that adversely affect apparent naturalness? **MON-RWILD-02** What activities have occurred that adversely affect opportunities for solitude or primitive and unconfined recreation? *(ii),*(vii)	**Wilderness Characteristics** Number, kind, extent, and outcomes of management activities that have occurred in recommended wilderness areas. Number and type of unauthorized use of mechanized or motorized equipment.	INFRA TESP-IS Partnership reports LEO reports (5 years)
MA2-OBJ-RWILD-01. Initiate site-specific planning within five years to ensure authorized activities within recommended wilderness areas are consistent with plan suitability components.	**MON-RWILD-04** What actions have been taken to remove activities or uses that are not consistent with the Land Management Plan ROD *(ii),*(vii)	**Allowable Use** Management action and status to remove uses that are not consistent with the Land Management Plan Record of Decision	INFRA

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Designated Wild and Scenic Rivers (DWSR)

Table 25. Monitoring Elements for Designated Wild and Scenic Rivers (DWSR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA1-DC-DWSR-01. Designated wild, scenic, and recreational rivers retain their free-flowing condition, water quality, and	**MON-DWSR-01** Are management activities consistent with	**Management Activities** Number, type, location, and effects of management activities within DWSR and consistency with	INFRA (annually) PALS

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
outstandingly remarkable values for which the river was designated. **MA1-STD-DWSR-01.** Management activities in designated wild and scenic river corridors shall comply with their individual comprehensive river management plans. **MA1-STD-DWSR-02.** Management activities in designated wild and scenic river corridors shall protect and enhance their free-flowing character, water quality, and outstandingly remarkable values for which the river was designated.	the Comprehensive River Management Plan for the DWSR? **MON-DWSR-02** Do management activities maintain free-flowing character, water quality, and outstandingly remarkable values of the DWSR? *(ii) (vii)	comprehensive river management plans. Section 7 analysis	

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Eligible and Suitable Wild and Scenic Rivers (E&SWSR)

Table 26. Monitoring Elements for Eligible and Suitable Wild and Scenic Rivers (E&SWSR)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA2-DC-E&SWSR-01. Eligible and Suitable wild, scenic, and recreational rivers retain their free-flowing character,preliminary classification and the outstandingly remarkable values that provide the basis for their eligibility or suitability for inclusion in the System.	**MON-SWSR-01** Have management actions maintained free flow, preliminary classification, and outstandingly remarkable values of the E&SWSR? *(ii), (vii)	**Outstandingly Remarkable Values** Number, type, location, and effects of management actions on free-flow, preliminary classification and ORVs within E&SWSR corridor.	INFRA FACTS? PALS (annually)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Idaho Roadless Areas (IRA)

Table 27. Monitoring Elements for Idaho Roadless Areas (IRA)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA2-DC-IRA-01. Roadless areas maintain the roadless characteristics and themes assigned to them in the Idaho Roadless Rule. MA2-DC-IRA-02. The composition, structure, and pattern of vegetation reflect natural disturbances and follow Idaho Roadless Rule themes as assigned.	**MON-IRA-01** Have management actions occurred in Idaho Roadless Rule areas? **MON-IRA-04** Have Idaho Roadless Rule theme or boundary changes occurred? *(ii), (vii)	**Management Actions** Number and type of management actions in Idaho Roadless Rule areas by theme Number and type of Idaho Roadless Rule theme changes	FACTS PALS (annually)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Research Natural Areas (RNA)

Table 28. Monitoring Elements for Research Natural Areas (RNA)

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA2-DC-RNA-01. Designated and proposed Research Natural Areas maintain a representation of natural systems found on the Nez Perce-Clearwater as a baseline for research, monitoring, and education by the agency, academia, and public interests. Wildfire, insects, and pathogens, along with other processes and disturbances, continue to affect vegetation, reflecting the dynamic nature of the systems they represent. Research Natural Areas contribute to ecological sustainability and biological diversity. The names and acreage of the designated and proposed Research Natural Areas are listed in the Research Natural Areas section of the Land Management Plan.	**MON-RNA-01** What is the status of RNA establishment? **MON-RNA-02** Have management actions occurred in RNAs? *(ii) (vii)	**Research Natural Areas** Number of establishment records developed for proposed RNAs Number, kind, extent, and outcomes of suitable management activities that have occurred in RNAs	Supervisor's Office Records PALS (2 years)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Lolo Trail National Historic Landmark (NHL) Geographic Area

Table 29. Monitoring Elements for the Lolo Trail National Historic Landmark (NHL) Geographic Area

Selected Plan Components	Monitoring Question	Indicator(s) Measure(s)	Data Source/Storage (Interval of Data Collection)
MA1-GL-NHL-01. Lolo Trail National Historic Landmark no longer considered "at risk" by NPS because natural setting of Landmark is managed to benefit its integrity. **MA1-DC-NHL-01.** The national register integrity of the Lolo Trail National Historic Landmark is considered high to retain its status as a National Historic Landmark and convey its exceptional value and qualities in illustrating the heritage of the United States.	**MON-NHL-01** Has the National Register integrity of the National Historic Landmark been compromised i? *(vii)	**National Historic Landmark** Number, types, and impacts of activities on National Historic Landmark's National Register integrity	INFRA FACTS (annually)

*2012 Planning Rule required questions element 1-8 [36 CFR 219.12(a)(5)] or FSH 1909.12, Section 32.13f - Social, Economic, and Cultural Sustainability

Appendix 4 Management Approaches

Introduction

This appendix describes some of the possible actions and potential management approaches and strategies the Nez Perce-Clearwater National Forests might undertake to maintain or make progress towards achieving the desired conditions described in the Land Management Plan. It is also intended to help clarify how the planned outcomes (that is, objectives, desired conditions) in the plan might be achieved. The potential management approaches included here may be used to inform future proposed and possible actions. It does not serve as a "to do list" of projects; it does not suggest expected locations or dates of implementation; and it is not an all-inclusive list.

This appendix provides information by individual resource areas that is intended to clarify the intent and provide suggested means to achieve specific Land Management Plan direction and components related to each resource area. Potential management approaches and strategies presented in this section may include suggestions for on-the-ground implementation, analysis, assessment, inventory, or monitoring, as well as partnership and coordination opportunities the Nez Perce-Clearwater is suggesting might be helpful in achieving its desired conditions. The potential approaches and strategies are not intended to be all-inclusive, nor are they commitments to perform specific actions. The types of actions that are exemplified in this appendix do not commit the Nez Perce-Clearwater to perform or permit these actions but are provided as actions that would likely be consistent with plan components and that might be undertaken to maintain or move towards the desired conditions and objectives. Although the purpose and need developed for a specific project may address one or more desired conditions identified in the Land Management Plan, each individual desired condition would not need to be met on every project nor in every treatment area within a project.

The Nez Perce-Clearwater Land Management Plan employs a strategy of adaptive management in its decision making and achievement of the plan's desired conditions and objectives. An adaptive management strategy emphasizes the learning process. It involves using the best current knowledge to design and implement management actions, then monitoring and evaluating results and adjusting future actions based on what has been learned. This is a reasonable and proactive approach to decision making considering the degree of uncertainty in future ecological, social, and economic factors. This appendix describing potential management approaches and possible actions is optional content in the Nez Perce-Clearwater revised land management plan. Land Management Plans may include optional content such as potential management approaches, strategies and partnership opportunities, or coordination activities (36 CFR § 219.7(f)(2)).

Across the Landscape (TE)

Potential Management Approaches: Uncommon Habitat Elements

Plan Component(s)

FW-GL-TE-01

FW-DC-TE-01

FW-GDL-TE-01

Purpose of Plan Component(s)

The Nez Perce-Clearwater National Forest is home to a number of rare, or unique, endemic species as a result of the Rocky Mountain Refugium, a term used to describe the high endemism and biodiversity of land snails, salamanders, and plants in this area. Extent endemics show two biogeographic patterns to their distribution: rare widespread species with fragmented populations, or endemics with narrow ranges. This area is essentially comprised of areas spared from glaciation nor paved by volcanic flows, which allowed some species to survive the last glacial maxima until today (Stagliano 2007). Examples of species or groups that persist today include snail biodiversity, the Coeur d'Alene salamander, rare plants with specific narrow habitat requirements, or coastal disjunct plant communities. This assemblage of endemics represents a distinctive role and contribution that the plan area contributes to biodiversity. As the taxonomy and habitat associations of many endemic snails are still being resolved, the emphasis is on conserving the habitats used by these species. The plan components are designed to maintain the rare, unique habitats these species rely on as a conservation strategy. The purpose of these plan components are to maintain or restore the habitats that these species use. Uncommon habitat elements are defined in FW-DC-TE-01. As uncommon habitat elements and the species that depend upon them are rare or uncommon, Guideline FW-GDL-TE-01 is intended to be applied narrowly within areas of known occurrence, or habitats that have a high likelihood to contain the species based on the knowledge of the species distributions and habitat needs. It should be recognized that as more information about the distribution or taxonomy of these species becomes available, the conservation status or nature serve rank for could change and therefore FW-GDL-TE-01 application should also change.

Possible Management Strategy and Approach

To implement FW-GL-TE-01, Nez Perce-Clearwater should cooperate with partners such as the Idaho Fish and Game, Nez Perce Tribe, researchers, universities, or other Federal agencies to better understand the distribution, ecology, conservation status, taxonomy and habitat associations of the Rocky Mountain Refugium associated species or endemic species.

The best approach to implementing these plan components are at the project scale with site specific considerations and measures. However, implementing the plan components will require an understanding of the habitats and distribution of the species to guide where to apply measures. As currently understood, habitat associations include:

For Coeur D'Alene Salamander: Consider conservation measures to minimize or avoid altering sharply fractured rock formations, or talus when in combination or proximity to seeps, springs, waterfall spray zones, or streamside habitats. Measures would be most effective when working near areas within known observations or suspected Coeur D'Alene Salamander habitat.

For Marbled Disc: Shaded limestone or schist talus slopes in the Lower Salmon River Canyon in and around the confluence of John Day Creek and the Salmon River including lower Slate Creek and surrounding area.

Selway Forestsnail: Large fields of large basalt talus with overstory of mixed forest with a diverse understory and substantial duff layer. Populations have been observed around the confluence of the Lochsa, Clearwater and Selway rivers, the South Fork of the Clearwater River, Slate Creek and the Salmon River. Consider avoiding alteration of talus slope especially those with the vegetation around and over them in these areas.

Nimapuna Tigersnail: Habitat is moist forest or moist talus, well shaded by mixed forest. Species has been observed around the confluence of the Lochsa, Clearwater and Selway rivers and southwest to the South Fork of the Clearwater River.

Mountain Snails: The Lower Salmon River canyon and surrounding lands supports high diversity of mountain snails of the genus Oreohelix some of which are unique, endemic, and are rated as G1 critically imperiled, or G2 imperiled by Nature Serve. While the taxonomy and ecology of these species is evolving, a common habitat characteristic associated with these species are specific lithologies, especially rocks and soils that have a calcareous make up. Areas with high mountain snail endemic diversity is concentrated within the Lower Salmon River and lower elevations of adjacent canyons such as around John Day Creek, Slate Creek, Rapid River, and others. Measures to conserve talus or rock outcrops composed of calcareous rock types in this area are recommended when mountain snails are present.

Pristine pyrg: Springs and seeps provide habitat for species specialized to exist within the narrow and consistent temperature and physical characteristics of groundwater habitats or spring habitats. Changes to water flow, temperature, or water quality of springs are thought to affect spring dwelling species. The Pristine Pyrg is a rare widespread species with highly fragmented populations which are known to occur within the North Fork Clearwater, Lochsa, Salmon River canyons. Guideline FW-GDL-TE-01 could be applied where Pristine pyrg is known to occur.

Potential Management Approaches: Pollinator Forage

Plan Component(s)

FW-DC-TE-03

Purpose of Plan Component(s)

The forestwide plan component is designed to promote a diverse mix of native grass, forb, shrub, and tree species, which provide floral resources for pollinator species.

This plan component is consistent with the 2014 Presidential Memorandum “Creating a Federal Strategy to Promote the Health of Honeybees & Other Pollinators”, which established a national strategy for restoring and enhancing 7 million acres of land for pollinators through federal actions and public-private partnerships.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider incorporating Pollinator-Friendly Best Management Practices for Federal Lands (U.S. Department of Agriculture 2015) when developing projects. Examples of best management practices to improve forage for pollinators include identifying important pollinator habitat sites; identifying, collecting, and using local native seeds; and removing invasive plant species,

Consider utilizing strategies from the National Strategy to Promote the Health of Honeybees and Other Pollinators (Tidwell 2015). This Strategy outlines a comprehensive approach to tackling and reducing the impact of multiple stressors on pollinator health, including pests and pathogens, reduced habitat, lack of nutritional resources, and exposure to pesticides.

Encourage flowering plant diversity to promote resilient pollinator communities.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible management actions could include identifying, collecting, and using seed or pollen from local native forbs, grasses, and other plant species beneficial to local pollinators for use in restoration projects; mechanically removing invasive plant species or treating with herbicides; implementing habitat restoration projects to increase diversity and abundance of flowering plants that provide forage for pollinator species.

Forestlands (FOR)

Potential Management Approaches: Dominance Type Plurality

Plan Component(s)

FW-DC-FOR-03

FW-DC-FOR-06

FW-DC-FOR-09

MA1-DC-FOR-10

MA2-DC-FOR-09

MA2-DC-FOR-10

MA3-DC-FOR-07

Purpose of Plan Component(s)

These forestwide and management area plan components are designed to promote desired species composition within defined broad potential vegetation type groups. Desired conditions are focused on increasing the composition of seral species and decreasing the composition of late seral tolerant species. Reasonable effort should be made to contribute to moving species composition toward the desired condition ranges specified in the plan. These plan components are intended to be applied throughout the life of the Plan, at the planning, implementation and monitoring phases of all vegetation and fuels management projects.

Forestwide plan components FW-DC-FOR-03, FW-DC-FOR-06 AND FW-DC-FOR-09 address species composition within the warm dry, warm moist and cool moist potential vegetation type groups respectively. Plan components MA3-DC-FOR-07 and MA2-DC-FOR-09 and MA1-DC-FOR-10 are designed to specifically address within-stand species composition and stand structure of the Cold broad potential vegetation type group. Plan component MA2-DC-FOR-10 specifically addresses species composition of resilient old growth patches within Management Area 2. Aspects of these plan components related to structure are addressed under the variable group retention management approach.

Desired conditions for species composition ranges are presented in the plan. The target species composition ranges for each broad potential vegetation type group are intended to be applied at the management area scale. Individual stand level species composition percentages promote management area desired conditions, contribute to forestwide management objectives and address project level resource concerns.

Species composition is expressed by dominance type and is specific to each management area. Dominance types are defined as the species or species mix with the greatest abundance of canopy cover, basal area, or trees per acre within a setting and is intended to be achieved as a plurality of species present (Barber et al. 2011). For example: within the warm moist potential vegetation type group in Management

Area 3, the desired proportion of western white pine species would average between 20 percent and 35 percent of total species composition. Vegetation treatments within Management Area 3 at any project area scale contribute toward Management Area 3 desired conditions.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The management strategy is to achieve through silviculture treatment a plurality of resilient (seral) dominance types within each broad vegetation type based on desired conditions presented in the Land Management Plan. While it may not be possible to obtain dominance type objectives with a single management entry, reasonable effort for moving the resulting prescription unit dominance types toward desired conditions, while not precluding other desired conditions. Desired conditions for dominance type are assessed at management area scales and each project area's contribution to dominance type desired conditions may be quantified.

As appropriate utilize the VMap database to determine existing vegetative dominance. There are 26 tree dominance group 6040 classes supported on the forest and these are used for most base-level analysis applications. Dominance group 6040 is the finest thematic resolution supplied in the Northern Region existing vegetation map (VMap) databases. The VMap raw database contains the dominance group 6040 attribute and is most often used to support project-level work. Dominance group 6040 is also an attribute in reports and applications derived from FSVeg data (FIA, Intensified Grid Inventory, Stand Exams) and maintained by the Northern Region. Utilizing this data enhances understanding of the implications and opportunities to meet other resource objectives, for example, maintaining in-stand diversity to promote the diversity and abundance of wildlife, or reducing fuels to maintain or enhance fire regimes.

The plurality-dominance group 6040 management approach may be used to determine the degree of departure (gap) between existing and desired conditions. The degree of departure should inform development of proposed actions. The following list illustrates possible considerations and analysis needed to apply the plurality management approach.

- Given that the forestwide maximum opening patch size is 207 acres, project scales should consider allowing for multiple patch sizes to both approximate average patch sizes associated with each broad potential vegetation type and to encompass variability in site potential and conform to elevation and topography constraints.
- Determine broad potential vegetation type groups within project area.
- Stratify habitat types within each broad potential vegetation type group by topographic features and confirm through field reconnaissance.
- Determine existing conditions of dominance types.
- Identify past vegetation management and history of wildfire and correlate to existing dominance types.
- Identify opportunities for vegetation and fuels management that trend toward desired conditions for dominance types.
- Identify limitations to attainment of desired conditions for dominance types including constraints associated with other resource concerns.

Consider the plurality-dominance group 6040 management approach to develop silviculture prescriptions and project design features that move forest vegetation towards the forest level vegetation composition target ranges as referenced in the target stands document.

- Silviculture prescriptions should consider 1) are there preferred dominance types within the stand or prescription unit and 2) can the stand be thinned to achieve plurality of preferred dominance types.
- Even-aged, uneven-aged, and intermediate treatment silviculture systems should be balanced and reflect consideration of target patch size.
- Silviculture prescriptions should be applied to take advantage of topographic settings appropriate for dominance types.
- All prescriptions to maintain or achieve preferred dominance types should be informed by and consider historic fire regimes.
- Prescribed fire should be considered in silviculture prescriptions at intervals sufficient to maintain plurality of dominance types.

Plurality-dominance group 6040 should track and consider landscape scale and forest level trends in species composition.

- Monitoring is performed through periodic re-measurement of Forest Inventory and Analysis (FIA) plots and analysis of inventory data.

Possible Actions over the Life of the Plan

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.

The following represents potential actions that may be used to implement plan direction.

- Possible actions may include shifting species composition, stand density, and size class distribution, pattern and patch size. For example:
- Design vegetative treatments to maintain or move towards stand structures commensurate with appropriate fire regimes to develop and maintain resilient dominance types. Use vegetative treatments to manipulate size class distribution, pattern, and patch sizes sufficient to develop and maintain target dominance types.

Potential Management Approaches: Integrated Silviculture Prescriptions

Plan Component(s)

FW-DC-FOR-01

MA3-DC-FOR-11

MA3-STD-FOR-01

MA2 AND MA3-GDL-FOR-05

MA2 AND MA3-GDL-FOR-07

MA3-GDL-FOR-06

Purpose of Plan Component(s)

These forestwide and management area plan components are designed to promote aspen (FW-DC-FOR-01), retention of snags (MA3-DC-FOR-11, MA2 and MA3-GDL-FOR-05, MA2 and MA3-GDL-FOR-07,

and MA3-GDL-FOR-06) and retention of resilient old growth types (MA3-STD-FOR-01). Desired conditions for aspen are focused on both retention and expansion of existing aspen clones. Desired conditions for snags are focused on managing the current and future snag pool to promote snag retention by considering spatial distribution, snag density, size class distribution, snag species and safety. Desired conditions for resilient old growth type retention are focused on maintaining existing resilient old growth stands and stand components as well as increasing the resiliency of existing old growth stands to perturbations.

Desired conditions for aspen retention and recruitment are intended to achieve a target of one (1) percent of total vegetative cover across Nez Perce-Clearwater. This plan component may also be used to promote paper birch where birch is present and aspen is absent. This plan component may be used in conjunction with plurality-dominance group 60/40.

Desired conditions for snag retention and snag recruitment are presented in the plan. The targets for snag retention for each broad potential vegetation type group are intended to be applied at the project level. Individual stand level snag densities may contribute to project level targets. The intent is not to normalize snag retention and recruitment at the per acre level but to achieve a project level target which reflects natural disturbance patterns. Stand level snag inventories are not anticipated. Snag data may be estimated through a variety of sources including existing stand exam data, walk-through exams, permanent growth plots, digital imagery, or other means of estimation that are adequate to make an informed decision.

The purpose of plan standard MA3-STD-FOR-01 is to constrain management activities so project design promotes old growth retention of resilient old growth cover types defined within the standard. If the existing condition of a stand is classified as old growth as defined by (Green et al. 1992, Green et al. 2011), the stand must remain as an old growth stand following any vegetation management activity, including prescribed fire. This standard does not preclude management of resilient old growth cover types. Any proposed vegetation management may enhance the resiliency of existing old growth stands.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The integrated silviculture prescription management strategy is aimed toward achieving desired condition objectives at both the prescription unit and project level scales. Prescription units may incorporate prescription elements which achieve desired conditions for multiple vegetation composition, size class distribution, density, or other objectives without the need to delineate small disjunct vegetation types or stand structures. At the landscape or project level scale all polygons may have a prescription which moves toward desired conditions. This will require integrating both short- and long-term fuels management objectives alongside timber management objectives.

Given the complex nature of forested ecosystems under management and additive constraints necessitated by a multiple-use land management paradigm, the use of integrated prescriptions becomes an essential tool.

Integrated prescriptions, such as Commercial Thinning and Improvement Cuts, can be used in stands with an intermixed distribution of aspen or other hardwood species which is desirable to retain. With this prescription the stand is thinned from below to achieve the target density except in portions of the stand where aspen occurs. When small inclusions of aspen occur, the improvement cut implementation guide is used to remove all conifer species from within the aspen patch and create a one tree length buffer around the aspen clone.

An integrated prescription, such as Salvage or Shelterwood, can be used to achieve multiple objectives following a wildfire. Within this prescription, the salvage implementation guide can focus on variable snag retention in portions of the stand with high burn severity and the shelterwood implementation guide directs live tree retention within areas of low burn severity or unburned portions of the stand.

A Sanitation or Improvement Cut prescription could be used to treat an old growth stand to remove diseased overstory grand fir component as well as remove understory grand fir to improve resiliency of a Ponderosa pine and Douglas-fir, or Douglas-fir and western larch old growth cover types.

It is also recommended to create integrated prescriptions by modifying the timing of regeneration or to omit regeneration objectives if appropriate. For example, the Single-Tree Selection Cut (4151) can substitute for an Individual Tree Selection prescription which can be used to distribute growing space to select diameter classes in place of an even distribution. By omitting the regeneration objective this prescription can be used to achieve stand structure objectives where regeneration is not desired.

Over the life of the plan these plan components are intended to be applied at the planning, implementation and monitoring phases of all vegetation and fuels management projects.

During the analysis and planning phases of project development, the integrated prescription management approach may be used to evaluate the range of treatment alternatives that could move the landscape toward desired conditions. Integrated prescriptions can be viewed as a tool to address multiple resource objectives in an efficient manner. The following list illustrates possible considerations and analysis needed to apply the integrated prescription management approach.

- Identify stands or prescription units that contain inclusions of unique habitat elements such as aspen, paper birch, whitebark pine, subalpine larch, or specified wildlife niche components.
- Identify opportunities to incorporate variable snag and green cull densities based on broad potential vegetation type group and disturbance history. Distribution of snags should consider existing down woody material concentrations.
- Identify old growth stands and incorporate silviculture treatment strategies to create or maintain resilient old growth types and improve resiliency of existing old growth types.
- Identify silviculture systems, methods and time scales that trend forest vegetation toward desired conditions. The clearcut method should not be used on more than thirty percent of the project area acres.

During the implementation phase of project development, the integrated prescription management approach may be used in conjunction with vegetation condition class, stand density index and variable group retention to develop silviculture prescriptions and project design features that move forest vegetation towards the forest level diameter distributions, density, and structural target ranges.

- Identify opportunities to develop integrated silviculture prescriptions that address the need for variability in density, structure and composition at the stand and landscape scales.
- Identify opportunities to combine both natural and artificial regeneration methods within a prescription unit to capitalize on existing seral species composition, genetic stocks, and stocking objectives.
- During the monitoring phase, the management approach of integrated prescriptions may be tracked at landscape, and forest scales to provide feedback to improve adaptive management strategies and to inform research.

Possible Actions over the Life of the Plan

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.

While not exhaustive, the following silviculture activities may be used singly or in combination as integrated prescriptions to accomplish desired conditions for forest vegetation:

- Coppice Cuts, Patch Clearcut with or without leave trees, Stand Clearcut with or without leave trees, Shelterwood Preparatory Cuts, Seed-Tree Preparatory Cuts, Shelterwood Establishment Cut with or without leave trees, Seed-tree Seed Cut with and without leave trees, Shelterwood Removal Cut, Seed-Tree Final Cut, Overstory Removal Cut, Shelterwood Removal Cut with Leave Trees, Seed-Tree Removal Cut with leave trees, Shelterwood Staged Removal Cut, Single-tree Selection Cut, Group Selection Cut, Two-Aged Coppice Cut with residuals, Two–aged Patch Clearcut with reserve trees, Two-aged Stand Clearcut with reserve trees, Two-aged Seed-tree Seed and Removal Cut with reserves, Two-aged Preparatory Cut with reserves, Two-aged Shelterwood Establishment and Removal Cut with reserve trees, Two-aged Shelterwood Final Cut with reserves, Improvement Cut, Liberation Cut, Commercial Thin, Salvage Cut, Sanitation Cut, Special Products Removal, Harvest Without Restocking, No Treatment Matrix, Timber Stand Improvement activities including release and weeding, thinning, fertilization, cleaning, and pruning, Planting, Direct Seeding, Prescribed burning, Tree Release and Weed, Precommercial thinning, and Pruning

Potential Management Approaches: Stand Density Index (Reineke)

Plan Component(s)

FW-DC-FOR-02	MA1-DC-FOR-02	MA2-DC-FOR-04
FW-DC-FOR-05	MA1-DC-FOR-03	MA3-DC-FOR-01
FW-DC-FOR-08	MA1-DC-FOR-04	MA3-DC-FOR-03
FW-DC-FOR-11	MA2-DC-FOR-01	MA3-DC-FOR-05
FW-DC-FOR-12	MA2-DC-FOR-02	MA3-DC-FOR-08
MA1-DC-FOR-01	MA2-DC-FOR-03	

Purpose of Plan Component(s)

These forestwide and management area plan components are designed to promote desired conditions for within-stand characteristics of warmer and driest sites, as well as size class distributions and density within defined broad potential vegetation type groups. Desired conditions are focused on trending landscape and forest level size class distributions and density commensurate with the natural range of variation and historic fire regimes.

Forestwide plan components are designed to specifically address within-stand characteristics of the warmest and driest sites within the warm dry potential vegetation type group and size class distribution within the warm dry, warm moist, cool moist and cold potential vegetation type groups. Prescription unit density characteristics may be calculated by Stand Density Index or basal area formulas but are expressed within written prescriptions and implemented in the field as a range of basal area per acre objectives. Size

class distributions are expressed as a range of both trees per acre and basal area per acre objectives which contribute to toward desired conditions.

Desired conditions for size class distribution are presented in the plan. The target size class distribution ranges for each broad potential vegetation type group are intended to be applied at project scales to trend size class distributions to contribute toward management area desired conditions. Individual stand level size class distributions may contribute to project level targets. While it is desirable for stand level size class distributions to contribute to desirable conditions, it is not always necessary, possible, or expected that all prescription units or stands will individually contribute to desired conditions. The intent of the diameter class distributions is to use diameter as a proxy for age and to approximate the age-class distribution associated with the natural range of variation. Desired conditions for age class distribution will promote the recruitment of all size classes.

Desired conditions for density are not expressly defined in the plan. Density targets will need to be determined for each stand and project based on project objectives. Target densities may reflect both intended purpose of the project and historic fire regimes to promote landscape resiliency. Prescription units intended for high density or timber yield objectives may require additional protections and tending to protect the investment in contrast to forest restoration objectives which may focus on resiliency.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Stand Density Index may be used to allocate growing space or structural attributes for resilient dominance types, size class distribution, or other stand level objectives defined in the project.

Stand density is expressed using Stand Density Index (Reineke) for single species or species mixes using the summation method (Shaw). The stand density concept correlates basal area, trees per acre and size class to site occupancy, resource allocation and utilization, and competitive influence. Stand densities for all broad potential vegetation type groups may reflect both yield targets as well as historic fire regimes. Stand density objectives for project implementation may be expressed as basal area per acre or trees per acre. To manage for the full suite of structural stages, the Stand Density Index should generally range between 15 and 55 percent of maximum. The maximum Stand Density Index would need to be calculated for each stand or project based on the featured species and or species mixes and the planned percent species composition for each target stand.

Over the life of the plan this management approach is intended to be applied at the planning, implementation and monitoring phases of all vegetation management projects.

During the analysis and planning phases of project development, the Stand Density Index management approach may be used to evaluate and quantify the range of treatment alternatives that could move the landscape toward desired conditions. The Stand Density Index can be viewed as a tool to allocate growing space (density) to desired size class distributions to address multiple resource objectives in an efficient manner. The following list illustrates possible considerations and analysis needed for project development where Stand Density Index may be useful in quantifying management or treatment alternatives.

- Determining alternatives for the mix of silviculture systems needed to move vegetation toward desired species composition and size classes.
- Quantifying alternative residual stand structure and density for desired dominance types commensurate with fire regime and expected and planned fire return interval.

- Determining alternatives for internal patch (stand) structure and landscape scale patch structure.
- Determining alternatives for legacy tree opportunities and residual requirements.

During the monitoring phase, the management approach of the Stand Density Index may be tracked through FSVegSpatial at landscape, and forest scales to improve adaptive management strategies.

Possible Actions over the life of the Plan

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.

The following represents potential actions that may be used to implement plan direction.

The Stand Density Index management approach may be used at the stand level in conjunction with targeted disturbance, integrated prescriptions, and variable group retention management approaches to develop alternatives for silviculture prescriptions and project design features that move forest vegetation towards diameter distributions, density, and structural target ranges specified at forestwide and management area scales.

Potential Management Approaches: Targeted Disturbance

Plan Component(s)

FW-DC-SOIL-02

MA3-STD-FOR-01

MA2 and MA3-GDL-FOR-01

Purpose of Plan Component(s)

The desired condition addresses soil organic matter and down woody material important for supporting soil processes. Classification of old growth includes criteria for downed woody material. MA3-STD-FOR-01 requires that management of resilient old growth stands must maintain old growth characteristics. This includes criteria for downed woody material. Desired levels of soil organic matter and coarse woody material support healthy and resilient ecosystems. Compliance with guideline MA2 and MA3-GDL-FOR-01 helps to achieve this desired condition.

This guideline is designed to restrict projects from reducing course woody debris below a threshold of what is needed, by potential vegetation type groups, to maintain nutrient cycling, soil biology and to provide habitat structure. The guideline aims to restrict activities to ensure we maintain adequate amounts of coarse woody material following harvest and prescribed fire activities.

If insufficient coarse woody material is anticipated following treatments, silviculture prescriptions may include a strategy to recruit sufficient coarse woody material to maintain nutrient cycling and soil biology and to provide habitat structure.

The amounts of coarse woody material available on a given site at any point in time are strongly correlated with fire regime.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The dynamic nature of ecosystems is in part explained by the construct of disturbance ecology. Fire regimes function in response to climate cycles interacting with vegetation and landforms. Frequency and severity of wildfire influence the amounts and distribution of coarse woody material on the landscape. Long term site productivity required sufficient inputs of organic material to maintain soil formation processes. Coarse woody material also provides habitat for a wide variety of animals. This management strategy is focused on implementation of FW-DC-SOIL-02, MA3-STD-FOR-01, and MA2 and MA3-GDL-FOR-01 and intended to promote maintenance and recruitment of coarse woody material at the prescription unit scale.

Fire regime may be used to categorize the relative departure of current vegetation from simulated historical vegetation conditions. Historic fire regimes regulated the amount and distribution of coarse woody material present on a site at any time. Fire suppression has generally produced an excess of coarse woody material. Harvest and prescribed burning reduce available coarse woody material.

Given that most of the forest is classified as Fire Regime 3, with a fire return interval of between 30 and 200 years, it is necessary to plan for coarse woody material recruitment for managed stands. As fire return intervals are re-established within all broad potential vegetation type groups, it is important to recognize the need for retention of coarse woody material. Plan component MA3-GDL-FOR-06 requires up to three live green recruitment snags per acre (normalized to 3 trees per acre) to provide habitats. These trees provide a basis for future recruitment of coarse woody material. However, these three trees per acre (averaged across a project area) may not provide sufficient recruitment material to achieve the target amounts presented in the Land Management Plan. Additional green cull material may need to be retained to meet future target needs. Excess amounts of coarse woody material are not needed or desired. Silviculture prescriptions may include a coarse woody material recruitment strategy which accounts for post prescribed fire coarse woody material presence.

Over the life of the plan this plan component is intended to be applied at the planning, implementation, and monitoring phases of all vegetation management projects.

During the analysis and planning phases of project development, the targeted disturbance management approach may be used to determine the degree of departure (gap) between existing and desired conditions. The degree of departure may inform development of proposed actions. The following list illustrates possible considerations and analysis needed to apply the targeted disturbance management approach.

- Review fire regime for project area by potential vegetation type group.
- Review Coarse Woody Material requirements for each potential vegetation type group within the project area.
- Review coarse woody material requirements by old growth type for resilient old growth stands that will be managed to maintain and promote resiliency.
- Determine the need to maintain, recruit, or reduce current coarse woody material tonnage by treatment unit.

During the implementation phase of project development, the targeted disturbance management approach may be used to develop silviculture prescriptions and project design features that move coarse woody material guidelines towards the forest level target ranges which allow for the historic or planned fire return intervals.

- Design silviculture prescriptions which move targeted disturbance toward conditions which allow for historic fire return intervals.
- Design silviculture prescriptions that maintain, recruit, or reduce coarse woody material based on broad potential vegetation type group requirements and old growth type.
- Distribute live green recruitment snags at the project scale at sufficient quantities to meet current and future coarse woody material guidelines.
- Review USDA Rocky Mountain Research Station. General Technical Report RMRS-GTR-190.
- Include Inventory of coarse woody material or debris during soil surveys within activity areas to provide trend information regarding soil organic material and coarse wood quantities, specifically focusing on whether amounts are maintaining, decreasing, or increasing. Brown et al (2003) addresses the optimization with regards to managing coarse wood debris to balance multiple objectives between fuels, silviculture, and soils.

During the monitoring phase, the management approach of targeted disturbance may be tracked at landscape scales to monitor trends in coarse woody material availability.

Possible Actions over the Life of the Plan

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.
The following represents potential actions that may be used to implement plan direction.

The Targeted Disturbance management approach may be used at both landscape and stand level scales to integrate silviculture, wildlife habitat and fuels management objectives. Fuels management may need to consider snag retention and recruitment required to promote long term coarse woody debris distribution. Project design may consider the nexus between landscape scale vegetation pattern and patch sizes that influence the spatial distribution of coarse woody debris material and fire regime.

Potential Management Approaches: Variable Group Retention

Plan Component(s)

FW-DC-FOR-04	MA2-DC-FOR-05	MA2 GDL-FOR-02
FW-DC-FOR-07	MA2-DC-FOR-06	MA3-GDL-FOR-02
FW-DC-FOR-10	MA2-DC-FOR-07	MA2-GDL-FOR-03
MA1-DC-FOR-05	MA2-DC-FOR-08	MA3-GDL-FOR-03
MA1-DC-FOR-06	MA3-DC-FOR-02	MA2-GDL-FOR-04
MA1-DC-FOR-07	MA3-DC-FOR-04	MA3-GDL-FOR-04
MA1-DC-FOR-08	MA3-DC-FOR-06	
MA1-DC-FOR-09	MA3-DC-FOR-09	

Purpose of Plan Component(s)

These forestwide and management area plan components and guidelines are designed to promote desired conditions for within-stand characteristics, landscape pattern and patch size, and old growth within defined broad potential vegetation type groups. Desired conditions are focused on trending landscape and forest level stand structure, vegetation pattern and patch size and old growth persistence commensurate with historic fire regimes.

Forestwide plan components are designed to specifically address within-stand canopy structure and species composition of legacy trees for warm dry, warm moist and cool moist broad potential vegetation type groups. Management area plan components are designed to promote canopy structure and species composition of legacy trees, landscape pattern and patch size, and old growth for all broad potential vegetation type groups. Historic fire regimes inform the spatial distribution of patches relative to slope, aspect, and elevation gradients.

Management area guidelines are designed to increase resistance and resilience of old growth cover types and restrict permanent road construction that may fragment old growth patches.

Desired conditions for stand structure are presented in the plan. The target stand structures vary between single storied to multi-stories for each broad potential vegetation type group and are intended to be applied at the project level but evaluated and monitored at forestwide and management area scales. Individual stand structures may contribute to project level targets. The intent of the stand structure component is to promote heterogeneity in canopy structure across the landscape.

Desired conditions for landscape pattern and patch size are not expressly defined in the plan. Landscape pattern and patch size should consider historic fire regimes and the interaction between topography and land type within the fire regime and fire return intervals predicted for each broad potential vegetation group. Refer to the document “Using Natural Range of Variation Modeling to Estimate Historic Opening Size on the Nez Perce-Clearwater National Forests” for a detailed discussion of project level considerations useful for planning and designing vegetation patterns and appropriate opening sizes.

Desired conditions for old growth management within MA 3 are focused on retention of resilient old growth cover types and the development of stand characteristics which promote resistance and resiliency within old growth patches.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Variable group retention is a concept which focuses on the pattern and aggregation of live tree retention to meet ecological objectives such as maintaining or developing structural heterogeneity, site productivity, connectivity, and legacy components at various scales (Aubry et al. 2009, Mitchell and Beese 2002). Stand structure is addressed through residual density and aggregation of live trees at the patch scale. Spatial distribution and position of patches on the landscape create a landscape pattern. The size of patches is highly influenced by topography, land type, potential vegetation type group, fire regime and management history.

The application of variable group retention represents the framework under which the previously described management actions may be applied. At the project scale, all polygons (patches) are included in analysis of ecosystem restoration objectives. Some patches may be at or near desired conditions or meet management objectives while other patches may require vegetation management to move toward desired

conditions. It is the analysis of all patches within a project area that informs progress toward desired conditions.

Project level vegetation pattern and patch size distribution may be designed to reflect and approximate the forestwide average patch size of 350 acres. The forestwide average patch size is the result of and inclusive of all disturbance events. Disturbance events including harvest (past or present) and wildfire which result in a transitional forest or seedling and sapling size class are included in the calculation of average patch size. This average may be applied for all managed and unmanaged (deferred) patches (stands). The average patch size may be applied to all silviculture systems: even-aged, uneven-aged, and intermediate. Treatment of acres associated with timber volume targets may carry the same weight as acres treated to accomplish ecosystem restoration objectives. To re-establish historic fire return intervals, stands adjacent to and between harvest units may be treated to allow fire to function as a natural process without compromising silviculture investments or ecosystem integrity.

This management approach is intended to be applied throughout the life of the Plan, at the planning, implementation and monitoring phases of all vegetation management projects.

During the analysis and planning phases of project development, the variable group retention management approach may be used to evaluate the range of treatment alternatives that move the landscape toward desired conditions. Variable group retention can be viewed as a tool to establish landscape pattern and patch size within the context of fire regime, fire return intervals and ecosystem management objectives. This management approach is useful in developing heterogeneity in stand structure, residual tree densities and dispersal or aggregation of leave trees. Patches of old growth are integrated into the landscape pattern to promote resistance to disturbance severity and provide resilience in old growth characteristics. The following list illustrates possible considerations and analysis needed to apply the variable group retention management approach.

- Identify opportunities to develop and promote variability in stand structure both within-stand and at the project scale. Within-stand structure can be varied by allocating density among diameter classes or cohorts. Variable stand structure at the project scale can be achieved through defining desired stand structure at the patch scale (single stories, multi-storied) and allocating a percentage of total project area to specific structural classes.
- Identify opportunities to establish a vegetation pattern of patches by varying silviculture systems, densities of residual stands, and aggregations of trees across both managed and unmanaged stands. The spatial arrangement of silviculture treatments will be highly correlated with broad potential vegetation type, topography, past disturbance events, and areas of special emphasis. **Error! Reference source not found.** illustrates the NRV averages for each broad potential vegetation type and may be used at the project scale to promote landscape patterns commensurate with historic fire regimes to move forested vegetation towards desired conditions.
- Identify existing old growth stands and opportunities to integrate old growth stand structure into the larger landscape scale distribution of stand structures.

Table 30. Minimum, average, and maximum patch size by broad Potential Vegetation Type (PVT)

Broad Potential Vegetation Type	Minimum Patch Size (Acres)	Average Patch Size (Acres)	Maximum Patch Size (Acres)
Warm Dry	52	77	106
Warm Moist	45	160	467
Cool Moist	85	188	381

Broad Potential Vegetation Type	Minimum Patch Size (Acres)	Average Patch Size (Acres)	Maximum Patch Size (Acres)
Cold	48	95	190

During the implementation phase of project development, the variable group retention management approach may be used in conjunction with plurality, hybrid prescriptions, stand density index, and vegetation condition class to develop silviculture prescriptions and project design features that move forest vegetation towards the forest level structure, landscape pattern and patch sizes outlined in the desired conditions.

- Identify opportunities to connect smaller patches created from past management activities into larger patches which approximate the desired average patch size for each potential vegetation type group.
- Silviculture prescriptions and timing of prescriptions may vary within the project area to create a mosaic of vegetation structure, composition, densities, and pattern.
- Within stand densities and live tree aggregations maximize the growth characteristics of preferred dominance types defined for each broad potential vegetation type group.
- During the monitoring phase, the management approach of variable group retention may be tracked at landscape, and forest scales to improve adaptive management strategies.

Possible Actions over the Life of the Plan

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.

The following represents potential actions that may be used to implement plan direction.

The Variable Group Retention management approach may be used at both the landscape and stand level in conjunction with targeted disturbance, integrated prescriptions, and stand density index management approaches to develop alternatives for silviculture prescriptions and project design features that move forest vegetation towards diameter distributions, density, and within-stand structural target ranges specified at forestwide and management area scales. At the project scale, vegetation pattern and patch size appropriate for each broad potential vegetation type may be achieved through silviculture prescriptions applied through the variable group retention strategy.

