Chapter 4: Environmental Consequences

This chapter describes the anticipated impacts of the Red Fleet Reservoir Resource Management Plan (RMP) alternatives on resource areas described in Chapter 3: partnerships, water, recreation and visual, natural and cultural, and land management resources. Current conditions for these resources on U.S. Bureau of Reclamation (Reclamation) administered federal lands at Red Fleet Reservoir RMP Study Area (Study Area) were described in Chapter 3 and establish the baseline for the impact analysis. To the extent possible, the analysis provides quantitative impact estimates from the various alternatives in order to facilitate comparisons among alternatives during the decision-making process.

Issues Considered but Eliminated from Detailed Analysis

Some resource issues were beyond the scope of the analysis or were determined to not be relevant issues, and were therefore not evaluated in detail. Specifically:

- water operations are governed by existing legal commitments and water rights constraints and are not within the scope of decision to be made based on this Environmental Assessment; and

- the assessment of existing conditions (Chapter 3) determined that there were no Environmental Justice communities in the Study Area and therefore no disproportionate effects to minority or low-income populations would result from implementation of any of the RMP alternatives.

Partnerships

This section provides an assessment of how each alternative would impact resource partnerships between Reclamation and other stakeholder entities. Sources consulted in developing this information were personal correspondence with Reclamation team members, Utah Division of State Parks and Recreation (State Parks) officials, and partner agency representatives listed in Chapter 5.

Issue

How would implementation of the RMP affect resource management partnerships for the Study Area?

Impact Indicators

The following impact indicator was used to determine if implementation of the RMP would affect resource management partnerships within the Study Area:

- change in the number and type of resource management partnerships.

Analysis Methods

Partnerships needed to accomplish RMP goals related to each alternative were assessed based on agency experience associated with similar past activities at the Study Area and at other comparable Reclamation facilities.

Summary of Impacts

Under Alternative A, current resource management partnerships would continue in much the same way as they currently exist. Under Alternative B or C, resource management presence would increase within the Study Area with the likely opportunity for additional partnerships (Table 4-1).

Table 4-1. Summary of Partnership Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the number and type of resource management partnerships	No change to the number and type of partnerships. Existing partnerships include: • U.S. Bureau of Land Management • U.S. Fish and Wildlife Service • Utah Division of State Parks and Recreation • Uintah Water Conservancy District • Utah Division of Wildlife Resources • Utah Department of Environmental Quality • Utah Department of Transportation • Uintah County	Current partners listed for Alternative A would remain with increased responsibilities related to a conservation emphasis. Potentially new resource management partners include local conservation organizations and adjacent landowners.	Same as Alternative B, plus additional responsibilities and/or partnerships related to a recreation development emphasis. Potentially new resource management partners include those listed for Alternative B and also local recreation interest groups.

Alternative A: No Action

Because management goals would not change substantially from existing conditions, it is likely that the same partnerships currently in place with federal, state, and local governments would continue in the same manner as described in Chapter 3. Therefore, Alternative A partnerships would have little or no impact on resource management within the Study Area. While some erosion control measures would be implemented at existing recreational sites, impacts to vegetation, wildlife, and water quality at the Study Area would likely continue. No new interpretation or public education facilities for cultural or natural resources within the Study Area would be constructed.

As the sole recreation manager for Red Fleet Reservoir, State Parks would continue to manage recreational activities within the Study Area. Management of fish and wildlife resources within the Study Area by the Utah Division of Wildlife Resources (UDWR) and the U.S. Fish and Wildlife Service (USFWS) would continue with little or no changes under Alternative A. All law enforcement and fire suppression activities would continue to be provided primarily by State Parks, UDWR, Uintah County, and the Uintah Basin Interagency Fire Center. State and county road maintenance activities would not change under Alternative A and would continue under the direction of the Utah Department of Transportation (UDOT) and Uintah County. Water quality oversight would still be provided by the Utah Department of Environmental Quality. Alternative A would not impact existing agreements between Reclamation and the Bureau of Land Management (BLM) regarding minerals leasing and development within the Study Area.

