

Mitigation Measures by Resource

Recreation and Visuals:

- See the list of recreation Best Management Practices (BMPs) under the Soil and Watershed section of this document.

Wildlife:

- Construction employees would be instructed to avoid interaction with condors and to immediately contact the appropriate Forest Service, FWS, or Peregrine Fund personnel if and when condor(s) are seen.
- Construction would cease if a condor occurs at the construction site until the condor leaves on its own, or until techniques are employed by permitted personnel, which results in the individual condor leaving the area.
- All activity sites would be cleaned up at the end of each day the work is being conducted (e.g., trash removed, scrap materials picked up) to minimize the likelihood of condors visiting the site.

Range:

- Charlie Tank would be excluded from the campground expansion during implementation.

Botany:

- All potentially occurring Forest Service Sensitive, and Rare/Narrow Endemic (target) plant species would be surveyed for prior to expansion activities including road construction, campsite construction, fence construction, and any other ground disturbing activities. Surveys should be conducted during the appropriate periods when positive identification is possible for each plant species, resulting in some areas potentially surveyed twice at different times of the year to account for different plant phenologies. Target individuals or populations should be marked with visible stakes or flagged and avoided during implementation activities when possible and practical.
- Fences should be routed to avoid all target plant individuals and populations when possible and practical.

Silviculture and Vegetation Management:

- To reduce unintentional tree mortality, areas cleared for the new roads, trails, and/or camp sites would remove trees whose canopy overhangs the designated footprint.
- To improve safety for visitors, hazard trees (designated by individuals trained in the Forest Health Protection protocols) would be removed when they pose a hazard to developed recreation sites (e.g. roads, trails, and/or camp sites).
- To increase forest health, trees that are of failing health (typically with live crown ratios <30%) would be removed during scheduled maintenance (approximately every 1-5 years).
- To reduce forest fuels, trees that are cut during the clearing of developed recreation sites would have tops (typically <4") piled in a way that they would consume completely and not spread fire. Pile size would typically be 7' x 7'.

- To provide fuelwood for campground visitors, tree boles would be bucked into 18” pieces and piled in large openings where they will dry more quickly. Boles and piles would be discontinuous to avoid pile burns spreading into adjacent fuels.
- To avoid increasing risk of bark beetle outbreak, slash piles would be burned within two seasons if possible, treatments would ideally occur in late summer and early fall to avoid, and fuelwood piles would be monitored for bark beetle activity if left more than one year.
- Reference the Soils and Watershed Best Management Practices for more slash management mitigation measures.

Cultural Resources:

- To protect the historic Saginaw and Manistee logging railroad grade, an interpretive sign would be placed along the nature trail to discourage campers from removing railroad ties for fire wood. The prehistoric site is an artifact scatter that would be avoided during fence and campground expansion activities.
- If any unrecorded heritage resources are discovered during project implementation, all project related activities would cease immediately and the consultation process as outlined in Section 800.13 of the Advisory Council on Historic Preservation’s regulations 36 CFR Part 800 would be initiated.

Soils and Watershed:

Use applicable BMPs as outlined in the National BMPs for Water Quality Management on National Forest System lands. Volume 1: National Core BMP Technical Guide. FS-990a April 2012.

Mitigation	Reference
Recreation Planning	
Use applicable practices of BMP Plan-2 (Project Planning and Analysis) and BMP Plan-3 (Aquatic Management Zone [AMZ] Planning) when planning recreation projects.	FS-990a
Select site locations for recreation facilities that avoid or minimize the potential for adverse effects to water quality and riparian resources.	FS-990a
Design the capacity and layout of the recreation site to be consistent with land management plan desired conditions, goals, and objectives for soil, water quality, and riparian resources.	FS-990a
Consider capacity and patterns of use at a site when determining measures to avoid, minimize, or mitigate adverse effects from recreational use to soil, water quality, and riparian resources.	FS-990a
Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) to incorporate suitable erosion and stormwater controls in the project design.	FS-990a
Use applicable practices of BMPs for access roads and water, sanitation, and solid waste systems at recreation sites (see Roads Management Activities BMPs and Facilities and Nonrecreation Special Uses Management Activities BMPs) as needed.	FS-990a
Use applicable practices of BMP Road-10 (Equipment Refueling and Servicing) for recreation sites where vehicles or other equipment will be stored and maintained.	FS-990a
Use applicable practices of BMP Fac-6 (Hazardous Materials) for management of hazardous materials at recreation sites.	FS-990a
Developed Recreation Sites	
Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) to construct and maintain appropriate erosion control and stormwater management measures to avoid or minimize adverse effects to water quality from pollutant runoff at the site.	FS-990a

