CHAPTER 2

2.0 PROPOSED ACTION AND ALTERNATIVES FOR REPAIR AND MAINTENANCE OF FOX AND CRESCENT RESERVOIRS

The Proposed Action as presented in Section 1.3 of Chapter One will be further described in the Section 2.1 of this Chapter Two. Alternatives to the Proposed Action were developed that define meaningful ways to analyze the project in terms of the primary issue – that being the effects of the proposal on the wilderness values in a unit of the National Wilderness Preservation System. Detailed descriptions of the Proposed Action and Alternatives are included in Sections 2.1, 2.2, 2.3, and 2.4.

Applicable Forest Plan Management Area direction and Objectives (with accompanying Standards and Guidelines) were identified in Section 1.5 of Chapter One. Dry Gulch Irrigation Company's (DGIC) Proposed Action includes several environmental protection measures, which are listed as part of the work items in Section 2.1. In addition, the Forest Interdisciplinary Team (IDT) identified and developed specific measures (mitigation measures), which would minimize or eliminate adverse environmental effects to resource values. The Forest IDT also developed "monitoring guidelines" that would be followed to insure implementation of the mitigation measures. These mitigation measures and monitoring guidelines are included as part of the Proposed Action and Alternatives in Sections 2.1 through 2.4, and in Chapter Four-Environmental Consequences, under the corresponding resource section.

2.1 ALTERNATIVE ONE
Proposed Action – Proposal as submitted by Dry Gulch Irrigation Company (DGIC).

The Proposed Action includes the following work items and the following proposed use of motorized/mechanical transport and tools.

(See Alternative One Map, page 10)

DGIC proposed the following activities to insure the proper maintenance of the dams. The State of Utah Department of Natural Resources - Divisions of Water Rights and Dam Safety, and the Forest Service agree that the proposed maintenance activities would meet the technical requirements, and would be necessary to accomplish if the dams were to continue to be used for their intended purpose. *(Bastian 2000 and 2001, Kulesza 2001, Marchant Field Notes 2000, Marchant 2000 Note to Rick Hall, Assistant State Engineer, Marchant 2001, Morgan August 10, 2000. Morgan September 19, 2000, Morgan October 25, 2000, Morgan November 29, 2000, Nelson 2000, Self – note to Don Marchant).* The proposed action involves helicopter transport to the reservoir sites for materials and equipment, and also proposes on-site motorized equipment to complete the work.

Photo 2.a – Dam at Fox Reservoir

FOX RESERVOIR:

(Refer to Fox and Crescent Reservoirs Maintenance Project Site Map, page 9 of Chapter One)

- Repairs to the outlet pipe would consist of slip lining the existing 36 inch corrugated pipe with 30" ID (inside diameter) and a

32 1/2" OD (outside diameter) 40 pound pressure High Density Polyethylene (HDPE) pipe totaling 96 ft. 6 inches, with a stainless steel band to join the pipes in the center of the wet well and grouted in place. The inlet structure would be formed and a new concrete structure would be poured. The outlet structure could also need to be replaced, or if not replaced, then some grout work would be necessary.

- Existing head gate controls would be removed. A new 30-inch Waterman head gate and frame assembly would be installed on the inlet end of the outlet pipe.

- The southwest levee would be raised approximately 3 inches in elevation to match the elevation of the dam. The north levee would be raised approximately 9 inches to match the elevation of the dam. DGIC proposes to use native material from existing borrow pits to complete this portion of the project. There could also be some work required on the main dike to insure proper freeboard.

- The leak at the toe of the southwest levee would be excavated into the downstream toe and a sand filter installed to stop any fine material movement through the dike. This sand would be over laid with native material.

- Any leaks on the upstream apron of the spillway would be repaired. An 8 inch thick retaining wall, three feet high, and 22 feet long would be poured on the downstream apron and would be doweled into the existing concrete spillway, and the cracks would also be repaired. Riprap would be placed on the downstream to protect the spillway.

- All woody vegetation would be removed from the existing dam, levees, and dike (this action could take place annually or as needed for long-term maintenance.)

- A temporary coffer dam would be constructed to control flows out of the reservoir and would be equipped with a 15 inch head gate and 20 feet of 15 inch pipe to hold water for several days during the grouting operation, and to release collected water during non-work hours. The cofferdam would be removed upon completion of the project work.

- All necessary work that needs to be completed within the existing outlet pipe and wet well would be performed by the owner.

- There would be a pit for the latrine. Garbage would be packed out on horses.

Photo 2.b – Borrow area within Fox Reservoir

- Borrow sites: The quantity of borrow material needed for project work is estimated at 200 cubic yards. There is a borrow pit south of the main dam and also north of the main dam and several others located within the lake itself. Material

could be used from all these sites, but no new borrow sites are proposed.

- A Hazmat Plan would be developed prior to project initiation.

CRESCENT RESERVOIR:

- A new head gate frame assembly would be installed and any repairs required to the head gate or outlet pipe would be performed to ensure proper operation.

- The cracks in the masonry dam would be repaired using a grout facing material and glue mixture.

The proposed action would require the following materials at the reservoir sites: An oxygen and acetylene torch, 24 pieces of ½ inch rebar, one generator, one generator welder, two portable electric cement mixers, one grout pump, 200 gallons of fuel, one containment trough, six feet of 36 inch culvert and band, two wheel barrows, two 2 inch water pumps, 100 feet of pipe, outlet gate and frame, cement, skid loader, two spare tires, backhoe attachments, a hand operated compactor, grout hoses and operating valves, screens for gradation of materials, miscellaneous lumber and forms, miscellaneous tools and supplies, and camp equipment and supplies for the work crews. Transporting these tools and equipment would require an estimated minimum of 18 to 20 round trip helicopter flights. It is estimated that the project would take 30 to 35 days to complete, with work crews varying from six to fourteen personnel.

A staging area would be needed for the helicopter operation. DGIC proposed that this staging area be located outside the wilderness at Reader Creek meadows. Another option is the nearby Chepeta Trailhead area. (*See Alternative One Map, page 10).* The staging area would be accessed via the Chepeta Lake Road (Forest Development Road 110). The access route from the Chepeta Lake road to the Reader Creek staging area would be approximately 500 feet long over an existing track route. Access to the alternate Chepeta site would be about 50 feet over an existing track. Grading or leveling of these routes would not be required, nor would removal of vegetation, or grading and leveling of the helicopter staging area. Helicopter refueling operations would take place at the staging area. Flights from either staging site to the reservoir areas would be over North Pole Pass or Fox/Queant Pass. Helicopter drop zones would be located on the Fox Reservoir Dam or within close proximity to the work areas. If possible, drop zones would be within the reservoir area.

DGIC proposed that a Case 1838 skid steer loader be flown by helicopter to the site to accomplish the following tasks: gradation and sorting of materials for the concrete work, moving materials from place to place, extracting and placing of borrow material, constructing the coffer dam, digging out leaks on the dikes, excavation and compaction of materials, moving liner pipes into place, positioning head gates and liner pipes, adding material to the dikes, gathering and placing riprap downstream of the spillway structure, filling of the wet well, and removal of the coffer dam.

Photo 2.c – Reader Creek meadow staging area

DGIC also proposed that four saddle horses be at the worksite for the duration of the project for safety reasons. Other horses would be used as needed for transportation of supplies and materials to and from the worksite. There would be approximately 20 round trip pack trips. There

would be up to nine pack horses in each string, including riders. This would equate to 180 pack loads. The staging area for the pack trips would also be at Reader Creek meadows, in the proximity of the staging area for helicopter operations. Horse packers would use Reader Basin Trail #133 and Uinta Highline Trail #025 across North Pole Pass to access the reservoir areas. The livestock would use forage areas to the north and west of Fox Reservoir. Supplemental feed could be required for the livestock.

Campsites would be established to support up to 14 persons at one time per campsite. Campsites would be at least one mile apart. One campsite at a time would be used under this alternative. One or possibly two individuals may need to camp at the reservoir site to protect equipment and supplies.

In addition, Alternative One would include the development and implementation of an annual and long-term operation and maintenance (O&M) plan that contains terms and conditions for managing future activities associated with Fox and Crescent Reservoirs. If repairs were authorized as described, this would imply that the reservoirs would be retained for the foreseeable future to provide irrigation water. The development and implementation of an annual and long-term O&M plan would be made part of the decision that authorized the repair work.

The framework and content for this O&M plan is summarized in Sections 2.5 and 2.6.

2.1.1 Mitigation Measures and Monitoring Guidelines Developed by the Interdisciplinary Team for Alternative One (Proposed Action)

In addition to the measures and Forest Plan Standards and Guidelines listed and discussed in Section 1.5 of Chapter One, the following mitigation measures and monitoring guidelines would be implemented to address public issues and management concerns:

Wilderness

Mitigation Measures

- ✓ The impacts to wilderness and recreation experiences that would be cumulative from project personnel and regular wilderness visitors could be greatly alleviated through signing and otherwise informing the wilderness visitor of these activities, and suggesting alternative areas to visit to maintain the wilderness experience they come to expect. A visitor information plan would be developed to minimize visitor access to the Fox and Crescent Reservoir areas during the work phase of the project. The plan would also include information on activities at the Reader Creek staging area and flight routes to and from the staging area to the reservoirs sites so those that wish to avoid these areas may do so.

- ✓ Project personnel would be required to manage the grazing by livestock associated with the project to insure that animals were properly distributed over the suitable grazing areas and insure the established utilization standards were not exceeded.

Monitoring Guidelines

- ✓ Trail condition surveys would need to be conducted to assess the impacts of the project on the trails used and help set maintenance priorities for the forest.