Climate Change and Forest Carbon

Potential Management Approaches: Climate Change

Plan Component(s)

Desired conditions for Forestlands; Meadows, Grasslands, and Shrublands; Fire Management; Invasive Species; Soils Resources; Aquatic Ecosystems; Wildlife; Cultural Resources; Infrastructure; Sustainable Recreation Management; Ecosystem Services; and specifically:

FW-DC-TE-01

FW-DC-TE-03

FW-DC-WTR-01

FW-DC-WL-02

GA-DC-SR-03

Purpose of Plan Component(s)

The 2012 Planning Rule (U.S. Department of Agriculture 2012a) emphasizes restoring the function, structure, composition, and connectivity of ecosystems and watersheds to adapt to the effects of a changing climate and other ecosystem drivers and stressors, such as wildfire and insect outbreaks. Although not specifically mentioned, most of the physical and biological ecosystem desired conditions in the Land Management Plan were developed to facilitate natural ecological processes and create healthy ecosystems, which are more resilient and better adapted to changing climate. Plan components FW-DC-TE-01, FW-DC-TE-03, FW-DC-WTR-01, FW-DC-WL-02, and GA-DC-SR-03 explicitly address climate change and promote resilience and adaption to the effects of climate change.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Seek opportunities to engage in cooperation and collaboration with universities, Forest Service Research Stations, non-governmental organizations, tribal governments, and other interested partners in the development and implementation of research, management practices, and monitoring programs to better understand and address the effects of climate change on ecosystems and ecosystem services to inform adaptation and mitigation strategies.

The *Climate Change Vulnerability and Adaptation in the Northern Rocky Mountains: Part 1 and Part 2* (Halofsky et al. 2018a, b) could be used as a key source of information when assessing climate change. This publication, developed by the Northern Rockies Adaptation Partnership, is the main source of information for identifying resource vulnerabilities and providing possible strategies and approaches to address vulnerabilities specific to the Northern Rockies. The Northern Rockies Adaptation Partnership (http://adaptationpartners.org/nrap/index.php) is a science-management collaboration with the goals of assessing vulnerability of natural resources and ecosystem services to climate change and developing science-based adaptation strategies that can be used by national forests to understand and mitigate the negative effects of climate change.

Additional Nez Perce-Clearwater specific climate change information can be found in the following references: *A Climate Change Vulnerability Assessment for Resources of Nez Perce-Clearwater National Forests* (EcoAdapt 2014); *Climate Change Adaptation Strategies for Resources of the Nez Perce-Clearwater National Forests* (EcoAdapt 2015); and *Nez Perce-Clearwater National Forests' Forest Plan Assessment - Socioeconomic Climate Change Vulnerability Assessment* (U.S. Department of Agriculture 2014a). Also utilize the Nez Perce Tribe's Climate Change Vulnerability Assessment (in draft 2023).

Focusing on improvement, restoration, or protection of species that are vulnerable to climate change (for example, ecotone species, wetland species, coastal disjunct species, Ponderosa pine, aspen, and whitebark pine) could be a strategy to prioritize actions.

Utilizing the *U.S. Forest Service Transportation Resiliency Guidebook - Addressing Climate Change Impacts on U.S. Forest Service Transportation Assets* (U.S. Department of Transportation 2018) could help assess and identify climate change vulnerabilities within the transportation network and develop and prioritize adaptation strategies.

Other information and resources useful for assessing climate change include:

- The USDA Action Plan for Climate Adaptation and Resilience that responds to Executive Order 14008, outlining how the U.S. Department of Agriculture will provide relevant information, tools, and resources to its stakeholders and target programs and activities to increase resilience to climate impacts (U.S. Department of Agriculture 2021).
- The USDA Forest Service Climate Adaptation Plan FS-1196 presents a comprehensive approach to integrating climate change adaptation into the Forest Service's operations and mission. The plan outlines key climate risks to the agency's operations and critical adaptation actions to reduce these risks and help ensure the Forest Service continues to meet the needs of present and future generations (U.S. Department of Agriculture 2022a).
- The Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change (Federal Register Doc. 2023–00158) provides interim guidance to assist agencies in analyzing greenhouse gas (GHG) and climate change effects of their proposed actions under the National Environmental Policy Act.
- The Forest Service Climate Change Resource Center, which provides information and tools to land managers to address climate change in project planning and implementation. The Climate Change Resource Center offers educational information, decision-support models, maps, simulations, case studies, and toolkits. https://www.fs.usda.gov/ccrc/tools
- U.S. Forest Service Office of Sustainability & Climate Data and Tools Desk Guide - Integrating Climate Change Information into Land Management Planning (U.S. Department of Agriculture 2020b).
- U.S. Forest Service Office of Sustainability and Climate, Climate Tools and Data is a gallery of climate maps, tools and resources supporting environment analyses. https://www.fs.fed.us/managing-land/sc/data-dashboard.
- The Forest Service Climate Risk Viewer is a storymap used to illustrate the overlap of multiple values with climate exposure and vulnerability, and current management direction related to National Forest System lands. Resource managers can use this information to assess the need for climate adaptation to maintain valued resources and to identify gaps between current practices and needed adaptation practices.
- https://storymaps.arcgis.com/collections/87744e6b06c74e82916b9b11da218d28
- U.S. Forest Service Office of Sustainability & Climate Storymap: Climate Change Vulnerability Assessments Across the Nation https://usfs.maps.arcgis.com/apps/MapJournal/index.html?appid=4d52ad331fe4442a875709856048033c#
- U.S. Forest Service Office of Sustainability & Climate Storymap: Climate Vulnerability and Adaptation in the Northern Rocky Mountains https://usfs.maps.arcgis.com/apps/MapSeries/index.html?appid=c3858220288f45e0ac47e8ff77e0ae24
- The Climate Toolbox is an interagency website that offers a collection of web tools for visualizing past and projected climate and hydrology of the contiguous United States of America. https://climatetoolbox.org/.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential actions to help the Nez Perce-Clearwater adapt to changing climates include a range of adaptation options such as resistance, resilience, and transition strategies. Examples include improving, restoring, or protecting habitats or species that are vulnerable to climate change; storm proofing roads to withstand flooding and intense precipitation events; upgrade recreation facilities and sites to help accommodate changes in recreation seasons and use patterns.

Potential Management Approaches: Carbon Stock

Plan Component(s)

FW-DC-CARB-01

Purpose of Plan Component(s)

Forest management plays an important role in moderating the amount of carbon dioxide that enters and leaves the atmosphere. The intent is that carbon storage and sequestration potential are sustained through maintenance or enhancement of ecosystem biodiversity and function, and forests are resilient to natural disturbance processes and changing climates.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

A key carbon storage strategy is maintaining landscapes with native vegetation and not converting forested ecosystems to other uses such as agriculture or urban development.

Consider prioritizing vegetation management treatments that increase forest resilience to natural disturbance processes and changing climates. When assessing forest carbon, helpful resources include the Forest Service carbon tools and assessments provided by the U.S. Forest Service, Office of Sustainability and Climate and the Northern Region Climate Change Resources. Another reference is the Nez Perce-Clearwater Carbon Assessment (Hoang et al. 2019), which is included in Appendix D of the Final Environmental Impact Statement.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions in maintain or increase carbon stocks could include retaining or improving old growth stands; maintaining or increasing down coarse wood material and ground cover to conserve soil carbon; sustaining or creating resilient ecosystems through vegetation management, wildland fire management, and invasive species treatments; or restoring wetlands, which can accumulate large carbon stores.

Meadows, Grasslands, and Shrublands

Potential Management Approaches: Conifer Encroachment

Plan Component(s)

FW-DC-GS-04

FW-DC-GS-06

FW-OBJ-GS-01

Purpose of Plan Component(s)

Plan components promote native wetland and grassland plant communities and maintaining the spatial extent of those communities. Vegetation succussion can cause conifer tree species to encroach of wetlands and grasslands, especially when natural disturbance processes, such as wildfire have been excluded.

Possible Management Strategy and Approach

Take into consideration other resource values during project analysis when determining removal of the conifer component.

Consider removing conifers in grasslands in livestock grazing allotments to maintain shrubland and grassland potential vegetation types to maintain forage.

In grasslands or wetlands where the encroaching trees are less than 3-feet high, prescribed fire may be the preferred treatment. Mechanical methods may be the preferred treatment in areas where trees are over 3-feet high.

Consider utilizing soil information to help determine the extent of wetland or mollisol soils.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions to improve meadow and grassland conditions could include reducing encroaching conifers through mechanical treatment, including mastication, and use of wildland fire.

Fire Management (FIRE)

Potential Management Approaches: Ecosystem Component

Plan Component(s)

FW-GL-FIRE-01

FW-GL-FIRE-03

FW-DC-FIRE-01

FW-DC-FIRE-03

Purpose of Plan Component(s)

Fire has been and will continue to be the major change agent of vegetation within the landscapes of the Nez Perce-Clearwater National Forest. Given the importance of fire as a key ecosystem process, maintaining vegetation and forest diversity, sustaining fire adapted species and structures, and creating vegetation conditions at multiple scales that support and sustain native wildlife species in the short and long term are critical components of the Plan. Wildland fire could play a role in all areas of the forest, whether unplanned (wildfires) or planned (prescribed fires). Along with mechanical fuels treatments, these approaches can also create fuel conditions to mitigate the risk of wildfire to values at risk. A variety of management strategies could be used to meet desired vegetation conditions based on feasibility, economics, access, and successful implementation. These approaches would also support the three objectives of the National Cohesive Wildland Fire Management Strategy: restore resilient landscapes, maintain fire adapted communities, and provide for effective, safe fire response.

The fuels reduction associated with wildland fire also promotes a safer landscape for responders to work in to protect values from future wildfires and gives managers more opportunities in terms of strategies and tactics to respond to those incidents. Landscapes that are functioning in a healthy and sustainable manner would also be at less risk to loss of timber and other resource value from future wildfire events.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

One possible approach to achieving desired conditions and objectives would be for Interdisciplinary teams to consider what potential vegetation type fire regimes in the project areas encompass (Table 31). Consider treatments designed to emulate the fire regimes potential vegetation type within the project area and strive to meet vegetation desired conditions for the entire project area. Emphasize returning fire into Fire Regimes I, II, and III at levels identified in Table 32. Consider planning and analyzing for wildland fire to be used within the entire project area rather than just where mechanical treatment units are located. Consider mechanical treatments such as harvest or non-commercial thinning to remove ladder fuels especially shade tolerant species, as a precursor to application of wildland fire. Consider designing projects to take advantage of natural or existing barriers to fire spread such as rivers, rock outcrops or roads, etc. Treating larger blocks of lands would allow a holistic approach to attaining desired vegetation conditions and meeting objectives on a larger amount of the Nez Perce-Clearwater landscape.

Table 31. Fire regime, acres, and percentage of distribution on the Nez Perce-Clearwater

Fire Regime[1]	Definition[1]	Acres of National Forest System Land[2]	Percentage of Landscapes
I	0 to 35-year frequency; non-lethal, low or mixed severity	366,649	9.3
II	0 to 35-year frequency; replacement (high severity)	17,233	0.44
III	35 to 200-year frequency; mixed or low severity	2,121,896	53.8
IV	35 to 200-year frequency; replacement (high severity)	1,291,463	32.8
V	Greater than 200-year frequency; any severity	31,994	0.8
Sparsely Vegetated	National Land Cover database class	2,154	less than 1
Barren	National Land Cover database class	643	less than 1
Snow/Ice	National Land Cover database class	570	less than 1
Water	National Land Cover database class	6,993	less than 1

[1]Table information is adapted from (U.S. Department of Agriculture 2010).

[2]Acre summaries in this section may differ slightly due to the data source (raster data versus vector GIS data)

Data Source: Landfire 2010, v.1.2.0.

Table 32. Desired conditions for average amount and severity of wildland fire per decade within the Nez Perce-Clearwater Plan Area and fire regime group

Fire Regime Group[1]	Average Desired Acres Burned per Decade[2]	Desired Fire Return Interval (Frequency)[1]	Desired Fire Severity[1,3]
I	173,000 to 218,000	0–35 years	Low or mixed
II	9,000 to 11,000	0–35 years	High
III	286,000 to 325,000	35–200 years	Mixed or low

Fire Regime Group[1]	Average Desired Acres Burned per Decade[2]	Desired Fire Return Interval (Frequency)[1]	Desired Fire Severity[1,3]
IV	70,000 to 91,000	35–200 years	High
V	600 to 1,100	200+ years	High, mixed or low
Total	538,600 to 646,100	not applicable	not applicable

Desired condition applies to all potential vegetation types.

[1]Fire regime groups, fire return intervals, and fire severity types as defined in the FRCC Guidebook (U.S. Department of Agriculture 2010).

[2]Expected acres are the average range derived from Mean Fire Return Interval data from LANDFIRE 2012, v.1.3.0. Rounded to nearest hundred where applicable.

[3]First adjective indicates dominant severity. Mixed severity is defined as a combination of low to high fire severity within the perimeter of a single fire, or across consecutive events.

When planning projects adjacent to or near values at risk such as communities, infrastructure, or other private property focus on the area closest to the values, or strategic locations where the treatments would have the highest probability of reducing fire behavior from crown fire to surface fire. Treatments that are required to reduce fire behavior and risk to values may require more impact to other resources plan components such as down woody debris and snag retention. Focus vegetation management prescriptions on community protection rather than landscape restoration prescriptions within the WUI.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Projects that are planned and implemented under these Potential Management Approaches would aid in getting landscapes to desired conditions rather than small blocks within a project area. Once the projects are completed and adjacent project areas are treated, the vegetative conditions of the Nez Perce-Clearwater landscape would be more resilient to future wildfires. Fires would burn within their natural range of intensity, severity, and frequency. Landscapes would be more heterogeneous and resilient to future wildfires.

Values at risk would be able to withstand a fire event without significant loss. Responders would have a greater degree of success implementing the selected course of action during future wildfires. Costs associated with fire management would be reduced.

Landscapes meeting desired vegetative conditions and communities that are resilient to fire would leave more opportunity for managers to manage future wildfires to achieve desired conditions and meet objectives as defined in the Land Management Plan.

Invasive Species (INV)

Potential Management Approaches: Prevent Invasive Species

Plan Component(s)

FW-GL-INV-01

FW-GL-INV-02

FW-DC-INV-01

FW-OBJ-INV-01

FW-GDL-INV-02

Purpose of Plan Component(s)

The purpose of these plan components is to prevent the introduction of new invasive species and reduce the spread of existing invasive species.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Organizational Collaboration with other agencies, researchers, landowners, and interested groups increases the management effectiveness against invasive species infestations impacting or threatening Nez Perce-Clearwater resources. Cooperative weed management areas coordinate to determine weed management priorities, field inventories, and treatment strategies. At the time of this analysis, the Nez Perce-Clearwater participates in four cooperative weed management areas—Salmon River Weed Management Area, Frank Church-River of No Return Cooperative Wilderness Weed Management Area, Bitterroot-Selway Wilderness Cooperative Wilderness Weed Management Area, and the Upper Clearwater Weed Management Area. The Nez Perce-Clearwater also collaborates with the Idaho State Department of Agriculture. The Idaho State Department of Agriculture coordinates a statewide aquatic invasive species management and control program, acting to protect the integrity of the state's water bodies from the biological degradation caused by aquatic plants and pests. Additionally, the Nez Perce-Clearwater works with the Nez Perce Tribe Bio-Control Center, which specializes in rearing and providing insect "agents" to help control or manage targeted invasive plants.

Working with federal, state, and county agencies, tribes, non-government organizations, permittees, and adjacent landowners is the most productive and efficient strategy to support integrated pest management, including invasive species prevention, early detection and rapid response, control and containment, restoration and rehabilitation, and inventory and monitoring activities.

Prevention is a proactive approach taken to manage all aquatic and terrestrial areas within the National Forest System in a manner to protect native species and ecosystems from the introduction, establishment, and spread of invasive species. Prevention can also include actions to design public-use facilities to reduce accidental spread of invasive species and actions to educate and raise awareness with internal and external audiences about the invasive species threat and respective management solutions. Prevention measures include cleaning and drying watercraft and equipment between watersheds; washing vehicles and equipment upon entering a project area; establishing weed-free staging areas for emergency and daily operations; and potentially closing infested areas to travel. In addition, the Nez Perce-Clearwater enforces the Regional Noxious Weed Order, which prohibits possessing, storing, and transporting straw, hay, grain, seed, or other forage or mulch products without documentation that it is certified as weed free by a state certification process that meets or exceeds the North American Weed Free Forage standards or similar standards. The Nez Perce-Clearwater provides education and outreach on prevention practices through the Play Clean Go, Clean Drain Dry, and Idaho Weed Awareness Campaign.

Early detection and rapid response are important components of invasive species management for the Nez Perce-Clearwater and its collaborating partners. Early discovery and identification of newly arrived invasive species before they become widespread is critical to their eradication or control. Rapid response once a new invasive species is discovered is the most effective method for managing a newly arrived species. The Idaho State Department of Agriculture's annual monitoring program includes surveys and

sample collection for invasive plants, snails, clams, mussels, and crayfish. The Idaho State Department of Agriculture and its partners continue to monitor Idaho waterways for various listed aquatic invasive species. The Nez Perce-Clearwater has been participating in a National Forest pilot program using mobile applications to involve the public in early detection of high priority invasive species. Control and Management to actively reduce or eliminate invasive weed populations is required to apply an integrated pest management approach. This may include manual, mechanical, biological, and chemical ground-based herbicide applications. The amount of weed infested acres to be treated each year by various methods is largely dependent upon annual funding availability.

Inventory includes the systematic collection of information about weeds within the Nez Perce National Forest. This includes surveys for new weed infestations and revised data collection on existing weed infestations. Inventory information will be collected according to regional protocols and will be stored in the national database.

Monitoring and Evaluation includes the evaluation of trends in weed infestation number, size, and density; the effect of invasive weed infestations on native vegetation and other resources; the effect of treatments on target weeds; the effects of treatments on desirable vegetation; and effectiveness of treatments as implemented.

Restoration is a strategy to pro-actively manage aquatic and terrestrial areas within the National Forest System to increase the ability of those areas to be self-sustaining, resistant, and resilient to the establishment of invasive species. Seeding temporary or closed roads to reduce the potential for introduction and expansion of invasive species infestations is an example of this strategy and has been occurring on the Nez Perce-Clearwater for many years. Desirable non-native mixes of grasses and forbs have been used in the past, but native grasses and forbs have been used more frequently in recent years.

Where discharges of biological and chemical herbicides would leave residues in waters of the United States, a National Pollutant Discharge Elimination System permit would need to be obtained for those activities to comply with Section 301(a) of the Clean Water Act.

To limit the establishment of invasive species to aquatic ecosystems as per FW-DC-INV-01, prevention measures may be designed and implemented for aquatic invasive species at the project level. These activities could include but are not limited to proactive measures to avoid accidental introduction, transporting water across drainage boundaries for fire suppression, constructing stream fords, operating equipment in a riparian area and near a water course, and the use of pumps and sumps for fire suppression, or construction related dewatering activities.

To prevent the introduction of non-native species, guideline FW-GDL-INV-02 stipulates equipment operated by Forest Service employees and agency-authorized personnel that comes in contact with a water body should be inspected and cleaned for aquatic invasive species prior to use in a water body or when moving between subbasins (HUC08) during non-emergency operation, including pumps used to draft water from water bodies, water tenders, and helicopter buckets. Additionally, fire suppression activities should generally follow protocols outlined in the *Guide to Preventing Aquatic Invasive Species Transport by Wildland Fire Operations* (National Wildfire Coordinating Group 2017), the *Northern Rockies Coordinating Group Supplemental* (Northern Rockies Coordination Group 2018b), and the *Northern Rockies Coordinating Group Directive on Aquatic Invasive Species Protocols* (Northern Rockies Coordination Group 2018a). Fire operations should also generally follow industry standards for invasive species decontamination, such as vehicle washing.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

- Participation in Cooperative Weed Management Areas, along with County and State agencies, Nez Perce Tribe, private landowners, and various interest groups.
- Updating invasive species management environmental analyses and consultation documentation as necessary.
- Implementing invasive species treatment practices in accordance with environmental analyses including manual pulling of invasive plant species in sensitive areas; mechanical treatment; use of approved herbicides and use of biological control agents; and restoration.

Soils Resource (SOIL)

The Land Management Plan outlines a comprehensive strategy to conserve soils. The desired conditions include soil productivity and function that contribute to long-term resilience of ecosystems; provide organic matter and specifically coarse woody material sufficient to sustain soil processes; and conserve volcanic ash rich topsoil, a key characteristic for soil productivity. For other soil related management approaches see Potential Management Approaches: Targeted Disturbance.

Potential Management Approaches: Soil Productivity and Function

Plan Component(s)

FW-DC-SOIL-01

FW-STD-SOIL-01

MA2 and MA3-GDL-SOIL-01

Purpose of Plan Component(s)

The desired condition addresses the required level of soil productivity and function necessary for a resilient ecosystem. These elements are affected by the parent material, presence of ash, and condition of the forest floor, but also strongly dictated by climate. Desired levels of soil productivity and function maintain the nutrient status, water holding capacity, and physical soil environment needed for resilient vegetation communities.

Restoration using demonstrably effective methods can reestablish soil function despite the restored soil having signs of detrimental disturbance from bare soil and massive soil structure. The restoration sets in place conditions which advance recolonization of soil and vegetation communities.

The standard (FW-STD-SOIL-01) states that land management activities may be designed and implemented with protection of soil productivity and function in mind. This component does not apply to intensively developed sites such as mines, developed recreation sites, administrative sites, rock quarries, trails, or system roads (Northern Region Soil Management Supplement, FSM 2500-2014-1 (U.S. Department of Agriculture 2014e). Guideline MA2 and MA3-GDL-SOIL-01 provides slope restrictions for ground-based equipment used for vegetation and fuels management to maintain soil productivity. Exceptions can be authorized where soil, slope, and equipment are determined appropriate to maintain soil functions.

Possible Management Strategy

When assessing soil resources, the Northern Region Supplement to Forest Service Manual 2500, Chapter 2550 – Soil Management (U.S. Department of Agriculture 2014e) is a useful resource and provides region specific information. For soil field surveys, the Forest Soil Disturbance Monitoring Protocol (FSDMP) (Page-Dumroese et al. 2009a, b) could be used to assess soil indicators that are referred to in the Northern Region Supplement. Also, consider utilizing the Nez Perce-Clearwater Approach to Assessing Soil Function (see Analytical Tools section and Table 41 below), which compliments the Forest Soil Disturbance Monitoring Protocol method with locally derived indicators and thresholds with explicit ties to soil function type. The Soil Disturbance Vulnerability Index Tool is a useful method to aid in the prioritization or identification of which units require field review. The tool provides an index which could be used to stratify the landscape by potential risk of detrimental soil disturbance, soil characteristics and soil recovery potential. The use of the Forest Soil Disturbance Monitoring Protocol and the evaluation of soil functions do not explicitly address recovery timeframes of soil type. Observers can relate recovery trajectories from nearby disturbance such as old harvest sites and past wildfires.

The Soil Survey Geographic Database (SSURGO) and regionally developed soil data layers can help provide soil biological, physical, and chemical properties to identify the varying rates of productivity associated with parent material, topography, and climate zone. Productivity also varies with time since disturbance as measured in Page-Dumroese and Jurgensen (2006) for habitats on the Nez Perce-Clearwater and shown by aspect in Hicke et al. (2004) for Colorado pine.

To assess the sensitivity of the landscape for erosion, consider using the Clearwater National Forest Land System Inventory (Wilson et al. 1983) and Soil Survey of Nez Perce National Forest (U.S. Department of Agriculture and Natural Resources Conservation Service 2007) land type erosion hazard potential geospatial data when designing projects. These non-SSURGO surveys have erosion rates that reflect the geomorphology and rock types of the batholith, volcanics, and belt series. The land types classify erosion hazard potential into low, moderate, high, and very high. Subcategories include potential risk of surface erosion, subsurface erosion, mass wasting, debris avalanche; sediment delivery efficiency; and road suitability. These erosion rates were largely derived from data when road building was more prevalent. The erosion rates are specific to instances of bared soil surfaces, such as wildfire or timber harvest. For greater site specificity, either for individual timber units or watershed affected area, use a contemporary process model with inputs that integrate factors of soil cover, slope, terrain, and climate, such as GRAIP, GRAIP-Lite, the Water Erosion Prediction Project (WEPP) products.

Utilize the Clearwater and Nez Perce soil surveys and land type geospatial information to help identify sensitive soils such as granitic soils, hydric soils, and shallow and infertile soils. The land types essentially serve as a smaller resolution geology map. The published USGS maps provide greater context for the batholith and degree of grus, which affects erodibility, as well as the structural pitch and location of bedrock contacts. These contacts can create sources for mass failure that can impact these sensitive soils.

To reduce the probability of erosion on land types with high subsurface erosion potential, possible project specific design measures include limiting the amount of excavated skid trails and landings; fully recontouring all excavated skid trails and landings on these land types; and placing large woody material over the re-contoured slope for soil stabilization.

For soil assessments within livestock grazing allotments use indicators, such as biologic integrity, soil stability, and hydrologic function, as found in best available scientific information references; for

example, the multi-agency technical reference *Interpreting Indicators of Rangeland Health* (Pellant et al. 2020) compiled by the Bureau of Land Management to help determine rangeland soil conditions.

Guideline MA2 and MA3-GDL-SOIL-01 provides slope restrictions for ground-based equipment used for vegetation and fuels management to maintain soil productivity. Exceptions can be authorized where soil, slope, and equipment are determined appropriate to maintain soil functions. Technologies for use of ground-based equipment on slopes greater than 45 percent are rapidly changing. For example, tethered logging equipment can safely be used on slopes greater than 45 percent. The use of this equipment could be considered an exception if the soil, slope, and equipment are determined appropriate to maintain soil functions as described in the soil function visual indicators table in the Nez Perce-Clearwater Approach to Assessing Soil Function (See Analytical Tools).

Compliance for the soil resource relies on soil disturbance criteria as outlined in the Northern Region Soil Supplement (U.S. Department of Agriculture 2014e). However, professional judgement is used to interpret the level of these disturbance impacts, as the severity of impairment depends on the soil type and site conditions. The Land Management Plan emphasizes soil restoration of impaired soils. The Northern Region Supplement does not clearly account for soil restoration and thus, interpretation relies almost entirely on professional judgment. By parsing out impacts and restoration actions into elements of soil function, the effects of management actions can be more accurately portrayed. For example, a newly restored skid trail may improve the hydrologic function by breaking up soil compaction and allowing for improved infiltration. However, the soil biologic function may take years to restore as plants and soil microbes recolonize. See section 3.2.1.6 Soil Resources in the Land Management Plan Final Environmental Impact Statement for more information regarding soil productivity and function.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential Management Approaches: Ground Cover

Plan Component(s)

FW-GDL-SOIL-02

Purpose of Plan Component(s)

The intent of this component is to trend towards desired condition FW-DC-SOIL-02. Ground cover, such as litter, fine and coarse wood material, or vegetation, protects and insulates the soil surface that sustains adequate temperature and moisture for growth. These optimal conditions enable plant and microbe respiration within brackets of 10-40 degrees Celsius, and moistures above 10 percent (Davidson et al. 1998, DeLuca et al. 2019). The forest floor serves similarly to garden mulch with duff (highly decomposed organic matter) and litter holding water, ameliorating diurnal temperature swings, and protecting against soil loss from water and wind erosion. Natural areas typically have complete groundcover as noted Table 41. However, soil surfaces remain stable against water erosion generally if groundcover exceeds 85 percent cover as modelled using the Water Erosion Prediction Project's Disturbed WEPP module (Elliot et al. 1999).

This component applies to the productive land base and not to administrative areas, such as mines, developed recreation sites, administrative sites, rock quarries, trails, or system roads (U.S. Department of Agriculture 2014c).

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Tradeoffs exist between competing objectives for maintaining soil productivity, fuels, and silviculture. Local observations of recovery gaged from past forest disturbance can inform discussions when tailoring management treatments. Short term losses of soil cover will occur in step with predicted forest stand succession. Soil specialists may coordinate with silviculturists, and fuels specialists to design appropriate prescribe burn plans for the ecological site. In some instances, silviculturists may prefer less ground cover extent in the short term (one to five years) to reestablish early seral species, such as western larch and western white pine. In those instances, less ground cover extent would be consistent with the intent of the guideline since the guideline specifies that the depth and distribution of organic matter reflects the amounts that occur for the local ecological type and natural wildland fire regime.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential Management Approaches: Best Management Practices

Plan Component(s)

FW-STD-SOIL-03

Purpose of Plan Component(s)

This standard requires the use of federal and state best management practices during implementation of land management activities. In some instances, project specific design features or Nez Perce-Clearwater specific design features could be used to address site specific resource concerns.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Coordination between soil specialists, project foresters, timber sale administrators, and the Forest's Timber Contracting Officer help to ensure design features are implementable and can be included in timber sale contracts.

The use of soil moisture restrictions to determine when conditions are suitable for ground-based equipment to operate off temporary roads and skid trails, has proved to be quite effective in minimizing the level of dispersed detrimental soil disturbance that occurs during timber harvest while having very little impact on timber harvest operations. Restrictions are based on soil texture and the amount of rock fragments in surface soil layers. Utilize the Natural Resources Conservation Service guidance document *Estimating Soil Moisture by Feel and Appearance* (U.S. Department of Agriculture 1998) for making field determinations of relative soil moisture content in the field.

The use of best management practices is the primary mechanism for mitigating impacts to resources from Forest management actions. Best management practices used on the Nez Perce-Clearwater Forest come from federal and state direction.

Federal National Best Management Practices Program: The goal of the National Best Management Practices Program is to improve agency performance, accountability, consistency, and efficiency in protecting water quality, and is a significant component of the Agency's water strategy. The National Best Management Practices Program enables the Agency to readily document compliance with the

management of nonpoint source pollution at local, regional, and national scales and address the planning rule requirement for national best management practices (36 CFR 219.8(a)(4)). National best management practices are outlined in *Volume 1: National Core BMP Technical Guide* (U.S. Department of Agriculture 2012b). Direction for the implementation of this program is found in Forest Service Handbook 2509.19 and additional guidance is located at https://www.fs.fed.us/naturalresources/watershed/bmp.shtml.

Forest Service Handbook 2509.22, Northern Region and Intermountain Region (R1 and R4) Soil and Water Conservation Practices: The Soil and Water Conservation Practices handbook (U.S. Department of Agriculture 1988) provides site specific soil and water conservation practices for use on National Forest System lands in Northern Region and Intermountain Region to comply with direction in the Clean Water Act.

Idaho Forest Practices Act (IDAPA 20.02.01): Since 1974, the State of Idaho has encouraged sustainable forest management on Idaho forestland through compliance with the minimum Best Management Practices detailed in the "Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code." Best management practices are actions that focus on maintaining high quality water in forested watersheds and keeping sediment from reaching streams. They are enforced by the Idaho Department of Lands on state and private lands and by timber sale administrators on federal lands. Best management practices are regularly monitored by Idaho Department of Lands. Additionally, every four years, the Idaho Department of Environmental Quality conducts an audit of randomly selected logging projects across the state as part of Idaho's commitment to implementing the federal Clean Water Act. The audit team monitors stream temperature, sediment in the stream, shade, bank stability and the number of aquatic fish and invertebrate species to determine if best management practices were effective. Actions on federal lands in Idaho have had a 93 to 100 percent best management practice compliance rate since 1988 (IDEQ Forest Practices Water Quality Audits 1988 to 2016). Audits are available at the state website at https://www.deq.idaho.gov/water-quality/surface-water/monitoring-and-assessment/.

The Idaho Forestry Best Management Practices Field Guide: Using BMPs to Protect Water Quality (University of Idaho Extension Office 2015) is a field manual developed by the University of Idaho Extension. It includes information and diagrams about the Idaho Forest Practices Act, watersheds, working forests, forest roads, stream crossings, and timber harvest methods and post-harvest activities. It is available at https://idahoforests.org/product/idaho-forestry-best-management-practices-field-guide-using-bmps-to-protect-water-quality/.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential Management Approaches: Re-use of Impaired Soil Areas

Plan Component(s)

MA2 AND MA3-GDL-SOIL-02

Purpose of Plan Component(s)

Creation of additional soil disturbance would be limited by re-using existing disturbed areas, which would be decommissioned after use.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Identify legacy soil impairment through field reconnaissance or assessment using visual aids, such as timber sale contract maps, Lidar, NAIP imagery, etc. The primary focus for identifying legacy soil impairment would be in places where detrimental soil disturbance still exists, for example on old excavated skid roads/jammer roads and/or landings, and in areas where restoration activities would not exacerbate erosion rates, for example roads in riparian areas, mid-slope unstable areas, or headwall/scarp areas.

Coordinate with forester and timber sale administrator to create a logging system layout design that uses as many of the existing skid trails and landings as possible to limit the amount of new detrimental disturbance.

Use techniques outlined in 2.1.8.7 Potential Management Approaches: Soil Rehabilitation for restoration of temporary roads, skids trails, and landings after timber harvest operations are completed.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential Management Approaches: Restoration of Soil Impairment from Past Management Activities

Plan Component(s)

FW-OBJ-SOIL-01

MA2 AND MA3-GDL-SOIL-02

Purpose of Plan Component(s)

MA2 and MA3-GDL-SOIL-03 addresses legacy soil impairment and focus on establishing soil conditions that are better post-implementation than pre-project. This is a “leave it better than you found it” approach. FW-OBJ-SOIL-01 provides a restoration goal for legacy impacts to treat existing impaired soils within or adjacent to timber harvest units. The intended outcome is to move the existing soil condition towards the desired conditions and increase the rate and spatial extent of recovery through active restoration where desired conditions are not met.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

For timber sale contracts, restoration would be required if the purchaser re-used the impaired area during the current operation. If areas of impaired soil function are not re-used by purchaser, the Nez Perce-Clearwater could use stewardship or service contracts to treat detrimental soil disturbance.

Identifying areas in need of restoration could be achieved through field review, GIS NAIP imagery, google earth imagery and LIDAR data sets. Focus restoration efforts on areas with higher impacts, for example excavated skid trails, or heavily compacted and burned landings. Utilize the SSURGO database to help determine soil types and to aid in determining how soils may recover with restoration activities. For example, soils with high coarse fragments likely are not good candidates for subsoiling proposals.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Potential Management Approaches: Soil Rehabilitation

Plan Component(s)

FW-STD-SOIL-02

MA2 AND MA3-GDL-SOIL-05

Purpose of Plan Component(s)

The intent is to increase the rate of recovery when a management activity has impaired soil function. Certain circumstances of small temporal and spatial scale negative effects are acceptable when long term benefits will be gained. Restoration using demonstrably effective methods can reestablish soil function even if soils are still considered as detrimentally disturbed post-activity when using the Forest Soil Disturbance Monitoring Protocol (Page-Dumroese et al. 2009b). These plan components do not apply to intensively developed sites such as mines, developed recreation sites, administrative sites, rock quarries, trails or system roads as specified in the Northern Region Supplement FSM 2500-2014-1.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider obliterating temporary roads, skid trails, and landings following harvest and fuels treatment activities restores hillslope hydrology and slope stability in addition to restoring productivity on the road template.

Seeding exposed soils with a Northern Region approved native seed mixture or rake organic material from adjacent areas to inoculate soils could reduction soil erosion potential.

Decommissioning of temporary roads, skid trails, and landings, which includes recontouring and when available recovery of excavated ash cap topsoil, could be used to initiate recovery of soil productivity functions over time.

Utilizing methods similar to the Nez Perce-Clearwater Forest Road Decommissioning Methods (U.S. Department of Agriculture 2014b) when decommissioning temporary roads, skid trails, and landings following harvest and fuels treatment activities would support an increased recovery rate of soil productivity and function. Improvements in soil structure, water infiltration, aeration, root penetrability, and soil biological activity have been observed on the Clearwater National Forest after road decommissioning techniques were used (Lloyd et al. 2013).

Consider focusing soil restoration of skid trails on the beginnings of skid trails, nearest the landings, that receive the most successive equipment passes, followed by the middle sections of skid trails. The last section of skid trails may not need restorative actions, because there may be only slight compaction from a few equipment passes, soil layers are intact, and organic matter is still in place. Decompaction would be conducted to improve soil productivity and meet regional soil quality guidelines.

The following is an example of a project design measure that has been used on the Nez Perce-Clearwater in the last 10 years: “Soil decompaction of skid trails would span the width of the compacted areas and would be 6-14 inches deep. The intent of decompaction is to effectively loosen the ground to allow water penetration and revegetation and to minimize mixing the rocky sub-surface soils with the topsoil. The depth of decompaction may be adjusted to avoid turning up large rocks, roots, or stumps. Equipment

would not be permitted to operate outside the clearing limits of the skid trail. No decompaction work should be conducted during wet weather or when the ground is frozen or otherwise unsuitable."

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions could include active soil restoration, for example decommissioning temporary roads, skid trails, and landings.

Potential Management Approaches: Volcanic Ash Soils

Plan Component(s)

FW-DC-SOIL-03

Purpose of Plan Component(s)

The desired condition addresses the importance of volcanic ash-influenced soils for productive and resilient vegetation communities. If soil structure and function is intact, volcanic ash-influenced soils possess a unique ability to support high primary productivity.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The use of the Soil Survey Geographic Database (SSURGO) and other soil mapping efforts can identify locations of volcanic ash-influenced soils and identification of soil forming factors can isolate locations of increased sensitivity. Within the SSURGO database, soil taxonomy for instance could easily be filtered to quickly delineate potential volcanic ash soils.

Coordination between soil specialists, project foresters, timber sale administers, and the Forest's Timber Contracting Officer help to ensure extra precautions are used to limit the extent of disturbance to ash influenced soils and for best approaches to rehabilitate soils. Rehabilitation measures could include stockpiling topsoil or limiting the mixture of subsoils during decompaction.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions could include stockpiling topsoil before ground disturbing activities or limiting the mixture of ash soils with subsoils during decompaction.

Potential Management Approaches: Mass Movement Areas

Plan Component(s)

FW-GDL-SOIL-01

Purpose of Plan Component(s)

Soil erosion and mass wasting are natural processes, and many land types across the national forest have high inherent hazards of erosion, mass wasting, and landslides (Wilson et al. 1983, U.S. Department of Agriculture and Natural Resources Conservation Service 2007). These natural processes have occurred over long time periods and are fundamental factors in creating the present-day landscape. The Nez Perce-

Clearwater has over a thousand mapped landslides. The intent of this component is to not induce mass movement through management actions.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

When designing and construction temporary roads, it is beneficial to identify and avoid headwalls or unstable soils to limit mass movement.

Consider using the best available tools to identify mass movement areas to build the most accurate lines of evidence. The Nez Perce-Clearwater landslide prone definition (U.S. Department of Agriculture 2007a) and spatial layer is an appropriate coarse filter or initial step to identify mass movement areas.

- The Clearwater National Forest delineation for landslide prone terrain (LSP) is based on a slope break of 55 percent using a digital elevation model (DEM). Polygons delineating the 50 land type (LT) series, which are the slump or earthflow land types mapped in the Clearwater Land System Inventory, were included also in the (LSP) layer. The 50 LT includes some mass wasting areas less than 55 percent.
- The majority of the Forest Land of the Nez Perce Forest that is designated landslide prone is >60 percent slope and includes the 60 LT series. Land types 50CUU and 50EUU include slopes less than 60 percent, with LT 41 and LT 48 also including some slopes less than 60 percent. The 50 LT's are the slump or earthflow land types and are a concern to management due to active slope failure over large areas.

Other tools or information that are useful for fine filter analysis include: the Nez Perce-Clearwater landslide point geospatial layer, the Scarp Identification and Contour Connection Method (SICCM) tool, LiDAR, ortho imagery, geology and fault line mapping, watershed delineation tools that help identify water flow paths, land type erosion hazard data, elevation, aspect, and precipitation. The Scarp Identification and Contour Connection Method tool is an ArcGIS toolbox used to inventory landslides, identify unstable areas, and quantify the risks they pose to road networks or other infrastructure and resources. Locally derived references, such as USDA Forest Service (2007a), Wilson (Belt and Woo 1985) , Megahan et al (1974), Day and Megahan (1997), and McClelland et al (1997), contain useful information for identifying mass movement areas.

Silviculturists can help to identify areas with high potential for vegetation loss due to insects and disease or wildfire based on vegetation condition class and fire regimes.

Coordination with silviculturists and fuels management specialists can help to create prescriptions that would provide for short-term and long-term slope stability.

Effective indicators to aid in field verifying mass movement include steep (over 60 percent) concave slopes; hydrophytic vegetation (that is, sedges, moist site ferns); slumps, draws, and basins; past landslide locations; and obvious soil movement areas (typically indicated by curved or buttressed tree boles, soil creep, tension cracks, etc.).

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions to limit soil mass movement could include decommissioning roads that are located on high landslide prone soil types or planting deep rooted vegetation types to provide stabilization.

Potential Management Approaches: Soils with High Burn Severity

Plan Component(s)

MA2 AND MA3-GDL-SOIL-04

Purpose of Plan Component(s)

Soils with high burn severity have higher sensitivity to ground disturbance because of the change in soil biological and physical properties. Ground disturbing activities include temporary road, skid trail, and landing construction and the use of ground-based harvest equipment.

Soil burn severity is the effect of a fire on ground surface characteristics, including char depth, organic matter loss, and altered color and structure (DeBano et al. 1998). Soils with high burn severity become vulnerable to compaction from loss of soil structure and can erode readily from lack of soil cover and reduced ability to infiltrate rainfall. Severely burned soils are identified using the Field Guide for Mapping Post-Fire Soil Burn Severity (Parsons et al. 2010). These soils are less resilient to disturbances and additional management impacts to these sensitive soils can create conditions in which soil recovery is inhibited long term.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider using extra precaution when conducting management activities on soils with verified high burn severity to avoid permanent soil impairment.

Full coverage slash mats or other demonstrably effective methods to protect soils could be used to limit the impacts from ground-based harvest equipment.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions could include transporting slash or other material to severely burned site to cushion ground-based harvest equipment and limit soil disturbance or adding organic material to burned soils to add in rehabilitation.