Mitigation	Reference
Use applicable practices of Roads Management Activities BMPs for construction and maintenance of access roads.	FS-990a
Use applicable practices of BMP Roads-9 (Parking and Staging Areas) for trailheads and other parking areas at develop recreation sites.	FS-990a
Use applicable practices of BMP Fac-3 (Potable Water Supply Systems), BMP Fac-4 (Sanitation Systems), and BMP Fac-5 (Solid Waste Management) for water, sanitation, and solid waste systems at developed recreation sites.	FS-990a
Evaluate and adjust design capacity of the site when recreation use is causing adverse effects to water quality or riparian resources.	FS-990a
Provide hardened campsites located sufficiently far from surface waterbodies to provide an adequate vegetative filter strip to avoid or minimize sediment delivery (see BMP Plan-3 [AMZ Planning]).	FS-990a
Consider potential impacts to soils, water quality, and riparian resources when establishing recreation site use periods.	FS-990a
Use suitable measures to avoid or minimize overuse on sensitive areas.	FS-990a
Use suitable public relations, information, and enforcement tools to encourage the public to conduct their activities in a manner that will avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources. <ul style="list-style-type: none"> • Provide information on the location of the nearest RV (recreational vehicle) wastewater disposal station. 	FS-990a
Periodically evaluate the condition of soil, water quality, and riparian resources at and near developed sites to identify signs of insufficient ground cover, detrimental soil compaction, excessive runoff, sedimentation, or chemical or pollutant release by recreationists. <ul style="list-style-type: none"> • Relocate trails, parking areas, campsites, play areas, or water distribution points that are causing offsite resource damage. • Redesign and reconstruct, or close and rehabilitate, areas of recreation sites that exhibit signs of overuse. • Use suitable measures to restrict access, when necessary, to nearby 	FS-990a

Mitigation	Reference
wetlands and riparian areas that show signs of excessive damage from recreation use to allow for vegetative recovery.	
Rehabilitate unwanted user-created trails and sites within the developed recreation site and employ suitable measures to discourage their creation and use (see BMP Fac-10 [Facility Site Reclamation]).	FS-990a
Motorized and Nonmotorized Trails	
Use applicable Road Management Activities BMPs for construction, operation, and maintenance of motorized trails.	FS-990a
<p>Locate or relocate trails to conform to the terrain, provide suitable drainage, provide adequate pollutant filtering between the trail and nearby waterbodies, and reduce potential adverse effects to soil, water quality, or riparian resources.</p> <ul style="list-style-type: none"> • Avoid sensitive areas, such as riparian areas, wetlands, stream crossings, inner gorges, and unstable areas to the extent practicable. • Use suitable measures to mitigate trail impacts to the extent practicable where sensitive areas are unavoidable. • Use suitable measures to hydrologically disconnect trails from waterbodies to the extent practicable. 	FS-990a
Design, construct, and maintain trail width, grades, curves, and switchbacks suitable to the terrain and designated use.	FS-990a
Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) for control of erosion and stormwater when constructing trails.	FS-990a
Install and maintain suitable drainage measures to collect and disperse runoff and avoid or minimize erosion of trail surface and adjacent areas.	FS-990a
<p>Use and maintain surfacing materials suitable to the trail site and use to withstand traffic and minimize runoff and erosion.</p> <ul style="list-style-type: none"> • Pay particular attention to areas where high wheel slip (curves, acceleration, and braking) during motorized use generates loose soil material. 	FS-990a
Design stream crossings to use the most cost-efficient structure consistent with resource	FS-990a