- ✓ Campsite monitoring would occur at the campsite to assess changes from the baseline Site Impact Index.

- ✓ Monitoring of the grazing areas would be done to insure established utilization standards would be met.

Recreation

Mitigation Measures

- ✓ DGIC would be required to repair and rehabilitate trails and dispersed recreation areas damaged by their operations and activities. Such work would be done under the direction of the Forest Service.

- ✓ Prepare, post, and distribute flyers and other media notices that describe the purpose and need for the project work, location of helicopter and pack string staging areas, and the time frames for all operation activities.

Publish notices in local and regional papers as needed, and recommend that wilderness visitors limit their stay or otherwise avoid the Fox and Crescent Reservoir area during the project work period. (To be done by DGIC, under the direction of the Forest Service.)

Monitoring Guidelines

- ✓ Conduct inspection trips during and after the project work to insure the Dry Gulch Irrigation Company complies with special use permit terms and conditions.

Vegetation

Mitigation Measures

- ✓ Vegetative reclamation of borrow sites outside the reservoir would be done. At the dry borrow sites, a seed mix of timber oatgrass, tufted hairgrass, sheep fescue, and Canada singlespike sedge would be manually applied to disturbed soils or parent materials. At the wet sites, water sedge, elephant head, and other riparian species would establish naturally in disturbed soils of the borrow site.

- ✓ The utilization standards for recreation stock use in the High Uintas Wilderness apply to stock used for the proposed action. Since competition for available forage between construction and recreational horses within the immediate vicinity of Fox Reservoir and the staging area could result in the allowable use standard of 40% being exceeded in preferred forage areas. During the maintenance work on the reservoirs, the Forest Service would monitor utilization and move horses if utilization surpasses the 40% standard. This would be done to adequately distribute and comfortably accommodate both recreation and construction horse forage use.

- ✓ Invasive species and noxious weed monitoring of disturbed areas and FS-authorized treatment by DGIC would be done for a minimum of three years or until weed infestations are eradicated. This project is not expected to increase invasive species. Weed free hay will be in accordance with Forest Service requirements.

- ✓ The project does not affect any threatened, endangered, proposed, or sensitive plat species; therefore, no mitigation measures or monitoring guidelines are necessary.

Monitoring Guidelines

- ✓ Seven long-term vegetative trend studies are currently established within 1 mile of the project area (U.S Department of Agriculture, Monitoring Studies Inventory). Some of these studies, with 2 to 3 new ones, would be used to monitor condition and trend of the impacted forage areas prior to and immediately following construction horse use. To determine actual use in the impacted forage areas, utilization of forage would be estimated following horse use at the selected study sites.

Terrestrial Wildlife

Threatened and Endangered Species

Canada Lynx –

Mitigation Measures

- ✓ No mitigation would be required.

Monitoring Guidelines

- ✓ No additional monitoring would be necessary.

Bald eagle –

Mitigation Measures

- ✓ No mitigation would be required.

Monitoring Guidelines

- ✓ No additional monitoring would be necessary.

Sensitive Species

Northern goshawk, boreal owl, great gray owl, three-toed woodpecker –

Mitigation Measures

- ✓ The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional

protection to goshawks but to most bird species that may occur in the project area.

- ✓ Implementation of the project would not start before August 1st. This would reduce impacts from the proposed project, to possible goshawk nesting and post fledgling areas. It would also reduce impacts from the proposed project to late nesting three-toed woodpeckers. This mitigation would eliminate disturbances to boreal owls and great gray owls during the nesting period for these species.

Monitoring Guidelines

- ✓ The Ashley National Forest annually monitors and surveys known goshawk territories on the Forest. These surveys and monitoring will continue.

- ✓ Standard (l), in the Goshawk Amendment to the Ashley Forest Plan from the Utah Northern Goshawk Project, states, "When goshawk field surveys are required, complete field surveys for territory occupancy within suitable habitat. Surveys will be completed during the nesting and/or post fledgling period, and must be conducted no longer than one year prior to implementation of management actions". Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project (June or July of the same season of project implementation). If a goshawk is detected and an active nest is found, a helicopter flight path will be selected that does not occur within ½ mile of any goshawk nest.

- ✓ Owl surveys and three-toed woodpecker surveys have been conducted within and near the project area. These surveys detected boreal owls, great gray owls, and three-toed woodpeckers. Point counts conducted within the project area also detected three-toed woodpeckers. (Ashley NF unpub. data). The Ashley National Forest will continue to monitor these species on the Forest.

Management Indicator Species

Mule deer, elk, Lincoln's sparrow, song sparrow, northern goshawk –

Mitigation Measures

- ✓ The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks but to most bird species, as well as deer and elk, which may occur in the project area.

- ✓ Implementation of the project would not start before August 1st. This would reduce impacts from the proposed project to late nesting Lincoln's sparrows and song sparrows. This mitigation would eliminate disturbances to white-tailed ptarmigan during the nesting period and elk and deer during the fawning and calving season.

Monitoring Guidelines

- ✓ The Ashley National Forest annually monitors and surveys known goshawk territories on the Forest. These surveys and monitoring will continue.

- ✓ Standard (l), in the Goshawk Amendment to the Ashley Forest Plan from the Utah Northern Goshawk Project, states, "When goshawk field surveys are required, complete field surveys for territory occupancy within suitable habitat. Surveys will be completed during the nesting and/or post fledgling period, and must be conducted no longer than one year prior to implementation of management actions". Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project (June or July of the same season of project implementation). If a goshawk is detected and an active nest is found, a helicopter flight path will be selected that

does not occur within ½ mile of any goshawk nest.

- ✓ Generally the North American Breeding Bird Survey (Sauer et al. 2003) and Partners in Flight (Parrish et al. 2002) monitor bird populations, including Lincoln's and song sparrows. These bird surveys, Ashley National Forest Point Counts, and general Ashley NF observations have detected Lincoln's sparrows on the Forest (Sauer et al. 2003; Ashley NF unpub. data). These surveys and will continue.

- ✓ The Utah Division of Wildlife Resources generally monitors deer, elk, and white-tailed ptarmigan populations, sex ratios, and recruitment. This monitoring will continue.

Birds of Conservation Concern (Migratory Birds)

Williamson's sapsucker –

Mitigation Measures

- ✓ The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. Although not a raptor, this would allow additional protection to the sapsucker and to most bird species that may occur in the project area.

- ✓ Implementation of the project would not start before August 1st. This mitigation would eliminate disturbances to the Williamson's sapsucker during the nesting period.

Monitoring Guidelines

- ✓ The North American Breeding Bird Survey (Sauer et al. 2003) generally monitors bird populations, including the Williamson's sapsucker. These bird surveys, Ashley National Forest Point Counts, and general Ashley NF observations have detected this species on the Forest (Sauer et al. 2003; Ashley NF unpub. data). These surveys will continue.

Utah Partners in Flight Priority Species

Black rosy-finch, broad-tailed hummingbird –

Mitigation Measures

- ✓ The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. Although not raptors, this would allow additional protection to the finch and hummingbird, and to most bird species that may occur in the project area.

- ✓ Implementation of the project would not start before August 1st. This mitigation would reduce impacts from the proposed project to late nesting black rosy-finches and broad-tailed hummingbirds.

Monitoring Guidelines

- ✓ The North American Breeding Bird Survey (Sauer et al. 2003) and Partners in Flight (Parrish et al. 2002) generally monitor bird populations, including the black rosy-finch and broad-tailed hummingbird. These bird surveys, Ashley National Forest Point Counts, and general Ashley NF observations have detected these species on the Forest (Sauer et al. 2003; Parrish 2002; Ashley NF unpub. data). Ashley Point counts have detected broad-tailed hummingbirds within the project area. These surveys will continue.

Aquatic Wildlife

Forest Sensitive Species

Colorado River cutthroat trout-

Mitigation Measures

- ✓ There would be no specific mitigation needed for CRCT.

Monitoring Measures

- ✓ The Forest Service would continue to coordinate with UDWR to ensure that the regularly scheduled CRCT monitoring effort continues as scheduled.

Management Indicator Species

Colorado River cutthroat trout- same as above for Forest sensitive species

Aquatic macroinvertebrates-

Mitigation Measures

- ✓ There would be no specific mitigation needed for aquatic macroinvertebrates.

Monitoring Measures

- ✓ The Forest Service will ensure that pre and post reconstruction aquatic macroinvertebrate samples are collected and analyzed.

Hydrology

Mitigation Measures

- ✓ All staging, camping, concentrated stock, helicopter, and other activities with concentrated use would be conducted a minimum of 200 feet from a wetland, stream bank or lake high water line and located on soils with low erosion potential for erosion and compaction (excluding helicopter areas associated with Fox and Crescent Reservoirs and their outlet channels.

- ✓ The skid loader would be confined to designated locations to protect water quality and soil resources.

- ✓ Loading/unloading of oil, fuel or other hazardous materials from horses would occur outside of riparian/wet meadow areas and at least 200 feet from live water of any kind where practicable.

Monitoring Guidelines

- ✓ Implementation monitoring by a Forest Service representative documenting concentrated activities or hazardous material loading/unloading within 200 feet of a wetland stream bank or lake high water line.

- ✓ Implementation monitoring by a Forest Service representative documenting heavy equipment impacts to water quality or soil resources.

Soils and Landform

Mitigation Measures

- ✓ Reclamation of borrow sites outside the reservoir would be required to meet wilderness standards and guidelines. Reshaping of the ground contour should conform to the natural look of the ground moraines being excavated.