Alternative B: Resource Conservation Emphasis

Because of its emphasis on conservation and enhancement of Study Area natural resources, Alternative B would provide opportunities for additional resource management partnerships. Additional cooperation would be needed with adjacent landowners (government and private) to achieve optimal protection of resources. Alternative B would increase some management roles for current partnerships as described below for cumulative impacts.

Recreation management within the Study Area would continue to be provided by State Parks under Alternative B. The level of management is expected to increase for some management areas and decrease for others. New and improved types of visitor experiences would be created by designating Natural Areas around the reservoir, restricting access to sensitive areas, and providing increased trail connectivity between developed facilities. Enhanced public information and interpretation pertaining to Study Area natural, recreational, and cultural resources would also enhance visitor experiences. Such facilities would likely help reduce impacts to resources by increasing visitor education and ultimately lessening the management burden on partnering agencies.

Management of fish and wildlife resources would continue under the jurisdiction of the UDWR and USFWS. However, under Alternative B more proactive management of these resources would likely occur. Items include providing additional angling opportunities, improving wildlife habitat with the implementation of erosion control and revegetation measures using native plant species, and managing Natural Areas for conserving important wildlife habitat. Additional partnerships would be created with local conservation organizations dedicated to improving these resources and associated opportunities.

Water rights and water operations are outside of the scope of the Red Fleet Reservoir RMP; therefore, partnering relationships related to these resources would not be impacted by this alternative. A partnership agreement for minerals leasing and development currently exists with the BLM and would not change under Alternative B. Law enforcement and fire suppression activities and partnerships are not likely to be impacted under Alternative B. Road maintenance activities on Study Area and surrounding roads are currently under the direction of UDOT and Uintah County. This would not change under Alternative B.

Alternative C: Recreation Development Emphasis

Recreation management is expected to increase under Alternative C because of an increase in developed recreation facilities. In addition to enhanced trail connectivity, fishing opportunities, and interpretive programs described for Alternative B, Alternative C would expand existing Developed Day Use, Developed Overnight, and Developed Day Use and Overnight Group Recreation Areas. In site design, rental cabins and/or yurts may be added. Alternative C would also add a new Developed Day Use Recreation Area at the North Beach Area and a Developed Overnight and Day Use Group Recreation Area at the South Beach Area. Collectively, these additions would likely increase annual State Park visitation, particularly during the shoulder seasons in spring and fall. Reclamation and State Parks would likely pursue expanded partnerships with Uintah County, BLM, and private recreation user groups to help manage use and facility maintenance. Private concessions may also be pursued as an option.

Partnerships for water rights and water operations, minerals development, fish and wildlife management, law enforcement and fire suppression, highway maintenance, and water quality would be the same under Alternative C as described for Alternative B. As with Alternative B, additional partnerships would be facilitated with adjacent landowners, USFWS, and UDWR related to protection of Study Area natural resources.

Cumulative Impacts

Past partnerships have helped shape the existing resource conditions and recreational opportunities at the Study Area. An example is the Dinosaur Trackway hiking trail, which enters the Study Area from a trailhead located on BLM-administered federal lands. Trends in recreation user preferences for land- and water-based recreation activities are another outside influence on the Study Area that resource managers would have to address as the need arises.

Regardless of the RMP alternative selected, State Parks would continue to have responsibility to identify and enforce recreation capacities, identify appropriate recreational use areas for various activities, and manage user conflicts. Selecting one of the two action alternatives (i.e., Alternatives B and C) would provide greater specificity and management area direction that would be utilized by Reclamation, State Parks, and other partners in making these management decisions.

Mitigation Measures

No mitigation measures related to partnerships would be required.

Residual Impacts

No residual impacts related to partnerships would occur as a result of selecting any RMP alternative.

Water Resources

Issue

How would implementation of the RMP affect water resources within the Study Area?

Impact Indicators

The following impact indicators were used to determine if implementation of the RMP would affect water quality within the Study Area:

- change in the amount of unimproved roads,
- change in the amount of nonmotorized trails,
- change in the amount of developed recreation areas,
- change in the amount of Natural Areas, and
- change in the number and types of toilet facilities.