Mitigation	Reference
protection, facility needs, and types of use and safety obligations (see BMP Road-2 [Road Location and Design] and BMP Road-7 [Stream Crossings]).	
Designate season of use to avoid periods when trail surfaces are particularly prone to unacceptable erosion, rutting, or compaction.	FS-990a
Designate class of vehicle and type of nonmotorized uses (e.g., hiking, bicycling, and equestrian uses) suitable for the trail width, location, waterbody crossings, and trail surfaces to avoid or minimize adverse effects to soil, water quality, or riparian resources.	FS-990a
Monitor trail condition at regular intervals to identify drainage and trail surface maintenance needs to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.	FS-990a
Manage designated trails to mitigate adverse effects to soil, water quality, and riparian resources from over-use when closure and rehabilitation is not practicable or desired. <ul style="list-style-type: none"> Change designated vehicle class and season-of-use period as necessary. 	FS-990a
Close and rehabilitate unauthorized trails that are causing adverse effects on soil, water quality, and riparian resources (see BMP Fac-10 [Facility Site Reclamation]).	FS-990a
Facility Construction and Stormwater Control	
Obtain Clean Water Act (CWA) 402 stormwater discharge permit coverage (if necessary) from the appropriate State agency or the U.S. Environmental Protection Agency (EPA) when more than 1 acre of land will be disturbed through construction activities.	FS-990a
Establish designated areas for equipment staging, stockpiling materials, and parking to minimize the area of ground disturbance (see BMP Road-9 [Parking Sites and Staging Areas] and BMP Road-10 [Equipment Refueling and Servicing]).	FS-990a
Establish and maintain construction area limits to the minimum area necessary for completing the project and confine disturbance to within this area.	FS-990a
Develop and implement an erosion control and sediment plan that covers all disturbed areas, including borrow, stockpile, fueling, and	FS-990a

Mitigation	Reference
staging areas used during construction activities.	
<p>Calculate the expected runoff generated using a suitable design storm to determine necessary stormwater drainage capacity.</p> <ul style="list-style-type: none"> • Use site conditions and local requirements to determine design storm. • Include run-on from any contributing areas. 	FS-990a
<p>Refer to State or local construction and stormwater BMP manuals, guidebooks, and trade publications for effective techniques to:</p> <ul style="list-style-type: none"> • Apply soil protective cover on disturbed areas where natural revegetation is inadequate to prevent accelerated erosion during construction or before the next growing season. • Maintain the natural drainage pattern of the area wherever practicable. • Control, collect, detain, treat, and disperse stormwater runoff from the site. • Divert surface runoff around bare areas with appropriate energy dissipation and sediment filters. 	FS-990a
<p>Develop and implement a postconstruction site vegetation plan using suitable species and establishment techniques to revegetate the site in compliance with local direction and requirements per Forest Service Manual (FSM) 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.</p>	FS-990a
<p>Install sediment and stormwater controls before initiating surface-disturbing activities to the extent practicable.</p>	FS-990a
<p>Do not use snow or frozen soil material in facility construction.</p>	FS-990a
<p>Schedule, to the extent practicable, construction activities to avoid direct soil and water disturbance during periods of the year when heavy precipitation and runoff are likely to occur.</p> <ul style="list-style-type: none"> • Limit the amount of exposed or disturbed soil at any one time to the minimum necessary to complete construction operations. 	FS-990a

Mitigation	Reference
<ul style="list-style-type: none"> Limit operation of equipment when ground conditions could result in excessive rutting, soil puddling, or runoff of sediments directly into waterbodies. 	
Install suitable stormwater and erosion control measures to stabilize disturbed areas and waterways before seasonal shutdown of project operations or when severe or successive storms are expected.	FS-990a
Use low-impact development practices where practicable.	FS-990a
<p>Maintain erosion and stormwater controls as necessary to ensure proper and effective functioning.</p> <ul style="list-style-type: none"> Prepare for unexpected failures of erosion control measures. Implement corrective actions without delay when failures are discovered to prevent pollutant discharge to nearby waterbodies. 	FS-990a
Routinely inspect construction sites to verify that erosion and stormwater controls are implemented and functioning as designed and are appropriately maintained.	FS-990a
Use suitable measures in compliance with local direction to prevent and control invasive species.	FS-990a
Potable Water Supply Systems	
Develop water systems only in places where the water source can be protected.	FS-990a
Use applicable practices of BMP WatUses-3 (Administrative Water Developments) and BMP WatUses-4 (Water Diversions and Conveyances) to manage surface diversions.	FS-990a
<p>Operate, monitor, and manage Forest Service-owned (public and nonpublic) drinking water systems in accordance with direction in FSM 7420.</p> <ul style="list-style-type: none"> Design, construct, operate, and maintain water systems in a manner that provides for physical protection of the water source and system. Treat water as necessary to achieve desired water quality. Conduct sanitary and condition surveys per required schedules. 	FS-990a