- ✓ Locations of latrine pits are to be specified or approved by the Forest Service so as to minimize the risk of ground or surface water contamination. A minimum of one latrine unit at the work area and one at each campsite is required. Portable toilet facilities may be required to reduce the human waste in the area.

- ✓ Jute netting or other similar porous fabric would be placed on cut slopes of borrow sites. Water would be contained within the borrow sites. Waste material (oversized material) would be screened and placed back in the borrow sites.

Monitoring Guidelines

- ✓ There are seven long-term trend studies currently established within one mile of the project area. Soils would be incorporated into these studies as well as the two or three new studies identified as directly tied to this project. These sites would be used to monitor soil condition, along with vegetation, immediately following the repair work. Monitoring would be used to determine actual use in the impacted campsite and horse use areas.

- ✓ Study plots would also be established in conjunction with the borrow areas to determine the degree of disturbance. Monitoring while the project is being

implemented would identify the potential to exceed Class III standards.

Cultural Resources

Mitigation Measures

- ✓ Mitigation as agreed with Utah SHPO would consist of off site interpretation of the high lake dams or a publication detailing the history of Uinta Mountain reservoirs. *(Dykmann 2002)*

- ✓ Additional mitigation would consist of a site visit by Forest archaeologist to proposed staging areas and camp sites to verify their location and move their position if necessary to prevent placement on National Register Eligible sites.

- ✓ A brief discussion with project personnel to explain cultural resources laws and the need to leave cultural resources alone would also be recommended.

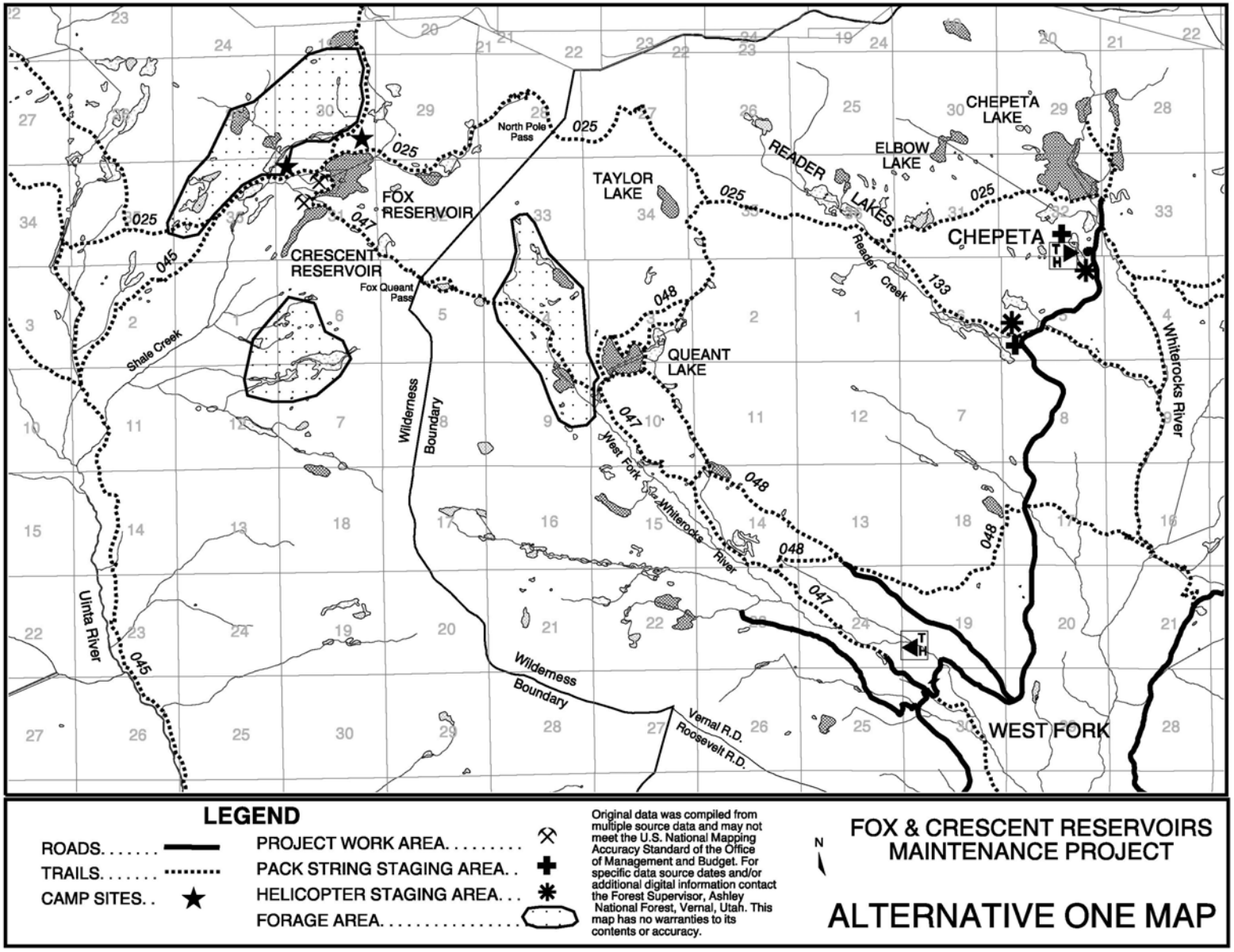
Monitoring Guidelines

- ✓ Forest personnel would visit the sites after the project to monitor impacts to cultural resources as a result of project implementation.

Inventoried Roadless Area

Mitigation Measures

- ✓ Prepare, post, and distribute flyers and other media notices that describe the purpose and need for the project work, location of helicopter and pack string staging areas, and the time frames for all operation activities. Publish notices in local and regional papers as needed, and recommend that visitors limit their stay or otherwise avoid the inventoried roadless area during the project work period


CHEPETA LAKE
ELBOW LAKE
READER LAKES
TAYLOR LAKE
North Pole Pass
025
FOX RESERVOIR
CRESCENT RESERVOIR
Fox Queant Pass
045
047
048
133
CHEPETA
Reader Creek
QUEANT LAKE
Shale Creek
Wilderness Boundary
West Fork Whiterocks River
Whiterocks River
Uinta River
Vernal R.D.
Roosevelt R.D.
WEST FORK
LEGEND
ROADS.
TRAILS.
CAMP SITES.
PROJECT WORK AREA.
PACK STRING STAGING AREA.
HELICOPTER STAGING AREA.
FORAGE AREA.
Original data was compiled from multiple source data and may not meet the U.S. National Mapping Accuracy Standard of the Office of Management and Budget. For specific data source dates and/or additional digital information contact the Forest Supervisor, Ashley National Forest, Vernal, Utah. This map has no warranties to its contents or accuracy.
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FOX & CRESCENT RESERVOIRS MAINTENANCE PROJECT
ALTERNATIVE ONE MAP

2.2 ALTERNATIVE TWO

Modified Proposed Action

Alternative Two is the Environmentally Preferred Alternative

The work items in this alternative would be the same as described in Alternative One, with the exception of borrow areas at the reservoirs, and staging areas for the helicopter operation and horse pack trips.

(See Alternative Two and Three Map, page 14)

For this alternative, Dry Gulch Irrigation Company (DGIC) would be required to remove the estimated 200 cubic yards of borrow material from within the reservoirs (reservoir bottoms) and not from the existing borrow sites.

The Ashley National Forest Interdisciplinary Team identified a site located immediately north and west of the junction of Chepeta Lake Road #110 and the Queant Lake Jeep Trail as an alternative staging site for helicopter operations and horse pack trips. This site could have fewer impacts to recreation users in the area. This site is part of larger area that was logged during the summers of 1994 and 1996 to remove blow down trees from a windstorm that occurred in the summer of 1993. Minor grading and leveling of this staging area site would be needed, as well as the removal of some brush and small trees within the site and along the site perimeter. In addition, a logging spur road would be reopened and graded to allow safe entry and exit at the junction of the logging spur and Chepeta Lake Road. Helicopter flights from this alternative staging area to the reservoir areas would be over North Pole Pass or Fox/Queant Pass. Horse pack trips from this site to the reservoirs would use Queant Lake Jeep Trail, Queant Lake Trail #048 and West Fork Whiterocks River Trail #047 via Fox/Queant Pass, or Queant Lake Jeep Trail, Queant Lake Trail #048 and Uinta Highline Trail #025, via North Pole Pass. Impacts resulting from the use of this staging area and the trails would differ from that described in Alternative One (Reader Creek meadows and Trails #133 and #025) and will be discussed in Chapter four.

Photo 2.d – West Fork Whiterocks Trail # 047

Alternative Two would also require the development and implementation of an annual and long-term operation and maintenance (O&M) plan that contains terms and conditions for managing future activities associated with Fox and Crescent Reservoirs. If repairs were authorized as described in Alternative Two, this would imply that the reservoirs would be retained for the foreseeable future to provide irrigation water. The development and implementation of an annual and long-term O&M plan would be made part of the decision that authorized the repair work.

The framework and content for this O&M plan is summarized in Sections 2.5 and 2.6.

2.2.1 Mitigation Measures and Monitoring Guidelines Developed by the Interdisciplinary Team for Alternative Two

In addition to the measures and Forest Plan Standards and Guidelines listed and discussed in Section 1.5 of Chapter One, the following mitigation measures and monitoring guidelines would be implemented to address public issues and management concerns:

Wilderness

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternative One.

- ✓ DGIC would prepare a safety plan that addresses procedures for evacuation of personnel from work sites in the case of life threatening situations. This safety plan would meet OSHA requirements.

