

APPENDIX B – LAKE FUELS PROJECT DESIGN FEATURES,

The action alternative includes the design features to better implement the project. All applicable Forest-wide and Management Unit direction identified in the Forest Plan are hereby incorporated by reference unless otherwise stated. Additional specifications for timber harvest activities and roads included in contract provisions and some soil and water conservation practices are listed here.

Wildlife and recreation design features are also listed in this appendix.

This appendix describes the practices (SWCPs) from the Soil and Water Conservation Handbook (FSH 2509.22) that will be applied to actions proposed in all alternatives. Refer to the handbook for more information regarding specific practices.

Abbreviations used in this table:

CO - Contracting Officer	PSF - Pre-sale Forester
COR - Contracting Officer's Representative	SAM - Sale Area Map
DR - District Ranger	SMZ - Streamside Management Zone
ER - Engineering Representative	SPS - Special Project Specification
IDT - Interdisciplinary Team	TSA - Timber Sale Administrator
MC - Marking Crew	TSC - Timber Sale Contract
PS - Project Supervisor/Administrator	SUP – Special Use Permit
SUA – Special Use Administrator	

SWCP’s applicable to the planning phase of the proposed project include:

SWCP	SWCP OBJECTIVE	CONSIDERATIONS FOR IMPLEMENTATION
11.01	DETERMINATION OF CUMULATIVE WATERSHED EFFECTS – To determine the cumulative effects or impacts on beneficial water uses by multiple land management activities.	No direct or indirect effects are anticipated, therefore there would be no cumulative effects.
11.04	FLOODPLAIN ANALYSIS AND EVALUATION – To protect floodplain values and avoid, where possible, the long and short-term adverse impacts to soil and water resources associated with the occupancy and modification of floodplains.	<p><i>The SWCP states that a floodplain analysis and evaluation will be made when sites within floodplains are being considered for structures, developments, or management activities. Environmental quality, ecological effects, and individual safety and health will be considered.</i></p> <p>No occupancy or development of the floodplains or flood-prone area is proposed. Temporary roads will have appropriately sized culverts.</p>
11.05	WETLANDS ANALYSIS AND EVALUATION – To maintain wetlands function and avoid adverse soil and water resource impacts associated with the destruction or modification of wetlands.	<p><i>The SWCP states that the Forest Service does not permit the implementation of activities and new construction in wetlands whenever there is a practical alternative. A wetland analysis and evaluation will be made prior to acquisition or exchange of wetlands. Evaluation of proposed actions in wetlands will consider factors relevant to the proposal's effect on the survival and quality of the wetlands.</i></p> <p>There are wetlands in the harvest units; they will be avoided. Buffer zones are specified – see SWCP 14.04 and the specifications for the SMZ.</p>
11.07	OIL AND HAZARDOUS SUBSTANCE SPILL CONTINGENCY PLANNING - To minimize contamination of water from accidental spills by prior planning and development of Spill Prevention Control and Countermeasure Plans	<p>A SPCC Plan is required if the total, above-ground storage of oil, petroleum products, or other hazardous materials exceed 1320 gallons, or any single container exceeds a capacity of 660 gallons.</p> <p>Petroleum products and other hazardous materials will not be stored in areas designated in the Forest Plan as MWS or in Source Water Protection Zones One or Two.</p> <p>Each piece of heavy equipment must have sufficient supplies of absorbent and barrier materials on-hand to allow the rapid containment and recovery of any spills.</p>
11.14	MANAGEMENT OF SNOW SURVEY SITES - To protect snow courses and related data sited from effects by land management activities	<p><i>The SWCP states that snow survey sites will be protected according to the terms of the MOU or special use permit issued to the NRCS. Consult with the NRCS if adjacent activities might affect their value or site integrity.</i></p> <p>There are no snow courses or SNOTEL sites the project area.</p>
13.07	PESTICIDE USE PLANNING - To incorporate water quality and hydrologic considerations into project planning.	<p><i>The SWCP states that the pesticide use planning process will be used to identify sensitive areas, identify preventive measures and other mitigation measures, and incorporate hydrologic, water quality, and aquatic concerns.</i></p> <p>Materials for gopher control will be used in a manner consistent with label requirements.</p>
13.10	PESTICIDE SPILL CONTINGENCY PLANNING - To reduce contamination of water from accidental pesticide spills.	Contingencies for pesticide spill should be incorporated into the job hazard analysis and application guidelines/plans.
14.02	TIMBER HARVEST UNIT DESIGN- To insure timber harvest unit design will secure favorable conditions of water flow, maintain water quality and soil productivity, and reduce soil erosion and sedimentation.	<p><i>The SWCP states that requirements necessary to assure an acceptable level of protection for soil and water resources will be identified during the NEPA process; prescriptions will be designed implement these requirements. Technical specialists will work with the pre-sale forester(s) during unit layout to avoid sensitive areas, adjust unit boundaries, and to develop specific measures to implement these SWCP’s and other best management practices.</i></p> <p>A streamside management zone will be designated adjacent to Lake Canyon.</p>