Mitigation	Reference
<ul style="list-style-type: none"> • Implement follow-up actions identified in the sanitary and condition surveys. • Minimize possible contaminating activities within Wellhead Protection Areas and Source Water Assessment Areas to protect drinking water sources. • Conduct required system monitoring and follow-up actions as needed. 	
Perform water supply and system disinfection activities in a manner such that disinfectant residuals and byproducts will not affect nearby surface water or groundwater.	FS-990a
Sanitation Systems	
Use qualified personnel to locate, design, inspect, operate, maintain, and manage sanitation systems.	FS-990a
Coordinate all phases of sanitation system management (planning, design, installation, inspection, operation, and maintenance) with appropriate State and local agencies to ensure compliance with applicable regulations.	FS-990a
Design and operate waste collection, treatment, and disposal systems appropriate for the type and volume of waste generated at the site consistent with direction in FSH 7409.11, chapter 50.	FS-990a
<p>Follow applicable regulations and guidelines when locating toilets, wastewater disposal, and leach fields.</p> <ul style="list-style-type: none"> • Use suitable setback distances from water bodies or other sensitive areas when siting facilities. • Use proper field investigations and soil tests to determine suitable soils for onsite treatment and disposal systems. 	FS-990a
<p>Prepare and maintain an operation and maintenance plan for all waste treatment or disposal facilities (FSM 7410).</p> <ul style="list-style-type: none"> • Inspect vaults, septic tanks, and other wastewater systems at regular intervals to ensure that capacities are not exceeded and that the system is functioning properly and in compliance <p>with applicable State and local regulations.</p>	FS-990a

Mitigation	Reference
<ul style="list-style-type: none"> • Implement follow-up actions identified in the inspections as needed to ensure that the system is working properly. • Include procedures in operation and maintenance plans to contain or avoid releases of pollutants in floods or other emergencies. 	
<p>Consider changes or improvements to existing sanitary systems that may be causing water quality impacts, such as poorly located pit toilets or drain fields, at opportune times such as facility remodeling or change in facility ownership or control.</p>	<p>FS-990a</p>
Solid Waste Management	
<p>Develop a Solid Waste System consistent with direction in FSM 7460 and FSH 7409.11, chapter 80 that defines and describes collection, transportation, storage, and final disposal methods for solid waste generated at facilities.</p>	<p>FS-990a</p>
<p>Use suitable public relations and information tools and enforcement measures to encourage the public to use proper solid waste disposal measures.</p> <ul style="list-style-type: none"> • Encourage recycling of materials where practicable. • Encourage the public to “pack it in-pack it out” in areas where practicable. 	<p>FS-990a</p>
<p>Provide receptacles for trash at developed facilities.</p> <ul style="list-style-type: none"> • Place trash and recycling receptacles in areas that are convenient to the facility’s users. • Place trash and recycling receptacles in locations away from waterbodies. • Provide receptacles that discourage wildlife foraging as suitable for the area (e.g., bears, raccoons, birds) and suitably confine materials until collected. • Collect trash on a routine schedule to prevent the receptacles from overflowing. 	<p>FS-990a</p>
<p>Dispose of collected garbage at properly designed and operated municipal-, county-, or State authorized sanitary landfills or waste recycling sites where groundwater and surface water are adequately protected.</p>	<p>FS-990a</p>