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternative One.

Recreation

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternative One.

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternative One.

Vegetation

Mitigation Measures
- ✓ No mitigation measures are proposed for the borrow sites. The mitigation measures for livestock grazing would be the same as those proposed in Alternative One.

Monitoring Guidelines
- ✓ The monitoring guidelines would be the same as those outlined in Alternative One.

Terrestrial Wildlife

Threatened and Endangered Species

Canada Lynx –
Mitigation Measures
- ✓ None applicable

Monitoring Guidelines
- ✓ None applicable

Bald eagle
Mitigation Measures
- ✓ None applicable

Monitoring Guidelines
- ✓ None applicable

Sensitive Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Management Indicator Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Birds of Conservation Concern (Migratory Birds)

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Utah Partners In Flight Priority Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Aquatic Wildlife

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Management Indicator Species

Macroinvertebrates –

Mitigation Measures
- ✓ Specific mitigation would not be needed.

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Hydrology/Soils and Landform

Mitigation Measures
- ✓ There are no proposed mitigation measures for the borrow areas, since all borrow material would be extracted within the reservoirs. With the exception of borrow areas, mitigation measures would be the same as described in Alternative One.

Monitoring Guidelines
- ✓ Monitoring guidelines are the same as for Alternative One, with the addition of a trail condition inventory prior to the beginning of the project and the establishment of monitoring sites at key locations, tied to riparian and poor condition segments.

Cultural Resources

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternative One.

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternative One.

Inventoried Roadless Area

Mitigation Measures
- ✓ The measures would be the same as described for Alternative One.

Monitoring Guidelines
- ✓ The guidelines would be the same as described for Alternative One

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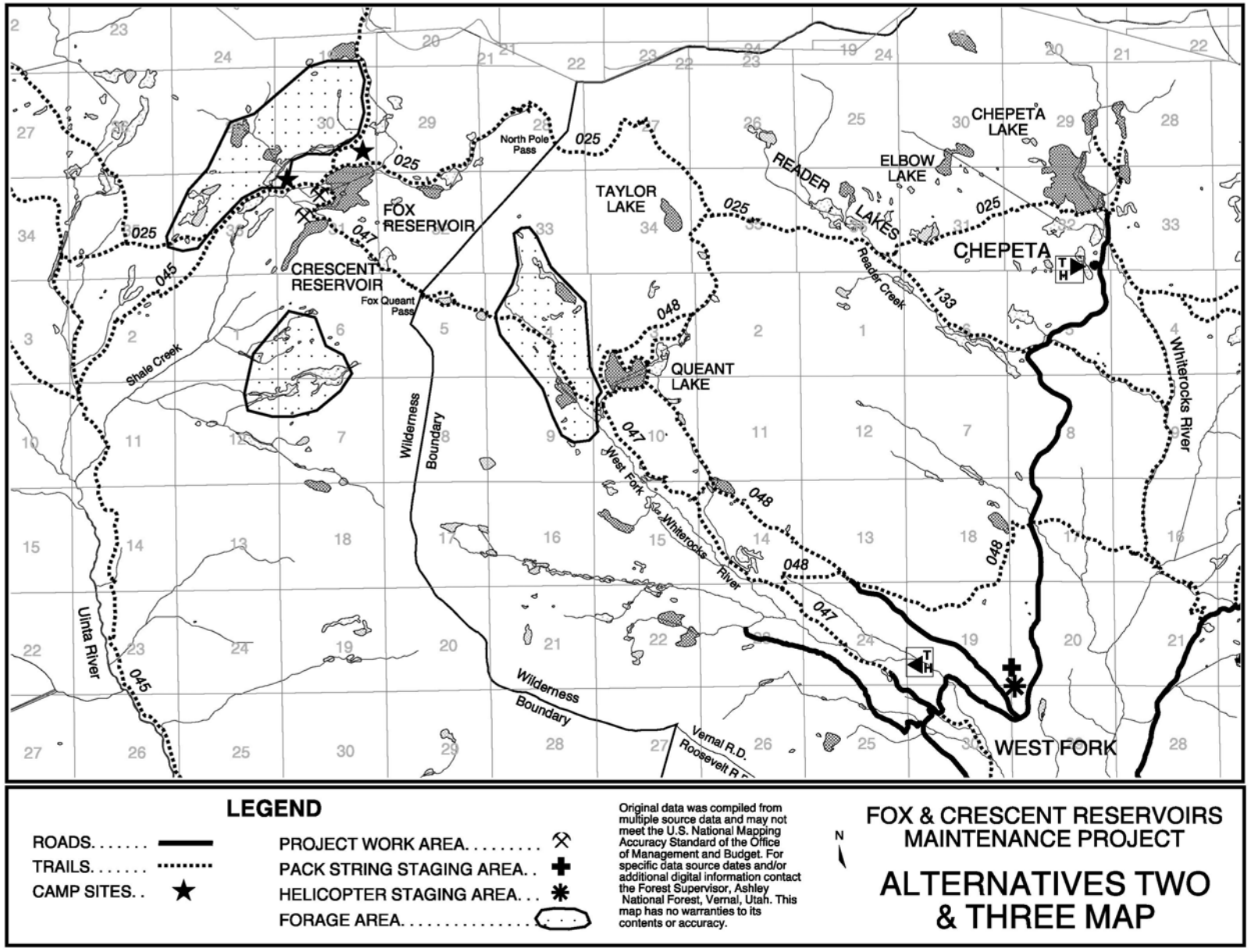
CHEPETA LAKE
ELBOW LAKE
READER LAKES
TAYLOR LAKE
FOX RESERVOIR
CRESCENT RESERVOIR
North Pole Pass
Fox Queant Pass
CHEPETA
Reader Creek
QUEANT LAKE
Shale Creek
Wilderness Boundary
West Fork Whiterocks River
Whiterocks River
Uinta River
Vernal R.D.
Roosevelt R.D.
WEST FORK
025
045
047
048
133
LEGEND
ROADS
TRAILS
CAMP SITES
PROJECT WORK AREA
PACK STRING STAGING AREA
HELICOPTER STAGING AREA
FORAGE AREA
Original data was compiled from multiple source data and may not meet the U.S. National Mapping Accuracy Standard of the Office of Management and Budget. For specific data source dates and/or additional digital information contact the Forest Supervisor, Ashley National Forest, Vernal, Utah. This map has no warranties to its contents or accuracy.
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FOX & CRESCENT RESERVOIRS MAINTENANCE PROJECT
ALTERNATIVES TWO & THREE MAP

2.3 ALTERNATIVE THREE

Maximize Traditional (non-motorized) Tools

The work items in this alternative would be the same as described in Alternatives One and Two.

For this alternative, Dry Gulch Irrigation Company (DGIC) would be required to remove the estimated 200 cubic yards of borrow material from within the reservoirs (reservoir bottoms) and not from the existing borrow sites.

(See Alternative Three Map, page 14)

This alternative would also include the use of the staging area located northwest of the junctions of Chepeta Lake Road #110 and the Queant lake Jeep Trail for helicopter and horse pack trip operations. The horsepacking routes would also be the same as described for Alternative Two, i.e., Queant Lake Jeep Trail, Queant Lake Trail #1048 and West Fork Whiterocks River Trail #1047, or Queant Lake Jeep Trail, Queant Lake Trail #1048 and Highline Trail #1025 to access the reservoir areas.

(Refer to Section 2.2 above and Alternative Three Map, page 14 for descriptions and illustrations of this staging area and trail use.)

This alternative would also require the development and implementation of an annual and long-term operation and maintenance (O&M) plan with terms and conditions for managing future activities associated with Fox and Crescent Reservoirs. If repairs were authorized as described in Alternatives One and Two, this would imply that the reservoirs would be retained for the foreseeable future to provide irrigation water. The development and implementation of an annual and long-term O&M plan would be made part of the decision that would authorize the repair work.

The framework and content for this O&M plan is summarized in Sections 2.5 and 2.6.

This alternative would maximize the use of traditional, i.e., non-motorized tools, equipment and transportation to complete the work items. Traditional is further defined as horse drawn or human powered equipment and tools used by early settlers and pioneers prior to the advent of today's motorized equipment.

The project could not be entirely accomplished by traditional means due to the need to meet dam construction standards and the weight and bulk of some of the project materials and supplies. This alternative could not eliminate the need for helicopter transport and the need for motorized/mechanical equipment on site. Personnel involved in this alternative would, however, make every attempt to carry in all materials and supplies that could be safely packed to the project site. This alternative would reduce the number of helicopter flights and increase the number of pack trips from those applicable to Alternatives One and Two. It would reduce the motorized/mechanical equipment at the site, the number of helicopter flights, and increase the time to complete the project.

It is estimated that this alternative would require approximately ten to twelve round trip helicopter flights. There would be 50 round trip pack trips. This would be an increase in the number of pack trips over Alternatives One and Two by 220 pack loads or 30 to 35 pack trips. Total pack loads would be approximately 450, with up to nine horses in each string.

This alternative would replace the work done by the Case 1838 skid loader with 4 to 6 draft horses, and the electric cement mixer with hand mixing of cement. The work would take a minimum of 21 working days to accomplish with draft horses. The number of stock days would nearly triple under this alternative and the impacted grazing areas would also increase substantially, as compared to Alternatives One and Two.

Personnel needed to complete the project would be expected to increase from a maximum of 14 persons under Alternatives One and Two to nearly 20 persons onsite. This would require at least two campsites in use at one time as opposed to one under Alternatives One and Two.