SWCP	SWCP OBJECTIVE	CONSIDERATIONS FOR IMPLEMENTATION
14.05	PROTECTION OF UNSTABLE AREAS - To protect unstable areas and avoid triggering mass movements of the soil mantle and resultant erosion and sedimentation.	No unstable areas are proposed for harvesting.
14.10	LOG LANDING LOCATION AND DESIGN - To locate in such a way as to avoid soil erosion and water quality degradation.	The timber sale administrator must approve landing locations proposed by the purchaser. Approved landing locations will meet the criteria of minimal size, least excavation needed, minimal crossing of stream channels, minimum skid roads necessary, no side-cast material into sensitive areas, and proper drainage. Landings will not be located in Streamside/Riparian Management Zones or in other water-related buffer zones. Landing associated with ground-based and cable harvesting will be no more than ½ acre each; those associated with helicopter harvesting will be no more than 2 acres each.

SWCP's applicable to the implementation phase of the proposed project include:

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
11.11	PETROLEUM STORAGE AND DELIVERY FACILITIES AND MANAGEMENT – To protect surface and subsurface soil and water resources from petroleum fluid contamination resulting from leaking delivery systems and storage facilities. Note that this also applies to other hazardous materials, including drilling fluids	Project area, especially the harvest units adjacent to Spring Creek & Huntington Reservoir.	<i>The SWCP states that delivery and storage facilities will be located, designed, constructed, and maintained in a manner that minimizes the potential for contamination of surface and subsurface soil and water resources from leaking flowlines, pipelines, and storage tanks.</i> Fuel and other petroleum products will not be stored in Source Protection Zones One or Two.
13.02	SLOPE LIMITATIONS FOR TRACTOR OPERATION - To reduce gully and sheet erosion and associated sediment production	Harvest units	Ground-based logging (including forwarders) will be limited to slopes of 40% or less.
13.03	TRACTOR OPERATION EXCLUDED FROM WETLANDS, BOGS, AND WET MEADOWS - To limit soil damage, turbidity, and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion. Note that this SWCP applies to all heavy equipment operations.	Harvest units and areas adjacent to access roads	<i>The SWCP states that application of the SWCP is mandatory for all vegetation manipulation projects, including mining operations; exceptions must be specifically addressed in an environmental document. The agency project administrator or project supervisor is responsible for identifying wetlands and meadows not previously recognized in the NEPA process and for following or developing management controls to protect wetland and meadows. Protection of wetlands (mapped and unmapped) should be included in pre-work briefings.</i> There are mapped and unmapped wetlands in the harvest units. Buffer zone requirements (SWCP 14.06) must be considered and incorporated in sale layout and timber marking and while locating temporary roads, skid trails, and landings.
13.04	REVEGETATION OF SURFACE DISTURBED AREAS - To protect soil productivity and water quality by minimizing soil erosion	Temporary roads, some skid trails and landings, and selected harvest areas	Select disturbed areas will be seeded as directed by the sale administrator with seed mixture(s) developed for the project. The seed will be certified weed and noxious weed free. The proponent should have an independent test of seed purity, germination, and weed content prior to seed application. If the soil surface is crusted, take appropriate measure to break up the crusted areas prior to seeding.