Impact indicators were assessed on two scales, for the overall Study Area and for areas within 50 feet of a water body. For the overall Study Area, changes in land use affect stormwater runoff and potential for erosion to occur in a particular area. Areas with more development, particularly areas with impervious surfaces, would generate more stormwater runoff, potentially increasing erosion. Sediment yields increase with greater stormwater and erosion. Changes in land use within 50 feet of a water body are more likely to impact water quality since pollutants are more readily transported or directly discharged into the water body. This buffer represents the area 50 feet from the reservoir full pool elevation or from a tributary channel. It does not include information about riparian vegetation or other characteristics of the area within the 50-foot buffer. Toilet facilities, both septic systems and vault toilets, are indicators of the potential for water quality impacts, specifically in terms of bacteria, pathogens, and other human-health-related water quality concerns, in addition to nutrient loading.

The proposed RMP alternatives would have essentially no impact on reservoir temperature, the parameter for which the reservoir is currently listed as impaired. Temperature is predominantly controlled by the temperature of the water entering the reservoir, the amount of solar radiation, and reservoir depth, none of which are within the scope of the RMP decision.

Analysis Methods

Background information on existing water resource conditions was compiled from a variety of sources, as described in Chapter 3. This information was used in conjunction with the impact indicators to evaluate the impacts of the RMP alternatives on Study Area water quality. A Geographic Information Systems (GIS) analysis was completed to determine the acreage of land use, linear feet of trail, and recreation facility development within each management area, as well as within 50 feet of a water body, for the water resource impact assessment.

Summary of Impacts

Overall, the three RMP alternatives would be expected to have slightly different impacts on Study Area water resource conditions. Alternative A would not change water resource conditions directly; however, lack of an RMP combined with the potential for growing use and water demands would leave Red Fleet Reservoir open to increases in erosion and sediment generation near the reservoir, and therefore the potential for decreases in water quality within the reservoir. Although Red Fleet Reservoir visitation numbers have remained fairly flat over the past decade, strong recent population growth in Uintah County creates the potential for increased visitation. Each of the RMP action alternatives includes elements of improved resource management, reclamation of disturbances, and implementation of stormwater management facilities that would

benefit water quality and provide better preparation for accommodating future increases in visitation and resource use relative to the No-Action Alternative.

Comparisons of the alternatives indicate that Alternative B would benefit the Study Area water quality to the greatest extent because of the reduction in ground disturbance as well as improved resource management. Alternative C would lead to slight net improvements in water quality over existing conditions because of improved resource management, but to a lesser extent than Alternative B because of the increased development and ground disturbance associated with Alternative C. Assessments of the impact indicators for water resources are summarized for each alternative in Table 4-2.

Table 4-2. Summary of Water Resource Impacts to Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the amount of unimproved roads due to decommissioning and/or conversion to nonmotorized trail	No change from existing conditions (14 total miles of unimproved roads, including 5 miles within 50 feet of the reservoir or a tributary stream).	Decrease of 2.3 miles of unimproved roads, including a decrease of 0.7 mile within 50 feet of the reservoir or a tributary stream.	Decrease of 2.3 miles of unimproved roads, including a decrease of 0.7 mile within 50 feet of the reservoir or a tributary stream.
Change in the amount of nonmotorized trails	No change from existing conditions (1.1 miles of nonmotorized trails within the Study Area, including 0.2 mile within 50 feet of the reservoir or tributary stream).	Increase of 0.2 mile of nonmotorized trail in the East Side Area (at Lookout Point).	Increase of 1.8 miles of nonmotorized trail, including 1.4 miles within 50 feet of the reservoir or a tributary stream.
Change in the amount of developed recreation areas	No change from existing conditions (11 acres of developed recreation areas).	No change from existing conditions (11 acres of developed recreation areas).	Increase of 23 acres of developed recreation areas to a total of 34 acres. Increase of 13.3 acres of developed recreation area within 50 feet of a stream or the reservoir.
Change in the amount of Natural Area	No change from existing conditions (no existing Natural Areas).	Increase of 1,435 acres of Natural Area. Increase of 375 acres of Natural Area within 50 feet of a stream or the reservoir.	Increase of 1,000 acres of Natural Area. Increase of 255 acres of Natural Area within 50 feet of a stream or the reservoir.
Change in the number and types of toilet facilities	No change from existing conditions.	Additional vault toilet at the Lookout Point trailhead (East Side Area). No change in septic system at the State Park Area.	Additional vault toilets within the State Park, South Beach, North Beach, and East Side areas. Septic system at the State Park Area may require upgrade or expansion.