This alternative would nearly double the time it would take to complete the work – from approximately 35 days to approximately 65 days.

2.3.1 Mitigation Measures and Monitoring Guidelines Developed by the Interdisciplinary Team for Alternative Three

In addition to the applicable Forest Plan Standards and Guidelines listed and discussed in Section 1.5 of Chapter One, the following mitigation measures and monitoring guidelines would be implemented to address public issues and management concerns:

Wilderness

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternatives One and Two.

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternatives One and Two.

Recreation

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternatives One and Two

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternatives One and Two.

Vegetation

Mitigation Measures
- ✓ No mitigation measures are proposed for the borrow sites. The mitigation measures for livestock grazing would be the same as those proposed in Alternatives One and Two.

Monitoring Guidelines
- ✓ The monitoring guidelines would be the same as those outlined in Alternatives One and Two.

Terrestrial Wildlife

Threatened and Endangered Species

Canada Lynx –
Mitigation Measures
- ✓ None applicable

Monitoring Guidelines
- ✓ None applicable

Bald eagle
Mitigation Measures
- ✓ None applicable

Monitoring Guidelines
- ✓ None applicable

Sensitive Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Management Indicator Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Birds of Conservation Concern (Migratory Birds)

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Utah Partners In Flight Priority Species

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternative One (refer to Alternative One).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Aquatic Wildlife

Mitigation Measures
- ✓ Mitigations would be the same as discussed in Alternatives One and Two (refer to Alternatives One and Two).

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternatives One and Two (refer to Alternatives One and Two).

Management Indicator Species

Macroinvertebrates –

Mitigation Measures
- ✓ Specific mitigation would not be needed.

Monitoring Guidelines
- ✓ Monitoring would be the same as discussed in Alternatives One and Two (refer to Alternatives One and Two).

Hydrology/Soils and Landform

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternatives One and Two.

- ✓ If the Queant Lake Jeep Trail staging area location is selected, there should be a design for long-term use of the terminus as a trailhead, relocation and upgrading of the trail system, and a systematic look at the impacts to the watershed.

Monitoring Guidelines
- ✓ Monitoring guidelines would the same as Alternative One, with the addition of a trail condition inventory prior to the beginning of the project and the establishment of monitoring sites at key locations, tied to riparian and poor condition segments.

Cultural Resources

Mitigation Measures
- ✓ Mitigation measures would be the same as described in Alternatives One and Two.

Monitoring Guidelines
- ✓ Monitoring guidelines would be the same as described in Alternatives One and Two.

Inventoried Roadless Area

Mitigation Measures
- ✓ The measures would be the same as described for Alternatives One and Two.

Monitoring Guidelines
- ✓ The guidelines would be the same as described for Alternatives One and Two.

2.4 ALTERNATIVE FOUR

No Action (Baseline Comparison) –

The Proposed Maintenance Activities Would Not Take Place

The No Action Alternative means that the proposed maintenance activities would not take place. If repairs were not authorized as described in Alternatives One, Two and Three, a storage restriction would eventually be placed on both reservoirs. A Reservoir and Dam Restoration Plan would then be developed to restore the reservoir sites to as a safe condition over time.

The framework and content for the Reservoir and Dam Restoration plan is summarized in Sections 2.5 and 2.6.

At a minimum, the outlet works would need to be secured to insure that the reservoir did not fill if restrictions were put in place, and the spillway would need to be fully functional. These activities could be done with minimal impact and

would not require any use of motorized or mechanical tools, equipment, or access. Future actions that might be needed to secure the reservoirs would require a separate analysis and would be beyond the scope of this project proposal.

2.4.1 Mitigation Measures and Monitoring Guidelines Developed by the Interdisciplinary Team for Alternative Four

In addition to the measures and Forest Plan Standards and Guidelines listed and discussed in Section 1.5 of Chapter One, the following mitigation measures and monitoring guidelines would be implemented to address public issues and management concerns:

Wilderness

Mitigation Measures

- ✓ No mitigation measures would be required for the project. A dam and reservoir restoration plan would be prepared should there be future storage restrictions needed at the reservoirs or should some site restoration work need be undertaken.

Monitoring Guidelines

- ✓ Monitoring of the conditions at the reservoirs would continue for the foreseeable future to determine if the reservoirs could still be used for the intended purpose of supplying late season irrigation water. Should it be determined that either reservoir has failed, or that failure was imminent, the Forest Service would apply storage restrictions.

Recreation

Mitigation Measures

- ✓ New mitigation measures would not be needed for the dam and reservoir restoration plan that would be developed for this Alternative. Existing special user permit provisions would suffice.

Monitoring Guidelines

- ✓ Monitoring guidelines for the recreation resource would be those in the existing special use permit, which include annual inspections and requirements for correction of deficiencies with the dam and reservoir infrastructure.

Vegetation

Mitigation Measures

- ✓ No mitigation measures are proposed.

Monitoring Guidelines

- ✓ The studies in the Fox and Crescent Reservoir area would be used to continue long-term monitoring of impacts, due to recreational horse use and to monitor overall condition and trend for the area.

Terrestrial Wildlife

Mitigation/Monitoring

- ✓ No new mitigation or additional monitoring is proposed under this alternative.

Aquatic Wildlife

Mitigation/Monitoring

- ✓ No new mitigation or additional monitoring is proposed under this alternative.

Hydrology/Soils and Landform

Mitigation Measures

- ✓ Monitoring reports would be prepared by DGIC and/or the Forest Service every one to two years to assess resource protection needs.

- ✓ Additional NEPA would be done as resource protection needs were identified.

- ✓ Safety notices, articles, and other notification or use restrictions would be prepared as appropriate if potential dam failure created hazards to recreationists, DGIC, or other users.

Monitoring Guidelines

- ✓ Soil information would be collected at the range studies sites in conjunction with vegetation monitoring. These sites would be used for long term monitoring of impacts due to use in the area, and to help in assessing the overall condition of the watershed.

Cultural Resources

Mitigation Measures and Monitoring Guidelines

- ✓ Mitigation and monitoring of the restoration plan would have to be done in consultation with Utah SHPO if this Alternative is selected.

Inventoried Roadless Area

Mitigation Measures

- ✓ No new mitigation measures would be needed for the dam and reservoir restoration plan that would be developed for this alternative. Existing special use permit provisions would suffice.

Monitoring Guidelines

- ✓ Monitoring guidelines for the inventoried roadless area attributes would be those in the existing special use permit, which include annual inspections and requirements for correction of deficiencies, with no motorized access or mechanical tools.

2.5 GENERAL FRAMEWORK AND CONTENT OF THE ANNUAL AND LONG-TERM OPERATION AND MAINTENANCE (O&M) PLAN FOR ALTERNATIVES ONE, TWO, AND THREE

In response to the following issue and indicators from Chapter One, Section 1.8:

> Benefits of an Annual and Long-range Operation and Maintenance Plan –
>
> > Indicators – framework and content of an O&M Plan. Approval process for access, materials, tools and equipment.

Inspection of the dams and reservoirs, including monitoring of operation and maintenance work would be subject to the following process:

> As directed and guided by the Forest Service and State of Utah personnel, Dry Gulch Irrigation Company (DGIC) would adhere to the following process and procedure for initiating and completing all operation and maintenance work.
>
> - o DGIC would inspect the reservoirs annually, and report findings to the Forest Service.
> - o The Forest Service would provide direction to DGIC on what work should be done and the time frames for completion.
> - o DGIC would report back to the Forest Service and describe accomplishments.

The O&M Plan would include terms and conditions for routine and non-routine reservoir operation and maintenance activities. The Ashley National Forest Interdisciplinary (ID) Team developed the proposed "Terms and Conditions" as part of the evaluation and analysis process of the "Proposed Action" as described in Alternative One.

(See Table 2.a, pages 22 and 23 for descriptions of these terms and conditions.)

The proposed terms and conditions that result for this analysis would be made part of an Operation and Maintenance. These same terms and conditions could be used to condition a Ditch Bill Easement (Colorado Ditch Bill PL 99-545) for these reservoirs. The decision to condition the easement would be part of the Record of Decision (ROD) for the repair of the reservoirs.

Dry Gulch Irrigation Company would be required to prepare the O&M Plan. The Ashley National Forest would provide guidelines for the content, including Forest Service terms and conditions. The O&M Plan would have four principal sections:

> Section 1 – Annual Routine Operation and Maintenance, describing the responsibilities and work that would be done.
>
> *Annual routine operations and maintenance would be defined as any action and activity done on an annual basis that was classified as standard procedures, and could be accomplished with primitive tools and non-motorized access (refer to Table 2a, Item III, page 22).*

Section 2 – Long-term Non-routine Operation and Maintenance, describing the responsibilities and work that would be done. *Long-term non-routine operation and maintenance would be defined as any action and activity that was necessary to replace and restore dam and/or reservoir infrastructure (refer to Table 2.a, Item IV, pages 22 and 23).*

For Sections 1 and 2, Dry Gulch Irrigation Company would be required to extract all pertinent annual routine and long-term non-routine operational, maintenance, and other related requirements from the Forest Service Handbook and State of Utah Guides listed below, and would be required to address these requirements in the corresponding O&M Plan section.

The following Forest Service Handbook and State of Utah Guides describe operational and maintenance requirements applicable to permit or lease holders of dams and reservoirs on National Forest System lands. The requirements from these sources are made part of the EIS by reference.

- FSH 7509.11 WO Amendment 7509.11-93-1, Effective 8/5/93
- State of Utah Dam Safety Guide to Standard Operating Procedure – Development and Implementation, dated 1991
- State of Utah Dam Safety Guide to Routine Maintenance, dated 1991.