Aquatic Ecosystems (WTR, CWN, RMZ)

Potential Management Approaches: Multiscale Analysis

Plan Component(s)

FW-STD-WTR-04

FW-STD-RMZ-01

FW-STD-RMZ-06

FW-STD-CWN-01

Purpose of Plan Component(s)

The standards are designed to constrain project activities so that they do not retard attainment of aquatic and riparian desired conditions.

Specialists may utilize multiscale analysis to determine consistency with these standards. Stream and riparian conditions not meeting desired conditions would include aquatic restoration to maintain or move toward desired conditions, including the use of fire to move toward those desired conditions.

The Stream Conditions Indicator Assessment is a component of the multiscale analysis and could be used during project development to evaluate the existing condition of stream and riparian indicators and determine whether they are within the range of desired conditions. Stream Conditions Indicator Assessment methodology is intended to provide a consistent documentation approach for evaluating whether project actions will or will not retard attainment of aquatic and riparian desired conditions. This methodology may be particularly useful for evaluating proposed aquatic restoration actions designed to restore or maintain conditions where indicators are functioning at moderate or low levels.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Multiscale Analysis can be used to help determine consistency with standards FW-STD-WTR-04, FW-STD-RMZ-01, FW-STD-RMZ-06, and FW-STD-CWN-01. The use of Multiscale Analysis could provide the context and identify needs for project activities to restore aquatic and riparian habitat, as well as the context and the role those activities play in the recovery of federally listed aquatic species. Multiscale Analysis is intended to result in recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

The Stream Conditions Indicator Assessment may be used during project development and assessment of project effects to provide an assessment of whether or not projects meet standards. During project development, use of the Stream Condition Indicator Assessment provides an indication of whether or not aquatic and riparian habitats are degraded or not, as well as describe the existing hydrologic and sediment regimes and floodplain function. The methodology allows current conditions to be assigned to one of the three categories of Functioning at High Level, Function at Moderate Level, or Functioning at Low Level. The Stream Conditions Indicator Assessment is integrated into the Multiscale Analysis, at the HUC12 scale, and may be incorporated into recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

Water and Aquatic Resources

Potential Management Approaches: Partnerships

Plan Component(s)

FW-GL-WTR-02

FW-GL-WTR-03

Purpose of Plan Component(s)

Goal 3 of the U.S. Forest Service National Fish and Aquatic Strategy (U.S. Department of Agriculture 2017) aims to strengthen partnerships and work across boundaries. The U.S. Forest Service relies on

many cooperators and partners to achieve its mission, including state agencies, other federal agencies, tribal governments, nongovernmental organizations, private landowners and water users, private business, and the sport fishing industry. Cooperators and partners help the agency achieve shared objectives for fish and aquatic stewardship across jurisdictional boundaries and multiple landownerships.

Goal FW-GL-WTR-02 aims to build and maintain partnerships to fund and implement projects that result in improved water quality and watershed and stream conditions. Goal FW-GL-WTR-04 seeks to work with partners to improve aquatic habitat, increase resiliency, and enhance ecological integrity by improving habitat for beaver where appropriate.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Water resources such as clean, cold water and healthy fish populations know no jurisdictional boundaries. To successfully fulfill agency responsibilities to maintain and restore these resources, work may be implemented across boundaries with willing neighbors and other partners in restoration. Restoration may be designed and implemented at the HUC12 subwatershed or HUC10 watershed scale. Treatment objectives and activities on National Forest System lands should generally be coordinated with other resource programs and with restoration on other ownerships. Watershed-scale restoration is an interdisciplinary effort requiring close coordination and working partnerships among multiple resource programs, other agencies, Tribal governments, watershed councils, adjacent landowners, collaborative groups, and other stakeholders and partners. Interdisciplinary skills provide both operational and technical capacity for implementing comprehensive watershed protection and restoration programs. Coordination and partnerships are essential to effectively address community and watershed-scale restoration needs and opportunities. Coordination also enhances skill, and funding sources needed to sustain multi-year programs.

Cooperate with national, state, and local partners when restoring beavers and beaver habitat.

Consider the use of Beaver Dam Analogs (BDAs), as they are inexpensive, easily installed, in-stream structures that mimic the effects of beavers on aquatic habitats. They can be used in areas without beavers to engineer habitat or to entice beavers to immigrate to an area.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Partnerships could be maintained or developed to identify, develop, fund, and implement restoration actions. Potential partners could include national, state, and county agencies, Tribes, and other groups and individuals.

Other possible actions could include restoration activities developed in cooperation with partners to improve water quality and watershed and stream conditions. For example, riparian planting, large woody debris placement, abandoned mine reclamation, or beaver dam analog installations.

Beaver reintroduction or supplementation into suitable habitats within their former range could also be a potential action.

Potential Management Approaches: Watershed Resiliency

Plan Component(s)

FW-DC-WTR-01

Purpose of Plan Component(s)

A watershed that is functioning properly is resilient and able to absorb or recover to the desired condition when affected by natural disturbances or land management activities. To maintain or restore watershed conditions, the Nez Perce-Clearwater proposes to provide the distribution, diversity, and complexity of watershed and landscape-scale features, including natural disturbance regimes and the aquatic and riparian ecosystems to which species, populations, and communities are uniquely adapted.

The intent is for watersheds and associated aquatic ecosystems to retain their inherent resilience to respond and adjust to disturbances, including climate change, without long-term, adverse changes to their physical or biological integrity.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

When assessing watershed resilience to climate change, utilize *Climate Change Vulnerability and Adaptation in the Northern Rocky Mountains: Part 1 and Part 2* (Halofsky et al. 2018a, b). The Northern Rockies Adaptation Partnership publication is the main source of information for identifying resource vulnerabilities and providing possible strategies and approaches to address vulnerabilities specific to the Northern Rockies.

Other information and resources useful for assessing watershed resilience and potential risk to climate change include:

- The Forest Service Climate Change Resource Center, which provides information and tools to land managers to address climate change in project planning and implementation. The Climate Change Resource Center offers educational information, decision-support models, maps, simulations, case studies, and toolkits, available at **https://www.fs.usda.gov/ccrc/tools.**
- U.S. Forest Service Office of Sustainability & Climate's Climate Tools and Data, available at https://www.fs.usda.gov/managing-land/sc/data-dashboard.
- The Climate Toolbox is an interagency website that offers a collection of web tools for visualizing past and projected climate and hydrology of the contiguous United States of America. **https://climatetoolbox.org/**.

When developing restoration projects, consider using an all-lands approach to work across ownership boundaries, seeking opportunities at the landscape scale, and fostering partnerships with state agencies, counties, other federal agencies, tribal governments, nongovernmental organizations, and private landowners.

Since ecological conditions on the Nez Perce-Clearwater vary greatly across the landscape, a variety of information can be used to assess terrestrial and aquatic conditions at differing temporal and spatial scales. Two primary tools the Forest Service uses include the Watershed Condition Framework and the Terrestrial Condition Assessment. These assessments cover all national forests across the United States. There are also a variety of subbasin, and watershed assessments completed by the Northwest Power and Conservation Council, Idaho Department of Water Resources, Idaho Department of Environmental

Quality, Nez Perce Tribe, county soil and water conservation districts, and the Nez Perce-Clearwater that describe watershed and stream conditions at a variety of scales and across multiple land ownerships. Additionally, the **PACFISH and INFISH Biological Opinion Effectiveness Monitoring (**PIBO) program provides status and trend information for stream habitat conditions within portions of the interior Columbia River and Missouri River basins.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions to improve watershed scale resilience could include restoring upland and riparian vegetation conditions at subwatershed scales; protection of existing and predicted future stream thermal refugia; removal of fish passage barriers that block or restrict access to historically occupied aquatic habitats or restrict connectivity between aquatic habitats; restoration of hydrologic connectivity of floodplains and meadows.

Potential Management Approaches: Watershed Restoration

Plan Component(s)

FW-OBJ-WTR-02

FW-OBJ-WTR-03

FW-STD-WTR-04

Purpose of Plan Component(s)

Standard FW-STD-WTR-04 specifies all projects to include measures to maintain aquatic and riparian desired conditions where they are currently met, or where not met, to restore or do not retard aquatic desired conditions to the extent that project activities would contribute to those conditions. Short-term adverse effects may be allowable when they support long-term recovery of federally listed species and aquatic and riparian desired conditions. The purpose of this standard is, at a minimum, to prevent long-term degradation of aquatic and riparian desired conditions and ideally, restore conditions where currently degraded.

The focus of watershed restoration is to complete needed restoration work from ridgetop to valley bottom to have healthy watersheds. It should be recognized that not all watersheds will be in good condition at the same time and that the condition of some existing high-quality watersheds will eventually be degraded by future disturbance and that replacement habitats will be needed for some populations of aquatic and riparian species (Reeves et al. 1995).

To show projects meet this standard, the effects of all projects strive to contribute to maintenance or improvement in these categories for any indicator.

To show that projects meet standard FW-STD-WTR-04, when proposed in watersheds where one or more indicators currently fall in the Functioning at Low Level, they strive to avoid short term adverse effects to that indicator, unless it can be shown using the tools in the Stream Condition Indicator Assessment (or their equivalent) that the project as a whole supports long-term recovery of federally listed species and achievement of desired conditions for streams and riparian areas.

An example of a project that results in a short-term adverse effect to an indicator is a road improvement project that includes instream and near stream disturbance to add a cross drain and replace an undersized culvert. This disturbance would result in a short-term increase in sediment delivery. Long term, however, if it can be shown the project results in reduced sediment delivery and reduces the risk of a road failure during an extreme precipitation event, this standard would be met.

Objectives FW-OBJ-WTR-02 and FW-OBJ-WTR-03 emphasize restoration in both priority watersheds identified under the Watershed Condition Framework and all watershed across Nez Perce-Clearwater. Under FW-OBJ-WTR-02, restoration of stream habitat within unconfined channels would occur to maintain or restore structure, composition, and function of habitat for fisheries and other aquatic species in streams with legacy effects, such as road building, mining impacts, abandoned railroad beds, etc., that caused channels to become straightened or incised, impaired beaver habitat, or diminished floodplain capacity. Activities that would contribute to this objective include berm removal, large woody debris placement, streamside road decommissioning, riparian planting, beaver dam analogs, process-based restoration, and floodplain restoration. For FW-OBJ-WTR-03, restoration within confined channels would restore step pool structure, composition, and function of habitat for aquatic species. Activities that would contribute to this objective include improving stream complexity, large wood debris or boulder placement, and riparian planting.

Possible Management Strategy and Approach

The following represents potential strategies that may be used to implement plan direction.

The use of the Stream Conditions Indicator Assessment during project development and assessment of project effects provides an assessment of whether or not projects meet the FW-STD-WTR-04 standard. During project development, use of the Stream Condition Indicator Assessment provides an indication of whether or not aquatic and riparian habitats are meeting desired conditions, as well as describe the existing hydrologic and sediment regimes and floodplain function. Current conditions would be assigned to one of the three categories of Functioning at High Level, Function Medium Level, or Functioning at Low Level. Stream Condition Indicator Assessment indicators are intended to be incorporated into recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

Both long term and short-term project effects could be assessed by use of tools to determine whether projects result in a shift in indicators in the Functioning at High Level, Functioning at Medium Level, or Functioning at Low Level categories.

Use of models such as GRAIP-Lite can provide an initial indication of road segments that may be at high risk for delivering sediment. Field review of these segments would provide a further refinement of modeled estimates and identify areas that could be improved or decommissioned to reduce sediment delivery over the long term. Implementation of projects to reduce chronic sediment delivery through improvement or elimination of the sediment delivery points would be a key method in demonstrating FW-STD-WTR-04 is met, in watersheds with streams with sediment loads outside of reference conditions.

Use demonstrably effective methods, such as those found in the Nez Perce-Clearwater Road Decommissioning Handbook (U.S. Department of Agriculture 2014d).

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Removing fish passage barriers that block or restrict access to historically occupied aquatic habitats or restrict connectivity between aquatic habitats
- Riparian and in-stream habitat restoration, for example, log structures or large woody debris placement
- Riparian planting
- Levee or berm removal to restore connectivity to floodplains
- Removing or relocating stream adjacent roads
- Abandoned mine reclamation

Potential Management Approaches: Sediment Delivery

Plan Component(s)

FW-DC-WTR-06

Purpose of Plan Component(s)

This desired condition addresses delivery of sediment to streams and includes the expectation that sediment delivery supports instream sediment transport, storage, and instream sediment substrate compositions that are within ranges that occur naturally (that is, in unmanaged watersheds). It also states that sediment regimes are not affected by management activities to the extent that availability of functioning spawning areas and interstitial spaces are reduced. Sediment deposition at levels that are generally higher than those in reference conditions have been documented in many managed watersheds, and this deposition reduces the availability and quality of spawning habitat for salmonids. It also reduces interstitial spaces, which are the spaces between rocks in the substrate of the stream. These spaces provide important winter rearing habitat, particularly for juvenile salmonids.

Reducing stream substrate fine sediments is expected to be an important part of recovering federally listed fish species and addressing the habitat needs of aquatic species of conservation concern. Sediment is also a concern in streams that provide public water. Sediment is one of the primary pollutants for streams to be classified as impaired and not meeting beneficial uses in the Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The use of indicators for sediment regime and channel form in the Stream Condition Indicator Assessment provides an assessment of sediment delivery points associated with grazing, mining, and roads or trails, as well as provide an assessment of effects from projects. It would also provide an assessment of current substrate conditions in streams, as determined by PIBO monitoring or the equivalent. In streams where channel complexity is lacking or where substrates are not functioning within desired conditions, stream and riparian restoration actions could be developed to reduce the amount of anthropogenic sediment delivered and can be developed to contribution to restoration of other functions such as floodplain connectivity, which after time, are expected to allow the stream to restore sediment conditions. FW-DC-WTR-01 strives for watersheds that are resilient and respond and adjust to disturbances, including filtering and processing of sediment. Stream complexity that includes large wood

and boulders that create pools and side channels, is a desirable condition for watersheds to withstand or recover from natural or human caused disturbances.

The use of existing models such as GRAIP, GRAIP-Lite, WEPP, and Northern Region and Intermountain Region, or newer models developed during the life of the plan that improve on existing models, collectively provide an assessment of existing condition and project effects, and whether actions associated with projects would move conditions towards meeting this desired condition where it is not currently met, or maintain it where it is currently met. These models allow for both short and long-term estimates of sediment delivery, and both may be modeled.

Use of models such as GRAIP-Lite also provide an initial indication of road segments that may be at high risk for delivering sediment. Field review of these segments would provide a further refinement of modeled estimates and identify areas that could be improved or decommissioned to reduce sediment delivery over the long-term.

Utilize the U.S. Forest Service Transportation Resiliency Guidebook - Addressing Climate Change Impacts on U.S. Forest Service Transportation Assets (U.S. Department of Transportation 2018) to help assess and identify climate change vulnerabilities within the transportation network that could become a sediment source and develop and prioritize adaptation strategies to reduce the likelihood of occurrence.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Reconstructing or improving FS system roads, focusing on roads with chronic sediment delivery to streams or potential future road prism failures
- Improving trail systems, focusing on trail segments with chronic sediment delivery to streams
- Decommissioning or relocation of roads on unstable slopes
- Removing or relocating stream adjacent roads
- Removing, relocating, or mitigating recreation facilities outside of riparian zones, including dispersed sites that are causing resource impairment

Potential Management Approaches: Flow Regimes

Plan Component(s)

FW-DC-WTR-07

Purpose of Plan Component(s)

This desired condition addresses instream flows and their timing, magnitude, duration, and spatial distribution of peak, high, and low flows. These elements can be affected by creation of openings in the forested landscape, particularly their size and spatial distribution can result in changes to instream flow regimes. Flow regimes can also be affected by roads and their locations. Desired streamflow regimes transport sediment and woody material and maintain stream channel dimensions that are within natural ranges.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Utilize the Nez Perce-Clearwater Approach to Assess Water Yield and Peak Flow outlined in Analytical Tools section below to evaluate existing or potential changes in flow regimes.

Water yield and peak flow are indicators included in the Multiscale Analysis, Stream Condition Function and Indicator Assessment. To help determine level of risk for potential alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows, consider using existing condition and proposed activity factors as described in Table 33. Factors for determining potential level of risk for water yield and peak flow. These factors are a synthesis of best available scientific information and are not intended to be established thresholds. This type of approach moves away from using a single number as an indicator of peak flow increases, but instead provides a systematic evaluation that provides a plausible and defensible range of potential increases that is based on the preponderance of evidence.

Table 33. Factors for determining potential level of risk for water yield and peak flow

Stream Condition Function	Level of Risk	Existing Condition	Proposed Activity
Functioning at High Level	Low potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	Low amount (less than 10% of HUC12) of forest vegetation openings, dispersed openings, low road density or hydrologic connectivity, stable streams with no evidence of stream erosion, unbalanced aggradation and deposition, or altered width-to-depth ratios	Activity is located in rain-dominate or snow-dominate zone, low amount (less than 10% of HUC12) of proposed forest openings, dispersed openings, stable stream types.
Functioning at Medium Level	Moderate potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	Moderate amount (10 to 20% of HUC12) of forest vegetation openings, concentrated openings, moderate road density or hydrologic connectivity, stable streams with some evidence of stream erosion, unbalanced aggradation and deposition, and altered width-to-depth ratios	Activity is located in transient snow zone, moderate amount (10 to 20% of HUC12) of proposed forest vegetation openings, concentrated openings, vulnerable stream types.
Functioning at Low Level	High potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	High amount (greater than 20% of HUC12) of forest vegetation openings, concentrated openings, high road density or hydrologic connectivity, high amount of evidence of stream erosion, unbalanced aggradation and deposition, or altered width-to-depth ratios	Activity is located in transient snow zone, high amount (greater than 20% of HUC12) of proposed forest vegetation openings, concentrated openings, vulnerable stream types.

In conjunction with an appropriate assessment, as described in the Nez Perce-Clearwater Approach to Assess Water Yield and Peak Flow, field surveys could be used to identify stream channels sensitive to channel erosion in watersheds where assessments have determined that the potential for stream alteration from peak flows may occur.

Field surveys using channel form indicators, as outlined in the Streams Conditions Indicator Assessment and evaluation of bankfull width to depth ratios, are also useful for determining whether a stream system has been affected by changes in the hydrologic regime.

If resource concerns related to increased peak flows and channel stability persist after an assessment has been completed consider working with silviculturist or fuels specialist to make adjustments in extent and intensity of forest overstory removal, such as altering silvicultural prescriptions, changing treating prescriptions on certain aspects, increasing tree retention, or creating more dispersed openings. These adjustments would be contingent upon the perceived risk to aquatic species, their associated habitat, and water quality.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Upsizing stream crossings to pass at a minimum 100-year flood events
- Restoring hydrologic connectivity of floodplains and meadows
- Storm proofing roads to accommodate intense precipitation events
- Restoring stream conditions to improve resiliency to changes in flow regimes
- Levee or berm removal to restore connectivity to floodplains

Potential Management Approaches: Priority Watersheds

Plan Component(s)

FW-OBJ-WTR-01

Purpose of Plan Component(s)

The watershed condition goal of the Forest Service is “to protect National Forest System watersheds by implementing practices designed to maintain or improve watershed condition” (FSM 2520.2). The Watershed Condition Framework meets this goal by establishing a systematic, consistent process for classifying watershed condition; improving the internal dialog among disciplines to focus and integrate programs of work; enabling a coordinated and priority-based approach for allocating resources to restore watersheds; and enhancing coordination with external agencies and partners.

Highlighting the value of the Watershed Condition Framework, Section 8405 of the Agricultural Improvement Act of 2018 (2018 Farm Bill) provides specific legislative authorization and requirements for the process, one of those being to identify for protection and restoration up to five priority watersheds in each national forest.

The 2012 Planning Rule requires that plans identify watersheds that are a priority for maintenance or restoration (36 CFR 219.7(f)(1)). Priority watersheds are identified through the Forest Service Watershed Condition Framework. Additional priority watersheds will be determined throughout the life of this plan.

Objective FW-OBJ-WTR-01 targets completing the actions identified in watershed restoration action plans for 15 priority watersheds as identified under the Watershed Condition Framework process every 15 years.

Actions are implementation of essential projects included in a watershed restoration action plan. Accomplishments are recorded in the Watershed Classification Assessment Tracking Tool (WCATT); a Forest Service national web-based map application. A watershed is considered to have moved to an improved condition class and reported as such in WCATT when all of the essential projects necessary to move a watershed to an improved condition class or improving trajectory, as identified in a Watershed Restoration Action Plan are completed.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The Watershed Condition Framework consists of an iterative process involving 6 steps. Refer to Watershed Condition Framework (U.S. Department of Agriculture 2011) for additional details in applying the framework process.

Selection of Priority Watersheds

The Nez Perce-Clearwater will select one to five HUC12 subwatersheds at a time to prioritize restoration efforts. The number should represent a reasonable and achievable 5-year program of work and within current budget levels. The priority watersheds must be approved by the Nez Perce-Clearwater national forest supervisor.

The selection of priority watersheds is not necessarily picking the worst scoring watersheds as rated through the watershed condition classification process. Priority watersheds should be selected after analysis and evaluation using a multi-functional interdisciplinary approach, with the consideration of:

- Agency watershed restoration policies and priorities that have been established at other scales, including national- and regional-scale restoration strategies.
- The importance of water and watershed resources (resource value), the urgency of management action to address conditions and threats, and economic considerations.
- Alignment with other Forest Service strategic objectives and priorities.
- Alignment with the strategies and priorities of other Federal and State agencies, tribes, community and collaborative efforts, nongovernmental conservation organizations, and public desires.

The participation of partners in the priority selection process is expected and highly encouraged. The 2012 Planning Rule and the planning directives require the responsible official to reach out to local, state, tribal, and other federal agencies and interest groups when identifying priority watersheds (FSH 1909.12, section 22.31). Priority watersheds could occur in watersheds included in the Conservation Watershed Network that require process-based restoration strategies to support ESA listed fish species and Species of Conservation Concern.

By design, Watershed Condition Framework priority watersheds are not intended to be permanent designations; when all needed work is completed, a new Watershed Condition Framework priority watershed is to be identified using the same process and criteria described above. Occasionally, a change in a WCF priority watershed designation may be needed for other reasons, such as significant disturbance events (for example, wildfire or severe flooding), loss of a critically important restoration partner, or to attain better alignment with active Agency and Unit priorities. Therefore, the 2012 Planning Rule includes priority watersheds as other plan content, so that an administrative change could be used to quickly respond to changes in priority.

Changes to Watershed Condition Framework Priority Watersheds in a plan may be made by administrative change at any time (FSH 1909.12, chapter 20, section 21.5). The responsible official should give public notice before issuing an administrative change (36 CFR 219.13(c)(2)). The public notice may be made in any way the responsible official deems appropriate, except, at a minimum, the notice must be posted online on the administrative unit's planning website. Administrative changes are not subject to the objection process (36 CFR 219.50).

Development of Watershed Restoration Action Plans

Once a Watershed Condition Framework priority watershed is selected, a watershed restoration action plan (WRAP) is developed. The WRAP identifies specific essential projects necessary to achieve the watershed condition improvement or maintenance goals. The watershed restoration action plan should document specific problems affecting watershed and ecological conditions, identify appropriate projects that address these problems, propose an implementation schedule, project sequencing, potential partners, funding sources, and monitoring and evaluation.

This suite of essential projects may be designed to achieve specific and explicit restoration goals and objectives for the watershed, address the root causes (rather than symptoms) of degradation, be fit to the local ecological potential of the watershed and ecosystem, and be of sufficient scope and scale to address these problems (Beechie et al. 2010). Moreover, identified essential restoration projects may be based on a consideration of the potential effects of climate change and the ability of restoration actions to minimize them. In particular, water availability, stream flows and stream temperature should be considered. Identified restoration project may also be informed by and consistent with any applicable recovery plans for federally listed aquatic species, State water quality restoration plans, or both.

Essential projects can either directly correct a problem (for example, restore an abandoned mine) or substantially reduce risk to soil, hydrologic, or riparian function (for example, invasive weed treatment, hazardous fuels reduction, or storm proofing system roads). Essential projects may be individual projects or a group of projects that cumulatively require work or action to maintain or improve watershed condition class. A watershed will generally require a suite of essential projects to move a watershed to a better condition class (for example, decommission five roads, upgrade 15 culverts, change a grazing system, remove three check dams, remove hazardous fuels from 30 acres of riparian area, and restore 20 acres of native riparian vegetation).

Enough essential projects should be identified to move the watershed to next better class, primarily for the attributes that are functioning at risk or have impaired function, while also considering the law of diminishing returns. The focus should be on addressing the most important concerns that can provide the most benefit instead of identifying low risk projects that offer little benefit, especially when more important restoration is needed elsewhere.

Utilization of the Multiscale Analysis management approach may be useful for developing watershed restoration action plans for priority watersheds. Also consider climate change vulnerabilities and adaptation strategies when designing essential projects.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction. Potential actions include active restoration of watershed conditions, including but not limited to, riparian planting; decommissioning or relocation of stream adjacent system roads; storm proofing roads; hydrologically disconnecting roads from streams; invasive species treatment; upland and riparian vegetation

management; wildland fire management, including prescribed fire; stream habitat restoration; abandoned mine reclamation; and improvement of developed and dispersed recreation sites.

Potential Management Approaches: Best Management Practices

Plan Component(s)

FW-STD-WTR-02

Purpose of Plan Component(s)

Best management practices, often referred to as "BMPs" are methods, measures, or practices used to address the Clean Water Act (CWA) objective of maintaining and restoring the chemical, physical, and biological integrity of the Nation's waters. The use of best management practices is the primary mechanism for mitigating impacts to resources from Forest management actions.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Incorporate best management practices from the following federal and state direction into proposed actions of land management actions that have the potential to affect water quality.

Federal National Best Management Practices Program: The Forest Service initiated the National Best Management Practices Program in 2012 to improve management of water quality consistent with the federal Clean Water Act and state water quality programs and to integrate water resource protection into management activities conducted across the landscape. The goal of the National Best Management Practices Program is to improve agency performance, accountability, consistency, and efficiency in protecting water quality, and is a significant component of the Agency's water strategy. The National Best Management Practices Program enables the Agency to readily document compliance with the management of nonpoint source pollution at local, regional, and national scales and address the planning rule requirement for national best management practices (36 CFR 219.8(a)(4)). National best management practices are outlined in the *National Core BMP Technical Guide* (U.S. Department of Agriculture 2012b). Direction for the implementation of this program is found in Forest Service Handbook 2509.19 and additional guidance is located at https://www.fs.fed.us/naturalresources/watershed/bmp.shtml.

Forest Service Handbook 2509.22, Northern Region and Intermountain Region (R and R4) Soil and Water Conservation Practices: The Soil and Water Conservation Practices handbook (U.S. Department of Agriculture 1988) provides site specific soil and water conservation practices for use on National Forest System lands in Northern Region and Intermountain Region to comply with direction in the Clean Water Act.

State of Idaho: Subsection 350.03 of the Idaho Water Quality Standards (IDAPA 58.01.02) lists best management practices for the purpose of limiting nonpoint source pollution. Those specific to actions on Forest Service lands are Rules Pertaining to the Idaho Forest Practices Act, Stream Channel Alteration Rules, and Dredge and Placer Mining Operations in Idaho.

Idaho Forest Practices Act (IDAPA 20.02.01): Since 1974, the State of Idaho has encouraged sustainable forest management on Idaho forestland through compliance with the minimum Best Management Practices detailed in the "Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code". Best management practices are actions that focus on maintaining high quality water in forested watersheds and keeping sediment from reaching streams. They are enforced by the

Idaho Department of Lands on state and private lands and by timber sale administrators on federal lands. Best management practices are regularly monitored by Idaho Department of Lands. Additionally, every four years, the Idaho Department of Environmental Quality conducts an audit of randomly selected logging projects across the state as part of Idaho's commitment to implementing the federal Clean Water Act. The audit team monitors stream temperature, sediment in the stream, shade, bank stability and the number of aquatic fish and invertebrate species to determine if best management practices were effective. Actions on federal lands in Idaho have had a 93 to 100 percent best management practice compliance rate since 1988 (IDEQ Forest Practices Water Quality Audits 1988 to 2016). Audits are available at the state website at http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/forest-practices-audits/.

The Idaho Forestry Best Management Practices Field Guide: Using BMPs to Protect Water Quality (University of Idaho Extension Office 2015) is a field manual developed by the University of Idaho Extension. It includes information and diagrams about the Idaho Forest Practices Act, watersheds, working forests, forest roads, stream crossings, and timber harvest methods and post-harvest activities. It is available at https://idahoforests.org/product/idaho-forestry-best-management-practices-field-guide-using-bmps-to-protect-water-quality/.

Stream Channel Alteration Rules (IDAPA 37.03.07), as adopted by the Board of Water Resources: Section **055 of the** Stream Channel Alteration Rules **outlines the minimum standards to be used during stream channel alteration activities.** The standards are intended to cover the ordinary type of stream channel alteration and are included as minimum conditions for approval of stream alteration permits.

Dredge and Placer Mining Operations in Idaho (IDAPA 20.03.01), as adopted by the Board of Land Commissioners: Rules Governing Dredge and Placer Mining Operations in Idaho are intended to implement the requirements for operation and reclamation of placer and dredge mining set forth in the Idaho Code. Compliance with these rules will allow removal of minerals while preserving water quality and ensuring rehabilitation for beneficial use of the land following mining.

The Manual of Best Management Practices for the Mining Industry in Idaho (Idaho Department of Lands 1992) was developed through a joint effort, including state and federal agencies and mining associated organizations. The handbook is intended to be an informational reference guide that can be used by both industry and regulatory agencies. The best management practices outlined in the manual are recommended for use but are not required by law.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions include implementation of best management practices, for example, adding cross drains and gravel on system roads, utilizing erosion control barriers, limiting the types of herbicides to treat invasive plant species in riparian areas, revegetating mining sites to minimize soil erosion, moving livestock when prescribed utilization levels are reached, maintaining drainage structures on system trails, or obliterating temporary roads.

Potential Management Approaches: Water Quality

Plan Component(s)

FW-GL-WTR-02

FW-DC-WTR-05

FW-STD-WTR-06

Purpose of Plan Component(s)

The goal is intended to promote building and maintaining partnerships to fund and implement projects that result in improved water quality and watershed and stream conditions.

The desired condition for streams originating from within or flowing out of the Nez Perce-Clearwater is to meet or exceed applicable state water quality standards, fully support designated beneficial uses, and is of sufficient quality to support surrounding communities, municipal water supplies, and natural resources.

To restore watersheds, standard FW-STD-WTR-06 requires management activities in watersheds with approved total maximum daily loads to be designed to comply with the total maximum daily load (TMDL) allocations following project implementation. The wording "following project implementation" allows short-term impacts to water resources may be acceptable when those activities support long-term benefits to water quality.

The Idaho Department of Environmental Quality is responsible for ensuring that Idaho's surface, ground, and drinking water resources meet state water quality standards. A memorandum of understanding (20-MU-11046000-011) has been established to document cooperation between the Idaho Department of Environmental Quality, Bureau of Land Management, and the U.S. Forest Service in Idaho (U.S. Department of Agriculture 2020a) to implement the nonpoint source water quality provisions of the federal Clean Water Act for the State of Idaho.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

To promote building and maintaining partnerships consider working cooperatively:

- with federal agencies, state agencies, and tribes to meet applicable water quality requirements,
- with the Idaho Department of Environment Quality to develop appropriate strategies needed to meet water quality standards and support beneficial uses of 303(d) listed water bodies on federal land, and
- with the Idaho Department of Environment Quality as existing TMDLs and implementation plans in the planning area are implemented and new ones are developed.

Engage with local watershed councils and advisory groups in evaluating water quality, aquatic resources conditions, development of TMDLs and their implementation plans, and monitoring so corrective actions may be taken to meet environmental standards.

Participate in inter-agency coordination and cooperative monitoring and information gathering to evaluate progress towards TMDL goals.

The following documents offer guidance on water quality standards and nonpoint source management and can be found on the Idaho Department of Idaho Quality website:

- Idaho Nonpoint Source Management Plan (State of Idaho Department of Environmental Quality 2015)

- State of Idaho Water Quality Standards (IDAPA 58.01.02) (State of Idaho Department of Environmental Quality 2016)
- Idaho's Integrated Report (State of Idaho Department of Environmental Quality 2022a, b) documents compliance with 305(b), 303(d), and 314 of the Clean Water Act and is updated every two years.

As outlined in the MOU with Idaho Department of Environmental Quality, to better demonstrate project activities are being conducted in a manner consistent with Idaho Nonpoint Source Management Program, consider incorporating responses to the eleven questions outlined in the Federal Consistency Checklist into NEPA analyses. These questions apply to any federal, local, or state agency conducting nonpoint source activities:

1. Was the appropriate regional office of the IDEQ informed of the activity and steps to be taken to minimize nonpoint source pollution?
2. Was a determination made if water quality limited (State of Idaho 303(d) list) stream segments exist within the project areas?
3. Was a determination made if Outstanding Resource Waters (ORWs) exist within the project area?
4. Were the "appropriate beneficial uses" for the water bodies in the project area identified?
5. Were the water quality standards and criteria to protect the "appropriate beneficial uses" identified and are they being met?
6. Have the nonpoint source activities regulated by the Idaho Water Quality Standards been identified?
7. Were state approved BMPs for each nonpoint source activity identified?
8. For each nonpoint source activity that does not have approved BMPs, were management practices identified that demonstrate a knowledgeable and reasonable effort to minimize resulting water quality impacts?
9. Was a monitoring plan developed, and when implemented, did it provide adequate information to determine the effectiveness of the approved or specialized BMPs in protecting beneficial uses?
10. Was a process (including feedback from water quality monitoring) identified for modifying the approved or specialized BMPs to protect beneficial uses of water identified?
11. Did pre-project planning and design include an analysis of water quality resulting from the implementation of the proposed activity sufficient to predict exceedances of water quality criteria for the beneficial use(s), or in the absence of such criteria, sufficient to predict the potential for beneficial use impairment?

As the Forest Service is responsible for implementing nonpoint source pollution controls and meeting Idaho water quality standards and beneficial uses, consider utilizing guidance found in Forest Service Manual 2532 and Forest Service Handbook 2509.22 Northern Region and Intermountain Region Amendment, including Manual and policy updates such as the National Forest Best Management Practices Program. A primary tool for mitigating nonpoint source pollution is through implementation of best management practices (BMPs). Other nonpoint source strategies include, among other things, integrated project planning that considers temporal and spatial distribution of impacts, identification of priority restoration needs, implementing restoration, implementing BMPs on all ground disturbing activities, and monitoring.

Where discharges of biological and chemical herbicides would leave residues in waters of the United States, a National Pollutant Discharge Elimination System permit would need to be obtained for those activities to comply with Section 301(a) of the Clean Water Act.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Abandoned mine reclamation
- Removing, relocating, or mitigating recreation facilities outside of riparian zones, including dispersed sites that are causing resource impairment
- Reconstructing or improving FS system roads, focusing on roads with chronic sediment delivery to streams or potential future road prism failures
- Limiting the types of herbicides to treat invasive plant species in riparian areas
- Restoring stream complexity to improve thermal refugia
- Restoring stream connectivity to floodplains to allow for natural processes to occur

Potential Management Approaches: Riparian Management Zones

Plan Component(s)

FW-DC-RMZ-01

FW-DC-RMZ-02

FW-DC-TE-03

FW-DC-TE-04

FW-DC-TE-05

FW-DC-GS-04

W-OBJ-RMZ-01

FW-OBJ-TE-01

FW-OBJ-GS-01

FW-OBJ-TT-02

Purpose of Plan Component(s)

The RMZ desired conditions describe the characteristics of Riparian Management Zones that projects may strive to maintain or achieve, emphasizing the importance of these areas to stream function. Important indicators to consider are summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration. In this case, the word “appropriate” is intended to be synonymous to those conditions that occur in reference watersheds, that are largely unaltered by human caused actions. A key concept is maintaining or achieving a range of riparian

conditions in managed watersheds that is similar or the same as reference watersheds. These desired conditions

The other desired conditions describe additional integrated vegetation characteristics to trend towards and promote plant communities being comprised of a diverse mix of native grass, forb, shrub, and tree species (FW-DC-TE-03); vegetation reflecting natural disturbance regimes and the composition, structure, function, and connectivity of native plant communities are appropriate for a given landscape and climatic setting (FW-DC-TE-04); riparian vegetation that includes native assemblages of hardwood trees, deciduous shrubs, conifers, and, where appropriate, unique coastal disjunct species (FW-DC-TE-05); and wetland graminoid and riparian shrub habitat type groups that are comprised of a mosaic of communities dominated by native species which tolerate and are adapted to periodic flooding and an associated seasonally high-water table (FW-DC-GS-04).

The objectives promote active restoration of riparian management zone vegetation. In some instances, implementation of these integrated objectives may overlap on the ground.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The use of the Stream Conditions Indicator Assessment (See the management approach in the Aquatic Ecosystems section) during project development and assessment of project effects provides an assessment of whether projects meet this standard or not. Use of the assessment would provide an indication of whether or not aquatic and riparian habitats are meeting desired conditions, as well as describe the existing hydrologic and sediment regimes and floodplain function. Current conditions would be assigned to one of the three categories of Functioning at High Level, Function at Medium Level, or Functioning at Low Level. Stream Condition Indicator Assessment indicators can be used independently to assess desired conditions and needed actions to maintain or move toward those desired conditions. The Stream Condition Indicator Assessment is also the preliminary step to being integrated into the Multiscale Analysis, at the HUC12 scale, and incorporated into recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

The use of Multiscale Analysis (See the management approach in Aquatic Ecosystems section) provides the context and need for project activities to maintain or restore riparian habitat, as well as the need to conduct activities within RMZs to achieve desired conditions. It is most appropriately used for project planning where there are multiple resource objectives, both within RMZs and outside of them.

Coordinate with other resource programs to achieve or trend toward desired conditions FW-DC-TE-03, FW-DC-TE-04, FW-DC-TE-05, and FW-DC-GS-04 and design restoration projects to achieve objectives specific to riparian areas, such as improving 300 to 700 acres of riparian habitat every 5 years (FW-OBJ-RMZ-01); restoring hardwood species or allow disturbance processes, such as fire or other disturbance, on 3,000 to 4,200 acres of riparian areas every 5 years (FW-OBJ-TE-01); maintaining existing meadows and grasslands by reducing conifer encroachment into meadows and grasslands on 500 acres every 5 years (FW-OBJ-GS-01); and increasing wet meadow associated culturally important botanical species, such as camas, production on 50 acres every 5 years (FW-OBJ-TT-02).

When developing projects to restore vegetation conditions in riparian management zones, working collaboratively with applicable resource programs could aid in determining departure from desired conditions or reference conditions and help to prioritize restoration areas. Consider using a range of factors and tools, such as disturbance processes, fire regime, hydrologic regime, geomorphic characteristics, stream gradient, seral stage, succession stage, land types, soil types, habitat type or guild,

plant species in reference areas, plant species appropriate to the area, Rosgen channel type, and Beaver Restoration Analysis Tool (BRAT).

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Riparian planting
- Riparian area fencing
- Meadow restoration
- Restoring hydrologic connectivity of floodplains and meadows
- Levee or berm removal, reconnection, or creation of floodplain features
- Removing or relocating stream adjacent roads
- Thinning of undesirable overstory and understory in riparian management zones
- Utilizing prescribed fire in riparian management zones to emulate natural disturbance processes
- Removing, relocating, or mitigating recreation facilities outside of riparian zones, including dispersed sites that are causing resource impairment

Potential Management Approaches: Vegetation Management in Riparian Management Zones

Plan Component(s)

FW-STD-RMZ-01

FW-STD-RMZ-06

Purpose of Plan Component(s)

Riparian management zones are not intended as exclusion areas or reserves. Instead, management activities designed to benefit aquatic and riparian-dependent resources and move the landscape towards desired conditions are allowed and encouraged within them. Plan component FW-STD-RMZ-07 establishes default riparian management zone widths that can contain both upland and riparian vegetation. Although the default riparian management zones widths are uniform, the management of them is not intended to be. These standards provide guidelines for treatment of vegetation in riparian management zones, including harvest and fuels treatments in riparian management zones (FW-STD-RMZ-01) and ignition of prescribed fire in riparian management zones (FW-STD-RMZ-06).

These standards define and describe the circumstances under which timber harvest, silvicultural treatments, and direct ignition of prescribed fire may occur in Riparian Management Zones. Vegetation management may only occur to restore or enhance aquatic and riparian-associated resources. Direct ignition of prescribed fire in RMZs is generally not allowable unless two conditions are met. Both standards contain the direction that, in all cases, existing stream conditions are maintained or enhanced, and effects to threatened or endangered species and their designated critical habitat are considered. These standards refine similar direction in the PACFISH and INFISH amendments and provide specific

clarification of the conditions under which silvicultural activities and ignition of prescribed fire are appropriate.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Utilize the Stream Conditions Indicator Assessment (see the management approach in the Aquatic Ecosystems section) during project development and assessment of project effects to provide an assessment of whether projects meet this standard or not. Use of the Stream Condition Indicator Assessment provides an indication of whether aquatic and riparian habitats are meeting desired conditions. Stream Condition Indicator Assessment indicators are intended to be integrated into the multiscale analysis, and to be incorporated into recommendations for conservation measures for aquatic species including consideration at different spatial scales.

Utilize multiscale analysis (see the management approach in the Aquatic Ecosystems section) to provide the context and need for project activities to maintain or restore riparian habitat, as well as the need to conduct activities within RMZs to achieve desired conditions. It is most appropriately used for project planning where there are multiple resource objectives, both within RMZs and outside of them. Multiscale analysis describes existing species and age composition of the vegetation within RMZs provides a link between those conditions and stream conditions outside of reference, and thus provide a rationale that treatments are needed (or not).

This information informs the need to conduct management activities in RMZs and support conclusions that the activities are either needed to improve stream and riparian conditions, or at a minimum, show that these actions to not retard attainment of aquatic and riparian desired conditions.