Mitigation	Reference
Obtain necessary State or local permits for solid waste disposal sites.	FS-990a
Road Location and Design	
Locate roads to fit the terrain, follow natural contours, and limit the need for excavation.	FS-990a
Locate roads on stable geology with well-drained soils and rock formations that dip into the slope.	FS-990a
Locate roads as far from waterbodies as is practicable to achieve access objectives, with a minimum number of crossings and connections between the road and the waterbody.	FS-990a
Relocate existing routes or segments that are causing, or have the potential to cause, adverse effects to soil, water quality, and riparian resources, to the extent practicable.	FS-990a
Design the road to fit the ground and terrain with the least practicable impacts to soil, water quality, and riparian resources considering the purpose and life of the road, safety, and cost.	FS-990a
Design the road to maintain stable road prism, cut, and fill slopes.	FS-990a
Design the road surface drainage system to intercept, collect, and remove water from the road surface and surrounding slopes in a manner that minimizes concentrated flow in ditches, culverts, and over fill slopes and road surfaces.	FS-990a
Design the road for minimal disruption of natural drainage patterns and to minimize the hydrologic connection of the road segment or network with nearby waterbodies.	FS-990a
Design road surface treatment to support wheel loads, stabilize the roadbed, reduce dust, and control erosion consistent with anticipated traffic and use.	FS-990a
Design roads within the AMZ (when no practicable alternative exists outside of the AMZ to achieve access objectives) to maintain desired conditions, goals, and objectives for AMZ structure, function, and processes (See BMP Plan-3 [AMZ Planning]).	FS-990a
Design waterbody crossings to avoid or minimize adverse effects to soil, water quality, and riparian resources to the extent practicable consistent with road use, legal requirements, and cost considerations (See BMP Road-7 [Stream Crossings]).	FS-990a

Mitigation	Reference
Design a post-construction site vegetation plan, including short- and long-term objectives, using suitable species and establishment techniques to revegetate the site in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.	FS-990a
Road Construction and Reconstruction	
Identify and locate waste areas before the start of operations. <ul style="list-style-type: none"> • Deposit and stabilize excess and unsuitable materials only in designated sites. • Do not place such materials on slopes with a risk of excessive erosion, sediment delivery to waterbodies, mass failure, or within the AMZ. • Provide adequate surface drainage and erosion protection at disposal sites 	FS-990a
Do not permit sidecasting within the AMZ. <ul style="list-style-type: none"> • Avoid or minimize excavated materials from entering waterbodies or AMZs. 	FS-990a
Use suitable measures in compliance with local direction to prevent and control invasive species.	FS-990a
Reconstruct existing roads to the degree necessary to provide adequate drainage and safety.	FS-990a
Road Operations and Maintenance	
Designate season of use to avoid or restrict road use during periods when use would likely damage the roadway surface or road drainage features.	FS-990a
Ensure that drainage features are fully functional on completion of seasonal operations.	FS-990a
Use suitable road surface stabilization practices and dust abatement supplements on roads with high or heavy traffic use (See FSH 7709.56 and FSH 7709.59).	FS-990a
Inspect drainage structures and road surfaces after major storm events and perform any necessary maintenance (see BMP Road-11 [Road Storm-Damage Surveys]).	FS-990a
Inspect roads frequently during all operations.	FS-990a
Maintain the road surface drainage system to intercept, collect, and remove water from the	FS-990a

Mitigation	Reference
road surface and surrounding slopes in a manner that reduces concentrated flow in ditches, culverts, and over fill slopes and road surfaces.	
Maintain road surface treatments to stabilize the roadbed, reduce dust, and control erosion consistent with anticipated traffic and use.	FS-990a
Stream Crossings	
Plan and locate surface water crossings to limit the number and extent to those that are necessary to provide the level of access needed to meet resource management objectives as described in the RMOs.	FS-990a
Design and locate crossings to minimize disturbance to the waterbody.	FS-990a
Use suitable surface drainage and roadway stabilization measures to disconnect the road from the waterbody to avoid or minimize water and sediment from being channeled into surface waters and to dissipate concentrated flows.	FS-990a
Use suitable measures to avoid, minimize, or mitigate damage to the waterbody and banks when transporting materials across the waterbody or AMZ during construction activities.	FS-990a
Locate stream crossings where the channel is narrow, straight, and uniform, and has stable soils and relatively flat terrain to the extent practicable.	FS-990a
Design the crossing to pass a normal range of flows for the site.	FS-990a
Use suitable measures to avoid or minimize scour and erosion of the channel, crossing structure, and foundation to maintain the stability of the channel and banks.	FS-990a
<p>Culverts</p> <ul style="list-style-type: none"> • Align the culvert with the natural stream channel. • Cover culvert with sufficient fill to avoid or minimize damage by traffic. • Construct at or near natural elevation of the streambed to avoid or minimize potential flooding upstream of the crossing and erosion below the outlet. • Install culverts long enough to extend beyond the toe of the fill slopes to minimize erosion. 	FS-990a