DGIC would also be required to describe any and all annual routine and long-term non-routine operation and maintenance work that is not included in the above referenced Forest Service Handbook and State of Utah Guides.

Sections 1 and 2 would also include time frames for completing O&M work.

Section 3 – Annual Routine Terms and Conditions, stating how operation and maintenance work would be approved and accomplished.

This section will contain "Terms and Conditions" that DGIC would follow in performing all work classified as annual routine by the Forest Service. These "Terms and Conditions" are described and illustrated in Table 2.a, Item III on pages 22 and 23, and are designed to meet the Forest Service Standards for Operation and Maintenance of the Fox and Crescent Reservoirs in the High Uintas Wilderness, as evaluated and analyzed in this EIS.

Section 4 – Long-term, Non-routine Terms and Conditions, dictating how operation and maintenance work would be approved and accomplished.

This section would contain "Terms and Conditions" for application and implementation of any and all actions proposed by Dry Gulch Irrigation Company that would be classified as long-term non-routine by the Forest Service. These "Terms and Conditions" are described and illustrated in Table 2.a, under Item IV on pages 22 and 23 and are also designed to meet the Forest Service Standards for Operation and Maintenance of the Fox and Crescent Reservoirs in the High Uintas Wilderness, as evaluated and analyzed in this EIS.

2.6 GENERAL FRAMEWORK AND CONTENT OF THE DAM AND RESERVOIR RESTORATION PLAN FOR ALTERNATIVE FOUR

The Dam and Reservoir Restoration Plan (Restoration Plan) would be part of the No Action Alternative for the Fox and Crescent Reservoir Maintenance Project EIS. This Plan would contain pertinent or specific direction from the Forest Service Handbook and State of Utah Guides listed above under Section 2.5. The Plan would specify that the permit or lease holder would operate and maintain the dam and reservoir on a year-to-year basis until dam failure occurred or was imminent, at which time the Forest Service would initiate and implement a "storage restriction" and require that the permit or lease holder plan and carry out restoration measures for

the dam and reservoir, under the time frames established by the Forest Service.

The Fox and Crescent Reservoir Restoration Plan would have four principal sections.

Sections 1 through 4

The information and direction included under Sections 1 through 4 for the Annual Routine and Long-term Non-Routine Operation and Maintenance (see item 2.5 above) would be followed in developing Sections 1 through 4 of the Dam and Reservoir Restoration Plan. The proposed "Terms and Conditions" on Table 2.a, pages 22 and 23 would also apply to any and all work proposed and implemented by DGIC as part of a "storage restriction" and/or dam and reservoir restoration.

Table 2.a
Proposed Terms and Conditions for Section III and IV of the Annual Routine and Long-term Non-Routine Operation and Maintenance Plan *(Alternatives One, Two and Three)*
and the
Proposed Dam and Reservoir Restoration Plan *(Alternative Four)*
Fox and Crescent Reservoirs

GENERAL DIRECTION	TERMS AND CONDITIONS
Section III – Annual Routine O&M Routine annual operation and maintenance would be defined as any action and activity done on an annual basis that is classified as standard procedures and can be accomplished with primitive tools and non-motorized access. All routine O&M Work would be required to comply with the Standards for the High Uintas Wilderness. *(Refer to FSH 7509.11 and State of Utah Guides for Standard Operating Procedures and Routine Maintenance)*	**Section III – Annual Routine O&M** Must meet Standards for the High Uintas Wilderness. All actions and activities would be done with primitive tools and non-motorized access. *(Primitive tools would be defined as non-mechanical, non-motorized hand tools.)*
Section IV – Long-term, Non-Routine O&M Long-term, Non-Routine operation and maintenance would be defined as actions done as needed to replace and/or restore dam and reservoir infrastructure. Due to the nature of the proposed methods of accomplishing the work, Standards for the High Uintas Wilderness would usually not be met; therefore, a "minimum tool evaluation" would be needed. *Examples: replacement of outlet works, earth movement activities to maintain free board, restoration of original dam prism.*	**Section IV – Long-term, Non-Routine O&M** Triggers and maintenance levels for non-routine O&M work – **(4 triggers)** **1. Emergency** – An emergency would be defined as threats to life, and federal and private property as determined by the Forest Supervisor. **2. Use of motorized/mechanical tools, equipment, and/or access for non-emergency O&M work – (2 maintenance levels)** Maintenance Level 1 – ▪ No motorized access ▪ Use of small motorized/mechanical equipment onsite ▪ *(Ex: chainsaw, wheelbarrow, pulley, jack, battery powered equipment, water pump, generator)* ▪ All equipment transported by packhorse(s) ▪ Work to be done on one day or no more than two consecutive days ▪ Onsite storage of gas, tools, or materials limited to two consecutive days (max. of 10 gal. of gas on site) *Note: Future work would be subject to Forest Service approval and any associated analysis requirements.* Maintenance Level 2 – ▪ Motorized/mechanical access *(Ex: pickup truck, ATV, snowmobile, helicopter)* ▪ Use of large motorized machinery on site *(Ex: bobcat, trackhoe, grader, skid loader)* ▪ Herbicidal treatments

Table 2.a continued

GENERAL DIRECTION	TERMS AND CONDITIONS
Section IV – Long-term, Non-routine O&M continued	**Section IV – Long-term Non-routine O&M continued** **2. Use of motorized/mechanical tools, equipment, and/or access for non-emergency O&M work – (2 maintenance levels) – continued** *Note: Maintenance Level 2 would be applicable to the Fox and Crescent Reservoir Proposed Action and Alternatives One, Two, and Three. The "minimum tool analysis" requirement will be addressed as part of the evaluation and analysis in the Fox and Crescent Reservoirs EIS. In this case, the Regional Forester would approve the Proposed Action or Alternative in a Record of Decision.* **3. Reconstruction –** Implies that a reconstruction site would occur within the High Uintas Wilderness to: a) reconstruct a failed dam/reservoir; and/or b) alter the physical features of the dam and/or the dam outlet works. ▪ Motorized/mechanical access *(Ex: truck, ATV, snowmobile, helicopter)* ▪ Use of large motorized machinery on site *(Ex: bobcat, trackhoe, grader, skid loader, dozer)* *Note: Future work would be subject to Forest Service approval and any associated analysis requirements.* **4. Enlargement or enhancement –** Implies increasing capacity of the reservoirs and reconstruction of the dam to accommodate increased storage of water. New features and infrastructure will not be authorized by an existing special use permit or Ditch Bill easement (PL 99-545), but will require separate authorization under a new permit or easement. ▪ Motorized/mechanical access (Ex: truck, ATV, snowmobile, helicopter) ▪ Use of large motorized machinery on site (Ex: bobcat, trackhoe, grader, skid loader) *Note: Future work would be subject to Forest Service approval and any associated analysis requirements.*

2.7 ALTERNATIVES CONSIDERED BUT DROPPED FROM FURTHER ANALYSIS

2.7.1 Do not allow the project to go forward, but remove the dams (restore the sites), and restore the natural conditions.

While this alternative is the long-term objective for the water users (once alternative storage is realized) and the Forest Service, this alternative is not feasible at this time. As discussed in Chapter 1, there are efforts underway (the 203(a) Project) to stabilize many of the reservoirs in the HUW. The stabilization of these reservoirs is made possible by the opportunity to provide alternate storage sites for the water.

In the case of the reservoirs in Uinta Canyon, an alternate storage site does not exist. The old Uinta Unit of the Central Utah Project planned to stabilize these reservoirs after construction of a new reservoir in the canyon at lower elevations on Ute tribal trust land. When this project was dropped, the opportunity to transfer the water storage rights was lost. Until alternate storage is found, or other methods that deliver water to the DGIC stockholders are implemented, it would not appropriate to take action to stabilize the reservoirs.

The dams and the reservoirs with the associated water storage rights are considered a valid existing right under the wilderness laws and need to be protected until such time as the opportunity exists to exercise those rights in a different manner, or the rights are voluntarily terminated by DGIC.

2.7.2 Modification of the Original Proposed Action

The scoping documents and the Notice of Intent published in the Federal Register described this alternative. The intent was to accommodate some variation in the proposed action's need for motorized/mechanical tools, equipment, or access, or in the methods used to accomplish specific work items. In addition, there are some opportunities that often become apparent during the analyses that would minimize the costs and impacts of the project.

Because DGIC has recently modified their proposal to become more efficient as they accomplish the project, and because small changes could be approved either in the Record of Decision (ROD) which will be based on this analysis, or in the operating plans, this alternative was no longer necessary.

2.7.3 The Original Proposed Action.

The original proposed action that was described in the scoping letters and the Notice of Intent to prepare an EIS has been modified by DGIC and is now restated as Alternative One. The revised proposed action contains important adjustments that are necessary to successfully complete the project. It is no longer necessary to continue to analyze this original proposal further in this EIS.

2.7.4 Perform Repairs Using Only Traditional Tools, Equipment, and Access

This alternative was given serious consideration due to the general prohibition against motorized tools and equipment and mechanical transport in the 1964 Wilderness Act. While the act provides for exceptions to meet the need for the proper administration of the area as wilderness, exceptions should only be used when the use of traditional tools, equipment and access are not reasonable or feasible under the circumstances.

In the case of this proposed activity, the requirement to meet current dam safety standards, and the need to transport heavy and bulky pipes, head gates, and other repair items, make it unreasonable, if not impossible, to complete the project using entirely traditional means. The dam was originally constructed using draft horses, Fresno scrapers, and wagons. The modern pipes, head gates, and grouting techniques require a different approach.