For direct ignition is RMZs, multiscale analysis describes the current fuel and vegetative conditions in RMZs along specific stream reaches and compares those conditions to the context of broader conditions within the HUC12 and HUC10. Fire history compared to current conditions would describe any departures in fire regimes. A description of existing conditions, combined with proposed objectives for prescribed fire and the context in which these objectives were developed, would inform appropriate methods for introducing fire into the RMZ. Multiscale analysis informs project objectives and methods that are consistent with the standard's requirements that actions will not retard attaining aquatic and riparian desired conditions, that existing stream conditions are maintained or enhanced, and that adverse effects to threatened or endangered species are avoided.

Projects where direct ignition in riparian management zones is planned have burn plan objectives for low severity fire effects (less than 25 percent overstory mortality) within riparian management zones.

Post project implementation monitoring following direct ignition within the RMZ should be conducted by an integrated resource cadre in cooperation with the Nez Perce Tribe and other partners, when practicable. Review 10 percent of projects where direct ignition in the Riparian Management Zone occurs. For post project monitoring, utilize Stream Condition Indicator Assessment to determine if implementation of the project maintained or improved aquatic desired conditions.

Use adaptive management to improve burn plan objectives, based on project monitoring and stream condition indicator assessment or multiscale analysis, by incorporating lessons learned into future projects.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction. Examples of possible actions include:

- Riparian planting
- Invasive species treatment
- Thinning of undesirable overstory and understory in RMZs
- Prescribed fire in RMZs to emulate natural disturbance processes

Potential Management Approaches: Conservation Watershed Network

Plan Component(s)

FW-STD-CWN-01

Purpose of Plan Component(s)

This standard requires all projects proposed in Conservation Watershed Network watersheds to include measures that result in aquatic and riparian conditions that are moving towards meeting their desired conditions, and recovery of federally listed aquatic species, where desired conditions are not met.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The use of the Stream Conditions Indicator Assessment during project development and assessment of project effects provides an assessment of whether projects meet this standard or not. During project development, use of the stream condition indicator assessment would provide an indication of whether or not aquatic and riparian habitats are meeting desired conditions, as well as describe the existing hydrologic and sediment regimes and floodplain function. Current conditions would be assigned to one of the three categories of Functioning at High Level, Function at Moderate Level, or Functioning at Low Level. The Stream Conditions Indicator Assessment is intended to be integrated into the Multiscale Analysis, at the HUC12 scale, and be incorporated into recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

Multiscale Analysis determines consistency with this standard. The use of Multiscale Analysis provides the context and need for project activities in restoring aquatic and riparian habitat, as well as the context and role of project activities in recovery of federally listed aquatic species. Multiscale Analysis is intended to result in recommendations for conservation measures for aquatic species by considering data from different spatial scales and informing project effects analyses.

For projects proposed in the Conservation Watershed Network, where one or more indicators currently fall in the Functioning at Low Level category, and the project will result in short term adverse effects to that indicator, measures may be included that move that indicator towards the Functioning at High Level or Functioning at Moderate Level category. Multiscale Analysis provides supporting rationale for how project actions collectively contribute to meeting this standard, that is, they must be shown to support or contribute towards recovery of federally listed aquatic species and achievement of aquatic and riparian desired conditions.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Examples of possible actions include:

- Installation of beaver dam analogs, relocation of roads, increased drainage through roads, and reducing conifer encroachment
- Restoring hydrologic connectivity of floodplains and meadows
- Levee or berm removal, reconnection, or creation of floodplain features
- Beaver reintroduction or supplementation into suitable habitats within their former range
- Monitoring, including stream temperature, stream conditions, bank stability, stream substrate, steam flow, water quality, fish habitat, large wood material, PIBO monitoring
- Riparian and in-stream habitat restoration, for example, log structures or large woody debris placement

Potential Management Approaches: Road and Stream Hydrologic Connectivity

Plan Component(s)

FW-DC-CWN-03

FW-STD-ARINF-07Purpose of Plan Component(s)

The desired condition promotes roads in the forest presenting minimal risk to aquatic resources. The standard is intended to reduce the impacts from the road system to riparian and aquatic ecosystems in HUC12 subwatersheds with Endangered Species Act critical habitat or listed aquatic species by requiring a net decrease in the hydrologic connectivity of the road system and stream channel network by project area when constructing or reconstructing roads.

Hydrologic connectivity or items that are hydrologically connected refers to a circumstance, such as a roadway ditch or other drainage structure, that is directly connected to a watercourse, such that water, and any associated sediment it is carrying, is delivered directly to that watercourse or a natural channel network.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider implementing road improvements to hydrologically disconnect the road system from the channel network, such as installing cross drain culverts or adding rolling dips to road to direct water from ditches, reducing the number of road and stream crossings, or relocating or decommissioning stream adjacent roads.

A variety of indicators could be used to measure the net decrease in hydrologic connectivity. For example, number of actions implemented; miles of road improved by adding drainage structures or miles of road relocated or decommissioned; or amount of reduced sediment delivery to streams as estimated by models, such as WEPP, GRAIP, or GRAIP Lite.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions could include installing cross drain culverts or adding rolling dips to road to direct water from ditches, reducing the number of road and stream crossings, or relocating or decommissioning stream adjacent roads.

Potential Management Approaches: Road Storm Proofing

Plan Component(s)

FW-OBJ-CWN-02

Purpose of Plan Component(s)

The objective promotes storm proofing roads in the conservation watershed network to reduce the impacts from the road system to riparian and aquatic ecosystems. Storm proofing refers to nonrecurring treatments on existing roads that reduce the potential for resource impacts and damage or failure of a road feature or road system, typically resulting from storm events. These treatments relate to open and stored roads.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider integrating climate change vulnerabilities when developing storm proofing projects. Examples of road system actions that could reduce risk to aquatic resources include timely road maintenance, adding road drainage structures, reducing culvert diversion potential, pulling back marginal fill slopes, use of biotechnical and vegetative slope stabilization and erosion control products, and gully prevention.

Consider integrating climate change vulnerabilities when developing storm proofing projects. For example, upsizing culverts in areas where climate change projections indicate a potential increase in heavy precipitation and flooding. Culverts should be sized to meet these future bankfull width projections (U.S. Department of Transportation 2018).

Utilize the Storm Damage Risk Reduction Guide for Low-Volume Roads (Keller and Ketcheson 2015) when planning and implementing road treatments.

Utilize the U.S. Forest Service Transportation Resiliency Guidebook - Addressing Climate Change Impacts on U.S. Forest Service Transportation Assets (U.S. Department of Transportation 2018) to help assess and identify climate change vulnerabilities within the transportation network and develop and prioritize adaptation strategies.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible actions could include adding road drainage structures, reducing culvert diversion potential, pulling back marginal fill slopes, use of biotechnical and vegetative slope stabilization and erosion control products, or reconstructing FS system roads, focusing on roads with chronic sediment delivery to streams or potential future road prism failures.

Potential Management Approaches: Support non-ESA listed fish in the Clearwater basin.

Plan Component(s)

FW-GL-WLMU-02.

Purpose of Plan Component(s)

Some species that provide important fisheries on Nez Perce-Clearwater are ineligible for ESA listing or the Species of Conservation Concern list due to non-native status because original stocks were extirpated, and subsequent introductions used out-of-basin stocks.

The Nez Perce Tribe and State of Idaho maintain fisheries of non-native stocks of spring or summer Chinook and Coho salmon. These stocks are primarily funded through the USFWS Lower Snake Compensation Plan and BPA and are managed by interagency coordination. Smolt releases for this program occur at various facilities and locations across Nez Perce-Clearwater.

This forestwide and management area plan component is designed to promote a goal in support of non-ESA-listed salmonid conservation. Although salmonid abundance depends on factors that operate at scales much larger than the plan area, and outside the scope of forest management and Forest Service responsibility, the intent of this approach is that within the national forest boundaries, sufficient habitat is available to provide for smolt releases, migration, and adult returns of non-ESA listed salmonids.

Forestwide plan components that are designed to specifically address within-stream characteristics of the critical habitat of ESA-listed fishes are also expected to provide benefit to non-listed sympatric salmonids.

This goal focuses on coordinating with partners to facilitate cooperation for conservation of non-ESA listed salmonids. Although aquatic plan components are expected to provide conservation for these populations as well, there may be occasions when specific coordination measures could be used to focus efforts for the benefit of these fisheries.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction:

At the time of project planning, consult Nez Perce Tribe fisheries management plans, as well as Lower Snake Compensation Plan reports for any updates to supplementation locations or schedules.

Consider having someone from the Nez Perce-Clearwater attend Lower Snake Compensation Plan AOP Meetings as permitted to coordinate program of work with planned smolt release locations and strategies.

To improve coordination, when planning projects, consider timing and location of LSRCP smolt releases to ensure compatibility with the forest program of work.

Consider the locations of restoration priorities for partners' BPA funding tied to these supplementation programs that could be used to identify collaborative opportunities for habitat restoration.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Possible management actions are intended to be undertaken through an interdisciplinary approach to integrate plan components across multiple resource areas. Consideration and responsiveness to public and partner input is essential to promote an all-lands-approach, adaptive management strategies and scalable project designs and implementation.

Wildlife (WL, WLMU)

Potential Management Approaches: Elk

Plan Component(s)

FW-DC-WLMU-06

FW-DC-WLMU-07

MA1-DC-WLMU-01

MA2-DC-WLMU-01

MA2-DC-WLMU-02

MA2-STD-WL-01

MA3-DC-WLMU-01

MA3-GDL-WLMU-01

MA3-OBJ-WLMU-01

Purpose of Plan Component(s)

Two concepts, nutrition, and habitat use, provide the foundation for managing elk populations on National Forests during spring-fall, encompassing both hunting and non-hunting periods. Land management plan direction is most logically built on these two concepts as best available science to ensure that elk populations are productive and abundant to meet land use desires of a wide spectrum of stakeholders who place high cultural, social, economic, and ecological importance on the species on public lands.

Nutrition is defined as the dietary nutrients needed by a lactating female elk to meet its maintenance needs during summer and fall, a period of nutritional stress in response to demands of a calf at heel. Adequate summer-fall nutrition of a lactating female ensures survival of her calf through winter, and allows the female to be in sufficient condition, after weaning, to again produce and recruit a calf the following year which avoids alternate-year calf production by a female. Nutrition is key to managing productive populations.

Habitat use is defined as the relative probability of elk use of a specified landscape and areas within the landscape. Habitat use is key to achieving the desired distribution of elk. Habitat use is primarily affected by 4 covariates: dietary digestible energy, distance to nearest road open to motorized use by the public, distance to cover-forage edge, and slope. The plan adopted the concepts of nutritional resources and elk habitat use as a framework for management of elk habitats.

The Land Management Plan formalizes these concepts with the desired condition FW-DC-WLMU-06 which is a forest wide desired condition that establishes these two concepts as foundational to habitat

management for elk on the Nez Perce-Clearwater National Forest. FW-DC-WLMU-07 describes the desired distribution of elk in the plan area and a desire to allow nutritional resources to be usable by elk. These two desired conditions direct management of elk habitat as an overarching framework. Underneath these two desired conditions are additional desired conditions specific to the needs of elk relative to the three management areas.

In Management Area 1, the intent is to manage elk habitat consistent with activities allowed under the regulations with which they were created. MA1-DC-WLMU-01 establishes that elk habitat conditions in Management Area 1 are primarily established through natural processes. The primary exception being that some important elk winter habitats in wilderness areas have been infested by noxious weeds which has degraded habitat quality for elk within this management area. Without actions, these areas would continue to remain degraded. It is hoped that this desired condition would encourage an effort to reduce or prevent invasive weed infestations in elk habitats in this management area.

Elk Distribution in Management Area 2 is less affected by open roads; however, moderate, or high-quality forage may be lacking. The approach for this management area is to 1) increase high-quality forage throughout the MA, and 2) maintain large blocks of habitat without motorized access as described in MA2-DC-WLMU-02 and MA2-GDL-WLMU-01. Moderate or high-quality nutritional resources are created through management to restore the desired conditions described in the terrestrial vegetation plan component tables for the percentages of each broad potential vegetation type in various size classes. It is manifested through targeting up to 50 percent of those restoration treatments towards areas predicted by the forage potential spatial layer to produce the highest quality forage. It would be achieved through means consistent with the regulations with which they were established such as the Idaho Roadless Rule.

Guideline MA2-STD-WL-01 is intended to prevent excessive fragmentation of habitat in Management Area 2 by motorized access. However, it is explicitly designed to allow some future development of motorized trails in this MA in response to desires from the public to have increased motorized access. This guideline restricts fragmentation of elk habitats to no less than 5,000 acres in size. Thus, when considering new motorized trails in Management Area 2, the proposed route and existing roads may be mapped and buffered by ½ mile, and then the size of the adjacent area without motorized access may be evaluated to determine if they will be larger than 5000 acres after the project is finished. If the adjacent areas are smaller than 5000 acres the new route may be rerouted to maintain 5000-acre blocks without motorized access, or not allowed. Alternatively, other existing motorized routes may be closed to increase the size of the habitat without motorized access to the minimum acreage to allow the new route. Where possible new motorized trails may be routed to avoid areas with the highest nutrition potential.

Management Area 3 contains the greatest potential for active management to increase moderate or high-quality nutrition but also currently has road conditions in many places that may preclude elk habitat use. Management area 3 emphasizes multiple uses including timber harvest, recreation, and mining and mineral extraction, as well as wildlife habitat. Therefore, elk habitat use, and forage are emphasized as important direction for this management area. MA3-DC-WLMU-01 establishes a desired condition to increase the amount of high-quality forage resources usable by elk. Moderate or high-quality nutritional resources are usable by elk when they are located ½ mile or more from open motorized access. In Management Area 3, managers may seek to increase the percent of usable moderate or high-quality forage within HUC 12's to achieve 15 percent or more of the landscape having usable moderate or high-quality forage. The percent of moderate or high-quality forage usable by elk can be calculated by calculating the amount of moderate or high-quality forage present within a HUC 12 watershed using an elk forage layer, subtracting out the amount of moderate or high-quality nutritional resources within one-half mile of an

open road or motorized trail, and then dividing the area of the moderate or high-quality forage by the area of the HUC 12.

MA3-OBJ-WLMU-01 is an objective designed to increase the amount of usable moderate or high-quality forage in Management Area 3. Rather than adding acres of treatment to the desired conditions and objectives in the terrestrial vegetation section, the approach instead is to direct the location 20 percent of treatments to restore desired vegetation condition to areas that would produce the moderate or high-quality forage as indicated by the elk forage potential layer. At a forest wide scale, habitat treatments to create early seral habitats for elk may not exceed the percentages found in the vegetation desired conditions size class tables which are upon the natural range of variability.

The mechanism under which projects would be evaluated, and by which habitat use and moderate or high-quality forage resources would be maintained or improved during project work, is through guideline MA3-GDL-WLMU-01. This guideline requires decisions to maintain or improve predicted percent body fat of female elk at a HUC 12 Scale through the manipulation of four covariates that influence elk habitat use and predicted female percent body fat. Predicted percent body fat ties habitat conditions directly to vital rates of female elk. Vital rates include pregnancy rates, calf production, calf survival, winter survival of female elk, and more. A relatively small increase in forage quality available at the landscape scale to elk in summer and autumn can have strong effects on fat accretion, timing of conception, probability of pregnancy of lactating cows, calf growth, yearling growth, and yearling pregnancy rates. The four covariates are: 1) the amount of moderate or high-quality nutritional resources usable by elk, 2) increased distances from open motorized routes during spring through fall, 3) improved habitat use on slopes less than 40 percent, or improved vegetation interspersion. While guideline MA3-GDL-WLMU-01 allows for either the maintenance or improvement in predicted percent body fat, the agency's intent is to improve the predicted percent body fat in most cases by improving one or more of the covariates.

The primary means through which moderate or high-quality nutritional resources are created involves vegetative disturbance. Natural non-forested habitats also can contribute to the amount of moderate or high-quality forage. These habitats can be encroached by forest succession and can be maintained through a combination of active management and natural disturbance. On the Nez Perce-Clearwater, the most effective means to increase moderate or high-quality forage is through disturbance to forested habitats, particularly in those areas with higher site potential. Disturbance may include timber harvest, natural fire, prescribed fire, or other activities that reduce canopy cover. Even modest changes in the percent of usable moderate or high-quality nutritional resources at a HUC 12 scale increase predicted percent body fat of female elk. Projects may increase or maintain predicted percent body fat of female elk by increasing the amount of moderate or high-quality nutritional resources.

Increased distances from open motorized routes during spring through fall may also increase predicted percent body fat of cow elk by increasing the amount of usable space at a HUC 12 scale. Larger areas of usable space may be achieved through increasing the distance to open motorized access. Rather than emphasizing road density under a miles per square mile concept as has been done under elk security, the emphasis here is to maintain or increase space or distance between open motorized roads and trails for elk to use. This will necessitate consideration of both road configuration and distribution and how it affects elk habitat use. Essentially this concept focuses on the gaps between the roads rather than the road density. Active engagement by all stake holders is a strategic approach for managing recreation and wildlife road issues.

Managing for moderate or high quality nutrition away from open motorized access may be created in a variety of ways including closing new roads to the public created during project implementation rather than leaving them open, using prescribed fire or wildfire to create early seral habitats away from open

motorized access, re-routing motorized roads or trails away from moderate or high quality nutritional resources, prevent the creation of new open motorize access into moderate or high quality nutritional resources, helicopter logging, pile and burning by hand crews, or other means. The intent is not to prevent or prohibit new open motorized access or force the obliteration of existing roads, but decisions should carefully consider how road segments might affect the distance between roads relative to nutritional resources were they to be created or left open to the public. It is also not the intent to increase nor require the use of helicopter timber harvest.

Projects can increase elk habitat use by designing openings to decrease distance to forage edge and the distribution of forage resources at a landscape scale. Most elk use of forage occurs within 100 yards of forested edges, and similarly the use of cover is within 300 yards of the edge of open foraging areas. Management to benefit elk may arrange the shape and size of forage and cover patches to increase edges by creating irregularly shaped forage areas with high edge to interior ratios that are interspersed at a landscape scale. Patches of forest retained within openings can facilitate use of larger openings. The term habitat interspersion used in MA3-GDL-WLMU-01 is meant to capture both the concept of the spatial arrangement of patches at a landscape scale and the cover to forage edges. A mosaic of treated and untreated stands provides optimal nutritional choices for elk across seasons.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

FW-MSA-ELK-01. Utilize the reference Draft Rationale, Concepts and Definitions for Elk Management Considerations in the Nez Perce-Clearwater Land Management Plan and Implementation Process (Wisdom 2018), which includes the following analytical steps.

Specify the landscape for evaluation and provide supporting rationale.

Map and evaluate current summer-fall nutrition with a nutrition model (for example, Models 2, 4, or 6 currently available), summarizing results as to the percentage of the landscape that meets the maintenance needs of lactating female elk. The nutrition analysis could simply commit to use of the nutrition model based on best available science (currently Models 2, 4, or 6), thus allowing for flexibility in use of models over time as models are finalized, further validated, and published.

Overlay the network of roads and trails open to public motorized uses on the nutrition map and establish a distance buffer of at least one-half mile from each open road and trail.

Summarize the percentage of the landscape within the one-half mile buffer that meets maintenance needs of lactating female elk. Reduce the overall percentage of the landscape considered to meet maintenance needs by excluding these areas within the buffer. Results indicate the degree to which human disturbance, via open road and trail effects, reduces or eliminates use of the best nutritional areas (this is a simple version of a habitat use model). More sophisticated habitat use models are likely to be provided over time, and like the nutrition evaluation, language can be placed in the project implementation process to allow for their use as they are developed and published—but that would not diminish the use of a road buffer as outlined here as the first step in habitat use evaluation.

Describe hunter harvest and hunter opportunity objectives for the landscape, as developed with Idaho Department of Fish and Game and Nez Perce Tribe, and how the current landscape condition meets or does not meet those objectives (consideration of elk security but more specifically outlined by defining harvest and hunter opportunity objectives). Consider road closures specific to helping meet these objectives during hunting seasons.

Identify areas within the landscape of highest nutritional capacity and consider directing the use of silviculture or fire management to those areas of highest capacity as part of rationale for any proposed management activities outlined for the project. Use the nutritional capacity map provided to the planning team (it is unlikely to change with continued Clearwater elk research).

Identify specific open roads and trails that might be closed to increased use of best nutritional areas, and that might be closed to meet harvest and hunter opportunity objectives, as specified in collaboration with Idaho Department of Fish and Game and Nez Perce Tribe.

Evaluate management alternatives of silviculture, fire, and roads by repeating analytical steps and evaluating the changes in nutrition, habitat use, and harvest and hunter opportunity relative to current condition.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Utilize the reference *Draft Rationale, Concepts and Definitions for Elk Management Considerations in the Nez Perce-Clearwater Land Management Plan and Implementation Process* (Wisdom 2018), which includes the following analytical steps.

- Specify the landscape for evaluation and provide supporting rationale.
- Map and evaluate current summer-fall nutrition with a nutrition model (for example, Models 2, 4, or 6 currently available), summarizing results as to the percentage of the landscape that meets the maintenance needs of lactating female elk. The nutrition analysis could simply commit to use of the nutrition model based on best available science (currently Models 2, 4, or 6), thus allowing for flexibility in use of models over time as models are finalized, further validated, and published.
- Overlay the network of roads and trails open to public motorized uses on the nutrition map and establish a distance buffer of at least one-half mile from each open road and trail.
- Summarize the percentage of the landscape within the one-half mile buffer that meets maintenance needs of lactating female elk. Reduce the overall percentage of the landscape considered to meet maintenance needs by excluding these areas within the buffer. Results indicate the degree to which human disturbance, via open road and trail effects, reduces or eliminates use of the best nutritional areas (this is a simple version of a habitat use model). More sophisticated habitat use models are likely to be provided over time, and like the nutrition evaluation, language can be placed in the project implementation process to allow for their use as they are developed and published—but that would not diminish the use of a road buffer as outlined here as the first step in habitat use evaluation.
- Describe hunter harvest and hunter opportunity objectives for the landscape, as developed with Idaho Department of Fish and Game and Nez Perce Tribe, and how the current landscape condition meets or does not meet those objectives (consideration of elk security but more specifically outlined by defining harvest and hunter opportunity objectives). Consider road closures specific to helping meet these objectives during hunting seasons.
- Identify areas within the landscape of highest nutritional capacity and consider directing the use of silviculture or fire management to those areas of highest capacity as part of rationale for any proposed management activities outlined for the project. Use the nutritional capacity map provided to the planning team (it is unlikely to change with continued Clearwater elk research).

- Identify specific open roads and trails that might be closed to increase use of best nutritional areas, and that might be closed to meet harvest and hunter opportunity objectives, as specified in collaboration with Idaho Department of Fish and Game and Nez Perce Tribe.
- Evaluate management alternatives of silviculture, fire, and roads by repeating analytical steps and evaluating the changes in nutrition, habitat use, and harvest and hunter opportunity relative to current condition.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Projects that are planned and implemented under these Potential Management Approaches include vegetation management activities to increase early-seral vegetation states.

Potential Management Approaches: Grizzly Bear

Plan Component(s)

FW-GL-WL-01

FW-DC-WL-06.

FW-DC-WL-07

FW-DC-WL-08

FW-DC-WL-09

MA2-GDL-WL-01

Purpose of Plan Component(s)

FW-GL-WL-01 acknowledges and supports interagency coordination as a critical part of recovery of listed species. Engaging with Federal, State, and tribal partners will lead to better informed decisions, products and ultimately lead to a higher chance of recovery success.

FW-DC-WL-06 to FW-DC-WL-09 are fine filter plan components to support recovery of Grizzly Bear in the Bitterroot Ecosystem at the Land Management Plan level and successful migration to the Bitterroot Recovery Zone. These plan components work with the integrated course filter plan components described in Table 21 of the biological assessment and the land allocation decisions, described below, to guide the Forest Service's actions over the life of the plan to support colonization, persistence, and recovery of grizzly bear within the Bitterroot Recovery Area.

Land Allocations were developed to consider several different broad management concepts that limited human use and access as ways to provide the large tracts of land to support grizzly bear movement and recovery. These allocation types include Recommended Wilderness Areas, Suitable Wild and Scenic Rivers, Idaho Roadless Areas, and suitability determinations designating non-motorized settings in the recreation opportunity spectrum. In these areas, road construction is prohibited with very few exceptions. In consideration of grizzly bears, land allocations and designations were deliberately overlayed and overlapped in such a way as to provide a corridor for travel from the northern boundary of the Nez Perce-Clearwater on the Bitterroot Divide to the Selway Bitterroot Recovery Area. Specifically, the Mallard-Larkin and Hoodoo Recommended Wilderness Areas are connected along the northern boundary of the

national forest, by a chain of roadless areas including Meadow Creek-Upper North Fork, and Rawhide that are non-motorized in the Summer. From this northern boundary of the national forest, a path south to the Bitterroot Recovery Area was also allocated and given a non-motorized ROS setting, through these various designations and determinations. This route includes the Hoodoo Recommended Wilderness Area, the eastern portion of the Bighorn-Weitas, the Weir-Post Office Creek, and western portion of the Lochsa Face roadless areas as well as the Sneakfoot Meadows roadless area. Also within this path are a number of rivers with additional protections, including the Lochsa Wild and Scenic River and several rivers found suitable as wild and scenic rivers including Kelly Creek and the three main tributaries of Kelly Creek, Cayuse Creek and Colt Killed Creek. To the west of this main path lies a large contiguous matrix of Idaho Roadless Rule Areas that also prohibits road construction, though some summer motorized travel on trails may be permitted in the future. In total, these land allocations, designations, and determinations provide a large, contiguous swath of largely unroaded forested landscape for grizzly bears to travel through. This is an area that generally follows the movement of grizzly bears that have ventured onto the national forest in the past.

The purpose of MA2-GDL-WL-02 is to ensure there are large unroaded areas for wide ranging wildlife species. This guideline constrains travel planning decisions within Idaho Roadless Rule Areas and other MA2 lands (outside Community protection areas). Road construction is generally prohibited in Idaho Roadless Rule Areas and this guideline does not further restrict nor modify the Roadless Rule. This guideline does not prohibit motorized travel but does put restrictions on how much additional motorized travel could be allowed in future travel plans. This guideline tempers the number of new motorized trails that could be constructed in the future, and in particular impacts large roadless areas, such as the western portion of Bighorn -Weitas, Pot Mountain, Moose Mountain, Siwash and North Lochsa Slope roadless areas. These roadless areas will be relatively free of motorized use and are additional to and connected with the land allocations described above. The intent of this guideline is to ensure large blocks of secure habitat exist in the future for a variety of wildlife species.

Possible Management Strategy and Approach

The Nez Perce-Clearwater participates as a member of the Bitterroot Ecosystem subcommittee, or an equivalent interagency science-based committee, to understand best available science and best practices regarding Grizzly bears in the Bitterroot Ecosystem and support recovery in the Bitterroot Recovery Area.

Avoidance and minimization measures and conservation recommendations may be used to minimize negative impacts to grizzly bears and promote recovery. Updated scientific information or recommendations by the Bitterroot Ecosystem Subcommittee, are incorporated into project planning when applicable.

Interagency Grizzly Bear Committee recommendations for sanitation plans, infrastructure and reducing attractants may be implemented within and outside recovery areas to reduce grizzly bear-human conflict.

When conducting travel planning analysis, the FWS and the Forest Service consider connectivity for grizzly bear at a site-specific scale. This could include measures and actions to reduce human-bear conflict and reduce impacts to current bear security.

The Forest Service continues to collaborate with and follow direction of the FWS regarding management, project level analysis and consultation for grizzly bear.

Air Quality (AIR)

Potential Management Approaches: Planned and Unplanned Fires

Plan Component(s)

FW-GL-AIR-01

FW-DC-AIR-01

Purpose of Plan Component(s)

The purpose of these plan components and associated Potential Management Approaches are to emphasize coordination with local and regional partners, reduce cumulative air quality impacts, and to help provide visibility and visual aesthetics of the planning area over the long term.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

For planned wildland fires, participate with the Montana and Idaho Airshed Management Group, or a similar smoke coordination group. The objective of this interagency group partnership is to manage and limit the impacts of smoke generated from necessary prescribed burning through the region. Participation in this group includes processes for proper permitting to conduct operations, and coordination at a regional scale to assess and avoid cumulative impacts to air quality to the extent possible.

For planned wildland fires, conduct and utilize fuel condition assessments prior to ignition, if and when appropriate to do so. Information about fuel type, fuel loading, and moisture content is valuable to air quality emissions forecasting and assessments of potential effects

All unplanned wildland fires, whether managed for full suppression objectives, confine and contain objectives, multiple objectives including achieving land management plan objectives, or other operational approaches, should consider utilizing an Air Resource Advisor or Public Information Officer on incidents when warranted by the Incident Management Team.

Cultural Resources (CR)

Potential Management Approaches: Historic Property Management

Plan Component(s)

FW-DC-CR-01

FW-DC-CR-02

FW-GDL-CR-01

FW-GDL-CR-02

Purpose of Plan Component(s)

Cultural resources are considered in the proposed Land Management Plan is a notable departure from the framework presented in the current Forest Plans. The 1987 Plans reflect a distant point in time on the

ever-evolving continuum of federal cultural resource management business practices. Those plans captured the administrative reality of the time whereby the agency was learning to embrace the regulatory compliance procedures set forth in the multitude of laws emerging from the 1960s and 1970s. As such, many Standards of the day were a quasi-reiteration of then extant laws meant to locate and protect historic properties but did little to advocate the actual enhancement of those properties. The proposed Land Management Plan makes little attempt to repackage federal mandates meant to locate and protect historic properties as those laws are incorporated by reference into the Plan.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The proposed Plan attempts to move cultural resource management constructs more firmly into the enhancement arena by crafting desired conditions and indicators meant to improve the condition classification of Nez Perce-Clearwater's historic properties that have been, or otherwise will be, located and protected from project activities through the commonplace adherence to existing federal laws. These federal laws and executive orders include, but are not limited to:

- Antiquities Act of 1906 (16 U.S.C. 431)
- Historic Sites Act of 1935 (16 U.S.C. 461)
- National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. 470)
- National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4346
- The Archeological and Historic Preservation Act of 1974 (AHPA) (16 U.S.C. 469)
- Federal Land Policy and Management Act of 1976 (FLPMA), (43 U.S.C. 1701)
- Archaeological Resources Protection Act of 1979 (ARPA) (16 U.S.C. 47Oaa *et seq*.)
- Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 U.S.C. 3001)
- Federal Lands Recreation Enhancement Act of December 8, 2004, (REA) (16 U.S.C. 6801-6814)
- Executive Order 11593 - Protection and Enhancement of the Cultural Environment
- Executive Order 13007 - Indian Sacred Sites
- Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments
- Executive Order 13287 – Preserve America

Municipal Watersheds and Source Water Protection Areas

Potential Management Approaches: Municipal Watersheds and Source Water Protection Areas

Plan Component(s)

FW-DC-MWTR-01

FW-STD-MWTR-01

Purpose of Plan Component(s)

Water draining off the Nez Perce-Clearwater is often used for drinking water supplies. Municipal watersheds and source water protection areas are two separate constructs for drinking water protection that are applicable to National Forest System land management. FW-DC-MWTR-01 and FW-STD-MWTR-01 provide direction on maintaining or improving water quality for public use.

A municipal supply watershed, as described by Forest Service Manual 2542, is a watershed that serves a public water system as defined in the Safe Drinking Water Act of 1974, as amended (42 U.S.C. §§ 300f, et seq.); or as defined in state safe drinking water statutes or regulations. The Forest Service can formally identify specific municipal watersheds by entering into agreements with municipalities to restrict the use of National Forest System lands from which water is derived to protect the municipal water supplies (Forest Service Manual 2542) within a given watershed area.

Source Water Protection Areas are zones delineated by a state or tribe for a public water system (PWS), or including numerous public water systems, whether the source is ground water, surface water, or both, as part of a state or tribal source water assessment and protection program (SWAP) approved by the Environmental Protection Agency under Section 1453 of the Safe Drinking Water Act (42 U.S.C. 300h-3(e)) (36 CFR §219.19) or any subsequent laws applicable to public water systems that provide water for human consumption.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Engage with local communities that derive municipal water from the Nez Perce-Clearwater.

Work cooperatively with federal and state agencies to meet applicable water quality requirements.

The *Source Water Protection Activity Guide* (Quality 2019) could be used to help identify contamination types such as sediment, microbes, inorganic compounds, synthetic organic compounds, and volatile organic compounds. Potential sources of contamination related to forest use and management are forest roads; mine sites; landslides; burned areas; harvested forest areas; campgrounds and administrative site septic systems; gasoline and diesel fuel spills; and pesticides, insecticides, and herbicides used to control insects and invasive species. For each of the potential contaminant sources, the activity guide identifies possible protection activities, potential contaminant types, and resource references for additional information and tools.

Source water protection assessments and source water protection plans could be used to identify potential contaminate sources, susceptibility to contamination, and the source water delineation zone when developing projects in source water protection areas.

When developing and evaluating activities, consider using the general technical report *Drinking Water from Forests and Grasslands* (Dissmeyer 2000), which is intended to be used by managers as a reference for assessing watersheds and planning programs to minimize the effects of land management practices on the quality of drinking water sources.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Municipal watershed plans could be developed with local communities that derive municipal water from the Nez Perce-Clearwater.

Other possible actions include implementing restoration projects to improve water quality, repairing sources of contamination, implementing best management practices to minimize contaminants, or conducting fuels management reduction projects to reduce the likelihood of uncharacteristic wildfire.

Sustainable Recreation (ARREC, RMZ, REC)

Potential Management Approaches: Recreation Opportunity Spectrum

Plan Component(s)

FW-GL-REC-02	FW-DC-REC-03	FW-STD-REC-02
FW-DC-REC-01	FW-DC-REC-07	FW-GDL-REC-01
FW-DC-REC-02	FW-STD-REC-01	FW-GDL-REC-02

Purpose of Plan Component(s)

These Plan components and associated Potential Management Approaches assist in providing a range of recreation opportunities across the Nez Perce-Clearwater throughout the year.

These plan components ensure that quality recreational experiences are available while providing for the needs of the many aquatic and wildlife species that occupy the Nez Perce-Clearwater.

The ROS classes determine the suitability of lands for motorized and non-motorized recreational activities. However, they do not determine the level, location, or types of motorized and non-motorized recreational activities within those classes. Those decisions are made through travel management or project planning. The ROS classes do not guide, restrict, or address management access needs. Such access needs are guided by management area, Idaho Roadless Rule, and designated area direction.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Prioritize reconstruction of campgrounds based on the Forest Service's updated recreation site facility master planning document. Align and right size recreation infrastructure to complement the regional and Forest character, settings, and opportunities.

Integrate the recreation opportunity spectrum into project-level designs and management decisions. Seek opportunity to develop recreation facility and infrastructure projects consistent with the ROS. Understand the differences between ROS classes and how these differences inform appropriate road and trail class, designed use, recreation setting and visitor expectation.

Work with communities and user groups to enhance and expand trail opportunities for a variety of users such as short and long loop systems, community linkages and experiences and challenges to match various skill levels.

As appropriate, separate disparate uses to improve user safety and enhance user experience.

When planning, evaluating, and managing Nez Perce-Clearwater recreation opportunities, consider hubs of recreation activity. Collaborate with communities and user groups in the management and maintenance of routes emanating from community hubs.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan, we expect that travel management decisions will be made consistent with the ROS classifications and Idaho Roadless Rule that provide quality motorized and non-motorized opportunities as appropriate.

One can also expect trail maintenance, construction, and reconstruction projects to improve trail conditions and experiences for motorized and non-motorized users consistent with ROS classifications that ensure protection of aquatics, wildlife, and the other natural resources across the Nez Perce-Clearwater.

Trails and dispersed sites would be maintained or improved to have minimal impacts on aquatic resources.

Additional infrastructure will also be provided as appropriate and maintained to enhance user experience and resource protection.

Potential Management Approaches: Developed and Dispersed Sites

Plan Component(s)

FW-DC-REC-13

FW-DC-REC-14

FW-DC-ARREC-01

FW-OBJ-ARREC-01

FW-GDL-ARREC-01

FW-GDL-ARREC-02

FW-GDL-ARREC-05

FW-STD-RMZ-05

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches assist in managing visitor impacts to other resources, primarily aquatic and wildlife resources, or human health and safety.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

When existing developed or dispersed recreation sites are negatively impacting aquatic and riparian resources, apply measures that are appropriate to the type of degradation, such as hardening sites or placing barriers to control access to riparian management zones. In severe situations, close, rehabilitate, or relocate the developed or dispersed recreation site outside of the riparian management zone.

Address dispersed campsites with erosion or sanitation issues that need rehabilitation by prioritizing sites that are creating unacceptable impacts to aquatic and riparian resources or human health and safety.

Address developed campgrounds that need improvements, by prioritizing improvements that address accessibility, health and safety, types of use, size of recreational vehicles, and mitigation of resource degradation.

Consider the following climate change adaptation strategies in developed recreation sites. Where feasible, recondition recreation-related infrastructure located in vulnerable areas; relocate existing infrastructure and opportunities to areas with less risk of climate-exacerbated damage; use appropriate vegetation within developed recreation sites to increase resilience to climate related stressors; and integrate climate considerations into siting of recreation facilities.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan, we expect that annually some existing dispersed recreation sites will be closed, rehabilitated, or relocated to address riparian zone impacts.

It is also expected that over the life of the plan new developed and dispersed sites may occur within riparian zones and sanitation issues as well as erosion issues will be addressed as discussed above.

Potential Management Approaches: Trails and Access

Plan Component(s)

FW-DC-REC-10	FW-DC-ARREC-01	FW-STD-RMZ-08	FW-GDL-ARREC-06
FW-DC-REC-11	FW-OBJ-REC-01	FW-GDL-ARREC-03	
FW-DC-REC-12	FW-OBJ-REC-02	FW-GDL-ARREC-04	
FW-DC-REC-13	FW-STD-REC-01	FW-GDL-ARREC-05	

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches provide quality year-long, trail-based access and recreational experiences for a variety of users while protecting aquatic and terrestrial resources.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

As wildland fire and mechanical treatments occur across Nez Perce-Clearwater, analyze the potential for these treatment areas to provide new opportunity for over-snow vehicles or where such use should be restricted for other resource concerns.

Regularly host workshops with agency personnel, industry representatives and user groups to discuss and understand new recreational products, technology, capabilities, and desirability to better align management actions that provide quality recreation experiences while meeting other Land Management Plan objectives.

When planning, evaluating, and managing the Nez Perce-Clearwater trail system, consider linking routes into cohesive and connected trail networks through collaboration with local, state, federal, and tribal governments, as well as partners and interested public.

After wildland fire activity, assess impacts to trail tread and infrastructure. Determine trail maintenance or restoration needs and costs, along with the history of use, to inform decisions regarding the disposition of the trail(s) and priority for maintenance, decommissioning or abandonment.

Engage partners, volunteers and permittees in the accomplishment of trail maintenance, deferred maintenance, and resource stewardship and restoration.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan, we expect that some trails will be decommissioned and rehabilitated, some new trails will be developed, and trails will be maintained on a scheduled basis or as needed, based on use, condition, or impacts to other resources.

Use of travel management or site-specific decisions to determine where and what motorized and non-motorized recreation activities may occur consistent with management area allocation, Idaho Roadless Rule Area direction, the recreation opportunity spectrum classes, and other social and ecological considerations.

Decommission, rehabilitate, or obliterate trails determined not necessary or appropriate for administrative or recreational purposes.

Potential Management Approaches: Interpretation and Education

Plan Component(s)

FW-DC-ED-01

FW-DC-ED-02

FW-DC-ED-03

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches promote the interpretation of historic and cultural uses of Nez Perce-Clearwater as well as education of the visiting public regarding management activities and resource values that are occurring and present today.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Actively engage urban populations, local communities, youth, and underserved communities in outreach programs, such as conservation education, recreation, and volunteer programs, to help people connect to the benefits of national forests and develop stewardship of public lands.

Utilize social media and new technologies to provide visitor education and interpretation.

Interpretive and environmental education programs could be developed for the public, Forest Service personnel, concessionaires, other special-use authorization holders, and volunteers about sensitive resources and habitats, restoration activities, and ecosystem services.

The services of special-use authorization holders that provide services to the public (for example, concessionaires, organization camps, outfitters, and guides) could be engaged to assist in the development and delivery of these programs. Authorization holders could be provided with messages about sensitive resources and management issues so that they can use them to educate people.

Efforts could be coordinated between national forests for maximum results and cost efficiencies.

Existing visitor centers, campgrounds and trail heads could be used as hubs of information dissemination where appropriate.

Possible Actions over the Life of the Plan

Over the life of the plan, we expect that communities around the Nez Perce-Clearwater and other forest visitors may shift culturally and socially in terms of their expectations for recreational uses of the forested landscape. With these shifts in desires and expectations it is anticipated that the Nez Perce-Clearwater will need to be adaptable to new users, different needs of users and different expectations of users.

The following represents potential actions that may be used to implement plan direction.

Education and interpretation through social media, the Nez Perce-Clearwater website, signage, and other venues are expected to be used to adapt and respond to such changes and inform the visiting public.

Evaluate commercial services offered within the Nez Perce-Clearwater to determine the need to adapt to new and changing demands as well as opportunities to provide new or additional interpretive and educational services.

Scenery (SCENERY)

Potential Management Approaches: Scenery Opportunities

Plan Component(s)

FW-DC-SCENERY-01

FW-DC-SCENERY-02

FW-GDL-SCENERY-01

FW-GDL-SCENERY-04

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches assist in maintaining or improving the scenic character, sense of place, and overall aesthetics of the Nez Perce-Clearwater.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider opportunities to improve the scenic attractiveness as part of vegetation treatment and fuels reduction projects, especially in areas that do not meet established scenic integrity objectives.

Consider opportunities for increasing public enjoyment of the scenery, such as vista clearing, where the work would not lower the scenic integrity of the immediate foreground below the assigned Land Management Plan scenic integrity objective.

Consider opportunities to perpetuate scenic attributes especially in areas where the visual setting is important, such as within or surrounding heavily used recreation areas.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Customize the application of the assigned scenic integrity objectives of high, moderate, and low to each new project by conducting a project-specific visibility analysis from the applicable mapped critical viewing platforms.

During project analysis, aim to integrate scenery management goals with other resources, such as soil or hydrology, to develop design features that address multiple resources.