Alternative A: No Action

Current trends in water resource conditions would continue under Alternative A. No changes would occur in water management and operation of Red Fleet Reservoir, and the existing impacts of Red Fleet Dam on the hydrology, floodplain, and channel conditions of Big Brush Creek would continue. Existing levels of unauthorized off-highway vehicle (OHV) use and associated runoff and sediment impacts would be expected to continue. No specific projects to control erosion and soil compaction at the Dinosaur Trackway hiking trail would be implemented. However, improved stormwater control design elements would be incorporated into any redesign or rehabilitation projects completed at existing recreational sites as part of ongoing management and maintenance efforts. The existing septic system at the State Park management area would continue to function in the same manner it does currently.

Under Alternative A, no specific plans would be in place to further study, manage, or address any of the existing potential pollution sources. Current trends in water quality would continue if the number of users (i.e., the number of people camping, boating, and swimming) remains the same. Water quality would potentially decline if actual use increases. Although Red Fleet Reservoir visitation numbers have remained fairly flat over the past decade, strong recent population growth in Uintah County creates the potential for increased visitation and use in the future. With increased human activity, the types of potential pollutant sources that currently exist would not change, but the amount of pollutants would increase. Pollutants include oil and gas and metals from vehicles such as cars, trucks, all-terrain vehicles, and boats. Garbage, human waste, food waste, and stormwater-borne sediment and phosphorus and other potential pollutants that could contribute to water quality issues—particularly bacteria, pathogens, algal blooms, and low dissolved oxygen.

Alternative B: Resource Conservation Emphasis

The changes associated with Alternative B described below would have overall positive impacts for Red Fleet Reservoir water quality by reducing erosion, stormwater runoff, and accumulation of trash, human waste, and vehicle-associated pollutants in remote portions of the Study Area.

Change in the Amount of Unimproved Roads

Under Alternative B, the amount of unimproved roads within the Study Area would decrease by a total of about 2.3 miles. Most of this decrease would result from decommissioning of redundant motorized access. This change would reduce the amount of disturbed bare ground in the Study Area and increase vegetation cover, resulting in improved infiltration and reduced surface runoff potential. This reduction in runoff would reduce the potential for erosion and sediment pollution within the decommissioned unimproved road areas. The benefits to water quality would be greatest where decommissioning occurs close to the reservoir shoreline or tributary drainage channels. Under Alternative B, 0.7 mile of unimproved road would be decommissioned within 50 feet of the reservoir or tributary channels.

Reduction in the amount of unimproved roads would have positive impacts for water quality because it is likely to reduce levels of vehicle-related pollution including oil and gas spills; erosion and related sediment and dust deposition that can increase the Total Suspended Solids (TSS) load; and metal contaminants (generally lead, copper, and silver). Reducing the amount of

unimproved roads would also reduce the number of users in more remote areas, which would reduce trash, garbage, and human waste accumulation.

More than a mile of user-created unimproved roads would be decommissioned in the South Side Area, reducing sediment inputs to nearby tributary washes and to the reservoir. However, none of the decommissioning in this area lies within 50 feet of a water body, so the expected improvements in water quality associated with reduced stormwater runoff and human activity would be relatively minor but nevertheless would improve watershed vegetation cover and reduce soil disturbance.

Portions of the proposed decommissioning in the Dinosaur Trackway, East Side, and North Beach areas would also occur close to the reservoir and to tributary drainage channels, and benefits to water quality would be correspondingly enhanced.

Change in the Amount of Nonmotorized Trails

Under Alternative B, the length of nonmotorized trails in the Study Area would increase by 0.2 mile. This change would result from development of a new nonmotorized trail to Lookout Point in the East Side Area. The trail construction would occur in conjunction with decommissioning and reclamation of an adjacent section of an unmaintained road. Because the new trail would have a smaller disturbance footprint, the combined net result would be a reduction in disturbed area, which would improve infiltration and reduce the potential for erosion and sediment-laden runoff. These benefits would be expected to be quite minor, as the affected area is relatively small and the majority of the trail length is not close to a water body.