2.8 COMPARISON OF PROPOSED ACTION AND ALTERNATIVES CONSIDERED AND SUMMARY OF CONSEQUENCES

Table 2.b
Comparison of Proposed Action and Alternatives Considered

ALTERNATIVE PARAMETERS	ALTERNATIVE ONE Proposed Action	ALTERNATIVE TWO Modified Proposed Action	ALTERNATIVE THREE Maximize Traditional Tools	ALTERNATIVE FOUR No Action
Motorized Tools and Equipment and Mechanical Access Needed (Regional Forester decision)	1. One gas powered generator 2. One generator welder 3. Two portable electric cement mixers 4. Two wheel barrows 5. Two 2" water pumps 6. One hand operated compactor 7. One grout pump 8. One Case 1838 skid steer loader or equivalent 9. Backhoe attachment for skid loader.	Same as Alternative One	1. One gas powered generator 2. One generator welder 3. One portable electric cement mixer 4. One wheel barrow 5. One 2" water pump 6. One hand operated compactor. 7. One grout pump	None
Number of Pack Trips Required	20 pack trips – approx. 180 horse trips	Same as Alternative One	50 pack trips – approx. 450 horse trips	2 pack trips per year to check reservoir condition – anticipated water storage restriction implemented
Trail Use for Horse Pack Trips	Reader Basin Trail #133 and Uinta Highline Trail #025 or the Chepeta Trailhead using alternative Uinta Highline Trail #025d, and the Uinta Highline Trail #025.	Queant Lake Jeep Trail, Queant Lake Trail #048 and West Fork Whiterocks River Trail #047 or Queant Lake Jeep Trail, Queant Lake Trail #048 and Highline Trail #025	Same as Alternative Two	None
Number of Helicopter Flights Required with a K-max helicopter	18 to 20 round flights	Same as Alternative One	10 to 12 round flights	None

Table 2.b continued
Comparison of Proposed Action and Alternatives Considered

ALTERNATIVE PARAMETERS	ALTERNATIVE ONE Proposed Action	ALTERNATIVE TWO Modified Proposed Action	ALTERNATIVE THREE Maximize Traditional Tools	ALTERNATIVE FOUR No Action
Helicopter Staging Area, Flight Zones, and Road Access	Reader Creek meadows, or the Chepeta Trailhead area meadow with flights over North Pole Pass and/or Fox/Queant Pass. No new leveling of staging area. Existing road access available, and no vegetative clearing, grading or leveling required.	Area NW of junction of Queant Lake Jeep Trail and Chepeta Lake Road, with flights over North Pole Pass and/or Fox/Queant Pass. Minor leveling and vegetative clearing needed at staging area. Existing road access available, and minor grading required.	Same as Alternative Two	None
Number of Livestock Required	Varies from four to nine. (280 horse days)	Same as Alternative One	Varies from ten to fourteen (800 horse days)	Three to four per/year to check reservoir condition
Number of Personnel Needed	Varying from six to 14 personnel	Same as Alternative One	Varying from 10 to 20 personnel	Three to four per/year to check reservoir condition
Acres Impacted by Grazing Project Stock	Approximately 45 acres.	Same as Alternative One	Approximately 100 acres.	None
Number of Campsites Needed	One	Same as Alternative One	Two – at least one mile apart	None
Total Time for Project Completion	30 to 35 days	Same as Alternative One	60 to 65 days	None
Borrow Areas	Use of two existing borrow sites (200 cubic yards of material)	Removal of borrow material (200 cubic yards) from within the reservoirs, i.e., reservoir bottoms	Same as Alternative Two	None

Table 2.c
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Wilderness	▪ 30 to 35 day project period ▪ 6 to 14 workers ▪ Motorized intrusion (20 round trips by a helicopter, use of skid steer loader, and other mechanical equipment) ▪ Loss of wilderness attributes to visitors from noise, dust, exhaust, etc. ▪ Use of one campsite next to reservoirs (will reduce # of available campsites) ▪ Impacts to trails from 20 pack trips (180 horse trips) ▪ Use of forage by horses on approximately 45 acres ▪ Cumulative impacts from sustained and perpetual intrusion for O&M work to wilderness values, visitors, trails, and forage	▪ Same as Alternative One	▪ 60 to 65 day work period ▪ 14 to 20 workers ▪ Motorized intrusion (12 round trips by helicopter, and other mechanical equipment, no skid loader) ▪ Loss of wilderness attributes to visitors from noise, dust, etc. ▪ Use of two campsites next to reservoirs (will reduce # of available campsites) ▪ Impacts to trails from 50 pack trips (450 horse trips) ▪ Use of forage by horses on approximately 100 acres ▪ Cumulative impacts from sustained and perpetual intrusion for O&M work to wilderness values, visitors, trails, and forage	Development of a Dam and Reservoir Restoration Plan that leads to storage restrictions over time, based on deterioration of dam. ▪ Negligible impacts to Wilderness values from normal annual operation and maintenance activities ▪ No motorized intrusion ▪ No additional loss of wilderness attributes ▪ No additional impacts to trails ▪ No additional impacts to forage
Recreation **(Outside of Wilderness)**	▪ 1 pack trip per day for 5 weeks with short-term disturbance to recreation users along trails to reservoirs ▪ Short-term impacts to recreation users near staging area location from helicopter noise and dust (less than two hours at any one time)	▪ 1 pack trip per day for 5 weeks with short-term disturbance to recreation users along trails to reservoirs ▪ Short-term impacts to recreation users along flight routes from helicopter noise (less than ½ hour at any one time)	▪ 1 pack trip per day for 10 weeks with short-term impacts to recreation users along trails to reservoirs ▪ Short-term impacts to recreation users along flight routes from helicopter noise (less than ½ hour at any one time)	▪ Negligible impacts to recreation users or uses from normal annual operation and maintenance activities ▪ Negligible impacts to recreation users or uses from normal annual operation and maintenance activities

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Recreation continued (Outside of Wilderness)	▪ Short-term impacts to recreation users along flight routes from helicopter noise (less than ½ hour at any one time) ▪ Occupancy of a one parking area along Chepeta Lake Road during project period ▪ Cumulative impacts from sustained and perpetual intrusion for O&M work to recreation users and uses, and trails	▪ Minor impacts to recreation users near staging area location from helicopter noise and dust (*alternative location not along Chepeta Lake Road)*	▪ Minor impacts to recreation users near staging area location from helicopter noise and dust *(alternative location not along Chepeta Lake Road)* ▪ Cumulative impacts from sustained and perpetual intrusion for O&M work to recreation users and uses, and trails	
Vegetation	▪ 50 acres of suitable range required for 180 horse days of use ▪ Loss of vegetation from re-disturbing old borrow sites (less than ½ acre) ▪ Allowable use standard for livestock of available forage could be exceeded in the Wilderness *(due to competition between normal recreation horse use and project horse use.* ▪ Cumulative impacts to available forage from wildlife, recreation horse use and project horse use	▪ No loss of vegetation from borrow sites *(sites would be within the reservoir beds)* ▪ Same as Alternative One	▪ 142 acres of suitable range required for 450 horse days of use ▪ No loss of vegetation from borrow sites *(sites would be within the reservoir beds)* ▪ Allowable use standard for livestock of available forage more likely to be exceeded in the Wilderness than for Alternatives One and Two *(due to competition between normal recreation horse use and large number of project horses)* ▪ Cumulative impacts to available forage from wildlife, recreation horse use and project horse use (greater than Alts. One and Two)	▪ Less than 1 acre of suitable range for 10 horse days of use (normal operation and maintenance work) ▪ No other impacts

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Terrestrial and Aquatic Wildlife	▪ There would be short-term (35 days) disturbance to wildlife species, but no habitat fragmentation or permanent loss of habitat. ▪ There would be 50 acres of forage loss to some wildlife species and wildlife prey species for one season. ▪ Helicopter flights, work on the dams, mechanized equipment, 20 pack string trips of 9 horses, and disturbance from one campsite of 14 people would cause displacement of some wildlife. ▪ Helicopter flights could cause nest abandonment of some late nesting wildlife species.	▪ Same as Alternative One, except some impacts would switch from wildlife species in the Reader Creek area to wildlife species in the Queant area.	▪ Same as Alternatives One and Two, but there would be greater disturbances to wildlife from increasing the amount of time disturbances would occur to 65 days, increasing the amount of acres grazed to 142, increasing the number of pack string trips to 50, adding another campsite, and increasing personnel to 20. ▪ Reducing helicopter flights by 50% would reduce the possibility of nest abandonment by bird species ▪ A reduction in mechanized equipment at the dams would likely reduce some disturbance to wildlife.	▪ No short-term impacts. Long-term deterioration of the dams may eventually cause dam failure. Dam failure would degrade riparian habitat below the dams and would degrade some wildlife habitat.

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Terrestrial and Aquatic Wildlife continued	**Aquatic** ▪ Temporary loss of ½ to ¾ mile of stream habitat and potential mortality caused by entrapment in Shale Creek during construction. ▪ Potential reduction of eggs/fry for fall-spawning species in reservoir outlet streams, due to instream sediment below reservoirs from maintenance work (short-term, 1-2 years) ▪ Potential shift of macro-invertebrate taxa from clean-water to sediment-tolerate species in outlet streams (short-term) ▪ No measurable cumulative impacts	**Aquatic** ▪ Same as Alternative One, but would have less sediment, due to additional mitigation measures, so less effect on fish habitat	**Aquatic** ▪ Same as Alternatives One and Two, but there would be greater stream sediment, due to increased number of horses and increased length of days to complete project work. Both of these circumstances would increase sediment and breakdown of stream banks at trail crossings. Effects could be longer than in Alternatives One and Two if greater bank damage occurred.	**Aquatic** ▪ No short-term effects would occur. ▪ Long-term deterioration of the dam would affect water quality and channel integrity below both dams, which would affect the fish habitat in streams below the reservoirs. The resulting sediment and possible stream channel degradation could create long-term fish habitat problems.