During timber project analysis, layout, and implementation, the landscape architect or scenery specialist could work with the silviculturist and layout crews to determine where specific design features are needed to meet assigned scenic integrity objectives (rather than simply providing a list of generic design features).

Use examples of naturally occurring line, form, color, texture, and patterns from surrounding landscapes to reduce the discernibility of landscape modifications resulting from management actions, most especially vegetation management.

After project completion, determine whether the completed project has met the assigned scenic integrity objectives and if the design features were appropriate and successful.

Potential Management Approaches: Scenery Management System Implementation

Plan Component(s)

FW-DC-SCENERY-01

FW-DC-SCENERY-02

FW-GDL-SCENERY-01

FW-GDL-SCENERY-03

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches assist in implementing the Scenery Management System Handbook direction to better integrate scenery into the ecologically and socially dynamic landscape of the Nez Perce-Clearwater.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Tailor the application of the assigned Land Management Plan scenic integrity objectives of high, moderate, and low to each new project by conducting a project-specific visibility analysis from the applicable mapped critical viewing platforms.

Determine how a project might affect scenic integrity based upon each area's scenic character, which includes the viewer and viewing context, overall sense-of-place and may include non-natural valued scenic elements such as rustic fences, old buildings, or historic cabins. Also integral to the scenic character is the natural range of dynamics relevant to the vegetation component of the scenery, which includes fire regimes.

Consider a variety of approaches to meet or exceed the scenic integrity objectives.

Use examples of naturally occurring line, form, color, texture, and patterns from surrounding landscapes to reduce the discernibility of landscape modifications resulting from management actions, most especially vegetation management.

During project analysis, aim to integrate scenery management goals with other resources to develop design features that address multiple resources.

After project completion, determine whether a completed project has met the assigned scenic integrity objectives and if the design features were appropriate.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan, we expect that management activities including vegetation management, fuels management, emergency response, minerals management, range management and resource protection implementation will occur that will impact the scenery resource. The Scenery Management System and the Potential Management Approaches above may assist in preserving the scenery resource while also adapting to an ever changing ecological and social landscape.

Potential Management Approaches: Built Environment

Plan Component(s)

FW-DC-SCENERY-03

FW-GDL-SCENERY-02

Purpose of Plan Component(s)

These plan components and associated Potential Management Approaches assist in constructing and maintaining facilities to provide a positive visitor experience consistent with the architectural character of the area.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Aim to reduce the visual contrast of new facilities with their surroundings by carefully choosing colors, non-reflective, textured materials, and by facing inherently shiny, reflective, or lit-up elements (such as windows or lights) away from viewers.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan, we expect that new facilities will be developed, and existing facilities will be maintained that reflect the architectural character of the area and blend with the natural settings.

Land Ownership and Land Uses (LND)

Potential Management Approaches: Land Status and Ownership

Plan Component(s)

FW-DC-LND-01

FW-DC-LND-02

FW-DC-LND-05

FW-GDL-LND-02

FW-GDL-LND-04

Purpose of Plan Component(s)

Management of National Forest System lands on the Nez Perce-Clearwater is important to protect the public's estate interest in its national forest. Surveying and posting the national forest boundary, maintaining posted property lines, and defending public lands from trespass or encroachment are activities that maintain the integrity of the National Forest System.

Public lands are generally retained in federal ownership to provide long-term values. The vision for the planning area is to retain in public ownership all lands currently under its administration that meet the long-term needs of maintaining the integrity of contiguous natural ecosystems, river frontage, riparian areas and wetland ecosystems; recreation and open space; scenery; clean air and water; and habitat for plant and animal populations. Through the methods available to the agency, the Nez Perce-Clearwater would acquire lands and mineral estates that enhance this vision. Lands and mineral estates that do not meet these needs would be considered for disposal. In all such cases, the primary guiding principle would be the greater public benefit.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Adjust land ownership through purchase, exchange, or other authority, to protect resources and improve efficiency of management. Consider the following criteria when evaluating lands for acquisition (not presented in any specific order):

- Lands that can contribute to recovery of threatened or endangered species
- Lands important for wildlife connectivity and big game winter range
- Lands needed for the protection of important historical or cultural resources
- Lands that enhance recreation, public access, and protection of aesthetic values

- Lands located within Congressionally or Presidentially Designated Areas (for example, wilderness, wild and scenic river corridors), or within areas with special designations within this Land Management Plan
- Other environmentally sensitive lands
- Lands that reduce expenses and support logical and efficient management.

Consider the following criteria when evaluating lands for conveyance and disposal (not presented in any specific order):

- Lands and administrative buildings adjacent to communities that are chiefly valuable for non-National Forest uses.
- Lands with low resource value.
- Inaccessible, isolated, or intermingled ownership parcels.
- Lands with long-term, special use permits that are not consistent with national forest purposes and character.
- Lands not logical or efficient to manage.
- Lands eligible under the Small Tracts Act.

Land boundary lines may be surveyed, posted, marked, and maintained according to these priorities (listed in order of importance):

- land boundary lines needed to ensure that planned agency activities occur on NFS lands,
- land boundary lines needed to protect NFS lands and special areas from encroachment,
- land boundary lines where trespass or encroachment are most likely or are suspected, and
- all other land boundary lines.

Resolve existing trespass and encroachments using the appropriate authority according to the following priorities (listed in order of importance):

- Where public safety is threatened.
- Where damage to resources or resource values is occurring.
- Where there is interference with public access.
- Where encroachment is unintentional.
- Where no substantial damage or management concern exists.

Potential Management Approaches: Land Uses

Plan Component(s)

FW-DC-LND-03	FW-OBJ-LND-01	FW-GDL-LND-01
FW-DC-LND-04	FW-OBJ-LND-02	FW-GDL-LND-03
FW-DC-LND-06		

Purpose of Plan Component(s)

Lands uses authorizations such as permits and leases sanction the occupancy and use of National Forest System lands by private individuals or companies for a wide variety of uses such as roads, utility corridors, communication sites and other private or commercial uses that cannot be accommodated on private lands. Approval of these uses strive to meet the needs of current and future generations of the American public.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The strategy for lands uses management could include the following elements:

- Process renewals and re-issuances in a timely fashion. Environmental analysis should be commensurate and minimal for those uses where the decision to allow the use has previously been made and the new permit is simply an administrative function.
- Emphasize processing new proposals that contribute to the greater public good (utility projects, public highways, reciprocal access cases).
- For utility authorizations that do not have current Operation and Maintenance Plans, work with holders to develop and implement Plans.
- Prioritize and facilitate vegetation management activities within and adjacent to utility line rights-of-ways.
- Resolve existing trespass and encroachments according to the following priorities:
- Where public safety is threatened
- Where damage to resources or resource values is occurring
- Where public access is interfered with
- Where encroachment is unintentional
- Where no substantial damage or management concern exists
- Existing trespass and encroachments may be resolved in a variety of ways, including removal of improvements and infrastructure from National Forest System (NFS) lands, issuance of a short-term authorization allowing for eventual removal of improvements and infrastructure, or when appropriate, issuance of a long-term authorization permitting the use of NFS lands.
- Proponents for new communication uses (cellular, FM radio, internet service provider, etc.) should first consider co-location in an existing site that has an approved communication site management plan. Per special uses policy, the Forest Service authorized use of National Forest System lands as communication sites by issuing leases to facility owners or managers who may sublease their facilities to multiple occupants for operation of communications equipment.
- New communication facilities, which would require new leases, could be authorized after a site-specific environmental analysis pursuant to the National Environmental Policy Act is completed. Communication sites are designated for a specific type or types or communication uses.
- Tools to help minimize effects of authorized facilities or improvements to fish, water and riparian resources may include requirements for screens, headgates, diversion monitoring devices, or fish-bypass systems in the authorization.

- Permit reissuance of existing hydropower support facilities located within the riparian management zones could reduce impacts on aquatic and riparian resources, by methods such as moving support facilities outside of riparian management zones or further from water bodies where feasible.

Timber

Potential Management Approaches: All Stands

Plan Component(s)

FW-STD-TBR-01

FW-STD-TBR-02

FW-STD-TBR-03

FW-STD-TBR-04

FW-STD-TBR-05

FW-GDL-TBR-01

Purpose of Plan Component(s)

These forestwide standards are intended to constrain timber harvest and harvest systems to only lands suitable for timber production or unsuitable lands where timber harvest is allowed to accomplish other resource objectives. The guideline is intended to integrate the management of multiple resources on unsuitable lands. At the forestwide scale these plan standards recognize the need to promote the application of timber harvest as a tool to move forested vegetation towards desired conditions and to promote stocking levels, vegetation patterns and patch sizes commensurate with natural disturbance regimes.

These forestwide standards are intended to promote the attainment of desired conditions through silviculture treatments applied through timber harvest and stocking objectives on lands suitable for timber production and unsuitable lands where timber harvest may occur to accomplish other resource objectives at multiple scales.

Suitable lands represent a land use allocation decision and include only lands that are not expressly removed from timber production or are constrained by other resource concerns. Unsuitable lands where timber harvest may occur are derived from lands designated under the Idaho Roadless Rule and where timber harvest is allowed to accomplish other resource management objectives. Stocking levels may be based not only on stand level objectives but may consider the larger landscape context. Stocking levels may vary within and between cutting units to accomplish multiple resource objectives. Combinations of natural and artificial regeneration methods may be analyzed to achieve dominance type objectives across the project area.

The maximum opening size plan component approximates the forestwide average patch size. Silviculture treatments may be designed to approximate the average patch sizes for each broad potential vegetation types and distribution of patches should reflect consideration of topographic settings.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The All Stands management approach is intended to facilitate implementation of the plan standards through focusing on vegetation management at appropriate scales to move forested landscapes toward desired conditions. Achieving appropriate scales requires focusing on a landscape as a whole.

Central to the "all stands" management approach is the need to evaluate all stands within a project area to ascertain each stands contribution, limitation, or constraint on the attainment of desired conditions. Not all stands within a project area may be subject to a commercial timber harvest but may still contribute toward forestwide desired conditions. For example, stands adjacent to a timber harvest unit may benefit from other vegetation management or fuels treatments which may enhance the success of the harvest patch. Other stands within a project area may need to be deferred from management to achieve desired conditions for other resources such as corridors of mature sized trees to facilitate connection of habitats.

FW-STD-TBR-03 addresses statutory requirement to establish and maintain minimum stocking levels following final regeneration harvest treatments. Stocking levels established within harvest units also contribute towards management area level desired conditions for size class distributions. The "all stands" management approach facilitates implementation of the stocking standard and management area desired conditions by considering all stands within a project area as potentially contributing towards diameter class distribution desired conditions regardless of treatment type or intensity.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan this management approach is intended to be applied at the planning, implementation and monitoring phases of all vegetation and fuels management projects.

During the analysis and planning phases of project development, the team may consider utilizing the "all-stands" management approach to answer the following questions:

- What is the suitability classification of polygons within the project area?
- What is the fire regime(s) within the project area? Are there multiple regimes?
- What is the relative percentage of treatment units requiring even-aged regeneration harvest?
- What is the size class distribution of the project area?
- What is the species composition within the project area?
- How can the existing forest pattern within the project area be described?
- What is the average patch size and patch size distribution within the project area?
- What is the relative percentage of existing stands currently meeting desired conditions?
- Will multiple entries be required to trend vegetation toward desired conditions and what is the timing of treatments across the project area.

All polygons within the project area may be considered and both existing and projected stand characteristics may contribute toward forestwide or management area desired conditions. Monitoring is performed through biannual monitoring reports.

Potential Management Approaches: Area Regulation

Plan Component(s)

FW-STD-TBR-08

FW-STD-TBR-09

FW-STD-TBR-10

FW-STD-TBR-11

FW-GDL-TBR-04

Purpose of Plan Component(s)

These forestwide standards and guideline plan components are designed to promote desired conditions for dominance types, size class distribution, and landscape pattern and patch size by constraining the application of even-aged regeneration harvest systems as well as comply with handbook guidance regarding the timing of even-aged regeneration harvest treatments.

Desired conditions for forest pattern, patch size, dominance types, size class distribution and retention of old growth are presented in the Land Management Plan. Even-aged silviculture systems are intended to be used to accomplish plan objectives at appropriate scales. Regeneration harvest are scheduled to occur at or near the culmination of mean-annual-increment, unless an exemption is identified.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Consider using the Area Regulation management approach to balance age class distributions, patch size and vegetation pattern. Area regulation refers to the proportion of a project area allocated to each size and age class. The percentage of each project area converted to early seral stage reflects the desired conditions for size class distribution by broad potential vegetation type. This may include areas where a vegetation cover type conversion is prescribed to accomplish other resource objectives such as maintaining wildlife browse.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan these plan components are intended to be applied at the planning, implementation and monitoring phases of all vegetation and fuels management projects.

During the analysis and planning phases of project development, the team may consider the maximum percentage of each project area that will be managed under an even-aged silviculture system.

Even-aged management may provide opportunities to achieve desired conditions for dominance types and size class distributions at both the project area and management area scales.

Timing of treatments should reflect consideration of multiple resource objective, such as short-term forage production for wildlife.

During the implementation phase of project development, consider applying area regulation to topographic settings and the distribution of dominance types across the project area.

During the monitoring phase, area regulation may be tracked through various GIS and spatial software applications to track landscape and forest-level scales to provide feedback to improve adaptive management strategies.

Potential Management Approaches: All Resources Integration

Plan Component(s)

FW-DC-TBR-03

FW-DC-TBR-05

FW-DC-TBR-06

FW-STD-TBR-03

Purpose of Plan Component(s)

These forestwide desired conditions are designed to promote desired conditions for snag retention, fuels management within the WUI, and wildland fire management on suitable lands. This standard is intended to constrain timber harvest on slopes and terrain that may be irreversibly damaged or degraded.

Forestwide plan components are designed to specifically address minimum snag retention objectives while providing for firefighter and public safety. Timber harvest within the WUI is intended to promote and maintain fuel profiles which are effective in providing firefighter and public safety and are resilient over time.

Suppression of wildland fire will remain a focus on lands suitable for timber production. This is needed to ensure timber supplies and to protect investments in forest stand development.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

To accomplish the full suite of management objectives set forth in the Land Management Plan it is important to identify and consider all opportunities to promote attainment or move towards desired conditions. The All Resources Integration management approach is focused on accounting for all resource objectives that can be met within a given project area. For example, silviculture prescriptions for regeneration harvests and wildlife habitat are not mutually exclusive. Where possible, multiple resources objectives may be blended to move toward desired conditions.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan this management approach is intended to be applied at the planning, implementation and monitoring phases of all vegetation and fuels management projects.

During the analysis and planning phases of project development, the team may integrate as many resource objectives as is appropriate for the project area. Promoting desired conditions for multiple resource areas

is the preferred outcome. The team may consider the following questions to test the "all resources integration" management approach:

- Can vegetation and fuels treatments be used to move towards desired conditions for multiple resources?
- Does the plan component crosswalk reveal opportunities for resource integration? Which plan components correlate within and between resource areas.
- Will implementation of any proposed treatment preclude attainment of desired conditions for other resources?

Potential Management Approaches: Granted Authorities

Plan Component(s)

FW-DC-TBR-02

FW-STD-TBR-06

FW-STD-TBR-07

FW-STD-TBR-12

Purpose of Plan Component(s)

The forestwide desired condition focuses on leveraging ecosystem services to promote social and economic sustainability. Desired conditions are intended to encourage local economies to participate in forestwide restoration work in addition to traditional forest product utilization.

Forestwide timber standards 6 and 7 are constraints on the maximum patch size for an even-aged harvest unit. These constraints are intended to allow flexibility in designing even-aged harvest units that conform to the pattern and patch size of historic fire regimes while promoting sustainability of other resources.

Forest -wide timber standard 12 is a constraint on the maximum timber volume that may be sold within a decade. This standard acknowledges the sustained yield limit as a cap on total timber volume available for harvest each decade.

These forestwide plan components (desired conditions and standards) are designed to utilize and comply with authorities granted to the FS as well as the authority promulgated through implementation of the Land Management Plan.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The Authorities management approach is intended to focus on utilizing the authorities granted to the agency to increase the pace and scale of ecosystem restoration through attainment of desired conditions for multiple resources.

During the analysis and planning phases of project development, all timber stand improvement, wildlife habitat and watershed restoration activities may be identified and planned for implementation. Stewardship and Good Neighbor Agreement authorities may be leveraged to accomplish the vegetation treatments needed to move towards desired conditions.

During the implementation phase of project development, both stewardship contracts and good neighbor agreements can be used to implement project work on the ground. The maximum opening size authorized under the Land Management Plan may be used to achieve the pace and scale necessary to achieve desired conditions.

During the monitoring phase, the "authorities" management approach of authorities may be tracked at landscape and forest level scales to quantify and report the utilization of granted authorities for project planning and implementation.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan this management approach is intended to be applied at the planning, implementation, and monitoring phases of all vegetation management projects.

The "Authorities" management approach may assist the team in addressing the following questions:

- Are sufficient timber receipts available to offset habitat restoration costs?
- Can the pace and scale of restoration treatments be increased through stewardship contracts or inclusion in a stewardship agreement?
- Can the pace and scale of restoration treatments be increased through use of a good neighbor authority contracting?
- Can the project be implemented through a phased approach to accommodate funding cycles?
- Can the project be packaged with other projects for implementation through conservation financing options?

Potential Management Approaches: Integrated Ecosystem Restoration Approach

Plan Component(s)

FW-DC-TBR-01

FW-DC-TBR-04

FW-GDL-TBR-01

FW-GDL-TBR-02

FW-GDL-TBR-03

Purpose of Plan Component(s)

These forestwide desired condition and guideline plan components are designed to promote attainment of desired conditions through an integrated ecosystem restoration approach. Vegetation management through timber harvest and fuels management at appropriate scales are the primary tools to achieve restoration objectives. Desired conditions are focused on trending landscape and forest level stand structure, vegetation pattern and patch size and old growth persistence commensurate with historic fire regimes. These guidelines are constraints on the use of timber harvest on unsuitable lands and forested areas

characterized as grand fir mosaic sites. Forestwide timber guideline 3 constrains the shape of harvest units to conform with natural landform characteristics.

Forestwide plan components are designed to move vegetation toward desired conditions for dominance type, size class distribution, density, structure, forest pattern and patch size while maintaining connectivity and minimizing fragmentation of vegetation landscapes.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

The Integrated Ecosystem Restoration management approach focuses on the application of the suite of ecosystem assessment tools including the Terrestrial Condition Assessment (TCA), Watershed Condition Classification (WCC) which is further combined into the Ecosystem Condition Classification (ECC) assessment tool. These tools are most useful when used in combination with climate vulnerability assessments which provide further context for the identification of critical environmental thresholds.

All of these assessment tools utilize available corporate data sources or can be customized for specific analysis. Assessment tools may be used for the monitoring phase to evaluate the effectiveness of timber harvest to promote desired conditions.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Over the life of the plan this plan component is intended to be applied at the planning, implementation and monitoring phases of all vegetation management projects. The management approach may be used to answer the following questions:

- How effective are silviculture treatments at moving toward desired conditions on both suitable lands and unsuitable lands where timber harvest may occur to accomplish other resource objectives?
- Is the scale of treatments within the range of natural disturbance regimes?
- Does the forest vegetation pattern and scale of patches reflect natural disturbance patterns?
- Are forest stocking rates capable of producing a sustainable flow of saw timber and wildlife habitat?
- What adaptive management strategies are needed to move forest vegetation toward desired conditions?
- Can timber harvest be used as a tool to promote forest vegetation trajectories which move toward or maintain restoration objectives over time?

Energy and Minerals (EM)

Potential Management Approaches: Minerals Resource Management

Plan Component(s)

FW-DC-EM-01

FW-DC-EM-02

FW-DC-EM-03

FW-DC-EM-04

Purpose of Plan Component(s)

Mineral resource activities will be administered under the appropriate laws and regulations to ensure protection of surface resources while not unduly interfering with mining operations. Exploration and development of mineral resources will be facilitated by providing timely responses to Notices of Intent and Operating Plans. Emphasis will be put on working actively with operators to develop adequate operating plans and to obtain sufficient bonds to cover estimated reclamation needs. The frequency of inspections of ongoing operations will be commensurate with their size and complexity and will ensure adequacy of operating plans and identify unforeseen environmental impacts. Reclamation of disturbed areas to a productive condition will be required in all cases.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

FW-MSA-EM-01. Apply these elements to the project areas of currently approved Mineral Plan of Operations. Use the elements as criteria in the planning and design of proposed mineral developments and Plan of Operations.

Use the following elements as guidance for the administration of mineral activities:

- Administer the appropriate laws and regulations relating to minerals in a reasonable and consistent manner.
- Sell common variety minerals and provide free-use materials only if consistent with the management area direction and not in competition with private industry.
- Provide reasonable access to prospect, explore, develop, and produce mineral resources. Evaluate access needs based on requirements of mining operations and environmental factors.
- Assist miners in developing operating plans that provide for environmental protection and ultimate rehabilitation, while allowing exploration, development, and production to proceed in a reasonable and timely manner.
- Provide for appropriate record notation with the Bureau of Land Management and evaluate all sites for utilization as in-service rock sources.
- Notify mining claimants of impending Forest Service actions that may affect their claims. Reasonable effort should be made to protect claim corners and mine workings from disturbance because of Forest Service activities. Secure permission before entering claims with recognized surface rights.
- Apply appropriate special stipulations to oil and gas leases for each of the management areas only when necessary to protect surface resources or sustain the management direction.
- Extend reasonable effort to complete additional site-specific analysis of environmental effects before recommendations are made on any lease application. Document this analysis in either an Environmental Impact Statement, Environmental Assessment, or Categorical Exclusion.
- Avoid applying a "no surface occupancy" stipulation to leases, and consider only using when (a) surface occupancy would cause significant resource disturbance that cannot be mitigated by any other means or (b) where resource impacts would be irreversible or irretrievable.
- Extend reasonable effort to re-evaluate areas withdrawn from mineral entry should be re-evaluated regularly, for example, every 5 years, to determine if the withdrawal is still necessary.

- Assist miners in developing reclamation plans that clearly state final management objectives for specific areas and detail the procedures and timeframes to accomplish those objectives.
- Maintain present and continued soil productivity and water quality to the extent feasible. Apply Best Management Practices and meet State Water Quality Standards.
- Maintain the present and continued productivity of fish and wildlife habitat, to the extent feasible. Stress the protection of fish and wildlife habitats to prevent or minimize the need for mitigation. Rehabilitate soil and water resources, fish, and wildlife habitats after completion of mining operations.
- After the completion of mining activities and restoration, manage the area according to the Management Area designation.

Mineral exploration, development and mining are limited to the area necessary for their efficient economic and orderly development. Mining is conducted so that any effects on other resources are minimized to the extent feasible, all minimum legal resource protection requirements are met, and other resource uses and activities in the area do not conflict with mining operations. Following mineral development, affected areas are reclaimed and, in most cases, the area once again provides the settings and opportunities of the Management Area designation.

Use the following as guidance when implementing this management approach:

- To ensure minerals are developed in an environmentally sensitive manner and other high valued resources are considered when minerals developments occur.
- Leasable energy resources are available in consideration of other resource values that may be present.
- Following mineral development, impacted areas are returned to a productive capacity.
- Abandoned mining lands and areas impacted by past mining activities are returned to a state of site condition comparable to pre-mineral activity and provide comparable form and function based on site potential.
- Underground environments in abandoned mines remain unaltered, except where necessary to protect human health and safety.
- Cave and karst resources, inclusive of significant caves, are available for the use, enjoyment, and provision of benefits associated with the cave or karst resources, while also providing wildlife habitat requirements of stress- and disease-free environments for vulnerable, cave-associated species. The impacts of any proposed mineral development within the karst landscape can be analyzed through the environmental analysis that is triggered once a Plan of Operations is received.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Minerals and Geology Resource Preparation

Resource Inventory

Maintain the Mineral Resource Inventory. Include historic and current mining activity, regional and local geology, access routes, and geologic and mineral terrains. Continue to work with the U.S. Geological Survey to update and map the geology on the Nez Perce-Clearwater and incorporate the new data into Geology Layer. Geologic inventory includes the collection, analysis, and interpretation of geologic data necessary for identification and solution of management problems, and for the assessment and

development of the geologic resources. The creation of geologic inventories is basic to carrying out geologic resources and services. Geologic inventory includes bedrock geology, surficial geology, stratigraphy, hydrogeology, geomorphic features, geological hazards, karst features, caves, and paleontology, including potential for geologic formations to yield fossil resources of scientific and other values. (Consult FSM 2881 for specific direction.)

Resource Planning

Assemble and provide minerals and geology information as needed for project planning. Conduct inventories and assessments of geologic resources and hazards, palaeontologic resources, and mineral resources for use in land management planning (FSM 2884.11). Geologic reports written for specific projects as the result of geologic inventory or investigation may include some combination of the geologic history; location and extent of locatable, leasable, and salable minerals; location and extent of aquifers; groundwater quality and quantity; structural features; geologic and geomorphic processes affecting the area; cave and karst resources; and paleontological resources.

Resource Preparation

Conduct compliance checks, validity, and patent exams, and review operating plans, lease proposals, and applications. Provide expert testimony or opinions for contests, hearings, or appeals. Conduct geotechnical engineering and interpretive geology investigations as required.

Resource Coordination

Coordinate minerals, geologic inventories, and minerals administration with State and other Federal agencies, including the Bureau of Land Management and U.S. Geologic Survey.

Minerals and Geology Administration

Lands Withdrawn from Mineral Entry

Claimants with claims located in areas withdrawn from mineral entry retain valid existing rights if such rights are established prior to the withdrawal date.

Conduct on-the-ground validity examinations by a Certified Minerals Examiner to establish or reject valid existing rights on active mining claims within Wilderness areas and other areas withdrawn from mineral entry.

Permit reasonable access to mining claims in accordance with the provisions of an approved Plan of Operations. Motorized access to sites may be authorized as part of the Plan of Operations. Use of off-highway vehicles may be allowed and must be in accordance with 36 CFR 212, 251, and 261 – Travel Management; Designated Routes and Areas for Motor Vehicle Use.

Lands Open to Mineral Entry

Encourage the exploration, development, and extraction of locatable, salable, and leasable minerals and energy resources.

Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872 and Forest Service Mining Regulations (36 CFR 228).

Permit reasonable access to mining claims and mineral leases in accordance with the provisions of an approved Plan of Operations.

Locatable Mineral Operations

A Notice of Intent or a Plan of Operations is required for locatable operations. (Consult FSM 2810 and 36 CFR 228.)

- A Plan of Operations will receive prompt evaluation and action within the periods established in 36 CFR 228.
- Conduct an environmental analysis with appropriate documentation for all operating plans.
- Locatable mineral exploration or development situated in areas open to mineral entry must be consistent with standards and guidelines for mineral development.
- Following locatable mineral exploration or development site rehabilitation and restoration will be designed to return the site to as near as practicable to a natural condition consistent with the underlying Management Area designation.

Work with claimants to develop a Plan of Operations that adequately mitigates adverse impacts to management objectives. Include mitigation measures for locatable actions that are compatible with the scale of proposed development and commensurate with potential resource impacts.

- Maintain the habitats, to the extent feasible, of anadromous fish and other food fish, and maintain the present and continued productivity of such habitats when such habitats are affected by mining activities. Assess the effects on populations of such fish in consultation with appropriate state and federal agencies.
- Apply appropriate Transportation Forestwide Standards and Guidelines to the location and construction of mining roads and facilities.
- Reclaim disturbed areas in accordance with an approved Plan of Operations. Apply Forest Service approved seed mixtures as needed.
- Apply Best Management Practices to maintain water quality for the beneficial uses of water. (Consult National Core Best Management Practices Technical Guide FS-990a and FSH 2509.22.)
- Periodically inspect minerals activities to determine if the operator is complying with the regulations of 36 CFR 228 and the approved Plan of Operations.

Leasable Mineral Operations (Oil and Gas, Coal, Geothermal)

Leasing may occur on a case-by-case basis following site-specific analysis.

Include mitigation measures for leasable mineral operations and include standard and special stipulations in leasing actions that are compatible with the scale of proposed development and commensurate with potential resource impacts.

Operating plans will be reviewed and approved by the authorized officer. (Consult FSM 2820 and 36 CFR 228.)

Areas determined to be available for leasing all operations, including site restoration and rehabilitation, must be consistent with the standards and guidelines for the Management Area as displayed in the Land Management Plan.

During exploration, consider alternatives that minimize encumbrance and disturbance of National Forest System lands, such as permitting in lieu of leases for exploration.

Salable Mineral Operations (Mineral Material Sales and Free-use)

Operator should have an operating plan that includes a development or quarry plan with a map. Quantity estimates should be included.

Permit mineral material sites only after an environmental analysis assures other resources are adequately protected, the site location and operating plan is consistent with the Management Area designation, and such resources are not reasonably available on private land. Require bonds and surface disturbance reclamation as appropriate. (Consult FSM 2850 and 36 CFR 228.)

Where the opportunity exists, design, excavate, and reclaim material sites to facilitate their use for dispersed recreation or other desirable uses.

Include mitigation measures for salable mineral operations and include standard and special stipulations in permitted actions that are compatible with the scale of proposed development and commensurate with potential resource impacts.

Bonds

A bond will be required for locatable, leasable, and salable mineral operations to ensure operator performance and site reclamation (Consult 36 CFR 228.).

Split Estates

Seek to avoid separating the surface and subsurface estates. Coordinate with BLM, the state, Native corporations, and private landowners to manage split estates in accordance with individual patents or deeds.

Palaeontologic Resources

Develop and maintain a paleontological resource program that identifies, inventories, facilitates research, and emphasizes protection of the resources. Protect paleontological resources from loss due to threat, vandalism, or the natural elements through responsible planning, management, partnerships with qualified museums and other institutions, and collaboration with Forest Service law enforcement (FSM 2882.03).

Livestock Grazing (ARGRZ, CWN, GRZ)

Potential Management Approaches: Livestock Grazing

Plan Component(s)

FW-STD-ARGRZ-03

FW-STD-CWN-01

FW-GDL-ARGRZ-01

FW-GDL-INV-01

Purpose of Plan Component(s)

FW-GDL-ARGR-01 seeks to maintain and protect stream channel and streamside vegetation from the effects of permitted livestock grazing.

FW-STD-ARGR-03 calls for the prevention of livestock trampling of fish redds of federally listed fish species and species of conservation concern.

FW- STD-CWN-01 seeks to ensure management activities, including livestock grazing, supports achievement of aquatic and riparian desired conditions and recovery of federally listed species.

To reduce the probability of establishment or expansion of invasive weeds, FW-GDL-INV-01 specifies that management activities prone to significant soil disturbance or exposure should be planned and implemented with design features to address the potential spread of invasive weeds.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

It is advised that maintenance and protection of stream channels and streamside vegetation from permitted livestock grazing be incorporated into Annual Operating Instructions, Allotment Management Plans, and Grazing Permits. To implement **FW-GDL-ARGRZ-01** it is recommended that a consistent methodology is used for monitoring stream channels and streamside vegetation associated with livestock grazing across the Nez Perce-Clearwater. Methodologies used should be based upon current best available scientific literature. "*Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation,*" Tech Reference 1737-23, 2011 is the recommended the monitoring protocol used at the present time.

As per **FW-STD-ARGR-03 and FW- STD-CWN-01,** measures would be taken to prevent livestock from accessing known ESA federally listed and species of conservation concern fish redds. These measures could include redd surveys by Forest Service Fisheries Biologists, changing the date for livestock entry into a pasture containing active spawning, temporary or permanent fencing of identified redds or areas of redd concentrations, use of herding by the grazing permittee to keep cattle away from spawning areas, recognition that certain timbered habitats provide protection from cattle so that "trampling impacts are expected to be virtually nonexistent", and recognition that certain steep slopes and narrow valley bottoms provide protection so that "impacts from grazing is considered minimal". This standard will be applied through the life of the plan to the same degree as was applied at the time of consultation for PACFISH and INFISH with NOAA Fisheries Service and U.S. Fish and Wildlife Service. Specific actions to be taken by the grazing permittee, such as herding of livestock away from spawning areas or installation of temporary fencing, will be discussed with the permittee and identified in the Annual Operating Instructions.

Since livestock grazing is a potential pathway influencing invasive plant species spread, and as per proposed guideline FW-GDL-INV-01, permittees should be encouraged through the Annual Operating Instructions to implement invasive plant prevention measures associated with livestock grazing. Potential Management Approaches recommended in Appendix 4 of the Land Management Plan may include confining livestock to a weed free pasture before entering allotments on National Forest System lands, cleaning permittee owned equipment used in managing livestock, and feeding saddle horses weed free hay during allotment authorized use periods. Permittees should also be encouraged through the Annual Operating Instructions to report any new infestations that are found

When assessing rangeland conditions, consider using indicators, such as biologic integrity, soil stability, and hydrologic function, as found in best available scientific information references; for example, the multi-agency technical reference *Interpreting Indicators of Rangeland Health* (Pellant et al. 2020) compiled by the Bureau of Land Management to help determine rangeland soil conditions.

Interpreting Indicators of Rangeland Health (Pellant et al. 2005) or equivalent methods can be used when assessing upland rangeland vegetation. This publication and Rangeland Health (National Research Council 1994) highlight the integration of soil, vegetation, and hydrologic attributes and indicators as important elements in assessing rangeland ecosystem health. They provide an ecological framework for identifying, assessing, and discussing the importance and interdependence of soils, biotic communities, and hydrologic elements to a functioning and resilient ecosystem. Soil condition has historically been included along with vegetation condition as an integrated approach for assessing the condition of rangeland ecosystems.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

- Preparation of annual operation instructions to grazing permittees, and annual turn out of permitted livestock will occur.
- Construction, reconstruction, and annual maintenance of range structural improvements will occur.
- Reissuance of grazing permits in accordance with Forest Service national and regional direction.
- Evaluation and update of allotment management plans and associated National Environmental Policy Act analysis.
- Surveys for native fish spawning areas and identification of redds, for both federally listed and species of conservation concern fish species.
- Implementation of appropriate protection measures to prevent livestock trampling of fish redds, including adjusting entry or exit dates for a grazing pasture to avoid presence of livestock at the time of redd incubation; construction of permanent or temporary exclosure fencing; herding of livestock away from spawning areas by permittees; and identification of terrain features and vegetation conditions which will adequately deter livestock access to spawning areas.

Designated Areas (DWILD, DWSR, IRA)

Potential Management Approaches: Designated Wilderness

Plan Component(s)

MA1-GL-WILD-01

MA1-GL-WILD-02

MA1-DC-WILD-01

MA1-DC-WILD-02

Purpose of Plan Component(s)

MA1-GL-WILD-01 and 02. These plan components are to ensure wilderness management of shared wilderness areas are managed consistently across administrative boundaries.

MA1-DC-WILD-01. This plan component assists in managing designated wilderness to ensure wilderness character is maintained. The purpose is to guide wilderness management practices that protect

and enhance the ecological and social values unique to each designated area in accordance with the requirements of the Wilderness Act and other applicable laws.

MA1-DC-WILD-02. This plan component is to ensure that wilderness areas are primarily affected by the forces of nature with the influence of human work substantially unnoticeable. It ensures that visitors have outstanding opportunities to experience natural ecological processes in solitude and unconfined by human influences.

Possible Management Strategy and Approach

The following management strategies could be used to maintain or trend toward desired conditions, wilderness character, and purpose for which areas were designated.

Ensure trails, bridges and other improvements in wilderness provide access to and within a wilderness that maintain wilderness character and meet the wilderness objectives described in the wilderness and land management plans.

Utilize wilderness monitoring protocols to ensure preservation of wilderness character and opportunity for solitude or primitive and unconfined recreation.

Use information, interpretation, and education as the primary tools for management of wilderness visitors.

Possible Actions over the Life of the Plan

In designated wilderness, it is expected that wilderness boundaries and management restrictions will remain in place over the life of the plan. However, it can be expected that management activities will continue to occur within designated wilderness that maintain or trend toward desired conditions, wilderness character and purpose for which the areas were designated. The following represents potential actions that may be used to implement plan direction.

Design, construct and maintain trails, bridges, and other improvements to fit into the natural landscape as unobtrusively as possible.

Monitor preservation of wilderness character by establishing a wilderness character baseline and monitoring trends over time utilizing national protocols.

Monitor opportunities for solitude or primitive and unconfined recreation such as encounters, campsite impacts, and user created trails utilizing national protocols.

Evaluate monitoring data at 5-year intervals to determine how conditions are trending by utilizing thresholds as outlined in the Wilderness Character Monitoring Tech Guide (2019).

Implement the national wilderness stewardship performance measures and address elements that do not satisfactorily meet stewardship performance.

Plan and implement a wilderness symposium for agency personnel, non-government organizations, academia and private citizens focused on the wilderness areas managed by the Nez Perce-Clearwater and adjoining national forests.

Potential Management Approaches: Designated Wild and Scenic Rivers

Plan Component(s)

MA1-GL-DWSR-01

MA1-GL-DWSR-02

MA1-DC-DWSR-01

MA1-STD-DWSR-01

MA1-STD-DWSR-02

Purpose of Plan Component(s)

MA1-GL-DWSR-01 and 02. These components are to ensure consistent management of designated Wild and Scenic Rivers across administrative boundaries.

MA1-DC-DWSR-01. This plan component is to ensure that designated Wild and Scenic Rivers retain their free-flowing condition, water quality and the outstandingly remarkable values for which the rivers were designated.

MA1-STD-DWSR-01 and 02. These plan components are to ensure that management activities are in compliance with agency Wild and Scenic River policy, this Land Management Plan, and the respective comprehensive river management plans; that they protect the free-flowing condition, water quality and the outstandingly remarkable values for which the river was designated.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Periodically review and update comprehensive river management plans, coordinated with adjacent Forests as necessary, to address new information or changed conditions that might affect free-flowing condition, water quality or the outstandingly remarkable values of a designated Wild and Scenic River.

Ensure consideration of Wild and Scenic River resources during planning and implementation of management activities that might affect free-flowing condition, water quality or the outstandingly remarkable values of a designated Wild and Scenic River.

Possible Actions over the Life of the Plan

It is expected that management activities may occur within designated Wild and Scenic River corridors. Possible actions could include use of prescribed fire, timber harvest, vegetative treatments, in-stream structure development, or other habitat improvement.

The following represents potential actions that may be used to implement plan direction.

Include Wild and Scenic River resource specialists in the planning and implementation of management activities that might affect free-flowing condition, water quality or the outstandingly remarkable values of a designated Wild and Scenic River.

Recommended Areas (RWILD, E&SWSR)

Potential Management Approaches: Recommended Wilderness

Plan Component(s)

MA2-DC-RWILD-01

MA2-DC-RWILD-02

MA2-DC-RWILD-04

MA2-OBJ-RWILD-01

MA1-GDL-RWILD-01

Purpose of Plan Component(s)

These plan components assist in managing recommended wilderness to preserve the opportunity for inclusion of these lands in the National Wilderness Preservation System.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

Utilize Minimum Requirements Analysis (for example, Minimum Requirements Decision Guide) in situations that may authorize uses that potentially would not protect the social and ecological characteristics that provide the basis for a future wilderness designation.

Allow administrative use of motorized and mechanized equipment by the Nez Perce-Clearwater.

Allow administrative use for research or monitoring purposes directly related to their management responsibilities by other federal and state agencies, through coordination with the Nez Perce-Clearwater.

Manage wildland fire to protect or enhance the wilderness character of these areas.

Use pesticides and biocontrol to protect or enhance the wilderness character of these areas.

Within 5 years of the Record of Decision, initiate site-specific analyses of uses that are determined not suitable in recommended wilderness in the Land Management Plan and ROD.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

We expect that management activities will occur within recommended wilderness. Activities may include, but not limited to trail, bridge and structure maintenance, and prescribed fire. Any such actions should preserve the opportunity for the inclusion of the recommended wilderness lands in the National Wilderness Preservation System.

Construction and maintenance of trails, bridges and other structures may include the use of chainsaws, rock drills, trail machines or other motorized and mechanized equipment that facilitates expedient accomplishment of these activities.

Utilize social media, the Nez Perce-Clearwater website, trail signing and other venues to inform forest visitors on suitable and not suitable activities within recommended wilderness.

Utilize law enforcement tactics as necessary to address recurring activities not suitable in recommended wilderness.

Potential Management Approaches: Eligible and Suitable Wild and Scenic Rivers

Plan Component(s)

MA2-GL-E&SWSR-01

MA2-DC-E&SWSR-01

MA2-STD-E&SWSR-01

Purpose of Plan Component(s)

These plan components assist in managing eligible and suitable wild and scenic rivers to preserve the opportunity for inclusion of these river corridors in the National Wild and Scenic Rivers System. Rivers found to be eligible or suitable for inclusion will be managed to maintain and protect the river-related outstandingly remarkable values, the free-flowing nature and water quality of the river. They will also be managed to maintain their preliminary classifications of wild, scenic or recreational.

Possible Management Strategy and Approach

The following guidance represents potential strategies that may be used to implement plan direction.

It is anticipated that management actions may be proposed within the eligible and suitable river corridors during the life of this Plan. Site-specific projects and activities within these river corridors may be authorized when the project and activities are consistent with the interim protection measures found in FSH 1909.12, Chapter 80, 84.3.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Construction, reconstruction and maintenance of roads and trails to enhance visitor experience, improve user safety, or protect river values as appropriate and consistent with the preliminary river classification.

Vegetative treatments as appropriate to enhance visitor experience, improve user safety, protect river values, or address ecological conditions including, but not limited to, wildlife and aquatic habitat or vegetative characteristics such as composition, structure, and density.

Potential Management Approaches: Idaho Roadless Rule Areas

Plan Component(s)

MA2-GL-IRA-01

MA2-DC-IRA-01

MA2-DC-IRA-02

MA2-DC-IRA-03

MA2-DC-IRA-04

MA2-DC-IRA-05

MA2-STD-IRA-01

Purpose of Plan Component(s)

MA2-GL-IRA-01. This component is to ensure all management activities are consistent with the Idaho Roadless Area theme, maintain the roadless characteristics of the area, and that the Idaho Roadless Commission is aware of those activities.