Because the new trails would facilitate human movement, there is potential for trash and garbage to be present. In addition, in areas where the trail comes close to the reservoir, people may create footpaths off of the main trail, increasing impacts related to sediment and erosion as well as human waste. These impacts would be minimal if few people use the spurs and remain on the trail. Leaving any existing riparian vegetation buffer areas intact would help mitigate potential impacts. Overall, because the length of proposed trail near the reservoir is small, the effects to water quality would be minor.

Change in the Amount of Developed Recreation Areas

There would be no change in the amount of developed recreation areas from existing conditions in the Study Area under Alternative B.

Change in the Amount of Natural Area

Within the 1,435 acres of Natural Area proposed with Alternative B, off-trail recreational access would be discouraged by measures such as signage, more frequent patrolling and monitoring, and potential closures during sensitive time periods. Efforts to monitor OHV activities would be implemented more aggressively in Natural Areas. More stringent erosion control measures would also be implemented. All of these measures would be integrated into a Habitat Management Plan to be developed as an objective of Alternative B. These changes would result in a slight reduction in the amount of disturbed ground within the Study Area. Natural Area designations within the Inflow and East Side areas would increase protection of sensitive riparian floodplain areas adjacent to Big Brush Creek above and below the reservoir, and would have

substantial benefits in these localized areas. However, the overall benefits to reservoir water quality would be minor.

As discussed in Chapter 3, floodplain and riparian functions of Big Brush Creek are currently degraded in the area below the dam due to hydrologic alterations and agricultural practices. If restoration efforts (e.g., no-mow buffer practices, riparian plantings) were implemented in conjunction with the Natural Area designation, substantial benefits to riparian functions would be achieved. Benefits would include increased shading, reduced amounts of bank erosion and sediment loading, and increased filtration of sediment and pollutants.

Under Alternative B, approximately 375 acres of Study Area lands within 50 feet of the full pool shoreline would be designated as Natural Area. This designation would contribute to maintaining and potentially improving water quality. There would be a reduction in trash, food waste, human waste, and erosion and sedimentation. Such reductions would reduce the nutrient load to the reservoir, effectively reducing potential for algal blooms, eutrophication, and subsequent dissolved oxygen issues. In addition, the vegetation and soils in these areas along the water body would not be trampled, allowing the area to act as a filter for stormwater generated upslope of the Natural Area shorelines. In general, areas so managed are highly effective in filtering and retaining pollutants such as sediments, nutrients, and metals often associated with stormwater.

Change in the Number and Type of Toilet Facilities

Under Alternative B, vault toilets would be added at the Lookout Point trailhead. Improvement of the trailhead would encourage increased human presence at the trailhead and reservoir shoreline at the East Side Area, potentially increasing sediment and trash. However, providing toilets would reduce pollution from human waste including bacteria, pathogens, viruses, and nutrients. Including animal-proof trash receptacles would mitigate potential trash issues at a new trailhead. Since the trailhead is some distance away from a water body, these facilities would have less impact on water quality but are important for human health reasons and as components of the overall management strategy under Alternative B. The existing septic system at the State Park Area would continue to function in the same manner as it does currently.

Alternative C: Recreation Development Emphasis

With well-designed and implemented mitigation measures, Alternative C would lead to slight net improvements in water quality over existing conditions because of improved resource management. However, overall recreation use would be expected to increase and would occur at more locations around the reservoir, increasing the need for waste management and erosion control design elements to prevent water quality impacts.

Change in the Amount of Unimproved Roads

Overall, Alternative C would result in the same net decrease in unimproved road miles as Alternative B (Table 4-2).

Change in the Amount of Nonmotorized Trails

Alternative C includes the same Lookout Point trail as proposed under Alternative B, and would have the same water-resource effects in the East Side Area as described for Alternative B. Within the South Beach Area, Alternative C proposes to convert portions of an existing unimproved

road to a nonmotorized trail. This change would reduce the overall disturbance footprint, improve vegetation cover, and reduce stormwater runoff and erosion concerns in that area relative to existing conditions. However, new disturbances would occur as a result of the construction of more than 1 mile of new nonmotorized trails in the State Park and South Beach areas. Where new trails are installed in currently undisturbed, well-vegetated areas, they would reduce infiltration and increase surface runoff during rain events. These changes in runoff conditions would lead to increased erosion and sediment loads, particularly when trails are located close to the reservoir or tributary streams.