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
13.06	SOIL MOISTURE LIMITATIONS FOR TRACTOR OPERATION - To minimize soil compaction, puddling, rutting, and gulying with resultant sediment production and loss of soil productivity. Note that this SWCP applies to all heavy equipment operations.	Project area	The normal operating season on National Forest lands in this area is from July 1 st to October 1 st . Construction and other activities outside the normal operating season may require supplemental plans addressing temporary shutdown and erosion control measures. If temporary erosion control measures are not effective, activities will be suspended until conditions improve. Rutting will be used as an indicator of wet conditions on roads and skid trails. Vehicle traffic and equipment operation will be restricted to prevent rutting in excess of one inch on gravel roads, 2 inches on native surface roads and 3-4 inches on skid trails. Proponent(s) will provide maintenance equipment to repair rutting as soon as ground conditions permit. In harvest units away from travelways, restrict operations when mud clings to equipment wheels until soils are dryer. To minimize compaction, operate equipment over logging slash when possible.
13.08	APPLY PESTICIDES ACCORDING TO LABEL AND EPA REGISTRATION DIRECTIONS - To avoid water contamination by complying with all label instructions and restrictions.	Planted areas	Gopher control using strychnine may be necessary in planted spruce stands. Label directions, other constraints identified on the label and legal requirements for application and disposal will be incorporated into project plans and contracts. Noxious weeds will be controlled using liquid or solid herbicides. Label directions, other constraints identified on the label and legal requirements for application and disposal will be incorporated into project plans and contracts.
14.03	USE OF SALE AREA MAPS (SAMs) FOR DESIGNATING SOIL AND WATER PROTECTION NEEDS -To delineate the location of protected areas and available water sources and insure their recognition, proper consideration, and protection on the ground.	Timber sale contract Harvest units	Streamside management zone will be delineated on the SAM. All perennial and intermittent streams will be designated for stream course protection. Other water features with buffer zones (see the design features and 14.06) will also be included in the SAM. Note that SWCP 13.03 is mandatory and applies to mapped and unmapped wetlands. Ground verification and preparation of SAMs to be included in timber sale contract will be done by Presale Forester. Sale administrator reviews areas of concern with purchaser before operations.
14.04	LIMITING THE OPERATION PERIOD OF TIMBER SALE ACTIVITIES - To minimize soil erosion and sedimentation and loss in soil productivity by insuring the purchaser conducts his/her operations in a timely manner. Note that this SWCP applies to all heavy equipment operations.	Timber sale contract Harvest units	See also 13.06. The normal operating season on National Forest lands in this area is July 1 st to October 1 st . Winter logging over frozen ground may be approved.
14.06	RIPARIAN AREA DESIGNATION - To minimize the adverse effects on riparian areas with prescriptions that manage nearby logging and related land disturbance activities. Note that this SWCP applies to all heavy equipment operations.	Harvest units, temporary roads	See specifications for SMZ adjacent to Lake Canyon. For other areas, the minimum buffer zone will be 100 feet around seeps, springs and spring brooks, 100 feet from lake or reservoir high water lines, 100 feet from each perennial stream bank, 100 feet from the outer perimeter of a wetland, and 50 feet from the top of each intermittent stream bank. Operation of heavy equipment in these buffer zones is prohibited unless specifically authorized by an agency representative. Merchantable material may be removed.