MA2-DC-IRA-01 thru 05. These components are to help guide management actions to ensure that Idaho Roadless Areas provide a variety of resource and social values across the landscape consistent with the Idaho Roadless Area themes and recreation opportunity spectrum classes of primitive, semi-primitive non-motorized and semi-primitive motorized opportunities.

MA2-STD-IRA-01. This plan component is to ensure that Idaho Roadless Rule direction is followed rather than Land Management Plan direction should there be inconsistencies between the two.

Possible Management Strategy and Approach

It is anticipated that management actions may be proposed within Idaho Roadless Areas during the life of this Plan. Site-specific projects and activities within these areas may be authorized when the projects and activities are consistent with the Idaho Roadless Area themes and direction. The following guidance represents potential strategies that may be used to implement plan direction.

Implement management actions that maintain or move Idaho Roadless Aeas toward desired social and ecological conditions.

Utilize regular monitoring of a random sample of Idaho Roadless Areas to assess whether or not themes and roadless characteristics are maintained, and that management activities maintain or move the areas towards desired conditions.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Administrative corrections to the maps of IRAs are expected. Such corrections may include, but are not limited to, adjustments that remedy clerical errors, typographical errors, mapping errors, or improvements in mapping technology.

If recommended wilderness areas become designated wilderness, Idaho Roadless Area boundaries would be adjusted per those designations.

Timber harvest and other vegetative treatments, including prescribed fire, may be used to maintain or move areas towards desired conditions consistent with the Idaho Roadless Area themes and direction.

Trail, bridge and structure construction, reconstruction and maintenance may occur to provide motorized and non-motorized recreational opportunities consistent with the Idaho Roadless Area themes and recreation opportunity spectrum classes.

Geographic Areas

Potential Management Approaches: Lolo National Historic Trail

Plan Component(s)

GA-GL-NHL-01

GA-DC-NHL-01

GA-DC-NHL-02.

Purpose of Plan Component(s)

Accordingly, per 36 CFR 800.10(a), the federal agency should undertake such planning and actions to the maximum extent possible as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking and "give special consideration to protecting National Historic Landmarks…"

The goal and desired conditions promote the improvement of National Register integrity of the Lolo Trail National Historic Landmark and that natural processes are the primary drivers of change to, and composition of, vegetative communities within the Landmark to perpetuate the natural setting as seen and described by 19th century journalists.

Possible Management Strategy and Approach

Work collaboratively with the Nez Perce Tribe regarding trail maintenance. Contact the Tribe prior to any maintenance work. When conducting trail maintenance, maintain the trail tread where it exists. The trail is braided in some sections.

When developing or implementing projects in the National Historic Landmark, utilize the Lolo Trail National Historic Landmark Management Recommendations included in FEIS, Appendix I - Lolo Trail National Historic Landmark Administrative Context and Management Recommendations. The ten management recommendations were developed to ensure the Lolo Trail National Historic Landmark's integrity is not simply retained, but improved such that the Landmark can be removed from the Department of Interior's "Watch" list.

When developing or implementing projects in the National Historic Landmark, consider strategies to improved National Register integrity. The Department of Interior has defined the integrity elements of setting, feeling, and association as follows:

Setting - refers to the character of the place in which the property played its historical role. It involves how, not just where, the property is situated and its relationship to surrounding features and open space. Setting often reflects the basic physical conditions under which a property was built and the functions it was intended to serve. The physical features that constitute the setting of a historic property can be either natural or manmade, including such elements as:

- Topographic features – a gorge or the crest of a hill,
- Vegetation,
- Simple manmade features – paths or fences, or
- Relationships between buildings and other features or open space.

These features and their relationships should be examined not only within the exact boundaries of the property, but also between the property and its surroundings. This is particularly important for historic districts.

Feeling - a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. For example, a rural historic district retaining original design, materials, workmanship, and setting will relate the feeling of agricultural life in the 19th century.

Association - the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character. For example, a Revolutionary War battlefield whose natural and manmade elements have remained intact since the 18th century will retain its quality of association with the battle.

Possible Actions over the Life of the Plan

The following represents potential actions that may be used to implement plan direction.

Wildland fire suppression activities could occur in the National Historic Landmark, but activities would be constrained by guidelines GA-GDL-NHL-02, GA-GDL-NHL-04, and GA-GDL-NHL-07.

Over the life of the plan, wildland fire could be used to create or perpetuate open views of the prairies to the west and southwest.

Interpretative projects for National Historic Landmark could be completed.

Road and trail maintenance could occur to provide for reasonably safe passage by the public consistent with designated uses, such as defined by approved travel management plan record of decisions, forest orders, and displayed on motor vehicle use maps (MVUMs).

Felling of trees that pose a hazard or safety threat could also occur in the landmark corridor, but stumps must meet guideline GA-GDL-NHL-03.

Planting of desirable vegetation species within the landmark to help vegetative communities achieve a natural range of variation could also conducted in the landmark.

Analytical Tools

Nez Perce-Clearwater Approach to Assess Water Yield and Peak Flow

Large forest vegetation removal projects have been linked to changes in stream flow (Bosch and Hewlett 1982, Stednick 1996, MacDonald and Stednick 2003, Grant et al. 2008, Troendle et al. 2010). Altered water yield and peak flow patterns have the potential to alter channel stability (for example, Tonina et al (Page-Dumroese et al. 2009b)). The longest-standing quantitative method for characterizing prospective water yield change associated with forest harvest is the Equivalent Clearcut Area (ECA) method (U.S. Department of Agriculture 1974a). Simply described, the ECA method collates the amount of cleared forested area in a watershed and then calculates change in water yield associated with the cleared area.

Traditional ECA application has commonly consisted of computing change in average annual acre-feet of runoff, excluding evaluation of changes in peak flow. The elevated stream energies associated with peak flows, however, are more likely to influence channel change than a minor increase in seasonal base flow. In some instances, change in acre-feet of water yield is not computed; rather, estimated percent change in canopy cover is compared with observed thresholds at which change in canopy cover has been documented to create a detectable change in water yield. This evaluation may be done in absence of other data when deciding as to whether change in water yield or peak flows is of concern. ECA cannot account for spatial redistribution of snow in openings and associated changes in sublimation or forest canopy interception, only changes in evapotranspiration related to change in canopy cover.

Despite model limitations and inconsistencies in past applications, the ECA method is still a relatively simple and efficient means of evaluating change in evapotranspiration associated with tree harvest. At the time of NPCW FP Revision, all process-based or empirically based models capable of providing more detailed evaluations of hydrograph response are either too complex to run on a project-by-project basis or do not provide accurate outputs at relevant scales for management. So, while the concept of ECA still applies, how the analysis is completed could be improved. The following describes an updated methodology that could be used for determining watershed-scale water change resulting from timber harvest.

All forest vegetation management projects may undertake an analysis of potential change in water yield. The analysis could consist of a weight-of-evidence approach that couples estimation of change in canopy cover extent with other ancillary data to inform whether a) water yield, in particular peak flows, may detectably change as a result of proposed forest management activities and b) whether that change may be of concern from a water quality and aquatic habitat perspective.

When conducted, water yield and peak flow analysis would typically be assessed at no greater than the HUC12 (that is, 6th code HUC) scale, if not also at a finer resolution as deemed appropriate by the scope of the proposed project and potential risks downstream (for example, – water intake, ESA species present). ECA summation may account for past harvest activities while adjusting for evapotranspiration recovery over time using Callahan's (1996) recovery curves or a more site relevant and recent alternative.

Consider evaluating ECA against a detectable threshold for change in peak flows. Recent literature has converged upon a 20 percent change in forest canopy as commonly producing a detectable change in peak flows and average annual water yield (MacDonald and Stednick 2003, Grant et al. 2008, Troendle et al. 2010). This ECA threshold, however, should be treated as a general guideline and can be superseded by newer literature, local monitoring, or professional judgement when appropriately justified.

When the ECA is at or near a threshold of concern, other data sources may need to be used to refine the predicted risk of change in peak flows, potential magnitude of change, and associated risk to water quality and aquatic habitat. Those other data sources may include, but not be limited to:

- Gridded water balance or runoff models characterizing watershed locations more and less likely to substantially contribute to runoff;
- Historic vegetation condition and perceived level of departure from historic composition (thereby providing some idea of departure in annual hydrograph dynamics);
- Channel stability surveys and hydraulic analysis of bedload transport capacity;
- Road density and percent of road network hydrologically connected to stream channels within the watershed or drainage of concern; and

- Applicable peer-reviewed literature. See, for example, Figure 1 and Figure 2 provided below from Grant et al (2008), as well as their proposed evaluation framework (38-41).

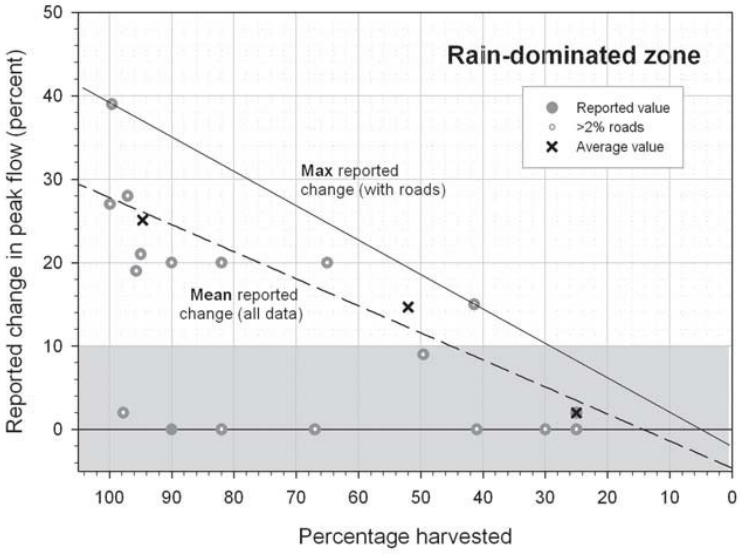

Figure 1. Peak flow response to harvest in the rain-dominated hydrologic zone. Solid line represents maximum values reported and includes the influence of roads. Dashed line is a linear fit through the average values, and represents the mean reported change for all data. Gray shading around zero indicates limit of detection (+- 10 percent). Figure and caption after Grant et al. (2008:35).

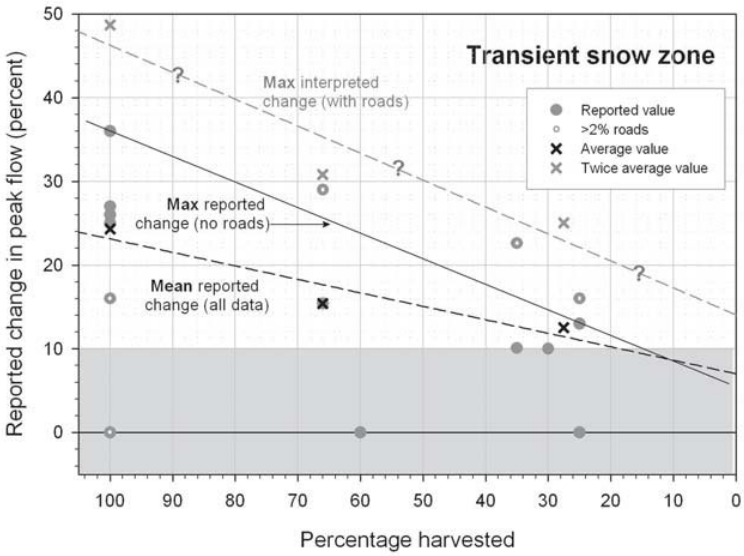

Figure 2. Peak flow response to harvest in the transient snow hydrologic zone. Solid line represents maximum values reported for basins without roads. Dashed black line is a linear fit through the average values from figure 8d, and represents the mean reported change for all data. Dashed gray line represents interpreted change with roads and is a linear fit through a doubling of the average values. Gray shading around zero indicates limit of detection (±10 percent). Figure and caption from Grant et al. (2008: 35)

Additionally, consider the spatial distribution and pattern of vegetation openings and road locations to help determine the likelihood of peak flow increases using Figure 2. A greater weight of factors on the left side of Figure 3 would lead to an interpretation of peak flow increases closer to the maximum response line shown in Figures 1 and 2, whereas a greater weight on the right side would lead to an interpretation

of increases at or below the mean response line. The outcome of this type of approach is not a single number for peak flow increases, but a plausible and defensible range of potential increases that is based on the preponderance of evidence and consistent with both data and inference (Grant et al. 2008).

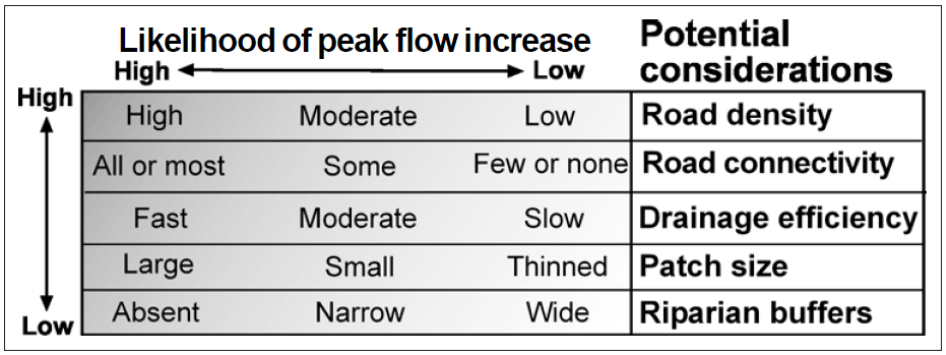

Figure 3. Site conditions and management treatment considerations that potentially influence peak flows. Considerations are listed in decreasing likelihood of effect. Grayscale represents theoretical range in impact of each factor (black = high, white = low). Figure and caption from Grant et al. (2008:40).

After ECA analysis has been refined and resource concerns persist as they relate to increased peak flows and channel stability, adjustments to extent and intensity (that is, amount of forest overstory removal) of silvicultural prescriptions may be required. These adjustments would be contingent upon the perceived risk to aquatic species, their associated habitat, and water quality.

Other Information and Resources:

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U.S. Department of Agriculture, Forest Service [USDA FS]. (1974a). Forest hydrology part II—hydrologic effects of vegetation manipulation. 229 p.

Nez Perce-Clearwater Multiscale Analysis

The Interior Columbia Basin Strategy, developed in 2003 and revised in April 2014 (U.S. Department of Agriculture and U.S. Department of the Interior 2014), is an approach for applying the knowledge gained by the Interior Columbia Basin Ecosystem Management Project to the Revision of Land Use Plans and Project Implementation. This strategy offers multiscale analysis as a tool that can be used in plan revisions and subsequent project-level decisions.

A memorandum of understanding to cooperatively implement the Interior Columbia Basin Strategy was approved by senior managers in several of the western Federal land management and regulatory agencies (that is, Environmental Protection Agency, National Marine Fisheries Service, USFWS, Bureau of Land Management, and the USFS). The 2014 memorandum updates science findings from the original Interior Columbia Basin Ecosystem Management Project effort of the late 1990s and gives guidance for inclusion of best available science in land management plan revisions.

The use of the Stream Conditions Indicator Assessment during project development and assessment of project effects is intended to provide a tool for evaluating whether stream and riparian indicators are meeting desired conditions. Where indicators do not meet desired conditions, multiscale analysis will aid in determining conservation measures or aquatic restoration actions that will move existing conditions toward a resilient watershed and desired conditions. During project development, use of the indicators would provide a determination of whether the indicators analyzed are considered limiting factors. Current conditions, based on the most currently available or recently collected data, would be used to determine whether conditions are meeting desired conditions and natural range. The Stream Conditions Indicator Assessment is integrated into the Multiscale Analysis, at the HUC12 scale, and is the basis for recommendations for conservation and restoration measures for aquatic species and water quality by considering data from different spatial scales and informing project effects analyses.

The six-step framework for Multiscale Analysis consists of the following steps:

1. Identify and map locations of listed native fish and species of conservation concern fish populations, and critical habitat to determine areas of greatest concern within the project area.
2. Coarse Filter - Identify Limiting Factors within Project Area
3. Medium Filter – Stream Condition Indicator Assessment.
4. Fine Filter – Field Verification of Conditions & Multiscale Analysis Questions
5. Identify Conservation and Restoration Actions
6. Effectiveness Monitoring

A more detailed explanation of in the section below.

For projects proposed in the Conservation Watershed Network, multiscale analysis can be used to provide supporting rationale for how project actions collectively contribute to meeting plan component FW-STD-01, that is, they should strive to support and contribute to recovery of federally listed aquatic species and achievement of aquatic and riparian desired conditions.

Conservation Watershed Networks replace Key and Priority Watershed under PACFISH and INFISH. According to plan component FW-STD-CWN-01, Multiscale Analysis is used to determine consistency

with this standard. The completion of the stream condition indicator assessment as part of multiscale analysis would result in identifying stream and riparian restoration actions that contribute towards the recovery of federally listed species and the achievement of these desired conditions and does not retard them.

The use of the Stream Condition Indicator Assessment and multiscale analysis leads project planners to consider available Endangered Species Act listed fish and habitat data layers and information. Multiscale analysis links desired conditions with indicators using the Stream Condition Indicator Assessment as shown in Table 34, determines departure from desired conditions, and recommends restoration actions. Use of the coarse scale filter in the multiscale analysis to identify limiting factors and high priority areas as identified in the recovery plans where aquatic restoration would be effective for assisting in increasing populations of listed fish.

Table 34. Aquatic and riparian desired conditions and stream condition indicator

Desired Conditions	Desired Condition Plan Component	Stream Condition Function	Recovery Plan Tributary Habitat Limiting Factors
FW-DC-WTR-01.	National Forest System lands provide the distribution, diversity, and complexity of watershed and landscape-scale features including natural disturbance regimes and the aquatic and riparian ecosystems to which species, populations, and communities are uniquely adapted. Watersheds and associated aquatic ecosystems retain their inherent resilience to respond and adjust to disturbances, including climate change, without long-term, adverse changes to their physical or biological integrity.	Stream Complexity and Channel Form	Stream Complexity and Channel Structure
FW-DC-WTR-02.	Spatial connectivity exists within or between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic, riparian-associated, and many upland species of plants and animals.	Connectivity	Passage Barriers
FW-DC-WTR-03.	Aquatic habitats contribute to ecological conditions capable of supporting self-sustaining populations of native species and diverse plant, invertebrate, and vertebrate aquatic and riparian-dependent species. Aquatic habitats are key contributors to for the recovery of threatened and endangered fish species and provide important habitat components for all native aquatic species.	Floodplain Function, Riparian Condition	Floodplain Connectivity
FW-DC-WTR-04.	Instream habitat conditions for managed watersheds move in concert with or towards those in reference conditions. Aquatic habitats are diverse, with channel characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Instream habitat conditions across the forest, such as large woody material, percent pools, residual pool depth, median particle size, and percent fines are within reference ranges as defined by agency monitoring (for example, PIBO) and match the frequency distribution of comparable reference sites for a given channel type, channel size, climate, and geomorphic setting.	Stream Complexity and Channel Form	Stream Complexity and Channel Structure
FW-DC-WTR-05.	Water quality, including groundwater, meets or exceeds applicable state water quality standards, fully supports designated beneficial uses, and is of sufficient quality to support surrounding communities, municipal water supplies, and natural resources. Nez Perce-Clearwater has no documented lands or areas that are delivering water, sediment, nutrients, or chemical pollutants that would result in conditions that violate the State of Idaho's water quality standards or are permanently above natural or background levels.	Temperature, Sediment Regime	Water Quality and Temperature, Excess Sediment
FW-DC-WTR-06.	Sediment delivery to streams is of the types, quantities, and rates that support the natural instream sediment transport and storage rates and instream sediment substrate composition. The sediment regime in water bodies is not chronically affected by management activities to the extent that the availability of functioning spawning areas and interstitial spaces are reduced.	Hydrologic Regime, Sediment Regime	Excess Sediment

Desired Conditions	Desired Condition Plan Component	Stream Condition Function	Recovery Plan Tributary Habitat Limiting Factors
FW-DC-WTR-07.	Instream flows are sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows are retained. Stream flow regimes maintain riparian ecosystems and natural channel and floodplain dimensions. Stream channels transport sediment and woody material over time while maintaining reference dimensions (for example, bankfull width, depth, entrenchment ratio, slope, and sinuosity).	Channel Form	Floodplain Connectivity, Stream Complexity
FW-DC-WTR-08.	Groundwater dependent ecosystems, including peatlands, bogs, fens, wetlands, seeps, springs, riparian areas, groundwater-fed streams and lakes, and groundwater aquifers, persist in size and seasonal and annual timing and exhibit water table elevations within the natural range of variability. Surface and groundwater flows provide late-season stream flows, cold water temperatures, and sustain the function of surface and subsurface aquatic ecosystems.	Temperature	Water Quality and Temperature
FW-DC-WTR-09.	Beavers are present in watersheds where their activities benefit ground water, surface water, and aquatic habitat complexity, and where their activities support conservation and recovery of imperiled aquatic species.	Channel Form	Stream Complexity and Channel Structure
FW-DC-WTR-10.	FW-DC-WTR-10. Critical habitat components (physical and primary biological features) provide the ecological conditions necessary to achieve species recovery. Spawning, rearing, and migratory habitats are widely available and inhabited. Listed aquatic species have access to historic habitat and appropriate life history strategies (for example, bull trout resident, fluvial, adfluvial; and anadromy for salmon and steelhead) are supported.	Connectivity Temperature Stream Complexity Channel Form Hydrologic Regime Sediment Regime Riparian Condition	Passage Barriers Water Quality Temperature Stream Complexity Channel Form Hydrologic Regime Sediment Regime Riparian Condition
FW-DC-WTR-11.	Water cooling mechanisms in unconfined channels that are dependent on the exchange of surface water and groundwater are functioning at full potential. Cooling mechanisms include dynamic scouring and bar formation, activation of side channels during high flow events, and inundation of the full floodplain extent during floods with an approximate 5-10-year return interval.	Channel Form	Stream Complexity and Channel Structure
FW-DC-CWN-01.	Conservation Watershed Networks have functionally intact ecosystems that provide high-quality water and contribute to and enhance the conservation of aquatic species of conservation concern and recovery of threatened or endangered fish species.	Temperature	Water Quality
FW-DC-CWN-02.	Streams within the Conservation Watershed Network provide habitat that supports robust native fish populations, which are able to expand to and recolonize adjacent unoccupied habitats. These areas conserve key demographic processes likely to influence the sustainability of aquatic species.	Connectivity	Passage Barriers

Desired Conditions	Desired Condition Plan Component	Stream Condition Function	Recovery Plan Tributary Habitat Limiting Factors
FW-DC-CWN-03.	Roads in the Conservation Watershed Network present minimal risk to aquatic resources.	Floodplain Function, Sediment Regime, Channel Form	Floodplain Connectivity, Excess Sediment
FW-DC-RMZ-01.	Riparian Management Zones reflect a natural composition of native flora and fauna and a distribution of physical, chemical, and biological conditions as compared to reference conditions. The species composition and structural diversity of native plant communities in riparian management zones provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration. Nutrients, large woody debris, and fine particulate organic matter are supplied in amounts and distributions sufficient to sustain physical complexity and stability.	Temperature, Channel Form	Riparian Condition, Stream Complexity and Channel Structure
FW-DC-RMZ-02.	Riparian Management Zones feature key riparian processes and conditions that function consistent with local disturbance regimes, including slope stability and associated vegetative root strength, wood delivery to streams and within the riparian management zones, input of leaf and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality.	Riparian Condition, Temperature, Channel Form	Water Quality and Temperature, Stream Complexity and Channel Structure
FW-DC-ARINF-01.	The transportation system has minimal impacts on aquatic and riparian conditions through reduced hydrologic connectivity of roads to streams, lower sediment delivery to streams, and improved aquatic organism passage, where transportation infrastructure affects these features.	Hydrologic Regime, Sediment Regime, Connectivity	Floodplain Connectivity, Excess Sediment, Passage Barriers
FW-DC-ARREC-01.	Recreation facilities and their use, including trails and dispersed sites, have minimal impacts on aquatic resources, including threatened and endangered species, designated critical habitat, and species of conservation concern.	Riparian Condition, Channel Form	Riparian Condition, Excess Sediment, Stream Complexity and Channel Structure
FW-DC-MWTR-01.	Lands that contribute to municipal watersheds and source water protection areas are in a condition that contributes to consistent delivery of clean water and meets or exceeds State of Idaho water quality standards.	Hydrologic Regime, Sediment Regime	Water Quality, Excess Sediment

Vegetation management in the riparian management zone would occur only for the purposes of restoring or enhancing riparian, fish, and aquatic resources (FW-STD-RMZ-01). The components described in the Riparian Management Zones section of the Aquatic Ecosystems plan components, guided by the use of tools such as Multiscale Analysis and the Stream Condition Indicator Assessment, arguably represents a refinement and enhancement of PACFISH and INFISH direction with greater clarity and emphasis on the do not retard concept, an expectation of improving conditions in streams where they do not meet desired conditions, use of standards and guidelines, and use of tools such as Multiscale Analysis rather than Watershed Analysis and indicators in the Stream Condition Indicator Assessment in lieu of Riparian Management Objectives.

For plan components, FW-STD-RMZ-01 and FW-STD-RMZ-06, multiscale analysis, including the use of stream condition indicator assessment, steps 1-6, is a methodology that can help determine whether desired conditions are being met. Where indicators fall into a category of functioning at a medium or low level, it is recommended that restoration or conservation actions be implemented to move that indicator to the next highest level.

Step 3 described below can be used to help document project activities will comply with FW-STD-WTR-04. Where aquatic and riparian desired conditions are not yet achieved, and to the degree that project activities would contribute to those conditions, Table 35 will help determine actions that need to be implemented to restore or not retard attainment of desired conditions. Identify factors limiting desired conditions and disclose how project could avoid or mitigate those activities that have a potential to retard aquatic desired conditions. Also disclose aquatic restoration and conservation opportunities and trade-offs with other resource objectives. An example of a project that results in a short-term adverse effect to an indicator is a road improvement project that includes instream and near stream disturbance to add a cross drain and replace an undersized culvert. This disturbance would result in a short-term increase in sediment delivery. Long term, however, if it can be shown the project results in reduced sediment delivery and reduces the risk of a road failure during an extreme precipitation event, this standard would be met.

Table 35. Potential stream and riparian restoration actions

Stream Condition Function	Indicator	Potential Stream/Riparian Restoration Actions
Hydrologic Regime	Water Yield and Peak Flow	Reforestation, increase stream complexity, addition of log structures, beaver dam analogs, disconnect road system from stream, install cross drain structures
Sediment Regime	Unstable Slopes and Intersecting Roads	Disconnect road system from stream, install cross drain structures, relocate roads
	Sediment Impaired - 303(d)/305(b)	Addition of log structures, beaver dam analogs, boulders, weirs, re-meander straightened stream
	% Pool Fines	Addition of log structures, beaver dam analogs, boulders, weirs, re-meander straightened stream
	Road and stream crossings	Replace undersized culverts with structure for 100-year flow, install cross drain structures
	Motorized Trail Crossings	Hardened ford crossings, trail bridge or culverts at stream crossings
	Miles of roads with High modeled sediment delivery risk	Road resurfacing, add stream complexity, install woody debris structures
Floodplain Function	Streamside Roads	Add stream complexity, install woody debris structures, road resurfacing

Stream Condition Function	Indicator	Potential Stream/Riparian Restoration Actions
	Altered stream channel or floodplain (for example, dredge mined; grazing impacts)	Levee removal, reconnection, or creation of floodplain features, remove mine tailings, fencing, beaver reintroduction, remove or relocate stream side roads
Stream Complexity and Channel Form		Increase stream complexity, addition of large woody debris, beaver dam analogs, connectivity to side channels; riparian planting, remove or relocate streamside roads
	Large Woody Debris	Addition of log structures, reintroduce beaver; riparian planting
Temperature	NorWeST Stream Temperature	Riparian planting, addition of log structures, install grade control structure, reintroduce beaver, reconnect floodplain features
	Temperature Impaired - 303(d)/305(b)	Riparian planting, addition of log structures, install grade control structure, reintroduce beaver, reconnect floodplain features
	Cooling Processes	Reconnect floodplain, floodplain restoration, beaver reintroduction, add stream complexity
Connectivity	Aquatic Organism Passage	Remove barrier; culvert replacement
Riparian Condition	Riparian plant composition, structure, diversity	Fencing, controlled grazing, riparian planting, remove non-native vegetation, thinning of undesirable understory; prescribed fire

Framework for Multiscale Analysis, including use of Stream Condition Indicator Assessment

Step 1: Identify and Map

Identify and map locations of federally listed native fish and species of conservation concern fish populations, and critical habitat to determine areas of greatest concern within the project area.

Basin Scale (for example, Clearwater Basin, Salmon Basin)

- Determine if watershed(s) contain major population group or population identified in the Snake River spring and summer Chinook salmon and Snake River Basin Steelhead Recovery Plan.
- Determine if watershed major population group status is rated as Maintain or High Risk and identify gap between its current status and proposed status (National Oceanographic and Atmospheric Agency 2017).
- Determine if watershed(s) contain local population identified in the Mid-Columbia Recovery Unit Implementation Plan or Upper Snake Recovery Unit Implementation Plan for Bull Trout.
- If relevant and accessible, include map of fish distributions of steelhead and spring/summer Chinook populations within each major population group (MPG, see National Oceanographic and Atmospheric Agency 2017) or bull trout local populations.

Subbasin Scale (for example, Upper North Fork Clearwater, Lochsa, South Fork Clearwater)

- Include location of project area on the map.

- Include map of designated critical habitat for steelhead, bull trout, and fall Chinook across subbasin.
- Identify critical habitat for the potential restoration area and briefly describe its importance to the species recovery (U.S. Department of the Interior 2015c, National Oceanographic and Atmospheric Agency 2017).
- Include mapped major and minor spawning areas for steelhead and spring/summer Chinook salmon.
- Include mapped local populations of bull trout Recovery Unit, within project area.
- Include a fire history map across the subbasin.
- Include a timber harvest map across the subbasin.
- Include map of natural disturbances such as landslides and flood history
- Include active grazing allotments maps across the subbasin.
- Include active mining claims across the subbasin.
- Identify Idaho Department of Environmental Quality impaired waters and TMDLs for the subbasin.

Sources for downloadable GIS information:

US Forest Service: FSGeodata Clearinghouse Website: https://data.fs.usda.gov/geodata/edw/datasets.php

USDA GeoSpatialDataGateway Website: https://datagateway.nrcs.usda.gov/GDGOrder.aspx

StreamNet: Fish data for the northwest Website: https://www.streamnet.org/data/interactive-maps-and-gis-data/

Norwest Stream Temperature Map Website: https://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=bf3ff38068964700a1f278eb9a940dce

NOAA fisheries: Species maps and data Website: https://www.westcoast.fisheries.noaa.gov/maps_data/Species_Maps_Data.html

Idaho Department of Fish and Game for fish distribution and temporal data. GIS layers are stored internally, and data is managed in different databases so inquire regional biologist for best point of contact

Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report

Website: https://mapcase.deq.idaho.gov/wq2020/default.html

Step 2: Coarse Filter - Identify Limiting Factors within Project Area

Watershed (HUC10) and Subwatershed (HUC12) Scale

- Review tributary habitat limiting factors identified in Snake River Recovery Plans (Table 36 and Table 37) and primary threats, if applicable, identified in the Recovery Unit Implementation Plan for bull trout (Table 38).
- Review PIBO data for the Nez Perce-Clearwater National Forest to determine whether stream indicators in managed watersheds are within reference ranges.
- Identify which factors are considered limiting for the watershed and subwatershed where the project is located. Carry forward the identified limiting factors to step 3.

Table 36. Tributary habitat limiting factors for Snake River steelhead populations within the Nez Perce-Clearwater National Forests

Population	Stream Complexity	Excess Sediment	Passage Barriers	Altered/ Low Flow	Water Quality/ Temperature	Riparian Condition	Floodplain Connectivity
Clearwater River Major Population Group							
Lower Main Clearwater River	√	√	√	√	√	√	√
Selway River		√	√		√	√	
Lolo Creek	√	√	√		√	√	
Lochsa River	√	√	√		√	√	
South Fork Clearwater River	√	√	√		√	√	√
Salmon River Major Population Group							
Little Salmon River	√	√	√	√	√	√	
Chamberlain Creek	√	√	√		√	√	

Table 37. Tributary habitat limiting factors for Snake River spring/summer Chinook salmon, South Fork Major Population Group populations within the Nez Perce-Clearwater National Forests

Population	Stream Complexity	Excess Sediment	Passage Barriers	Altered/ Low Flow	Water Quality/ Temperature	Riparian Condition	Floodplain Connectivity
Little Salmon River	√	√	√	√	√	√	√

Table 38. Tributary habitat limiting factors for Columbia River bull trout populations within the Nez Perce-Clearwater National Forests

Population	Stream Complexity	Excess Sediment	Passage Barriers	Altered/ Low Flow	Water Quality/ Temperature	Riparian Condition	Floodplain Connectivity
Clearwater River Recovery Unit	√	√	√	√	√	√	√

Step 3: Medium Filter – Stream Condition Indicator Assessment.

Subwatershed (HUC12) Scale or Project Level Scale

For each indicator, evaluate whether conditions are meeting desired conditions using the identified data source, or other information sources if more appropriate. If an indicator is functioning at high level, it is meeting desired conditions. If the indicator is functioning at medium or low level of risk, potential restoration actions are identified in Table 39 to assist in moving that indicator toward desired conditions.

Table 39. Stream condition function and Indicators and level of risk

Stream Condition Function	Indicator	Data Source	Desired Condition/ Natural Range	Functioning at High Level	Functioning at Medium Level	Functioning at Low Level
Hydrologic Regime	Water Yield/Peak Flow	GIS layers associated with Nez Perce-Clearwater Approach to Assess Water Yield and Peak Flow	Low potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	Low potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	Moderate potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows	High potential for alteration in the timing, magnitude, duration, and spatial distribution of peak, high, and low flows
Sediment Regime	Unstable Slopes/ Intersecting Roads	GIS/LiDar	No roads intersecting with identified unstable slopes	100% of unstable slopes are without intersecting roads	85-100% of unstable slopes are without intersecting roads	75-90% of unstable slopes are without intersecting roads
	Sediment Impaired - 303d	Idaho 303(d)/305(b) listed - Sediment Impairment	Stream not listed on Idaho 303(d)/305(b) water quality list for sediment	100% of streams not listed on 303(d)/305(b) list for sediment	85-100% of streams not listed on 303(d)/305(b) water quality list for sediment	75-90% of streams not listed on 303(d)/305(b) water quality list for sediment
	% Pool Fines	PIBO	<25% in spawning habitat	Pool fines equal or less than 25%	Pool fines equal or less than 30%	Pool fines greater than 30%
	Road/stream crossings	GIS/INFRA	Cross drains are present at road/stream crossings	100 % of road stream crossings are sized for 100-year flow event, cross drains exist	85-100 % of road stream crossings are sized for 100-year flow event, cross drains exist	75-90 % of road stream crossings are sized for 100-year flow event, cross drains exist
	Motorized Trail Crossings	GIS/INFRA	Trail/Stream crossings exhibit culvert, bridge, or hardened ford	100% of trail/stream crossings exhibit culvert, bridge, or hardened ford	85-100% of trail/stream crossings exhibit culvert, bridge, or hardened ford	75-90% of trail/stream crossings exhibit culvert, bridge, or hardened ford
	Miles of roads with High modeled sediment delivery risk	GIS/modeling (for example, GRAIP Lite, WEPP) Needs to be completed for each project	Low sediment delivery risk	100 % of roads modeled with low sediment delivery risk	85-100 % of roads modeled with low sediment delivery risk	75-90 % of roads modeled with low sediment delivery risk
Floodplain Function	Streamside Roads	GIS	No streamside roads within 300 feet of RMZ	100% RMZ have no roads within 300 feet of RMZ Category 1	85-100% RMZ have no roads within 300 feet of RMZ Category 1	75-90% RMZ have no roads within 300 feet of RMZ Category 1 and

Stream Condition Function	Indicator	Data Source	Desired Condition/ Natural Range	Functioning at High Level	Functioning at Medium Level	Functioning at Low Level
			Category 1 and within 150 feet of RMZ Category 2	and within 150 feet of RMZ Category 2	and within 150 feet of RMZ Category 2	within 150 feet of RMZ Category 2
Stream Complexity/Channel Form	Altered stream channel or floodplain (for example, dredge mined; grazing impacts)	GIS, Aerial Imagery	Low anthropogenic disturbance within floodplain	80-100% of floodplain unaltered by anthropogenic impacts; stream access to floodplain	70-85% of floodplain unaltered by anthropogenic impacts; stream access to floodplain	60-75% of floodplain unaltered by anthropogenic impacts; stream access to floodplain
	Large Woody Debris	PIBO	Instream channel complexity, LWD jams, diverse riparian stands as source of LWD	85-100% unconfined channels with diverse riparian timber stands; disturbance regimes to promote recruitment of LWD	75-90% unconfined channels with diverse riparian timber stands; disturbance regimes to promote recruitment of LWD	65-80% unconfined channels with diverse riparian timber stands; disturbance regimes to promote recruitment of LWD
Temperature	NorWeST Stream Temperature	NorWeST Database	Mean August stream temperature <13 degrees C in spawning streams	85-100% streams mean August temperature <13 degrees C in spawning streams	75-90% streams mean August temperature <13 degrees C in spawning streams	65-80% streams mean August temperature <13 degrees C in spawning streams
	Temperature Impaired - 303d	Idaho 303(d)/305(b) listed - Temperature Impairment	Stream not listed on Idaho 303(d)/305(b) water quality list for temperature	100% of streams not listed on 303(d)/305(b) list for temperature	85-100% of streams not listed on 303(d)/305(b) water quality list for temperature	75-90% of streams not listed on 303(d)/305(b) water quality list for temperature
	Cooling Processes	Netmap/ LiDar	Stream exhibits reference canopy cover, shade, stream complexity (LWD, floodplain inundation)	85-100 % of stream exhibits reference canopy cover, shade, stream complexity (LWD, floodplain inundation)	75-90 % of stream exhibits reference canopy cover, shade, stream complexity (LWD, floodplain inundation)	65-80 % of stream exhibits reference canopy cover, shade, stream complexity (LWD, floodplain inundation)
Connectivity	Aquatic Organism Passage	Field Surveys/GIS/INFRA	Fish bearing streams, no barriers	100% of road stream crossings support migration and	85-100% of road stream crossings support migration and	75-90% of road stream crossings support migration and

Stream Condition Function	Indicator	Data Source	Desired Condition/ Natural Range	Functioning at High Level	Functioning at Medium Level	Functioning at Low Level
				movement of aquatic organisms	movement of aquatic organisms	movement of aquatic organisms
Riparian Condition	Riparian plant composition, structure, diversity	GIS - Invasive species treatment areas, human caused alterations (grazing, mining, roads)	Native riparian vegetation species composition, structural and age class diversity unaltered by human caused actions	85-100 % of riparian area exhibits reference native riparian vegetation structure, composition, and age class diversity unaltered by human caused actions in <15% gradient stream segments	75-90% of riparian area exhibits reference native riparian vegetation structure, composition, and age class diversity unaltered by human caused actions in <15% gradient stream segments	65-80 % of riparian area exhibits reference native riparian vegetation structure, composition, and age class diversity unaltered by human caused actions in <15% gradient stream segments

When completing a full multiscale analysis, only identify departure from desired condition for limiting factors identified in Step 2.

- Primarily using aerial imagery, LiDAR, and GIS layers for each tributary habitat limiting factor (function) identified.
- Use medium filter indicators to determine departure (level of risk) from desired conditions.
- Identify status of each indicator using suggested data sources and compare against desired condition. Identify departure (functioning at high, medium, or low level) from desired condition.
- If data suggests indicator is functioning at medium or low level, use fine filter to verify field conditions.

For each indicator – if recovery plans reveal that indicators are limiting factors, map medium filter data against layers (Table 40) with that of basin and subbasin scale layers from step 1. (Data layers should generally be updated annually, but not less than every five years.)

- Map layers associated with Nez Perce-Clearwater Approach to Assess Water Yield and Peak Flow.
- Map unstable slopes and mass movement areas.
- Review road and trails layer, document segments on unstable ground and within RMZs- especially those that bisect floodplain or constrain stream segments, as these types of roads and trails intercept and constrain potentially negatively influencing other processes like wood and temperature.
- Map road segments that bisect or parallel the floodplain and especially those that continually fail.
- Map Idaho 303(d)/305(b) listed stream segments for sediment and temperature impairments.
- Map pool fines measurements and large wood frequency from PIBO data.
- Review culvert data for blockages and undersized culverts (fish passage culverts under 100-year flow capacity), include on map.
- Document mining claims and grazing allotments, include on map, if present.
- Map temperature data from NorWest temperature database.
- Map stream shading estimate.
- Include sediment modeling (for example, GRAIP Lite, WEPP, or other model as determined by the line officer to be adequate to inform the decision) for roads to help identify high delivery segments and make available to IDT at beginning of project initiation.
- Map invasive species treatment areas and human caused alterations (grazing allotments, mining claims, roads in riparian areas of streams with less than 15 percent gradient.