Mitigation	Reference
<ul style="list-style-type: none"> • Regularly inspect culverts and clean as necessary. 	
<p>Low-Water Crossings</p> <ul style="list-style-type: none"> • Consider low-water crossings on roads with low traffic volume and slow speeds, and where water depth is safe for vehicle travel. • Consider low-water crossings to cross ephemeral streams, streams with relatively low baseflow and shallow water depth or streams with highly variable flows or in areas prone to landslides or debris flows. • Locate low-water crossings where streambanks are low with gentle slopes and channels are not deeply incised. • Select and design low-water crossing structures to maintain the function and bedload movement of the natural stream channel. • Locate unimproved fords in stable reaches with a firm rock or gravel base that has sufficient load-bearing strength for the expected vehicle traffic. • Construct the low-water crossing to conform to the site, channel shape, and original streambed elevation and to minimize flow restriction, site disturbance, and channel blockage to the extent practicable. • Use suitable measures to stabilize or harden the streambed and approaches, including the entire bankfull width and sufficient freeboard, where necessary to support the design vehicle traffic. • Construct the roadway-driving surface with material suitable to resist expected shear stress or lateral forces of water flow at the site. • Design and install temporary crossings suitable for the expected users, loads, and timing of use. • Design and install temporary crossing structures to pass a design storm determined based on local site conditions and requirements. 	<p>FS-990a</p>
<p>Parking and Staging Areas</p>	

Mitigation	Reference
Design and locate parking and staging areas of appropriate size and configuration to accommodate expected vehicles and avoid or minimize adverse effects to adjacent soil, water quality, and riparian resources.	FS-990a
Use suitable measures to harden and avoid or minimize damage to parking area surfaces that experience heavy use or are used during wet periods.	FS-990a
Use and maintain suitable measures to collect and contain oil and grease in larger parking lots with high use and where drainage discharges directly to streams.	FS-990a
Conduct maintenance activities commensurate with parking or staging area surfacing and drainage requirements as well as precipitation timing, intensity, and duration.	FS-990a
Equipment Refueling and Servicing	
Plan for suitable equipment refueling and servicing sites during project design. <ul style="list-style-type: none"> Allow temporary refueling and servicing only at approved locations, located well away from the AMZ, groundwater recharge areas, and waterbodies. 	FS-990a
Develop or use existing fuel and chemical management plans (e.g., Spill Prevention Control and Countermeasures [SPCC], spill response plan, and emergency response plan) when developing the management prescription for refueling and servicing sites.	FS-990a
Use suitable measures around vehicle service, storage and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills and avoid or minimize soil contamination and seepage to groundwater.	FS-990a
Use suitable measures to avoid spilling fuels, lubricants, cleaners, and other chemicals during handling and transporting.	FS-990a
Prohibit excess chemicals or wastes from being stored or accumulated in the project area.	FS-990a
Remove service residues, used oil, and other hazardous or undesirable materials from NFS land and properly dispose them as needed during and after completion of the project.	FS-990a
Clean up and dispose of spilled materials according to specified requirements in the appropriate guiding document.	FS-990a