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
14.11	LOG LANDING EROSION PREVENTION AND CONTROL - To reduce erosion and subsequent sedimentation from log landing through the use of mitigating measures.	Log landings	Considerations include proper drainage and dispersion of water including preventing any road runoff from reaching the landing, shaping cuts and fills, decompaction, revegetation, spreading slash.
14.12	EROSION PREVENTION AND CONTROL MEASURES DURING THE TIMBER SALE OPERATION - To ensure that the purchaser's operations shall be conducted reasonably to minimize soil erosion.	Harvest units	The timber sale contract sets purchaser's responsibility to prevent soil/water resource damage. Sale administrator ensures that erosion control is kept current and prevents operations when excessive impacts are possible. The kinds and intensity of work done shall be adjusted to ground and weather conditions, including seasonal periods of precipitation and the need for controlling runoff. Damage-causing storms are most likely to occur during mid to late summer associated with monsoon/intense thunderstorms.
14.14	REVEGETATION OF AREAS DISTURBED BY HARVEST ACTIVITIES - To establish a vegetative cover on disturbed areas to prevent erosion and sedimentation.	Harvest units, temporary roads	<i>The SWCP states that the Purchaser shall take appropriate measures normally used to establish an adequate cover of grass or other vegetation acceptable to the Forest Service when soil has been severely disturbed by the Purchaser's operations and establishment of vegetation is needed to minimize erosion. It is the responsibility of the sale administrator to see that revegetation work required by purchaser is done correctly and in a timely manner.</i> See SWCP 13.04. For this project, the purchaser will be responsible for revegetation for one year after the completion of harvest or acceptance of the sale unit, whichever comes first.
14.15	EROSION CONTROL ON SKID TRAILS - To protect water quality by minimizing erosion and sedimentation derived from skid trails. Note that this SWCP applied to any temporary working travelway.	Skid trails, temporary roads	Erosion control measures are applied prior to expected hydrologic events (spring runoff, high-intensity storms, etc.). Purchaser must complete and maintain erosion control work as specified in the sale contract. Temporary measures may be necessary in some areas prior to harvest unit acceptance/closure. Permanent measures may include waterbarring, application of logging slash, and/or seeding
14.16	MEADOW PROTECTION DURING TIMBER HARVESTING - To avoid damage to the ground cover, soil, and water in meadows (wet and dry). Note that this SWCP applies to all heavy equipment operations	Harvest units, temporary roads	<i>The SWCP states that vehicular or heavy equipment shall not be used on meadows except where roads, staging areas, or equipment travelways are specifically located and approved.</i> The project administrator will be responsible for on-the-ground protection of meadows. Note that SWCP 13.03 requires the protection of both mapped and unmapped wet meadows and other wetlands.
14.17	STREAM CHANNEL PROTECTION (IMPLEMENTATION AND ENFORCEMENT) - To protect natural stream flows; to provide unobstructed passage of flows; reduce sediment input; and restore flow if diverted by timber sale activity.	Harvest units, temporary roads	All perennial and intermittent streams will be designated for stream course protection and included in the SAM. IDT specialists will be consulted as needed.
14.18	EROSION CONTROL STRUCTURE MAINTENANCE - To insure constructed erosion control structures are stabilized and working effectively.	Harvest units, temporary roads	During the period of the contract, the purchaser shall provide maintenance of soil erosion control structures constructed by the purchaser until they become stabilized 1) for up to, but not for more than, one year after their construction or 2) the sale unit is accepted as final, or 3) the sale is closed.

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
14.19	ACCEPTANCE OF TIMBER SALE EROSION CONTROL MEASURES BEFORE SALE CLOSURE - To assure the adequacy of required erosion control work on timber sales.	Harvest units, temporary roads	A careful review of erosion prevention work will be made by the sale administrator before each harvest unit is accepted as final. The inspection will determine if the work is acceptable and will meet the objective of the erosion control feature. Work is not acceptable if it does not meet standards or is not expected to protect soil/water values. Technical assistance will be used as necessary. See SWCP 14.18 - erosion prevention work done in the previous year should be periodically inspected during the life of the timber sale to determine maintenance needs within the first year following construction and to evaluate adequacy of the work and any necessary modifications.
14.22	MODIFICATION OF THE TSC - To modify the TSC if new circumstances or conditions indicate that the timber sale will cause irreversible damage to soil, water, or watershed values.	Timber sale contract	If contract specifications are not adequate to protect soil/water resources, the sale administrator and Contracting Officer are responsible for recommending a modification of the contract.
15.04	TIMING OF CONSTRUCTION ACTIVITIES - To minimize erosion by conducting operations during minimal runoff periods.	Timber sale contract Harvest units, temporary roads	The normal operating season includes the time period that typically has suitable soil moisture and runoff conditions for most Forest activities and operations. The proponent should schedule and conduct most operations within the normal operating season. The proponent shall conduct all activities to prevent erosion and sedimentation. Temporary erosion control measures may be required to prevent, control, and mitigate erosion and sedimentation. Temporary and permanent erosion control work must be kept current with ongoing operations, especially when construction occurs outside of the normal operating season. See SWCP 13.06 for soil moisture criteria.
15.05	SLOPE STABILIZATION AND PREVENTION OF MASS FAILURES - To reduce sedimentation by minimizing the chances for road-related mass failures, including landslides and embankment slumps. Note that this SWCP applied to any temporary working travelway.	Temporary roads, skid trails	Unstable areas are generally avoided. The proponent will avoid undercutting road-side slopes. Slumped or sloughed material will not be side-cast; it may be incorporated into the travelway or end-hauled to an area designated by the project administrator.
15.07	CONTROL OF PERMANENT ROAD DRAINAGE - To minimize the erosive effects of concentrated water and the degradation of water quality by proper design and construction of road drainage systems and drainage control structures.		No permanent roads will be constructed.
15.09	TIMELY EROSION CONTROL MEASURES ON INCOMPLETE ROADS AND STREAM CROSSING PROJECTS - To minimize erosion of and sedimentation from disturbed ground on incomplete projects.	Temporary roads	<i>The SWCP states that temporary erosion control and other protective measures will be kept current on all disturbed areas. Areas must not be abandoned for the winter with remedial measures incomplete.</i>