Table 40. Multiscale analysis filters

Stream Condition Function	Indicator	Coarse Filter	Medium Filter	Fine Filter
Hydrologic Regime	Water Yield/Peak Flow	Recovery Plan Tributary Limiting Factor: Altered Flow	GIS data associated with Nez Perce-Clearwater Approach to Assess	Field Verify Conditions

Stream Condition Function	Indicator	Coarse Filter	Medium Filter	Fine Filter
			Water Yield and Peak Flow	
Sediment Regime	Unstable Slopes/ Intersecting Roads	Recovery Plan Tributary Limiting Factor: Excess Sediment	GIS Layers for unstable slopes and mass movement areas	Field Verify Areas Identified
	Sediment Impaired - 303d	Recovery Plan Tributary Limiting Factor: Excess Sediment	Idaho DEQ GIS 303d stream layer	Total Maximum Daily Load or Beneficial Use Reconnaissance Project data
	% Pool Fines	Recovery Plan Tributary Limiting Factor: Excess Sediment	GIS Layers of PIBO Data used at Sub-basin Scale	Field Verify Pool Fine Conditions
	Road/stream crossings	Recovery Plan Tributary Limiting Factor: Excess Sediment	GIS Layers of stream crossing inventory	Field Verify Conditions
	Motorized Trail Crossings	Recovery Plan Tributary Limiting Factor: Excess Sediment	Trails Route Layer	Field Verify Trail Stream Crossing Conditions
	Miles of roads with High modeled sediment delivery risk	Recovery Plan Tributary Limiting Factor: Excess Sediment	GIS Layers of road network, WEPP/GRAIP Lite modeling	Field Verify Road Segments of Concern
Floodplain Function	Streamside Roads	Recovery Plan Tributary Limiting Factor: Floodplain Connectivity	GIS layers of streamside roads	Field Verify Conditions
	Altered stream channel or floodplain (for example, dredge mined; grazing impacts)	Recovery Plan Tributary Limiting Factor: Floodplain Connectivity	GIS/Aerial Imagery of anthropogenic floodplain disturbance (grazing, mining, roads)	Field Verify Conditions
Stream Complexity/Channel Form		Recovery Plan Tributary Limiting Factor: Stream Complexity and Channel Structure		Field Verify Conditions
	Large Woody Debris	Recovery Plan Tributary Limiting Factor: Riparian Condition or Stream Complexity or Floodplain Connectivity	GIS Layers of PIBO Data used at sub-basin scale	Ground Truth Unconfined Channels, Riparian Stands, Disturbance Regimes
Temperature	NorWeST Stream Temperature	Recovery Plan Tributary Limiting Factor: Water Quality Temperature	NorWest temperature mode for mean August temperature	Field Data (temp loggers)

Stream Condition Function	Indicator	Coarse Filter	Medium Filter	Fine Filter
	Temperature Impaired - 303(d)/305(b)	Recovery Plan Tributary Limiting Factor: Water Quality Temperature	Idaho DEQ GIS 303(d)/305(b) stream layer	Total Maximum Daily Load or Beneficial Use Reconnaissance Project data
	Cooling Processes	Recovery Plan Tributary Limiting Factor: Water Quality Temperature	Netmap/LiDar - estimate of stream shading	Photopoints, field verify stream shade canopy cover, LWD
Connectivity	Aquatic Organism Passage	Recovery Plan Tributary Limiting Factor: Passage Barrier	GIS identified passage barriers	Field Verify Passage Barriers Identified
Riparian Condition	Riparian plant composition, structure, diversity	Recovery Plan Tributary Limiting Factor: Riparian Condition	GIS/Aerial Imagery of anthropogenic floodplain disturbance (grazing, mining, roads) and Beaver Restoration Action Tool - streams <15%	Field Verify Conditions

Step 4: Fine Filter – Field Verification of Conditions & Multiscale Analysis Questions

- For each indicator not meeting desired conditions (functioning at a medium or low level), ground truth or field verify conditions, if needed.
- Identify whether conditions are caused by direct (for example, alteration of riparian habitat by grazing) or indirect (for example, roads impacting water quality and sediment regimes) processes. Review relevant existing habitat data (includes PIBO where available and other subwatershed or reach scale data).
- Determine extent of impact on indicators, using multiscale analysis questions, and use the information to inform restoration/conservation actions in step 5.

Fish Presence/Critical Habitat

- In which reaches are fish present within the project area?
- Is there designated critical habitat within the project area?

Water Quality/Temperature

- What downstream beneficial uses of water exist in the area?
- What beneficial uses are water quality limited in the project area?
- To what extent is the riparian condition affecting stream shading?
- To what extent is canopy cover, stream complexity, and floodplain inundation influencing stream temperatures?

Sediment

- What downstream beneficial uses of water exist in the area? What beneficial uses are water quality limited in the project area?
- For road decommissioning, what methods of treatment of mass wasting are likely to have the best success in a particular geologic setting? Will road decommissioning reduce mass wasting associated with the road?
- Does the road system cross unstable slopes that may cause mass wasting?
- How and where is the road or trail system hydrologically connected to the stream? How do the connections affect water quality/quantity?
- When building temporary or permanent roads or conducting other ground disturbing activities, evaluate land type erosion hazard potential. Are ground disturbing activities located on high surface erosion areas?

Stream Complexity/Channel Structure

- Is there evidence that past management has altered pool frequency, bank stability, large woody debris availability? Do the stream channels have access to their floodplains?
- How and to what extent are recreation facilities affecting aquatic resources?
- Is there adequate species composition and structural diversity of plant communities to provide thermal regulation, nutrient filtering, large woody debris, and bank stabilization?

Floodplain Function/Connectivity

- How does the road system affect shading, litterfall, and riparian plant communities? To what extent is road sediment entering the stream?
- Streamside roads – are they perpendicular or parallel to the stream
- Are there active mining claims
- Grazing allotments/ impacts

Connectivity/Passage Barriers

- How and where do road-stream crossings influence stream channels and water quality? How and where does the road system restrict the migration and movement of aquatic organisms?
- What aquatic species are affected and to what extent?
- How and where do road-stream crossings influence stream channels and water quality?

Hydrologic Regime

- How and where does the road system exist within the riparian zone? To what extent is the road system impacting hydrologic function?

Riparian Condition

- To what extent is the riparian condition affecting stream shading?
- To what extent are management actions and human caused alterations affecting riparian areas?
- Is there a sufficient source for adequate large woody debris within the floodplain?

Step 5: Identify Conservation/Restoration Actions

Restoration actions address the root causes of degradation using a process-based restoration approach (Booth et al. 2016). Restoration would focus on watershed areas that influence processes that build resilience and sustain rivers and streams. Higher priority is placed on protecting natural functions of watersheds and riverine zones than a single site-specific location.

Potential stream/riparian restoration actions are listed in Table 35. This list is not intended to be all inclusive. Other or additional actions may be implemented.

Restoration would be designed so that indicator will reduce risk by moving to the next level (such as if indicator is functioning at low level, restoration or conservation actions would be designed so that conditions move to functioning at medium level).

Step 6: Effectiveness Monitoring

- Broad-scale monitoring (PIBO Monitoring)
- Measure and evaluate the effectiveness of actions and best management practices at the forest and regional scale.
- Land Management Plan monitoring – Refer to Land Management Plan Appendix 3
- For post project monitoring of burn units in riparian management zones, utilize stream condition indicator assessment and multiscale analysis to determine if implementation of the project maintained or improved aquatic desired conditions.

Potential Multiscale Analysis Conclusions

The summary discloses the rationale and scientific context for how multiscale analysis may benefit future project-level decisions. Possible management and analytical approaches may include:

- Identify factors limiting desired conditions and disclose how project could avoid or at least minimize those activities that have a potential to retard aquatic desired conditions.
- Include in the analysis the rationale and scientific context for how multiscale analysis may benefit future project-level decisions.
- Disclose aquatic restoration opportunities and trade-offs with other resource objectives.
- Summarize forest condition and location and disclose need for treatment
- Describe existing species and age composition of the vegetation within RMZs, provide a link between those conditions and stream conditions outside of reference, and thus provide a rationale that treatments are needed (or not).
- Document interaction between proposed project and indicators that are considered limiting
- Document which indicators are limiting (functioning at either medium or low level), and document evidence and extent of departure from desired condition
- Summarize results of multiscale analysis questions and reveal how project will reduce impacts through project adjustments or aquatic restoration actions
- Disclose which aquatic restoration actions will be implemented to avoid retarding progress toward desired conditions and how those actions may improve conditions

Other Information and Resources:

Booth et al. (2016). Integrating Limiting-Factors Analysis with Process-Based Restoration to Improve Recovery of Endangered Salmonids in the Pacific Northwest, USA.

National Oceanic and Atmospheric Administration, National Marine Fisheries Service. (2014). ESA Recovery Plan for Snake River Spring/Summer Chinook Salmon (Oncorhynchus tshawytscha) & Snake River Basin Steelhead (Oncorhynchus mykiss). Portland, Oregon.

Overton, Kerry, Ann D. Carlson, and Cynthia Tait. (2010). An Aquatic Multiscale Assessment and Planning Framework Approach – Land Management Plan Case Study. In Advances in threat assessment and their application to forest and rangeland management. General Technical Report PNW-GTR-802. Portland, Oregon. https://www.fs.fed.us/pnw/pubs/gtr802/Vol2/pnw_gtr802vol2_overton.pdf

USFWS. (2015d). Upper Snake Recovery Unit Implementation Plan for Bull Trout (Salvelinum confluentus). Idaho Fish and Wildlife Office, Boise, Idaho.

USFWS. (2015a). Mid-Columbia Recovery Unit Implementation Plan for Bull Trout (Salvelinum confluentus). Oregon Fish and Wildlife Office, Portland, Oregon.

Nez Perce-Clearwater Approach to Assessing Soil Function

FSM Chapter 2550 Soil Management defines soil function as any ecological service, role, or task that soil performs. The FSM identifies six soil functions: soil biology, soil hydrology, nutrient cycling, carbon storage, soil stability and support, and filtering and buffering.

Since soil function is difficult to measure in the field, the information in Table 41 was produced, grouping the six functions into three primary sections with readily observed indicators. Soil function is categorized as functioning properly, functioning at risk, and impaired function. It is generally assumed that soils categorized as Class 0 and 1 in the Forest Soil Disturbance Monitoring Protocol (2008) are functioning properly, soils categorized as Class 2 or Class 3 that have received restoration treatments are functioning at risk, and soils categorized as Class 3 that have not received restoration treatments are considered as having impaired function.

Table 41. Soil function visual indicators

Soil Function	Selected Attributes	Functioning properly (Class 0, 1)	Functioning at risk (Class 2, Class 3 with restoration)	Impaired Function (Class 3, no restoration)
Biologic Function: the soil capacity to support vegetation and soil community	Roots	Root growth not affected by soil compaction	Roots impeded by compaction, j-roots noted, root depth greater than 10 cm	Compaction severely limits root growth, root depth less than 10 cm
	Plants and cover	Natural plant community, no bare soil	Bare soil >5% and invasive plants greater than 5% cover	Some vegetation groups missing compared to adjacent natural forest; Bare soil > 20%; invasive plants greater than 20% cover
	Nutrients: Surface organic matter, litter, duff, CWD	Forest floor intact, CWD[1] within HT ranges	Forest floor reduced or missing; CWD[1] less than ranges outlined in guideline MA2 and MA3-GDL-FOR-01, CWD[1] could be recruited	Forest floor missing; CWD[1] less than ranges outlined in guideline MA2 and MA3-GDL-FOR-01, no potential CWD[1] recruitment

Soil Function	Selected Attributes	Functioning properly (Class 0, 1)	Functioning at risk (Class 2, Class 3 with restoration)	Impaired Function (Class 3, no restoration)
	Nutrients: Topsoil	A horizon intact	A horizon impacted	A horizon missing, mixed, severely compacted
	Nutrients: Ash soil, which has superior nutrient and water storage capacity	Ash cap intact	Ash cap partially missing or mixed	Ash cap absent
Hydrologic Function: soil capacity to capture, store, water from rainfall, run-on, and snowmelt	Soil surface structure	Granular	Some platey, massive	No structure; large plates/ blocks, massive
	Infiltration	Natural forest infiltration rate	Infiltration less than the rate of adjacent natural forest; compaction only in upper 30 cm soil; restored soil	Infiltration less than 2 times the rate of adjacent natural forest; compacted subsoil horizons
Site stability: Soil resistance to erosion by wind and water	Soil surface	Forest floor intact, effective cover greater than 85%, no erosion sign	Erosion deposition evident, effective cover between 60-85%, exception for new restored soil	Erosion actively expanding, well-defined, continuous and connected into a definite pattern. Effective ground cover is less than 60%
	Mass wasting	Mass wasting sign rare, low risk from management	Slump signs evident, potential management trigger	Active slumping, steep scarp, sag ponds, tension cracks, high risk for management trigger

[1]Coarse wood debris or coarse woody material

The soil function assessment relies on evaluating the treated ground relative to adjacent untreated areas. These pairwise comparisons allow simple diagnostics without needing to create site potential characteristics across the diverse Nez Perce-Clearwater landscape. The indicators can relate to several functions. For example, an intact forest floor bolsters biologic function with carbon, ensures against water loss, and ameliorates soil temperatures for growth. However, the forest floor also serves as effective ground cover that stabilizes sites against wind and water erosion. The indicator thresholds were derived from Lloyd et al (2013) road decommissioning data measured on the Nez Perce-Clearwater, the Forest Disturbance Monitoring Protocol (Page-Dumroese et al. 2009b), the Indicators for Rangeland Health (Pellant et al. 2020), and erosion data from Water Erosion Prediction Project, Disturbed WEPP (Elliot et al. 2000).

Appendix 5 Northern Rockies Lynx Management Direction

Northern Rockies Lynx Management Direction Record of Decision is a standalone document.

Appendix 6 Water and Fish

Introduction

This appendix includes five sections focused on water and fisheries resources. This appendix provides reference material and not analysis. It will be updated every two years consistent with biennial report requirements.

The first section of this appendix is watershed condition framework and priority watersheds. Watershed Condition Framework is a national strategy designed to restore watersheds to their natural potential condition. Priority watersheds are identified through the Watershed Condition Framework. The second section discusses water quality status and beneficial uses. The third section covers municipal watersheds and source water protection areas. The fourth section describes the conservation watershed network, which is designed to provide long-term protection, connectivity, and survival of federally listed fish and aquatic species of conservation concern. The final section describes the Aquatic and Riparian Conservation Strategy and associated plan components.

Watershed Condition Framework and Priority Watersheds

Watershed Condition Framework

The Watershed Condition Framework (U.S. Department of Agriculture 2011) is a consistent, nationwide approach to classify watershed condition and to prioritize watershed restoration at the subwatershed (HUC12) scale, typically 10,000 to 40,000 acres. This framework was designed to be a consistent, comparable, and credible process for improving the health of watersheds across all National Forest System lands.

The watershed condition classification process (Potyondy and Geier 2011) is one of the steps included in the Watershed Condition Framework (U.S. Department of Agriculture 2011), a methodology that characterizes watershed condition based on indicators and attributes related to watershed processes.

Watershed condition classification categorizes watersheds in one of three discrete classes that reflect the level of watershed functionality or integrity: 1) functioning properly, 2) functioning at risk, and 3) impaired function. In this framework, a watershed is considered in good condition if it is functioning in a manner similar to one found in natural wildland conditions (Karr and Chu 1999, Lackey 2001). This characterization should not be interpreted to mean that managed watersheds cannot be in good condition. A watershed is functioning properly if the physical attributes are adequate to maintain or improve biological integrity. This consideration implies that a Class 1 watershed that is functioning properly has minimal undesirable human impact on its natural, physical, or biological processes, and it is resilient and able to recover to the desired condition when disturbed by large natural disturbances or land management activities (Yount and Niemi 1990). By contrast, a watershed is classified as having impaired function when some physical, hydrological, or biological attributes indicate a degraded state. Substantial changes to the factors that caused the degraded state are commonly needed to set them on a trend or trajectory of improving conditions that sustain physical, hydrological, and biological integrity.

Watershed conditions vary across the Nez Perce-Clearwater with conditions ranging from those unaffected by direct human disturbance to those exhibiting various degrees of modification and impairment. In 2011, the Nez Perce-Clearwater completed the watershed condition classification for 220 HUC12 subwatersheds. In summary, 140 watersheds were rated as functioning properly, 73 were rated as

functioning at risk, and 7 were rated as impaired. The majority of subwatersheds with Class 2 and 3 ratings are concentrated in the western, more road intensive portion of the Nez Perce-Clearwater. The most significant driver of the Class 3 ratings was the roads and trails indicator.

Priority Watersheds

The 2012 Planning Rule Directives require watersheds that that are a priority for restoration and maintenance be identified in revised land management plans. By design, Watershed Condition Framework priority watersheds are not intended to be permanent designations — when all needed work is completed, a new Watershed Condition Framework priority watershed is to be identified. Priority areas for potential restoration activities could change quickly because of disturbance events, such as wildfire, severe flooding, or landslides. Therefore, the 2012 Planning Rule includes priority watersheds as other plan content so that an administrative change could be used to quickly respond to changes in priority.

Watersheds that are a priority for maintenance or restoration include: Upper Elk Creek (HUC12 #170603080701), Upper Clear Creek (HUC12 #170603040102), Upper Little Slate Creek (HUC12 #170602090301), Musselshell Creek (HUC12 #170603060202), and Lower Crooked River (HUC12 #170603050302).

Future priority watersheds will be determined throughout the life of the Land Management Plan, which is assumed to be 15 years. Priority watersheds are selected by a forest or area responsible official after analysis and evaluation using a multi-functional interdisciplinary approach. The participation of partners in the priority selection process is expected and highly encouraged. The 2012 Planning Rule and the planning directives require the responsible official to reach out to local, state, tribal, other federal agencies and interest groups when identifying priority watersheds (FSH 1909.12, section 22.31). Priority watersheds identified would require the development of a watershed restoration action plan.

The Agricultural Improvement Act of 2018 (a.k.a. the 2018 Farm Bill), Section 8405 permanently authorizes the Forest Service to develop and maintain the Watershed Condition Framework, using the agency's existing processes and criteria. It provides specific legislative authorization and requirements for the process, one of those being to identify for protection and restoration up to 5 priority watersheds in each National Forest.

Water Quality

The Idaho Department of Environmental Quality uses water quality standards (IDAPA 58.01.02) to determine if Idaho’s waters are being adequately protected and is responsible for ensuring that Idaho’s surface, ground, and drinking water resources meet those standards. A water quality standard defines the goals that have been set for a water body by designating uses for the water, sets criteria necessary to protect those uses, and prevents degradation of water quality. A memorandum of understanding (1320 MU 11046000-011023) has been established to document coordination between the Idaho Department of Environmental Quality and the U.S. Forest Service in Idaho to implement the nonpoint source water quality provisions of the federal Clean Water Act for the State of Idaho (U.S. Department of Agriculture 2020a).

Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report

The Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report is a compilation of information about the water quality status of all Idaho waters and is a requirement of the Clean Water Act. Integrated reports are compiled biennially and are submitted to the U.S. Environmental Protection Agency

for approval. There are two main parts to the integrated report: 1) the 305(b) list, which summarizes the current condition of all state waters; and 2) the 303(d) list, which identifies those waters that are impaired or water quality limited and needing a total maximum daily load.

Both lists are named in accordance with the sections of the Clean Water Act where they are defined. Impaired waters listed on the 303(d) list are simply a subset of those on the 305(b) list. The Integrated Report places all state water bodies into at least one of five primary categories that describe how a water body relates to its beneficial uses. Beneficial uses are the desired uses that water bodies should support, as identified in Section 100 of Idaho's water quality standards (IDAPA 58.01.02.100). Each beneficial use has a unique set of water quality requirements or criteria that must be met for the use to be supported. Most water bodies have multiple beneficial uses. A water body is considered impaired when it does not meet the water quality criteria needed to support one or more of its beneficial uses. Beneficial uses that pertain to water bodies on the Nez Perce-Clearwater include cold water aquatic life, salmonid spawning, primary contact recreation, secondary contact recreation, domestic water supply, agricultural, industrial, wildlife habitats, and aesthetics uses.

Streams not supporting beneficial uses do not meet applicable water quality standards for their designated beneficial uses and are termed impaired or water quality limited. They are assigned Category 4 or 5 designations. Impairments in streams on the Nez Perce-Clearwater include sediment, stream temperature, E. coli, flow regime alterations, physical substrate habitat alterations, combined biota, and habitat bioassessments.

In 2019, the United State Environmental Protection Agency approved the State of Idaho's new and revised Human Health Water Quality Criteria for Toxics and Other Water Quality Standards Provisions (U.S. Environmental Protection Agency 2019), which established goals for the State's surface waters, including protecting sources of drinking water and helping ensure that fish from Idaho's waters are safe to eat.

Total Maximum Daily Load

As directed by the Clean Water Act, each State agency must develop a total maximum daily load for all waters identified on the section 303(d) list of impaired waters. Total maximum daily loads provide an approach to improving water quality so that streams and lakes can support and maintain their State-designated beneficial uses. A total maximum daily load determines pollutant reduction targets and usually covers a basin or subbasin. In instances where total maximum daily load assessment includes National Forest System lands, the Forest Service serves as a designated management agency through governmental memoranda of understanding. The State of Idaho is the lead agency for total maximum daily load development but must get U.S. Environmental Protection Agency approval before the total maximum daily load is formalized.

The total maximum daily load process has three distinct steps: 1) subbasin assessment, 2) loading analysis, and 3) implementation plan development. A loading analysis is needed only for those water bodies and their watersheds that were documented in the subbasin assessment to be water quality limited and only for those pollutants causing impairment. In addition to loading capacity and allocations, a loading analysis sets out a general pollution control strategy and an expected timeline for meeting water quality standards. For each of the subbasins with a developed total maximum daily load, the Idaho Department of Environmental Quality works with agencies and local landowners to develop a total maximum daily load implementation plan. Table 42 displays the status of subbasins in the total maximum daily load process on the Nez Perce-Clearwater. An Environmental Protection Agency approved Total Maximum Daily Load Report is required for the 747 miles of Category 5 water bodies in the Palouse,

Lochsa, Middle Fork Clearwater, Clearwater, Upper North Fork Clearwater, and Lower North Fork Clearwater rivers that are listed in the 2022 Idaho Department of Environmental Quality 303(d)/305(b) Integrated Report (State of Idaho Department of Environmental Quality 2022b) before an implementation plan can be developed.

Table 42. Status of subbasins in the total maximum daily load (TMDL) process.

Subbasin Name and Hydrologic Unit Code	Idaho Department of Environmental Quality Subbasin Assessment and Total Maximum Daily Load Reports (Year of EPA2 Approval)	Status of TMDL[1] Implementation Plan
Hangman Creek 17010306	• Upper Hangman Creek Subbasin Assessment and Total Maximum Daily Load (Idaho Department of Environmental Quality 2007b)	No plan has been developed
Palouse River 17060108	• Palouse River Tributaries Subbasin Assessment and Total Maximum Daily Load (Henderson 2005) • South Fork Palouse River Watershed Assessment and Total Maximum Daily Load (Idaho Department of Environmental Quality 2007a) • Palouse River Subbasin: 2017 Temperature Total Maximum Daily Load (Idaho Department of Environmental Quality 2017)	No plan has been developed[2]
Middle Salmon River–Chamberlain Creek 17060207	• Middle Salmon River-Chamberlain Creek Subbasin Assessment and Crooked Creek Total Maximum Daily Load (Shumar 2002) • Middle Salmon River-Chamberlain Creek Subbasin and Crooked Creek Total Maximum Daily Load: 2017 Temperature Total Maximum Daily Load and Five-Year Review (Idaho Department of Environmental Quality 2017)	Under Development
Lower Salmon River 17060209	• Lower Salmon River and Hells Canyon Tributaries Assessments and Total Maximum Daily Load (Idaho Department of Environmental Quality 2010)	No plan has been developed
Little Salmon River 17060210	• Little Salmon River Subbasin Assessment and Total Maximum Daily Load (Idaho Department of Environmental Quality 2006) • Little Salmon River Subbasin Assessment and Total Maximum Daily Load: 2013 Addendum (Idaho Department of Environmental Quality 2013a)	Completed in 2008
Lower Selway River 17060302	• Lower Selway River Subbasin Assessment (Bugosh 2000) • Category 5 water quality limited streams were delisted, and no Total Maximum Daily Loads established	Not applicable
Lochsa River 17060303	• Lochsa River Subbasin Assessment (Bugosh 1999) • Lochsa River Subbasin Temperature Total Maximum Daily Loads: Addendum to the Lochsa River Subbasin Assessment (EPA approved 2018, revised 2020) (State Technical Services Office 2012) • Appendix C. Lochsa River Subbasin Temperature Natural Conditions Assessments (State of Idaho Department of Environmental Quality 2022a)	No plan has been developed
South Fork Clearwater River 17060305	• South Fork Clearwater River Subbasin Assessment and Total Maximum Daily Loads (Dechart and Woodruff 2003) • Currently Under Revision	Completed in 2006
Clearwater River 17060306	• Potlatch River Subbasin Assessment and Total Maximum Daily Loads (Idaho Department of Environmental Quality 2008) • Potlatch River Watershed Assessment and Total Maximum Daily Loads: 2017 Temperature Total Maximum Daily Load (Idaho Department of Environmental Quality 2018a)	No plan has been developed[2]

Subbasin Name and Hydrologic Unit Code	Idaho Department of Environmental Quality Subbasin Assessment and Total Maximum Daily Load Reports (Year of EPA2 Approval)	Status of TMDL[1] Implementation Plan
	• Lolo Creek Tributaries Subbasin Assessment and Total Maximum Daily Load (Idaho Department of Environmental Quality 2011) • Lolo Creek Tributaries Watershed: 2017 Temperature Total Maximum Daily Load (Esquivel 2020)	
Upper North Fork Clearwater River 17060307	• Upper North Fork Clearwater River Subbasin Assessment and Total Maximum Daily Loads (Idaho Department of Environmental Quality 2003) • Upper North Fork Clearwater River Subbasin Assessment and Total Maximum Daily Load: 2017 Lake Creek Temperature Total Maximum Daily Load (Idaho Department of Environmental Quality 2018b)	Under Development
Lower North Fork Clearwater River 17060308	• Lower North Fork Clearwater River Subbasin Assessment and Total Maximum Daily Load (Henderson 2002) • Lower North Fork Clearwater River Subbasin Five-Year Review and Total Maximum Daily Load Addendum (Rowan 2013)	Completed in 2004, Addendum completed in 2013

[1]Total Maximum Daily Load

[2]Implementation Plans have been developed for Agriculture for the Palouse River, Potlatch River, and Lolo Creek Tributaries.

Data Source: Idaho Department of Environmental Quality Subbasin Assessments, Total Maximum Daily Loads, Implementation Plans, and Five-Year Reviews; http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/.

Once an approved total maximum daily load is established, waterbodies are moved from Category 5 to Category 4A in the integrated report. Impaired waters without a completed total maximum daily load remain as a Category 5 water body on the 303(d) list. As noted in Table 42, a total maximum daily load implementation plan is not applicable in the Lower Selway River Subbasin. Due to the findings in the Lower Selway River Subbasin Assessment (Bugosh 2000), all of the Category 5 water quality limited streams were delisted, and no total maximum daily loads were established.

Anti-Degradation

The State of Idaho anti-degradation policy requires that existing beneficial uses be maintained and protected on all water bodies. Under the anti-degradation standard, Idaho has a three-tier policy with varying levels of protection: 1) unremarkable waters, 2) high quality waters, and 3) outstanding resource waters. All waters receive Tier I protection. Water bodies identified in the Integrated Report as fully supporting assessed uses are provided Tier II protection. Waters given Tier III protection are outstanding resource waters. The Idaho State Legislature has yet to designate any river in Idaho as an outstanding resource water.

Stream Channel Protection

The Idaho Stream Channel Protection Act regulates stream channel alterations between mean and high-water marks on perennial streams in Idaho. Instream activities on National Forest System lands must adhere to the rules pertaining to the act by obtaining a stream channel alteration permit from the Idaho Department of Water Resources before commencing a streambank or stream channel altering activity. A memorandum of understanding (18-MU-110156000-080) has been established to document coordination between the Idaho Department of Water Resources and the U.S. Forest Service in Idaho to implement the Idaho Stream Channel Protection Act within Idaho on lands administered by the U.S. Forest Service (U.S. Department of Agriculture 2018a).

Best Management Practices

Best management practices are methods, measures, or practices used to address the Clean Water Act objective of maintaining and restoring the chemical, physical, and biological integrity of the nation's waters. The use of best management practices is the primary mechanism for mitigating impacts to resources from Nez Perce-Clearwater management actions. Best management practices utilized on the Nez Perce-Clearwater come from federal and state direction.

National Best Management Practices Program

The Forest Service initiated the National Best Management Practices Program in 2012 in order to improve management of water quality consistent with the federal Clean Water Act and state water quality programs and to integrate water resource protection into management activities conducted across the landscape. The goal of the National Best Management Practices Program is to improve agency performance, accountability, consistency, and efficiency in protecting water quality, and is a significant component of the Agency's water strategy. The National Best Management Practices Program enables the Agency to readily document compliance with the management of nonpoint source pollution at local, regional, and national scales and address the planning rule requirement for national best management practices (36 CFR 219.8(a)(4)). National best management practices are outlined in Volume 1: National Core Best Management Practices Technical Guide (U.S. Department of Agriculture 2012b). Direction for the implementation of this program is found in Forest Service Handbook 2509.19.

Forest Service Handbook 2509.22, R1/R4 Soil and Water Conservation Practices

The Soil and Water Conservation Practices handbook (U.S. Department of Agriculture 1988) provides site specific soil and water conservation practices for use on National Forest System lands in the Northern Region and Intermountain Region in order to comply with direction in the Clean Water Act.

State of Idaho

Subsection 350.03 of the Idaho Water Quality Standards (IDAPA 58.01.02) lists best management practices for the purpose of limiting nonpoint source pollution. Those specific to actions on Forest Service lands are Rules Pertaining to the Idaho Forest Practices Act, Stream Channel Alteration Rules, and Dredge and Placer Mining Operations in Idaho.

Idaho Forest Practices Act (IDAPA 20.02.01)

Since 1974, the State of Idaho has encouraged sustainable forest management on Idaho forestland through compliance with the minimum best management practices detailed in the "Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code" (Idaho Department of Lands 2022). Best management practices are actions that focus on maintaining high quality water in forested watersheds and keeping sediment from reaching streams. They are enforced by the Idaho Department of Lands on state and private lands and by timber sale administrators on federal lands. Best management practices are regularly monitored through forest practices water quality audits conducted by an interagency team, including Idaho Department of Environemental Quality and Idaho Department of Lands. Actions on federal lands in Idaho have had a 93 to 100 percent best management practice compliance rate since 1988 (Andrea et al. 2009, Hoelscher et al. 2001, Idaho Department of Environmental Quality 2016, Stone and Hess 2020).

The Idaho Forestry Best Management Practices Field Guide: Using BMPs to Protect Water Quality (University of Idaho Extension Office 2015) is a field manual developed by the University of Idaho Extension. It includes information and diagrams about the Idaho Forest Practices Act, watersheds, working forests, forest roads, stream crossings, and timber harvest methods and post-harvest activities.

Stream Channel Alteration Rules (IDAPA 37.03.07)

Section 055 of the Stream Channel Alteration Rules outlines the minimum standards to be utilized during stream channel alteration activities. The standards are intended to cover the ordinary type of stream channel alteration and are included as minimum conditions for approval of stream alteration permits.

Dredge and Placer Mining Operations in Idaho (IDAPA 20.03.01)

Rules governing dredge and placer mining operations in Idaho are intended to implement the requirements for operation and reclamation of placer and dredge mining set forth in the Idaho Code. Compliance with these rules will allow removal of minerals while preserving water quality and ensuring rehabilitation for beneficial use of the land following mining. The Manual of Best Management Practices for the Mining Industry in Idaho (Idaho Department of Lands 1992) was developed through a joint effort, including state and federal agencies and mining associated organizations. The handbook is intended to be an informational reference guide that can be used by both industry and regulatory agencies. The best management practices outlined in the manual are recommended for use but are not required by law.

Municipal Watersheds and Source Water Protection Areas

The following discussion will provide an overview of Municipal Watersheds and Source Water Protection Areas, which are two separate constructs for drinking water protection that are applicable to National Forest System land management.

Municipal Watersheds

Direction for management of National Forest System lands watersheds that supply municipal water is provided in 36 CFR 251.9 and Forest Service Manual 2542. The Forest Service is directed to manage watershed lands for multiple uses while recognizing domestic supply needs. Municipalities may apply to the Forest Service for municipal watershed agreements if they desire protective actions or restrictive measures not specified in the Land Management Plan. Formal written agreements to ensure protection of water supplies may be appropriate when multiple use management fails to meet the needs of a water user.

Although there are currently no municipal watershed agreements established for watersheds on the Nez Perce-Clearwater, agreements could be developed in the future. Forest Service Manual 2542.03 states "identify watersheds providing the principal source of community water during land management planning." The Nez Perce-Clearwater provides the principal source of community water for the cities of Elk River, Elk City, and Pierce. As shown in Table 43, there are three HUC12 subwatersheds on the Nez Perce-Clearwater that provide the principal source of community water for these communities.

Table 43. HUC12 subwatersheds that provide the principal source of community water.

HUC12 Name	Hydrologic Unit Code	Community	Percent Source Water Protection Area on Nez Perce-Clearwater Lands	Source Water	Population Served
Upper Elk Creek	170603080701	City of Elk River	90	Elk Creek	165
Elk Creek	170603050203	Elk City Water and Sewer Association	51	Big Elk Creek	320
Upper Orofino Creek	170603060401	City of Pierce	41	Orofino Creek	508

Data Source: Idaho Department of Environmental Quality Source Water Assessment Database, https://www.deq.idaho.gov/water-quality/ground-water/source-water/ and https://www2.deq.idaho.gov/water/swaOnline/Search.

Source Water Protection Areas

Source water protection areas protect public water systems from contamination in accordance with the 1996 amendments to the Safe Drinking Water Act. Public water systems are defined under the Safe Drinking Water Act as entities that provide "water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year."

Source water is the untreated groundwater (aquifers and springs) and surface waters (rivers, streams, and lakes) used to supply drinking water for private, domestic wells, and public water systems. Groundwater and surface water used for drinking water supplies are often vulnerable to contamination from land use practices and potential contaminant sources within the vicinity of drinking water wells and intakes.

The Nez Perce-Clearwater contains 80,000 acres of source water protection areas: 6,500 acres from groundwater and 73,500 from surface water. As noted in Table 44, source water protection areas occur within 57 subwatersheds. Table 44 also shows the percent of source water protection area that occurs within the Nez Perce-Clearwater portion of a particular HUC12. For example, the Middle Elk Creek subwatershed is 14,580 acres. Only 2,555 acres of the 14,580 occur on Nez Perce-Clearwater lands. Of the 2,555 acres, 805 acres, or 32 percent, are identified as a source water protection area. This distinction is to identify the extent of source water protection area within the Nez Perce-Clearwater portion of the subwatershed.

Table 44. Acres and percentage of HUC12 subwatersheds with source water protection areas on Nez Perce-Clearwater.

HUC12 Name	HUC12 Number	Public Source Water Name	SWPA[1] acres on NPC[2]	Percent of SWPA1 within NPC2 portion of the HUC12
Big Sand Creek-Palouse River	170601080102	Camp Grizzly Boy Scout; IDT Laird Park Campground	105	Less than 1
Meadow Creek	170601080103	USFS Giant White Pine Campground	72	Less than 1
Deep Creek	170601080109	Mineral Mountain Rest Area IDT	72	1
Rock Creek-Palouse River	170601080110	Bennett Lumber Company; Potlatch City Of	253	7
Sherwin Creek-Salmon River	170602090405	USFS Slate Creek Ranger Station	21	Less than 1
Lower Rapid River	170602100404	Rapid River Fish Hatchery Idaho Department of Fish and Game; Rapid River Homeowners Water Sewer District	521	4
Rackliff Creek-Selway River	170603020403	USFS Ohara Bar Campground	216	1
Ohara Creek	170603020404	Elk City Water and Sewer Association	1	Less than 1
Goddard Creek-Selway River	170603020405	USFS Fenn Ranger Station and YCC Camp	1,904	8
Lower Brushy Fork Creek	170603030103	USFS Lolo Pass Visitor Center	57	Less than 1

HUC12 Name	HUC12 Number	Public Source Water Name	SWPA[1] acres on NPC[2]	Percent of SWPA1 within NPC2 portion of the HUC12
Lower Crooked Fork Creek	170603030106	USFS Lolo Pass Visitor Center; USFS Powell Ranger Station	54	Less than 1
Walton Creek-Lochsa River	170603030301	Lochsa Lodge; USFS Powell Campground; USFS Powell Ranger Station	1,196	6
Legendary Bear Creek	170603030302	USFS Powell Ranger Station	462	3
Bald Mountain Creek-Lochsa River	170603030506	USFS Lochsa Historical Visitor and Work; USFS Wilderness Gateway Campground	72	Less than 1
Glade Creek-Lochsa River	170603030708	Three Rivers Resort; Wilderness Inn	72	Less than 1
South Fork Clear Creek	170603040101	Kamiah City Of	3,946	24
Upper Clear Creek	170603040102	Kamiah City Of	4,060	22
Lower Clear Creek	170603040103	Kamiah City Of; Kooskia Water Dept; Orofino City Of	2,136	25
Big Smith Creek-Middle Fork Clearwater River	170603040201	Kamiah City Of; River Dance Lodge	6,341	25
Maggie Creek	170603040202	Kamiah City Of; Kooskia Water Dept; Orofino City Of	91	100
Suttler Creek-Middle Fork Clearwater River	170603040203	Kamiah City Of; Kooskia Water Dept; Orofino City Of; Riverside Indep. Water Dist.	3,059	74
South Fork Red River	170603050101	USFS Red River Ranger Station	125	1
Upper Red River	170603050102	USFS Red River Campground; USFS Red River Ranger Station	266	1
Middle Red River	170603050103	USFS Red River Ranger Station	211	1
Upper American River	170603050201	Elk City Water and Sewer Association	168	1
Elk Creek	170603050203	Elk City Water and Sewer Association	7,095	99
Lower American River	170603050204	Elk City Water and Sewer Association	3	Less than 1
Upper Newsome Creek	170603050401	Kamiah City Of	3	Less than 1
Lower Newsome Creek	170603050402	Elk City Water and Sewer Association	60	Less than 1
Meadow Creek	170603050702	Kamiah City Of	8	Less than 1

HUC12 Name	HUC12 Number	Public Source Water Name	SWPA[1] acres on NPC[2]	Percent of SWPA1 within NPC2 portion of the HUC12
Lightning Creek-South Fork Clearwater River	170603050704	Kamiah City Of	3,266	22
Threemile Creek	170603050902	Grangeville Water Dept; Kamiah City Of	8	100
Rabbit Creek-South Fork Clearwater River	170603050903	Kamiah City Of; Kooskia Water Dept	770	24
Musselshell Creek	170603060202	USFS Musselshell Work Center	72	Less than 1
Middle Lolo Creek	170603060204	Orofino City Of; Riverside Indep. Water Dist.	186	2
Lower Lolo Creek	170603060205	Orofino City Of; Riverside Indep. Water Dist.	117	42
Upper Orofino Creek	170603060401	Pierce City Of; Riverside Indep. Water Dist.	11,134	100
Corral Creek	170603060901	Juliaetta City Of	27	Less than 1
Hog Meadow Creek-Potlatch Creek	170603060902	Juliaetta City Of; USFS Little Boulder Creek Campground	483	5
Upper Big Bear Creek	170603061001	Juliaetta City Of	21	1
Wheeler Canyon-Clearwater River	170603061302	Lewiston City Of	56	35
Elizabeth Creek-North Fork Clearwater River	170603070105	USFS Kelly Forks Work Center Campground	33	Less than 1
Cold Springs Creek-North Fork Clearwater River	170603070702	USFS Kelly Forks Work Center Campground	111	Less than 1
Sneak Creek-North Fork Clearwater River	170603071002	USFS Canyon Work Center	72	Less than 1
Stoney Creek	170603080202	Elk River City Of	23	10
Breakfast Creek-Stanton Creek	170603080204	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	127	34
Cedar Creek-Little North Fork Clearwater River	170603080302	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	91	82

HUC12 Name	HUC12 Number	Public Source Water Name	SWPA[1] acres on NPC[2]	Percent of SWPA1 within NPC2 portion of the HUC12
Salmon Creek-North Fork Clearwater River	170603080404	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	1,396	9
Gold Creek	170603080501	Elk River City Of	63	18
Elkberry Creek-North Fork Clearwater River	170603080502	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	2	1
Swamp Creek-North Fork Clearwater River	170603080504	Corps Big Eddy Marina; Corps Freeman Creek Campground	112	35
Upper Elk Creek	170603080701	Elk River City Of; Corps Freeman Creek Campground; USFS Elk Creek Campground	23,659	100
Bull Run Creek	170603080702	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	681	29
Middle Elk Creek	170603080703	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	805	32
Long Meadow Creek	170603080704	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	1,145	23
Lower Elk Creek	170603080705	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery	665	24
Cranberry Creek-North Fork Clearwater River	170603080801	Ahsahka Water and Sewer District; Corps Big Eddy Marina; Corps Dworshak	37	74

HUC12 Name	HUC12 Number	Public Source Water Name	SWPA[1] acres on NPC[2]	Percent of SWPA1 within NPC2 portion of the HUC12
		Power House View Pt; Corps Freeman Creek Campground; USFWS Dworshak National Fish Hatchery		

[1]Source Water Protection Area

[2]Nez Perce-Clearwater

Data Source: Idaho Department of Environmental Quality Source Water Assessment Database, https://www.deq.idaho.gov/water-quality/ground-water/source-water/ and https://www2.deq.idaho.gov/water/swaOnline/Search.

The Idaho Department of Environmental Quality's Source Water Protection Program provides guidance and approval of source water protection areas within the State of Idaho. The State of Idaho has completed a source water assessment for each of the 41 public water systems derived from the Nez Perce-Clearwater. A source water assessment summarizes the likelihood of individual drinking water sources becoming contaminated and serves as a foundation for public water systems to prepare source water (drinking water) protection plans and implement protection measures. Each source water assessment report defines the zone of contribution, commonly referred to as a source water protection area, as that portion of the watershed or subsurface area contributing water to the well, spring, or surface water intake. The assessment also identifies the significant potential sources of drinking water contamination in those areas, determines the likelihood that the water supply will become contaminated, and suggests management planning actions for communities and landowners. Public water supply sources and source water assessments can be found on the Idaho Department of Environmental Quality website: https://www.deq.idaho.gov/water-quality/groundwater/source-water/.

Source water protection is a voluntary effort a community can implement to help prevent contamination of public water system sources. A Source Water Protection Plan is a written plan a community develops to document its source water protection activities, which outlines the management tools the local community plans to use to protect drinking water sources. The following communities have formalized source water protection plans established with the Idaho Department of Environmental Quality: City of Elk River (Idaho Rural Water Association 2008), Elk City Water and Sewer Association (1994), City of Kamiah (Hummer and City of Kamiah Planning Team 2017), City of Orofino (2006), City of Lewiston (2010), City of Juliaetta (2019), Riverside Independent Water District (2013b), City of Kooskia (2013), and City of Potlatch (2010).