The proposed new trail that would link the State Park and South Beach areas would traverse two tributary washes and would impact riparian vegetation along the wash that parallels the South Beach Area access road. Portions of the proposed trail would be constructed in areas with steep (>20%) slopes, increasing the risk of erosion problems during and after trail construction. Care would need to be taken when aligning and designing this trail to minimize the potential for impacts from erosion and sediment-laden runoff. Under existing conditions, this area already receives a large amount of day use, evident from user-created hiking trails throughout the area. Therefore, the designation of an established trail and decommissioning of redundant, user-created trails that would occur under Alternative C would represent an improvement over existing conditions.

Another new trail is also proposed under Alternative C and would head north from the State Park access road, traverse an area of pinyon-juniper woodland, and end at a bedrock bluff above the reservoir. This area currently receives dispersed foot traffic and existing vegetation is fairly sparse. Therefore, trail construction would be expected to have minimal effects on infiltration, erosion, and runoff conditions.

Although new trail construction under Alternative C will facilitate and encourage human access, dispersed day use levels are already high in the areas where trails are proposed. Therefore, increases in potential pollutant sources such as garbage and human waste would be expected to minimal.

Change in the Amount of Developed Recreation Areas

Under Alternative C, developed recreation areas, which include developed overnight, day use and group recreation areas, would increase by a total of 23 acres. A large proportion of this new development would occur within the State Park Area, where the existing campground and developed day use areas would be expanded to the north. Where these expansions include new paved roads and parking areas, they would result in increased amounts of impervious pavement, leading to higher runoff and potential increases in erosion and sediment inputs. The expanded Developed Day Use Recreation Area would likely result in increased use and disturbance along the reservoir shoreline area, and has the potential to increase erosion and sediment inputs to the reservoir. However, the establishment of a formal trailhead and new toilet would likely improve sanitation conditions in an area that currently receives dispersed use.

Under Alternative C, developed recreation areas within 50 feet of the reservoir or other water body increase by just over 13 acres. These increases occur in the North Beach, South Beach, and State Parks areas. Water quality impacts would occur from increases in impervious surface area,

which generally cause an increase in stormwater-related pollutant loads and increased human use in the vicinity. Increases in erosion would lead to increased sediment load to the reservoir and nearby small streams. In addition, an increase in the direct access to the reservoir would potentially increase the amount of garbage, food waste, and stormwater impacts from trampling vegetation and soils. These impacts would be mitigated through well-designed and maintained toilet facilities, animal-proof dumpsters, and erosion and sediment controls.

A new boat ramp and group recreation area would be developed in the South Beach area under Alternative C. The majority (about 7 of 10 acres) of this development would be located within 50 feet of a water body, and areas of existing riparian and emergent marsh vegetation would be affected. The new camping and day-use facilities in this area would reduce vegetation cover, reduce infiltration, and increase runoff and erosion potential.

Change in the Amount of Natural Area

Within the 1,000 acres of Natural Area designated under Alternative C, off-trail recreational access would be discouraged and measures such as signage, more frequent patrolling and monitoring, and potential closures during sensitive time periods would be implemented. Efforts to monitor OHV activities would be implemented more aggressively in Natural Areas. More stringent erosion control measures would also be implemented. All of these measures would be integrated into a Habitat Management Plan to be developed as an objective of Alternative C. These changes would result in a slight reduction in the amount of disturbed ground within the Study Area. Natural Area designations within the Inflow and East Side areas would increase protection of sensitive riparian floodplain areas adjacent to Big Brush Creek above and below the reservoir, and would have substantial benefits in these localized areas. However, the overall benefits to reservoir water quality would be minor.

As discussed in Chapter 3, floodplain and riparian functions of Big Brush Creek are currently degraded in the area below the dam due to hydrologic alterations and agricultural practices. If restoration efforts (e.g., no-mow buffer practices, riparian plantings) were implemented in conjunction with the Natural Area designation, substantial benefits to riparian functions would be achieved. Benefits would include increased shading, reduced amounts of bank erosion and sediment loading, and increased filtration of sediment and pollutants.