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Hydrology	**Water Rights –** ▪ Increased control by Dry Gulch Irrigation Company (DGIC) with new headgate **Water Quality at Reservoirs and areas downstream –** ▪ Increased stream sediment during the first year or two after maintenance work, but less sediment over time (due to improvement of dam condition and reduced breach potential) ▪ Short-term increase in water temperature during maintenance work from suspended sediment of if drawdown was greater than normal. **Water Quality in Reader Creek drainage –** ▪ Short-term increase of sediment from increased use of Reader Creek Trail and meadow. Little sediment increase would occur if Chepeta Trailhead and trail were used. **Water Quality in West Fork of Whiterocks Drainage –** ▪ No change from baseline; area not used.	**Water Rights –** ▪ Same as Alternative One **Water Quality at Reservoirs and areas downstream –** ▪ Same as Alternative One **Water Quality in Reader Creek–** ▪ No change from baseline; area not used. **Water Quality in West Fork of Whiterocks drainage –** ▪ Short-term increase of sediment from increased trail use.	**Water Rights –** ▪ Same as Alternative One **Water Quality at Reservoirs and areas downstream –** ▪ Same as Alternatives One and Two, except impact would occur over a longer period of time, due to increased number of days and stock to complete the work. Effects likely greater than 1-2 years. **Water Quality in Reader Creek–** ▪ Same as Alternative Two (no use). **Water Quality in West Fork of Whiterocks drainage and Queant Lake area –** ▪ Longer duration of effects than Alternatives One and Two, due to more project days and increased stock numbers.	**Water Rights –** ▪ DGIC's ability to use their water rights would gradually decline as dam deteriorated **Water Quality at Reservoirs and areas downstream –** ▪ Dam deterioration would become a major source of sediment and stream channel degradation over long-term period. **Water Quality in Reader Creek or West Fork of Whiterocks drainages, Queant Trail/Lake–** ▪ No additional impacts would occur.

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Hydrology continued	**Riparian/Streams/Wetlands at Reservoirs and areas downstream –** ▪ Vegetation utilization/ trampling from horse use. **Riparian/Streams/Wetlands in Reader Creek drainage –** ▪ Vegetation utilization/ trampling would occur. Some stream bank breakdown would occur at trail crossings (less problem with use of Chepeta Trailhead, due to reduced stream crossings). ▪ **Cumulative Impact** to the Water Quality and Riparian/Streams/ Wetlands would be short-term and associated with recreation use at reservoirs and along trails and in forage areas.	**Riparian/Streams/Wetlands at Reservoirs and areas downstream –** ▪ Same as Alternative One. **Riparian/Streams/Wetlands in West Fork of Whiterocks drainage –** ▪ There would be short-term impacts to areas from horse use along trails. Longer-term impacts may occur at stream crossings, due to possible bank deterioration. ▪ **Cumulative Impact** to the Water Quality and Riparian/ Streams/Wetlands would be short-term and associated with recreation use at reservoirs and along trails	**Riparian/Streams/Wetlands at Reservoirs and areas downstream –** ▪ Similar to Alternatives One and Two, except over longer period of time, due to more project days and increased stock numbers. **Riparian/Streams/Wetlands in West Fork of Whiterocks drainage –** ▪ Similar to Alternative Two, except over longer period of time, due to more project days and increased stock numbers. More stream bank breakdown would be expected. Forage area recovery period would be longer than Alternative Two. ▪ **Cumulative Impact** to the Water Quality and Riparian /Streams/ Wetlands are associated with recreation use at reservoirs and along trails. Impacts would occur over a longer period of time, due to longer project work period and increased stock numbers. Forage area recovery would be similar to Alternative Two, but stream bank breakdown at trail crossings could be more severe and of longer duration.	**Riparian/Stream/Wetlands at Reservoirs and areas downstream –** ▪ Similar to current condition in the short-term; reduced riparian and wetland habitat in the long-term. **Riparian/Streams/Wetlands in Reader or West Fork of Whiterocks drainages –** ▪ No additional impacts would occur. ▪ **Cumulative Impacts** to water quality and Riparian/ Streams/Wetlands would reduce the quality of wilderness values, with a corresponding reduction of recreation in the vicinity of the reservoirs and streams below.

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Soils and Landform	▪ Increased horse use at the reservoirs would have minimal impacts ▪ Re-opening existing borrow areas would result in a long-term impact, due to lack of top soil and low fertility ▪ Minimal impacts to soils at Reader meadow staging area and along the Reader Basin Trail ▪ Cumulative impacts from past grazing associated with recreation horse use, elk and deer	▪ Increased horse use at the reservoirs would have minimal impacts ▪ No impacts to soils with borrow areas located within the reservoir bed ▪ Minimal impacts to soils at the Queant Lake Jeep Trail Staging Area, but moderate impact to soils along the West Fork of Whiterocks Trail ▪ Cumulative impacts from past grazing associated with recreation horse use, elk and deer	▪ Same as Alternative Two, but over a longer period of time. ▪ Cumulative impacts from past grazing associated with recreation horse use, elk and deer (greater than Alternatives One and Two, due to longer period of project work)	▪ Negligible impacts for annual maintenance activities ▪ Deterioration of the dam would cause channel erosion downstream for one mile or less ▪ Failure of the dam would cause significant erosion downstream for two to five miles
Cultural Resources	▪ There would be an adverse effect to the National Register eligible site (Fox Reservoir Dam) ▪ The campsite at the reservoirs could disturb National Register eligible sites	▪ Same as Alternative One	▪ Same as Alternatives One and Two	▪ No immediate impact, but any work done under the Dam and Reservoir Restoration Plan could have adverse impacts to the National Register eligible sites

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Inventoried Roadless Area	**Natural Integrity –** ▪ No effects **Apparent Naturalness –** ▪ Moderately high rating would change to moderately low during project period, then return to moderately high, due to helicopter operations **Remoteness –** ▪ Moderate rating would change to moderately low during project period, then return to moderate, due to helicopter operations **Solitude –** ▪ Moderately high rating would change to moderately low during project period, then return to moderately high, due to helicopter operations **Special Features –** ▪ No impacts **Manageability/Boundaries –** ▪ No impacts ▪ Cumulative Impacts would be those associated with repeated intrusions by motorized access to maintain or repair	**Natural Integrity –** ▪ Same as Alternative One **Apparent Naturalness –** ▪ Same as Alternative One **Remoteness –** ▪ Same as Alternative One **Solitude –** ▪ Same as Alternative One **Special Features –** ▪ Same as Alternative One **Manageability/Boundaries –** ▪ Same as Alternative One ▪ Cumulative Impacts would be those associated with repeated intrusions by motorized access to maintain or repair the dam and reservoirs	**Natural Integrity –** ▪ Same as Alternative One **Apparent Naturalness –** ▪ Same as Alternatives One and Two, but over a longer period of time, due to increase project period **Remoteness –** ▪ Same as Alternatives One and Two, but over a longer period of time, due to increase project period **Solitude –** ▪ Same as Alternatives One and Two, but over a longer period of time, due to increase project period **Special Features –** ▪ Same as Alternative One **Manageability/Boundaries –** ▪ Same as Alternative One ▪ Cumulative Impacts would be those associated with repeated intrusions by motorized access to maintain or repair the dam and reservoirs	▪ No changes in existing attributes for the inventoried roadless area

Table 2.c continued
Summary of Consequences of Proposed Action and Alternatives

Resource Values	Consequences			
	Alternative One – Proposed Action	**Alternative Two – Modified Proposed Action**	**Alternative Three – Maximize Traditional Tools**	**Alternative Four – No Action (Baseline Comparison)**
Socioeconomic Consequences are shown as levels of crops, values, and production associated with water from Fox and Crescent. **The average annual reduction in the levels of crops, values and production apply to all Alternatives.**	**Average annual reduction in level of crops, values and production if the 0.3 acre-feet of water from Fox and Crescent Reservoirs is not available:** ▪ 0.5 tons per acre of Alfalfa ▪ 0.4 tons per acre of Meadow Hay ▪ 8.4 bushels per acre of Oats ▪ 164 cow/calf units ▪ 7 head of horses ▪ 49,176 lbs of meat production ▪ $80,321 of commodity value of meat ▪ $92,680 associated with value of 1,324 acre-feet of stored water in the reservoirs ▪ Unquantifiable loss of employment and associated wages **Average annual receipts of Crop Production on the irrigated lands as compared to Crop Receipts in Uintah and Duchesne Counties with and without use of water from Fox and Crescent Reservoirs:** With use of the water = 5.1% of the average annual receipts for Duchesne and Uintah Counties Without use of the water = 4.4% of the average annual receipts for Duchesne and Uintah Counties **Average annual Commodity Value of Meat from cow/calf production on the irrigated lands as compared to Livestock Receipts in Uintah and Duchesne Counties with and without use of water from Fox and Crescent Reservoirs:** With use of the water = 1.2% of the average annual commodity value of meat for Duchesne and Uintah Counties Without use the of water = 1.1% of the average annual commodity value of meat for Duchesne and Uintah Counties			