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
15.11	SERVICING AND REFUELING EQUIPMENT - To prevent contamination of waters from accidental spills of fuels, lubricants, bitumens, and other harmful materials. Note that this SWCP applies in all areas where heavy equipment is operated.	Project area	The proponent will designate the location, size, and use of service refueling areas for the approval of the sale administrator. Refueling areas will be a minimum of 200 feet from perennial and intermittent stream channels, seeps and springs, wetlands, lakes and reservoirs, stock water developments, and other water features. Fuel and other petroleum products will not be stored in Source Protection Zone Two. All heavy equipment and service vehicles will have a supply of absorbent and other cleanup materials on hand for initial containment of spills. All projects will adhere to the Hazardous Substance Spill Plan in case of accidents.
15.12	CONTROL OF CONSTRUCTION IN RIPARIAN AREAS - To minimize the adverse effects on riparian areas from roads. Note that this SWCP applies in all areas where heavy equipment is operated.	Temporary roads	Except at designated stream crossings, fill materials will not be placed in riparian areas or wetlands.
15.13	CONTROLLING IN-CHANNEL EXCAVATION - To minimize stream channel disturbances and related sediment production.	Temporary roads	<i>The SWCP states that during construction of roads and installation of stream crossings, it may be necessary for construction equipment to cross or operate near riparian areas. This will be permitted only at locations designated by the sale administrator. In-channel excavation should be planned for low flow periods and be accomplished in as short a timer period as possible. Materials stockpiled or disposed of should be placed and contained in areas above the probable high water lines. Steam channels impacted by construction activity will be restored to their original plan and profile; stream bed armoring should be replaced to the extent possible.</i>
15.14	DIVERSION OF FLOWS AROUND CONSTRUCTION SITES - To minimize downstream sedimentation by insuring that all stream diversions are carefully planned.	Temporary roads	<i>The SWCP states that flow must sometimes be guided or piped around project sites. Diverted flows shall be restored to the natural stream course as soon as practicable and, in any event, prior to the major storm season or fish migration season. Stream channels impacted by construction activity will be restored to their natural cross-section, grade, condition, and alignment as soon as possible.</i>
15.15	STREAM CROSSINGS ON TEMPORARY ROADS - To keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish passage.	Temporary roads, some skid trails	<i>The SWCP states that culverts, temporary bridges, low water crossings, or fords will be required on temporary roads at all locations where it is necessary to cross stream courses. This includes perennial streams and intermittent drainages. Such facilities shall be designed and installed to provide unobstructed stream flow and fish passage, and to minimize damage to stream courses. Stream bank excavation shall be kept to the minimum needed for use of the crossing.</i> Culverts must be sized to accommodate the anticipated design life with a 70 to 80% chance of success.
15.18	DISPOSAL OF RIGHT-OF-WAY AND ROADSIDE DEBRIS - To insure debris generated during road construction is kept out of streams and prevent slash and debris from subsequently obstructing channels.	Temporary roads	Debris will not be placed in the stream channel or floodplain; incidental debris from tree felling will be removed. Streamside willows may be removed in clumps, set aside, and replaced during cleanup/shaping of the disturbed area. Other debris will be disposed of in adjacent upland areas. Disposal method will be specified by the agency project administrator.