Mitigation	Reference
Report spills and initiate suitable cleanup action in accordance with applicable State and Federal laws, rules, and regulations.	FS-990a
Prepare and implement a certified SPCC Plan for each facility, including mobile and portable facilities, as required by Federal regulations.	FS-990a
Other BMPs	
Do not blade roads when the road surface is too dry. If the road surface is too dry, water should be applied, or road blading should be scheduled when adequate moisture is present to complete road reshaping.	Site-specific
All fueling of vehicles will be done on a designated upland site. If more than 1,320 gallons of petroleum products are to be stored on site or if a single storage tank exceeds 660 gallons, then a spill prevention control and countermeasures (SPCC) plan will be prepared as per 40 CFR 112.	Site-specific
Clean all equipment prior to entry on site with a high pressure washer to remove mud, debris, and vegetative material from the equipment.	Site-specific
Clean all equipment prior to leaving the project area with a high pressure washer to remove mud, debris, and vegetative material from the equipment.	Site-specific
Road drainage is controlled by a variety of methods including rolling the grade, insloping, outsloping, crowning, water spreading ditches (turnouts), and cross drainage. Sediment loads at drainage structures can be reduced by installing sediment filters such as rock and vegetative energy dissipaters, and settling basins.	Site-specific
Do not operate equipment when ground conditions are such that soil rutting, compaction or puddling can occur.	Site-specific
Treatment areas should be designed in a manner that minimizes soil disturbance and facilitates BMP implementation. TES maps should be reviewed for location of site specific BMPs in specified TES map units.	Site-specific
Activity generated slash from forest thinning are to be removed from stream courses and/or drainages. Trees are to be felled outside the stream courses and/or drainages and not across drainages.	Site-specific

Mitigation	Reference
Do not hand pile slash in designated stream courses or drainages, or other designated protected areas.	Site-specific
Ensure that existing drainage structures on roads (rolling dips, culverts, rock crossings, etc.) are functioning correctly.	Site-specific
Lead out ditches (turnouts) should be maintained in a manner that does not allow sediment-laden runoff to enter stream courses and/or drainages.	Site-specific
Adverse skidding (i.e., skidding upslope) should be avoided to the greatest extent practicable.	Site-specific
Machine piling of activity-related slash should be conducted with an excavator, track hoe with a bucket thumb, and/or a dozer. In an effort to minimize soil disturbance, the excavator and track hoe should be used before a dozer. Dozers may also be used for removing stumps. Stumps should be placed where they are not visible from campground or roadways in order to avoid leaving piles of dirt when they are burned.	Site-specific
All necessary soil stabilization measures should be implemented prior to closing out thinning operations.	Site-specific
Primary skid trails should not occur within 1 chain (66 feet) of Streamside Management Zones or run parallel to stream courses in these areas. Where this BMP cannot be strictly adhered to, alternative BMPs (use of slash mats and timing of operations during dry conditions) shall be employed.	Site-specific
Skidder crossings of ephemeral drainages should be minimized and designated in timber harvest area maps and on the ground	Site-specific
Designated skid trails and log landings will be required within the Timber Sale Contract on all cutting units. Skid trail design should not have long, straight runs that would direct water flow. Skid trails should also be located out of filter strips (exceptions are at approved crossings).	Site-specific
Felling to the lead will be required within the Timber Sale Contract (TSC) to minimize ground disturbance from skidding operations	Site-specific
Use the following BMP techniques to minimize sedimentation from road and trail construction and maintenance:	Site-specific

Mitigation	Reference
<ul style="list-style-type: none"> • Outsloped road surface; • Leadout ditches and relief culverts; • Energy dissipators on culverts; • revegetate cut and fill slopes; • Riprap installation at stream crossings to protect water quality; • Riprap or rock at intersections with paved public roads to prevent track-out of mud and debris • Rolling grades. 	
<p>After use, all temporary roads will be ripped to a shallow depth (<6”), seeded using a certified weed free seed mix (if necessary), drained through installation of necessary water diversion structures and covered with slash from landings.</p>	Site-specific
<p>Locate new trail segments on-contour to the greatest extent possible. If cut and fill is required to establish serviceable trails, preferred drainage is outsloping of trail surfaces. Utilize additional drainage features in design and maintenance of the trail as warranted.</p>	Site-specific
<p>Forest Service approved native seed should be broadcast over disturbed areas as necessary to stabilize soils. Seeding rates should be 8-10 lbs. per acre pure live seed with native, certified weed-free seed mix. Potential vegetation for individual sites should utilize the Kaibab NF TES to identify species to be utilized.</p>	Site-specific