There are 13 public water systems that have surface water intakes located on Nez Perce-Clearwater lands or that have surface water source water protection areas that extend onto the Nez Perce-Clearwater, as delineated in the source water assessments (Table 45**)**. These public water systems serve approximately 22,650 people. The communities of Elk River, Elk City, Kamiah, Orofino, Lewiston, Juliaetta, Pierce, and Riverside derive their domestic water supply directly from the surface water originating from within the Nez Perce-Clearwater. Approximately 73,490 acres of the Nez Perce-Clearwater are delineated as source water protection areas for surface water intakes.

Table 45. Public water systems that have surface water intakes on National Forest System lands or have surface water source water protections areas that extend onto National Forest System lands.

System Number	Public Water System Name and Date of Assessment	Subbasin	Water Source	Class of Public Water System	Population Served
2180001	Ahsahka Water and Sewer District (2011)	Lower North Fork Clearwater	North Fork Clearwater	Non-Community	85
2180007	Big Eddy Marina, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community	25
2180009	Dworshak Power House, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community	50
2180010	Freeman Creek Campground, Clearwater County, Idaho (2001)	Lower North Fork Clearwater	Dworshak Pool	Non-Community	100
2180013	City of Elk River (2005)	Lower North Fork Clearwater	Elk River	Community	165
2180024	City of Orofino (Surface Water) (2001)	Clearwater	Clearwater River	Community	2,459
2180027	City of Pierce (2011)	Clearwater	Orofino Creek	Community	508
2180032	Riverside Independent Water District (Surface Water) (2001)	Clearwater	Clearwater River	Community	1,800
2180035	USFWS Dworshak National Fish Hatchery, Clearwater County, Idaho (2002)	Lower North Fork Clearwater	Dworshak Pool	Non-Community	25
2250017	Elk City Water and Sewer Association (Surface Water) (2002)	South Fork Clearwater	Big Elk Creek	Community	320
2290018	City of Juliaetta (Surface Water) (2001)	Clearwater	Potlatch River	Community	609
2310003	City of Kamiah (Surface Water) (2017)	Clearwater	Clearwater River	Community	1,495
2350014	City of Lewiston (Surface Water) (2002)	Clearwater	Clearwater River	Community	15,011

Data Source: Idaho Department of Environmental Quality Source Water Assessment Database, https://www.deq.idaho.gov/water-quality/ground-water/source-water/ and https://www2.deq.idaho.gov/water/swaOnline/Search.

There are 28 public water systems withdrawing groundwater from wells and springs within Nez Perce-Clearwater lands or have groundwater source water protection areas that extend onto National Forest System lands as delineated in the source water assessments (Table 46). These public water systems serve approximately 6,240 people. The communities of Grangeville, Kooskia, and Potlatch derive groundwater that drains from Nez Perce-Clearwater lands. Approximately 6,440 acres of the Nez Perce-Clearwater are delineated as source water protection areas for groundwater intakes.

Table 46. Public water systems that have groundwater intakes or delineated zone of contribution located within Nez Perce-Clearwater Forest lands.

System Number	Public Water System Name and Date of Assessment	Subbasin	Class of Public Water System	Population Served
2180041	USFS Canyon Work Center (2001)	Upper North Fork Clearwater	Non-Community	50
2180046	USFS Kelly Forks Work Center (2014)	Upper North Fork Clearwater	Non-Community	25
2180047	USFS Musselshell Work Center (2001)	Clearwater	Non-Community	35

System Number	Public Water System Name and Date of Assessment	Subbasin	Class of Public Water System	Population Served
2180056	USFS Elk Creek Campground (2011)	Lower North Fork Clearwater	Non-Community	35
2250023	Grangeville Water Department (2002)	South Fork Clearwater	Community	3,151
2250032	Kooskia Water Department (2003)	Middle Fork Clearwater	Community	607
2250035	Lochsa Lodge (2002)	Lochsa	Non-Community	80
2250036	Wilderness Inn (2002)	Lochsa	Non-Community	80
2250047	Rapid River Fish Hatchery Idaho Department of Fish and Game (2003)	Little Salmon	Non-Community	25
2250050	Rapid River Homeowners Water Sewer District (2003)	Little Salmon	Non-Community	120
2250052	USFS Powell Campground (2002)	Lochsa	Non-Community	25
2250062	River Dance Lodge (2011)	Lochsa	Non-Community	25
2250063	Three Rivers Resort (2004)	Lochsa	Non-Community	120
2250074	USFS Lochsa Historical Visitor and Work Camp (2002)	Lochsa	Non-Community	25
2250075	USFS Lolo Pass Visitor Center (2004)	Lochsa	Non-Community	25
2250078	USFS Powell Ranger Station (2014)	Lochsa	Non-Community	44
2250085	USFS Wilderness Gateway Campground (2002)	Lochsa	Non-Community	75
2250091	USFS Fenn Ranger Station and YCC Camp (2003)	Lower Selway	Non-Community	74
2250098	USFS O'Hara Bar Campground (2009)	Lower Selway	Non-Community	40
2250101	USFS Red River Campground (2002)	South Fork Clearwater	Non-Community	12
2250102	USFS Red River Ranger Station (2003)	South Fork Clearwater	Non-Community	70
2250105	USFS Slate Creek Ranger Station (2001)	Lower Salmon	Non-Community	25
2290003	Bennett Lumber Products, Inc. (2002)	Palouse	Non-Community	150
2290006	Camp Grizzly Boy Scouts (2002)	Palouse	Non-Community	300
2290021	Mineral Mountain Rest Area ITD (2002)	Palouse	Non-Community	100
2290030	City of Potlatch (2002)	Palouse	Community	812
2290051	USFS Giant White Pine Campground (2002)	Palouse	Non-Community	25
2290052	USFS Laird Park Campground (2002)	Palouse	Non-Community	86

Data Source: Idaho Department of Environmental Quality Source Water Assessment Database, https://www.deq.idaho.gov/water-quality/ground-water/source-water/ and https://www2.deq.idaho.gov/water/swaOnline/Search.

Groundwater is an important resource in Idaho, and it will likely become more important in the future as the State's population and industries grow. Groundwater is the source of drinking water for 95 percent of Idaho citizens (Idaho Department of Environmental Quality 2019). Idaho uses over 12,384 million gallons of groundwater per day for domestic use, public water supplies, irrigation, livestock, and industry (Murray 2018). Water generated in the mountains of the Nez Perce-Clearwater is an important source of recharge for downstream aquifers and is, therefore, an important ecosystem service to local communities. The Nez Perce-Clearwater contains all or portions of the following groundwater flow systems: Palouse River, Hangman Creek, Clearwater Uplands, Clearwater Plateau, Mill Creek, Little Slate Creek, Elk City, and Red River (Graham and Campbell 1981).

Water from the Nez Perce-Clearwater drains into six Idaho counties (Table 47). The total groundwater withdrawn for public and domestic water supply is 17.2 million gallons per day (Murray 2018). An additional 12.7 million gallons of groundwater per day is utilized for irrigation, livestock, aquaculture, and other industry. In comparison, these same counties use 55.6 million gallons of surface water per day for public supply, irrigation, livestock, aquaculture, and other industry. Consumptive groundwater use within the Nez Perce-Clearwater is limited to special-use permits, Forest Service campgrounds or administrative sites with domestic wells, private in-holdings, and in-forest communities.

Table 47. Groundwater withdrawal amounts and percent Nez Perce-Clearwater lands by county.

County	Population served	Public and domestic groundwater withdrawal (Mgal/d[1])	Total groundwater use[2] (Mgal/d[1])	Percent of Nez Perce-Clearwater in county
Benewah	9,218	0.5	0.8	4
Clearwater	8,373	0.7	6.3	50
Idaho	15,697	2.6	3.1	56
Latah	34,714	6.8	9.3	21
Lewis	3,750	0.7	1.2	less than 1
Nez Perce	37,931	3.1	6.0	less than 1
Shoshone	13,157	2.8	3.1	3
Total	122,840	17.2	29.8	n/a

[1]Million gallons per day

[2]Total groundwater includes public, domestic, irrigation, livestock, and industry usage.

Data Source: Water use by source and category in Idaho counties, 2015; U.S. Geological Survey data release (Murray 2018).

Conservation Watershed Networks

A conservation watershed network is a designated collection of watersheds where management emphasizes habitat conservation and restoration to support native listed fish and Species of Conservation Concern. Conservation Watersheds are intended to maintain multi-scale connectivity for at-risk fish and aquatic species, identifying important areas needed for conservation or restoration and ensuring ecosystem components needed to sustain long-term persistence of species. Conservation Watersheds are of particular importance for recovery of Endangered Species Act listed species. The goal of the network is to sustain the integrity of key aquatic habitats to maintain long-term persistence of native aquatic species. Designation of conservation watershed networks, which includes watersheds that are already in good condition or could be restored to good condition, are expected to protect native fish and help maintain healthy watersheds and river systems. Selection criteria for inclusion should help identify those watersheds that have the capability to be more resilient to ecological change and disturbance induced by climate change. For example, watersheds containing unaltered riparian vegetation will tend to protect streambank integrity and moderate the effects of high stream flows. Rivers with high connectivity and access to their floodplains will experience moderated floods when compared to channelized and disconnected stream systems. Wetlands with intact natural processes slowly release stored water during summer dry periods, whereas impaired wetlands are likely less effective retaining and releasing water over the season. For all these reasons, conservation watershed networks represent the best long-term conservation strategy for native fish and their habitats.

Selected Conservation Watershed Network watersheds are expected to provide a pattern of protection across the landscape where the habitat of listed native salmonids and Species of Conservation Concern receives special attention and treatment. Multiscale Analysis was used to identify subwatersheds to be

included in the Conservation Watershed Network. Criteria used to identify these HUC12 sub-watersheds included the following:

- A major or minor spawning area for Snake River steelhead trout or Snake River spring or summer chinook salmon or both identified in the Snake River Recovery Plan (National Oceanographic and Atmospheric Agency 2017).
- Designated critical habitat for one or more Endangered Species Act-listed species occurs in at least 25 percent of the stream network. Examples include the Columbia River bull trout, Snake River steelhead trout, Snake River spring or summer Chinook salmon, and Snake River fall Chinook salmon.
- Climate Shield (Isaak et al.) modeled reaches that have a that have a year 2040 bull trout probability of occurrence greater than 25 percent.
- A local bull trout population identified in the final Columbia River Bull Trout Recovery Plan (U.S. Department of the Interior 2015b).
- Important spawning and rearing habitat for Species of Conservation Concern.

HUC12 subwatersheds that meet three of the above criteria are considered a conservation watershed network subwatershed. Out of the 245 subwatersheds within the Nez Pere-Clearwater, 81 subwatersheds are included in the Conservation Watershed Network.

Aquatic and Riparian Conservation Strategy

The Aquatic and Riparian Conservation Strategy (ARCS) consists of a collection of plan components developed to provide for sustainable management of water resources and aquatic and riparian ecosystems as required by the 2012 Planning Rule. The plan components are founded on guidance from the Northern Region Aquatic and Riparian Conservation Strategy (U.S. Department of Agriculture 2022b), a broad-scale strategy to facilitate development of plan components to sustain aquatic ecosystems per the requirements of the 2012 Planning Rule (36 CFR Part 219).

The ARCS strategy incorporates current scientific information, long-term PACFISH and INFISH Biological Opinion (PIBO) monitoring, and the regulatory requirements of the 2012 Planning Rule. This includes ensuring all plan components comply with the definitions at 36 CFR 219.7(e), guiding future management to provide for ecological sustainability, species diversity, and multiple uses.

This strategy also reflects guidance provided by the Interior Columbia Basin Ecosystem Management Project Framework Memorandum of Understanding (U.S. Department of Agriculture and U.S. Department of the Interior 2014). The memorandum updated science findings from the original Interior Columbia Basin Ecosystem Management Project effort of the late 1990s and includes a framework that guides inclusion of best available science into land management plan revisions.

Although the plan components are spread throughout the land management plan under various resource topics, the intent is for the entire collection to act as a cohesive strategy, designed to protect, maintain, and restore the ecological health of watersheds and aquatic and riparian ecosystems. Table 48 outlines all of the plan components included in the ARCS. This strategy is intended to replace two existing aquatic strategies: PACFISH - Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and portions of California (U.S. Department of Agriculture and U.S. Department of the Interior 1995) and the Inland Native Fish Strategy (INFISH) (U.S. Department of Agriculture 1995b).

Table 48. Aquatic and riparian conservation strategy plan components.

Section	Goals and Desired Conditions	Objectives	Standards	Guidelines
Terrestrial Ecosystems	FW-GL-TE-01 FW-GL-TE-02 FW-DC-TE-02 FW-DC-TE-05	FW-OBJ-TE-01	NA[1]	NA[1]
Forestlands	NA[1]	NA[1]	NA[1]	MA2/MA3-GDL-FOR-01
Meadows, Grasslands, and Shrublands	FW-DC-GS-04	FW-OBJ-GS-01	NA[1]	NA[1]
Fire Management	NA[1]	NA[1]	NA[1]	FW-GDL-FIRE-02
Invasive Species	FW-GL-INV-01 FW-GL-INV-02 FW-DC-INV-01	FW-OBJ-INV-01		FW-GDL-INV-01 FW-GDL-INV-02 FW-GDL-INV-03
Soils Resource	FW-DC-SOIL-01 FW-DC-SOIL-02 FW-DC-SOIL-03	FW-OBJ-SOIL-01	FW-STD-SOIL-01 FW-STD-SOIL-02 FW-STD-SOIL-03	FW-GDL-SOIL-01 FW-GDL-SOIL-02 MA2/MA3-GDL-SOIL-01 MA2/MA3-GDL-SOIL-02 MA2/MA3-GDL-SOIL-03 MA2/MA3-GDL-SOIL-04 MA2/MA3-GDL-SOIL-05
Water and Aquatic Resources	FW-GL-WTR-01 FW-GL-WTR-02 FW-GL-WTR-03 FW-DC-WTR-01 FW-DC-WTR-02 FW-DC-WTR-03 FW-DC-WTR-04 FW-DC-WTR-05 FW-DC-WTR-06 FW-DC-WTR-07 FW-DC-WTR-08 FW-DC-WTR-09 FW-DC-WTR-10 FW-DC-WTR-11 FW-DC-WTR-12	FW-OBJ-WTR-01 FW-OBJ-WTR-02 FW-OBJ-WTR-03 FW-OBJ-WTR-04 FW-OBJ-WTR-05	FW-STD-WTR-01 FW-STD-WTR-02 FW-STD-WTR-03 FW-STD-WTR-04 FW-STD-WTR-05 FW-STD-WTR-06 FW-STD-WTR-07	FW-GDL-WTR-01 FW-GDL-WTR-02 FW-GDL-WTR-03 FW-GDL-WTR-04 FW-GDL-WTR-05 FW-GDL-WTR-06
Riparian Management Zones	FW-DC-RMZ-01 FW-DC-RMZ-02	FW-OBJ-RMZ-01 FW-OBJ-RMZ-02	FW-STD-RMZ-01 FW-STD-RMZ-02 FW-STD-RMZ-03 FW-STD-RMZ-04 FW-STD-RMZ-05 FW-STD-RMZ-06 FW-STD-RMZ-07 FW-STD-RMZ-08 FW-STD-RMZ-09 FW-STD-RMZ-10	FW-GDL-RMZ-01 FW-GDL-RMZ-02 FW-GDL-RMZ-03 FW-GDL-RMZ-04 FW-GDL-RMZ-05 FW-GDL-RMZ-06
Conservation Watershed Network	FW-GL-CWN-01 FW-GL-CWN-02	FW-OBJ-CWN-01 FW-OBJ-CWN-02	FW-STD-CWN-01	NA[1]

Section	Goals and Desired Conditions	Objectives	Standards	Guidelines
	FW-DC-CWN-01 FW-DC-CWN-02 FW-DC-CWN-03			
Infrastructure (Aquatics and Riparian)	FW-DC-ARINF-01 FW-DC-ARINF-02	NA[1]	FW-STD-ARINF-01 FW-STD-ARINF-02 FW-STD-ARINF-03 FW-STD-ARINF-04 FW-STD-ARINF-05 FW-STD-ARINF-06 FW-STD-ARINF-06	FW-GDL-ARINF-01 FW-GDL-ARINF-02 FW-GDL-ARINF-03 FW-GDL-ARINF-04 FW-GDL-ARINF-05 FW-GDL-ARINF-06 FW-GDL-ARINF-07 FW-GDL-ARINF-08 FW-GDL-ARINF-09 FW-GDL-ARINF-10
Energy and Minerals (Aquatics and Riparian)	NA[1]	NA[1]	FW-STD-AREM-01 FW-STD-AREM-02 FW-STD-AREM-03 FW-STD-AREM-04 FW-STD-AREM-05	FW-GDL-AREM-01 FW-GDL-AREM-02 FW-GDL-AREM-03
Livestock Grazing (Aquatics and Riparian)	NA[1]	NA[1]	FW-STD-ARGRZ-01 FW-STD-ARGRZ-02 FW-STD-ARGRZ-03 FW-ARGRZ-STD-04	FW-GDL-ARGRZ-01 FW-GDL-ARGRZ-02
Lands and Special Uses (Aquatics and Riparian)	NA[1]	NA[1]	FW-STD-ARLND-01, FW-STD-ARLND-02 FW-STD-ARLND-03 FW-STD-ARLND-04	FW-GDL-ARLND-01
Recreation (Aquatics and Riparian)	FW-DC-ARREC-01	FW-OBJ-ARREC-01	NA[1]	FW-GDL-ARREC-01 FW-GDL-ARREC-02 FW-GDL-ARREC-03 FW-GDL-ARREC-04 FW-GDL-ARREC-05 FW-GDL-ARREC-06
Wildlife	FW-GL-WL-01	NA[1]	NA[1]	NA[1]
Municipal Watersheds and Source Water Protection Areas	FW-DC-MWTR-01	NA[1]	FW-STD-MWTR-01	NA[1]
Sustainable Recreation Management	NA[1]	FW-OBJ-REC-01 FW-OBJ-REC-02	NA[1]	NA[1]
Public Information, Interpretation, and Education	FW-GL-ED-01 FW-DC-ED-01		NA[1]	NA[1]
Infrastructure	NA[1]	FW-OBJ-INF-01	NA[1]	NA[1]

Section	Goals and Desired Conditions	Objectives	Standards	Guidelines
		FW-OBJ-INF-02		
Timber	NA[1]	NA[1]	FW-STD-TBR-03	NA[1]
Designated Wilderness Areas	MA1-GL-WILD-03	NA[1]	NA[1]	NA[1]

1 NA is not applicable

Appendix 7 Scenic Character

Introduction

The current condition of the scenic character varies across the Nez Perce-Clearwater National Forests. Large areas contain naturally evolving landscapes where the scenery reveals the biophysical features and processes that occur with limited human intervention. These areas include all the designated wildernesses and several large expanses of Idaho Roadless Rule Areas. Broad landscapes, such as the viewshed of the Lolo Trail National Historic Landmark have been managed to maintain the visual quality and vistas as laid out in the 1987 Forest Plan, and currently have a natural appearing scenic character.

Other areas of the national forest located in the more heavily roaded portion of landscape do have evidence of human habitation and management. Some of these areas have openings that appear natural, while others have openings that were obviously created by human activities. These openings, while obvious, do not dominate the scenic character of the landscape and appear in background views or are minor components of the foreground and middle ground views from critical travelways or recreation areas.

Management of the scenery resource currently follows the Visual Management System (U.S. Department of Agriculture 1973, 1974b) and the visual quality objectives assigned in the 1987 Forest Plans. In some isolated areas of the Nez Perce-Clearwater management activities are not currently meeting the visual quality objectives. Therefore, the existing condition of these areas needs rehabilitation and restoration to meet the desired scenic character measure.

Areas of insect and disease have expanded in many areas across the Nez Perce-Clearwater. These areas, if left to their natural evolution processes, will likely die, fall over, or burn, creating larger and more frequent openings than are currently visible across much of the landscape. In contrast past fire suppression has created large landscapes where the coniferous canopy appears natural but is inconsistent with a naturally evolving and sustainable scenic character. In these areas there is a lack of openings and a lack of diversity in vegetation ages, classes, and patterns. This existing natural character is not within the historic range of variability because the vegetation species type, vegetation age and homogeneity of the canopy are not reflective of a naturally evolving stand or forest. These areas, if they had been left to naturally evolve, would probably have had more fire activity and in turn more natural openings and a more diverse species composition. Fire suppression, build-up of fuels on the landscape has also changed the behavior of fire when it does occur. Fires burning uncharacteristically hot leave less of a mosaicked appearance and less diversity of vegetation composition and pattern. Again, this is not a historically accurate or sustainable composition of the landscape and does not reflect a naturally evolving and sustainable scenic character. Management actions to move the scenic character to reflect the historic range of variability and a more stable scenic character that is sustainable is desired regarding both fire, and insect and disease processes. So, while the appearance of the forest is in many cases seemingly natural, it may be quite unstable and susceptible to a large alteration in appearance to an unaesthetic and unnatural appearing landscape.

Visitor use trends indicate that forest visitation is increasing. As more visitors are encouraged to enjoy the Nez Perce-Clearwater, they may visit with an expectation that it will look natural. National visitor use surveys of Nez Perce-Clearwater indicate that common activities are driving for pleasure and viewing scenery (U.S. Department of Agriculture 2018b). While visitors have an expectation of a natural landscape, it is important that this desire be reflected not in a landscape of homogeneity but in one of a

diverse landscape that reflects the historic range of variability and the various forest successional stages. At and along critical viewsheds this is especially important so that the expectations of these visitors can be met by the scenery of the Nez Perce-Clearwater.

Methodology

The Nez Perce-Clearwater is a diverse forest with four major divisions in scenic character. These divisions are based on differences in both the biophysical aspects of the landscape as well as the differences in visitor social expectations for their visit to these areas of the Nez Perce-Clearwater. The four scenic character zones are: Palouse, North Fork, Lochsa-Selway and Salmon River. Two scenic character descriptions are provided for each area, an existing and a desired scenic character description. The existing scenic character is based on what these areas look like today, as a point in time and a starting point. The desired scenic character describes what these areas might look like in the future under circumstances that create a more ecologically and culturally sustainable scenic composition. The desired scenic character serves as the measure to manage the scenery resource. Scenic integrity objectives, as mapped, provide the indicators to ascertain whether or not the desired scenic character is being maintained or improved upon. In areas where there is a large difference between the existing scenic character and desired scenic character there may be a need to undertake management actions to move the existing towards the desired. Project level desired scenic character descriptions should be determined, when management actions are proposed, to refine on a smaller scale whether or not an action will meet or exceed the assigned scenic integrity objective and contribute to sustaining or improving the desired scenic character of the larger landscape zone.

Where there is a difference between the existing and desired scenic character there is an opportunity to use management tools to move the scenic character of the landscape from the current state towards the desired state. It is recognized that there is a duration of time in which the landscape may appear further from the desired scenic character in the short term but this short term deterioration is acceptable for long term stability and sustainability of the scenic character and achievement of the desired scenic character.

The following terms, pulled from the Scenery Management System (U.S. Department of Agriculture 1995a, 5-5-Application), are used throughout the scenic character descriptions with respect to scenic character.

- **Natural evolving:** Scenic character expressing the natural evolution of biophysical features and processes, with very limited human intervention. The origin of the scenic character is natural disturbances, such as wildfires, glaciation, succession of plants from pioneer to climax species, or indirect activities of humans, such as inadvertent plant succession through fire prevention.
- **Natural appearing:** Scenic character that expresses predominantly natural evolution, but also human intervention including cultural features and processes. The origin of the scenic character is human activities, yet appears natural, such as historic conversion of native forests into farmlands, pastures, and hedgerows that have reverted back to forests through reforestation activities or natural regeneration.
- **Cultural or Historic:** Scenic character that expresses built structures, historic features, and landscape features that display the dominant attitudes and beliefs of specific human cultures or represent events and periods of human activity in the landscape.
- **Pastoral:** Scenic character that expresses dominant human created pastures, meadows, and associated structures, reflecting valued historic land uses and lifestyles. The origin of the scenic character is

human activities, containing positive cultural elements such as historic conversion of native forests into farmlands, pastures, and hedgerows, plus some remnants of native forests.

- **Rural or Agricultural:** Scenic character that expresses dominant human agricultural land uses producing food crops and domestic products. The origin of the scenic character is extensive human activities, no longer appearing natural, such as conversion of native landscapes into extensively cultivated farmlands, vineyards, pastures, or an area of intensive domestic livestock production.

Palouse Zone Scenic Character

Existing Scenic Character

Wind deposited loess soils of the Palouse create a topography of distinctive rolling hills and gentle valleys (Figure 4). These rolling hills are covered with dense coniferous vegetation intermingled with meandering river valleys where more deciduous shrubs and trees are found. The Palouse River, Potlatch River, and Elk Creek form the three major waterways bisecting the area. Agricultural lands and intermingled ownership are found along these rivers and within the valleys, supporting an agrarian-based architectural character, such as barns, rustic fences, and rustic outbuildings. Large grassy meadow complexes are also affiliated with these meandering rivers and streams. Deep soils promote rapid coniferous vegetation growth, now dominated by western larch, western redcedar, Ponderosa pine, Douglas-fir, and grand fir stands. In the southern portion of the zone, Elk Creek travels through a basalt substrate, channelizing and incising the waterway, making it distinct from the broader and more open river valleys to the north. The river crosses several columnar basalt cliffs forming a series of falls that have become a favorite recreation destination.

Special areas in this zone highlight unique vegetation compositions such as those at Perkins Cedar Grove, the Giant Cedar Tree, and unique geologic features such as Elk Creek Falls and Potlatch Canyon. Multiple scenic drives such as White Pine Scenic Byway, Upper Basin Road, North Fork of the Palouse Corridor, and Palouse Divide Corridor traverse the zone providing visitors with access to many of these special areas.

Figure 4. Palouse Plateau near Gold Hill, just west of Potlatch, Idaho.

Desired Scenic Character

Generally, a pastoral and agricultural landscape, the Palouse Zone is one where the agrarian cultural influence as well as the logging, ranching, and mining culture are not only part of the deep history of the area but are still active and present. This scenic character expression of human management and influence is reflected in the presence of roads, logging, meadows, mines, and a valued historic land use ethos. The natural topographic features of rolling hills should retain their naturally appearing coniferous stands, although the species mix and composition may appear more managed. Vegetative species should show the full range of evolution from the late seral dominance of Douglas- and grand fir to species that are more fire and insect and disease resistant with areas that mimic the natural meadows and openings of early seral species. Western white pine was the dominant species in the area until disease removed them. Reintroducing disease resistant western white pine to restore the historic nature of that vegetation should increase the scenic diversity of this zone. Natural processes should continue to dominate this area, with man-made alterations reflecting the natural characteristics of fire and insect disease behavior and activity to create more openings of sizes and shapes reflective of the historic range of variability as well as diversity in age classes and stand compositions to create a mosaic pattern across the landscape.

Retention of the unique opportunities to enjoy the special areas and their distinct attributes is desired. Maintaining visual access, through management activities, into, around, and out of these special areas is also desired. In some cases, this may include short-term alteration to the natural appearance of these areas to stabilize and create a sustainable viewshed. Maintaining the large and unique tree composition at Perkins Cedar Grove and Giant Cedar Tree are valued as is maintenance of a variety of vistas along the scenic byways and scenic drives. Visual access to the diversity of geologic features around Elk Creek

Falls and the Potlatch Canyon should also be maintained again, with a diversity of opportunities to enjoy these unique features from trails and roads.

North Fork Zone Scenic Character

Existing Scenic Character

The North Fork Zone centers on the tributaries and the canyons surrounding the North Fork of the Clearwater River. The river is diverse in its appearance, varying from shallow, rocky-river bottom stretches to narrow deep pool and rocky rapid sections. In the narrower stretches, water cascades through a thick growth of mixed conifer stands (Figure 5, Figure 6, Figure 7, and Figure 8). In gentler sections of meandering waters, meadow and willow habitats are common. Western redcedar habitats dominate the river edges in flatter areas, while the steeper canyon walls support thick mixed conifer stands of Douglas-fir, grand fir, western larch, and western white pine. There are a few beaches, but visitor use is concentrated along timbered river terraces near campgrounds and dispersed campsites.

The adjacent uplands are more gently sloping, rising to rocky subalpine ridge tops and the alpine dividing ridge top of the Bitterroot Mountains. This extensive ridge formation divides the North Fork River basin from the St. Joe River basin to the north. High elevation vegetation includes extensive stands of western larch, subalpine fir, mountain hemlock and western white pine inclusions.

Across the zone there is some evidence of past fire activities as well as of timber harvesting and road building. In some of the narrower canyon stretches, avalanche and rock fall have altered and continue to alter the canyon walls creating an ever-evolving river canyon. The area adjacent to the Deception road has been modified by mining activities including the presence of residential dwellings built on patented mining claims.

Figure 5. North Fork of the Clearwater River near Aquarius

Figure 6. North Fork of the Clearwater near Washington Creek Campground

Figure 7. Orogrande Creek near its confluence with the North Fork of the Clearwater

Figure 8. Black Canyon portion of the North Fork of the Clearwater

Two drainages with distinct appearances are Kelly Creek and Lolo Creek. Kelly Creek is broader and more rolling than the North Fork canyon. Along this tributary, cottonwoods and other deciduous vegetation are found along the larger river terraces (

Figure 9). Lolo Creek flows through an extensive section of columnar basalt forming distinctive, cliff-like landforms. There are few distinctive landforms, but the presence of the western portion of the Lolo Trail National Historic Landmark adds a distinctive cultural component to this drainage and area.

Special areas include North Fork of the Clearwater River, Kelly Creek, Cayuse Creek, Weitas Creek, Isabella Creek, Fern Creek, Black Canyon, Mallard Larkins, Five Lakes Butte, Black Mountain Lookout, Pot Mountain, and Elizabeth Mountain, the Great Burn area, Isabella RNA which is home to coastal disjunct plant communities, and sites off the Lolo Motorway.

Figure 9. Kelly Creek Canyon near Old Kelly Station

Desired Scenic Character

The North Fork Zone is a naturally appearing landscape where some evidence of management is present in specific areas, but the overall zone is dominated by natural processes, such as fire, insect and disease, geologic events. The natural topographic features of steep canyon walls transitioning to steep alpine areas should continue to dominate the appearance of this zone. Maintaining natural appearing mixed coniferous vegetation in the river corridors and along high alpine ridgelines is desired. Enhancement of the naturally evolving landscape to include a broader variety of high elevation vegetation species as well as riparian species is desired to better reflect the historic range of variability as well as create a more resilient vegetation composition. Although the species mix may be modified to improve forest health and resiliency, natural processes, such as fire and its effects, would continue to dominate the composition and appearance of the area, especially within the roadless areas. Management activities should reflect the natural characteristics of fire and insect disease behavior and activity to create more openings of sizes and

shapes reflective of the historic range of variability as well as diversity in age classes and stand compositions to create a mosaic pattern across the landscape.

Recreation and cultural use are concentrated adjacent to the river corridors. It is expected that this will continue and is a desired aspect of managing scenery in this zone. Management activity evidence, such as logging and road building is appropriate in some areas, where there is a historic, cultural, and agricultural component of the scenic character that maintains a diversity of appearances within the broader naturally appearing scenic character. While mining activities are a historic cultural component of the scenic character of this zone, again they should not dominate the broader naturally appearing scenic character.

Retention of the unique opportunities to enjoy the special areas and their distinct attributes is desired. Maintaining visual access, through management activities, into, around, and out of these special areas is also desired. In some cases, this may include short-term alteration to the natural appearance of these areas to stabilize and create a sustainable viewshed.

Middle Fork Zone Scenic Character

Existing Scenic Character

The Middle Fork Zone revolves around three nationally designated areas. They include the designated Middle Fork of the Clearwater wild and scenic river, including the Lochsa and Selway Rivers; the Selway-Bitterroot designated wilderness and the Lolo Trail National Historic Landmark. These three designated areas overwhelmingly inform the social and cultural use of the area and management decisions and activities. The linear features, river, and historic landmark trail both bisect the zone from east to west. The former lies in the middle of the zone while the later creates the northern boundary of the zone. South of the Middle Fork of the Clearwater the Selway-Bitterroot wilderness occupies most of the eastern area of the zone and forms the eastern boundary, along with the Idaho-Montana state line at the ridgeline of the Bitterroot Mountains. The headwaters of the Lochsa and Selway Rivers begin in the glacial peaks of these mountains and flow downstream to join into the Middle Fork of the Clearwater (Figure 10, Figure 11, and Figure 12).

A rich history of human use lies adjacent to these river corridors and informs a strong cultural aesthetic in this scenic character zone. Historic structures such as those found at the Lochsa Historic Ranger Station and the Fenn Ranger Station have been maintained to remind visitors of the rich history of the area. Pack bridges constructed during the same time period that link the highway trailheads to the Wilderness access trails across the river evoke this same historic architecture. The historic Lolo Trail corridor, where the Nez Perce, Lewis and Clark and others crossed the Bitterroot Mountains reiterates and reminds us of the diversity and struggles of those who have come before us.

U.S. Highway 12, an All-American Road Scenic Byway, and the Selway River Road parallel the roaded portions of the Middle Fork of the Clearwater, the Lochsa and the Selway rivers. These roads and the 500 Road which parallels much of the Lolo Trail National Historic Landmark allow visitors to trace much of this history and experience scenery much as those who came before us experienced it (Figure 13). The Selway-Bitterroot wilderness is composed mostly of higher elevation glacial peaks, riparian canyons, and numerous high mountain lakes. Access is limited and rugged but generally follows canyons and waterways with crossings at mountain passes providing long range high elevation vistas.

Figure 10. Middle Fork of the Clearwater near Syringa

Figure 11. Selway River

Figure 12. View along the Lochsa River toward Selway Bitterroot Wilderness

Figure 13. Views from the Lolo Motorway

Beginning in the rugged mountains that follow the state line, the Lochsa and Selway Rivers travel through relatively narrow canyons before intermingling with residential and agrarian development around their confluence. The presence of residences along the shore continues along the Middle Fork of the Clearwater to the forest boundary on the western portion of the river corridor. After cascading over Selway Falls, the Selway River canyon broadens, and the river becomes more placid. The Lochsa does not have a singular water falls as dramatic as Selway Falls but many distinctive rocky rapids and outcrops of rock line the river corridor and its adjacent hillsides. In the western portion of the river system the Middle Fork of the Clearwater River flows through a canyon bounded on both sides by basalt rock outcrops and forested hillsides. This area is drier than the upper reaches of the river system and broader with some intermixed smaller rocky rapids.

Much of the narrow canyon is covered with a dense canopy of conifers including ponderosa pine, lodgepole pine, Douglas-fir, grand fir, western redcedar, and western larch. There are some deciduous patches of vegetation directly adjacent to the river corridors but not extending beyond the immediate riparian area. Here ponderosa pine, Douglas-fir, grand fir, and western larch dominate and cover the steep canyon walls. North aspects, upper elevations and streamside draws are forested with western redcedar, grand fir and Douglas-fir. Coastal disjunct vegetative communities are found at the lower elevations within these river canyons.

While most of the river system corridors is heavily vegetated, there are some more open canopy brush fields where past fire events left few live trees remaining. Many of the large openings date back to large fires that occurred in 1910 and from 1934 to 36. The forested vegetation reflects the natural processes associated with fire, insects, and diseases south of the Lochsa River. While man-caused openings can be seen mostly in the western and eastern entrances of the Highway 12 corridor and in the upland areas near Lolo Creek, they do not tend to dominate the landscape character.

Special Places include Lolo Trail National Historic Landmark, U.S. Highway 12, All American Road Scenic Byway, Selway River Road, Middle Fork Clearwater and Lochsa Wild and Scenic River, Selway Falls, Selway-Bitterroot Wilderness, and Lolo Pass Visitor Center. Many visitors to this area are seeking opportunities to view scenery along these, primarily linear, features or enjoy a recreation experience.

Desired Scenic Character

The desired scenic character of this zone, much like the existing scenic character emphasizes the cultural and historic attributes of the zone and the naturally evolving appearance. Retention of the scenic composition that protects these resources as well as maintains the natural scenery that may have been experienced by previous visitors and users of the area. Recreation use is concentrated adjacent to the river corridors and along the Lolo Trail National Historic Landmark. The natural topographic features of steep river canyon walls transitioning to rolling uplands and alpine mountains should retain the characteristics of mixed coniferous stands, although the species mix could be modified to improve forest health and resiliency. Natural processes should continue to dominate this area, with an emphasis on the historic cultural attributes and scenery that has drawn people to this area for so long. This should remain especially true within designated wilderness and roadless areas, with man-made alterations reflecting the natural characteristics of fire and insect disease behavior and activity to create more openings of sizes and shapes reflective of the historic range of variability as well as diversity in age classes and stand compositions to create a mosaic pattern across the landscape.

Retention of the unique opportunities to enjoy the special areas and their distinct attributes is desired. Maintaining visual access, through management activities, into, around, and out of these special areas is

also desired. In some cases, this may include short-term alteration to the natural appearance of these areas to stabilize and create a sustainable viewshed.

South Fork Scenic Character

Existing Scenic Character

The South Fork Zone encompasses the area between just north of the South Fork of the Clearwater River south to the Salmon River, a designated wild and scenic river. The community of Elk City is found in the central portion of this area and is a square of non-forest land surrounded entirely by the national forest. This expansive area includes the designated Gospel Hump wilderness and portions of the designated Frank Church River of No Return wilderness and Selway-Bitterroot wilderness. This zone also includes the portion of the forest commonly referred to as *the Island,* which abuts the designated Hells Canyon wilderness. Like the other zones, this one focuses on its river systems (Figure 14). Unlike the other zones, this is the driest zone of the forest with vegetation structures that reflect the drier conditions. In addition to the river systems several high mountain lakes are found in some of the alpine areas.

Figure 14. South Fork of the Clearwater along State Highway 14

This zone's topography is primarily rolling uplands bisected by the canyon of the South Fork of the Clearwater and the break-lands of the Salomon River (Figure 15). The South Fork of the Clearwater canyon is a narrow rocky canyon with a mix of rock outcrops and water features. The Salmon River lies within a large canyon and is much drier than the remainder of the zone. Forest habitats include dry ponderosa pine forest at lower elevations and grand fir and Douglas-fir at mid-elevations, with lodgepole pine and subalpine forest at higher elevations. The highest ridges and cold basins of the zone have whitebark pine and lodgepole pine. East of the South Fork of the Clearwater River, the Red River area is a

more pastoral river landscape. Extensive meadow complexes are found adjacent to forested canyon walls creating a contrast in views. The Fish Lake, Elk Creek, and Square Mountain Research Natural Areas are home to unique plant communities that are distinctly different from the rest of the zone. Overall, the vegetation pattern is a mosaic of different age and size classes created by extensive wildland fires.

Figure 15. Rolling Hills near Dixie

The Island is found between U.S. Highway 95 and Hells Canyon. The area stretches from the private land adjacent to the western slopes of the Salmon River to the dividing ridge between the Salmon and the Snake Rivers. The area has forested habitats ranging from low elevations with mountain mahogany transitioning to dry upland ponderosa pine and lodgepole pine stands transitioning to high elevation habitats with subalpine fir, Engelmann spruce and whitebark pine. Dry grasslands and

scrublands are common at all elevations (

Figure 16).

The historic cultural elements of this zone revolve around primarily mining and grazing uses. All of these uses currently occur in this zone as well, extending the historic uses into the present. There is evidence of historic mining activities including tailing piles and abandoned buildings and equipment especially around the Elk City area. The Florence area and other historic mining areas contribute to a historical and cultural landscape dating back to the turn of the 20th century and earlier. Portions of the Elk City Wagon Road and Magruder Corridor remind us of the paths people have taken in the past. Pilot Knob and McComas Meadows are culturally significant dating from periods of use before the 20th century. More recent history is found in U.S. Forest Service cultural elements such as Jerry Walker Cabin, Elk Summit Lookout and Cabin, and historic Red River Ranger Station.

Evidence of management is prevalent along the zone's extensive road network in the form of visible timber harvest, mining, and grazing. Frequent fires in the dry ponderosa pine sites are common. Current patterns of vegetation appear as a mosaic of different size classes of tree species as influenced by fire.

Figure 16. Island area as viewed from U.S. 95 and the Salmon River

Desired Scenic Character

The desired condition for this zone is one of a cultural landscape where the historic uses of the landscape and the natural processes coexist and are visible across the landscape. The river corridors natural topographic features of steep canyon walls transitioning to rolling uplands found south of the South Fork of the Clearwater and Red River area to the Salmon River canyon should retain the characteristics of mixed coniferous stands, although the species mix could be modified to improve forest health and resiliency. Mixed canopy density variability across this landscape should continue and human-based alterations reflecting the natural characteristics of fire and insect disease activity that creates natural openings in this landscape provide diversity and scenic interest.

In areas around the Salmon River break-lands at the edges of the rolling landscape, distant views towards the subalpine mountains and towards the prairie and dissected canyon country should be retained and enhanced to provide opportunities to enjoy this distinct scenic opportunity. Retention of the unique opportunities to enjoy the special areas such as the Magruder corridor, South Fork of the Clearwater and Salmon River and their distinct attributes is desired. Maintaining visual access, through management activities, into, around, and out of these special areas is also desired. In some cases, this may include short-term alteration to the natural appearance of these areas to stabilize and create a sustainable viewshed.

The presence of historic mining activity, in and around the Red River basin in particular, may continue to tell the story of this human use of this zone. The presence of some aspects of these historic features is appropriate and may be retained while in other cases restoration of these past activities is also appropriate. Management activities may be appropriate to reflect the culturally more managed landscape. Natural processes with less management driven alteration should continue across much of this area, especially within designated wilderness, along designated wild and scenic river corridors and roadless areas. Natural processes should continue to dominate this area, with an emphasis on the historic cultural attributes and

scenery that has drawn people to this area for so long. This should remain especially true within designated wilderness and roadless areas, with man-made alterations reflecting the natural characteristics of fire and insect disease behavior and activity to create more openings of sizes and shapes reflective of the historic range of variability as well as diversity in age classes and stand compositions to create a mosaic pattern across the landscape.

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