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
15.21	MAINTENANCE OF ROADS - To maintain all roads in a manner which provides for soil and water protection by minimizing rutting, failures, side-cast, and blocking of drainage facilities.	All roads used by contractor	Road maintenance associated with a timber sale is the responsibility of purchaser. The sale administrator will ensure the purchaser maintains roads according to the appropriate maintenance level.
15.22	ROAD SURFACE TREATMENT TO PREVENT LOSS OF MATERIALS - To minimize the erosion of road surface materials and, consequently, reduce the likelihood of sediment production.	All roads used by contractor	Selected road segments will be graveled and/or treated with some type of dust abatement material. Additional measures may be required if activities occur or continue outside the normal operating season.
15.23	TRAFFIC CONTROL DURING WET PERIODS - To reduce the potential for road surface disturbance during wet weather and reduce sedimentation.	All roads used by contractor	<p><i>The SWCP states that roads that must be used during wet periods should have a stable surface and sufficient drainage to allow such use with a minimum of resource impact. Road not constructed for all weather use should be closed during the wet season. Where winter operations are planned, roads may need to be upgraded and maintenance intensified to handle the traffic without creating excessive erosion and damage to the road surfaces. Road closures and traffic control measures should be implemented on all roads when damage would occur as a result of use during wet weather.</i></p> <p>Road restrictions and traffic control measures will be implemented on all roads when damage occurs. The decision to restrict a road is made by the agency project administrator or engineering representative</p> <p>Damage is indicated by rutting in excess of one inch on gravel roads, 2 inches on native surface roads and 4 inches in other travelways.</p> <p>Outside the normal operating period, vehicle traffic and equipment operation will be restricted to dry or frozen conditions. For roads initially proposed as access but not requiring improvement, continued use which extends beyond the normal operating season or during extended wet conditions may require improvement, such as gravel, or other measures.</p>
15.24	SNOW REMOVAL CONTROLS - To minimize the impact of snow melt on road surfaces and embankments and reduce the probability of sediment production resulting from snow removal operations.	All roads used by contractor	Snow removal will be kept current on all roads used for winter logging operations. During snow removal, a minimum of 4 inches of snow will be left on the roadway. Cut banks shall not be undercut nor shall gravel be bladed off the roadway. Ditches and culverts shall be kept functional. Snow berms should be removed or breached at a spacing to provide surface drainage without discharge over erodible fills. Deicing agents will not be used without special authorization from the agency project administrator or sale administrator
15.25	OBLITERATION OF TEMPORARY ROADS - To reduce sediment generated from temporary roads by obliterating them at the completion of their intended use.	Temporary roads	All temporary roads in the decision area will be obliterated. Obliteration will include removing culverts and reestablishing stream channel configuration, decompaction, recontouring or reshaping of sideslopes and/or construction of waterbars, construction of access controls, application of salvaged woody debris, and revegetation.

SWCP	SWCP OBJECTIVE	APPLICABLE TO	CONSIDERATIONS FOR IMPLEMENTATION
18.03	PROTECTION OF SOIL AND WATER FROM PRESCRIBED BURNING EFFECTS - To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface water.	Harvest units	Prescribed burn plans identify the conditions necessary to prevent soil damage and meet site preparation objectives while maintaining the integrity of riparian areas and retaining sufficient ground cover to prevent erosion of the burned areas. Practices include construction of water bars in fire lines, and removal of all debris added to stream channels as a result of prescribed burning. Additional, remedial practices may be needed in areas where burn intensity and severity is greater than planned.

Additional requirements for roads

The Clean Water Act specifically includes the following baseline requirements for roads (33 CFR 323.4(6):

- i. permanent and temporary roads and skid trails shall be held to the minimum feasible number, width, and total length;
- ii. all roads, including skid trails, shall be located sufficiently far from streams and other water bodies to minimize discharge into waters of the U.S. (except for portions which must cross these waters);
- iii. the road fill shall be bridged, culverted, or otherwise designed to prevent the restriction of expected flood flows;
- iv. the fill shall be properly stabilized and maintained during and following construction to prevent erosion;
- v. during construction, the encroachment of heavy equipment into the waters of the U.S. (and adjacent wetlands) outside of the construction boundaries will be minimized;
- vi. vegetative disturbance in waters of the U.S. will be minimized during design, construction, and maintenance;
- vii. the design, construction, and maintenance of road crossings will not disrupt the migration or other movement of aquatic species inhabiting the water body;
- viii. borrow material will be taken from upland sources when feasible;
- ix. discharges will not take or jeopardize the continued existence of a threatened or endangered species or adversely modify or destroy critical habitat of such species;
- x. discharges into breeding and nesting areas for migratory waterfowl, spawning areas, and wetlands shall be avoided if practical alternative exist;
- xi. discharges shall not be located in the proximity of a public water supply intake;
- xii. the discharge shall not occur in areas of concentrated shell fish production;
- xiii. the discharge shall not occur in a component of the National Wild and Scenic River System;
- xiv. the discharge shall to free of toxic pollutants in toxic amounts;
- xv. all temporary fills shall be removed and the area restored to its original elevation

Soil, Water and Aquatic Species Design Features

A streamside management zone (SMZ) will be designated adjacent to Lake Canyon. The objectives for the SMZ are to provide an operable unit with a specific/customized treatment prescription and stipulations that would minimize compaction in the valley bottom adjacent to Lake Canyon, and reduce fuel loading while retaining sufficient trees for streamside shade and stability and a source of aquatic large woody debris.

The treatment prescription and stipulations will include the following:

1. Ground based equipment operations only when soils are dry or frozen, or over 2 feet of equipment-supporting snow.
2. Unless operating over snow, operate ground based on skid trails over logging slash.
3. No heavy equipment operation within 100' of the streamside boundary within SMZ.
4. Up to 50% of the merchantable trees may be marked for harvest but retain approximately 50% of larger diameter (18"+) trees within a tree length of the streamside edge of the SMZ.
5. Intermittent drainages crossing the SMZ – in 50' zone of each side of channel, no heavy equipment operation but up to 50% of the merchantable trees may be removed.
6. Seeps, springs, spring brooks, wetlands – 100' zone, no ground based equipment operations or removal of trees.
7. No active lighting within the 100 feet of the streamside boundary of the SMZ

Wildlife Design Features

- Surveys for the northern goshawk will be on going. If goshawks are located in the project area, the guidelines of the goshawk strategy and the forest plan amendment for the Utah Northern Goshawk Project would be implemented, which are the following:
 - 1) Prohibit forest vegetation manipulation within active nest areas during the active nesting period. The active nesting period will normally occur between March 1st and September 30th.
 - 2) In active nest areas, restrict Forest Service management activities and human uses for which the Forest issues permits during the active nesting period unless it is determined that disturbance is not likely to result in nest abandonment.
 - 3) Identify a Post Fledgling Area (PFA) which encompasses the active, alternate and replacement nest areas and additional habitat needed to raise fledglings. A PFA should be approximately 420 acres (exclusive of nest acres) when sufficient habitat exists, no treatments would occur if a nest is active, within this buffer until young have fledged the nest (September 30th).
 - Nest trees with cavities will be protected.

Forest Plan Page	Guideline	CONSIDERATIONS FOR IMPLEMENTATION	PERSON(S) RESPONSIBLE
CC- 59	C01 04 f	300 snags/100 acres, minimum size is 18 inches DBH, 30 feet tall	COR; ER; PSF; TSA
CC- 59	C01 04 g	50 logs/10 acres, minimum size is 12 inches DBH, 8 feet long, 100 tons/10 acres	COR; ER; PSF; TSA

- Migratory bird surveys will continue to be conducted prior and during project implementation.
- If priority migratory birds are found to be nesting in areas that would be disturbed by the project, no project activity would be allowed until after nesting is completed.

Recreation Design Features

The planning area has extensive system of motorized trails; two of the trails are within the proposed timber sale units and would be closed during operations. The Lake Fork dispersed camping area is in the planning area, one or two of the sites may have to be closed during operations. Signing and a watch-person may be required during flight operations. Helicopter and tractor harvest will be restricted in the units adjacent to campsites and trails until after Labor Day. Haul will be restricted on weekends, holidays, and rifle hunting seasons. Winter operations will end by December 15 so as to not conflict with snowmobile and other winter recreation use.

Cultural Resources Design Features

Should eligible sites be identified during implementation they will be avoided during timber harvest and temporary road construction activities; therefore, there would be no effect.