Approximately 255 acres of Undeveloped Day Use Recreation Area acreage would be designated as Natural Area within 50 feet of a tributary stream or the reservoir at the Inflow, East Side, and Dinosaur Trackway areas. Such designation would improve water quality by potentially reducing human access, and therefore the amount of human waste and trash left by users. In addition, the vegetation and soils in these areas along the water body would not be trampled, allowing the area to act as a filter for stormwater runoff generated upslope of the reservoir. In general, areas so managed are highly effective in filtering and retaining pollutants such as sediments, nutrients, and metals often associated with stormwater runoff.

Change in the Number and Type of Toilet Facilities

Under Alternative C, vault toilets would be added at the expanded and newly developed recreation facilities within the State Park, South Beach, North Beach, and East Side areas. The vault toilets in existing and expanded recreation areas and areas with high use would improve

water quality by reducing the pollution from human waste including bacteria, pathogens, viruses, and nutrients discharged into the reservoir. Vault toilets at the new trailheads are some distance away from a water body and would have less impact on water quality but are important for human health reasons and as components of the overall management strategy under Alternative C. An increase in the number of visitors would increase the loads on the existing septic system at the State Park Area. Any upgrade or expansion of the existing septic system would have minimal impact on reservoir water quality over current conditions since upgrades or expansions would have to meet current health department and state regulations for septic systems.

Cumulative Impacts

Other activities in the watershed and Study Area contribute to or compound impacts to water quality at Red Fleet Reservoir. Logging and grazing on federal lands administered by the U.S. Forest Service and BLM contribute incrementally to erosion and a sediment load to tributary streams, particularly where these activities expose highly erodible soils adjacent to streams. The Big Brush Creek watershed also has some extensive dead forest stands from pine beetle infestation that are a known watershed condition. There are also private and federal lands within the watershed with active phosphate mining that is expected to continue in the future. Specifically, the phosphate mine, located within the Big Brush Creek watershed just upstream and west of the Study Area, expects to expand its disturbance footprint by approximately 180 acres over the next 2 years. Long-term UDOT plans include widening of U.S. Highway 191 (US-191), which will increase impervious cover and stormwater runoff within the Big Brush Creek watershed.

Recreation such as dispersed camping within the watershed would also contribute some pollutants to the streams and subsequently the reservoir. Pollutants would include sediment, nutrients, and trash. However, the magnitude of this impact depends largely on the quantity of dispersed camping, with heavy use near contributing water bodies having a greater impact than minimal use away from water bodies. Recreation development such as trails for OHVs, mountain bikes, and hiking also increase land disturbance, stormwater runoff, and potential pollutant loads. Current BLM plans include expansion and hardening of OHV trail access to the reservoir inflow area and hardening of a mountain bike trail just north of the Dinosaur Trackway Area. The BLM trail expansions and improvements would cumulatively contribute to the water resource effects of the new trails proposed under RMP Alternatives B and C.

Any increased sediment and phosphorus loads to Big Brush Creek would be transported to Red Fleet Reservoir, particularly during spring runoff when inflows contain high amounts of suspended sediment. Any increase in phosphorus load would be important because it would contribute to eutrophication, associated algal blooms, and potential for dissolved oxygen issues including anoxic conditions in the reservoir. The State of Utah already considers Red Fleet Reservoir impaired for temperature, which affects dissolved oxygen concentration in the water column. Dam operations also have some impact on water temperature and dissolved oxygen concentrations in the reservoir.

All of these factors are important ongoing concerns for the management of the Study Area as well as the surrounding BLM-designated Red Mountain-Dry Fork Area of Critical Environmental Concern and the larger Big Brush Creek watershed. Interagency coordination and

partnerships are important for addressing cumulative impact issues and maintaining water quality at Red Fleet Reservoir.

Mitigation Measures

Potential impacts to water quality associated with the RMP action alternatives would be mitigated through proper design, installation, and maintenance of stormwater best management practices (BMPs), placement of vault toilet facilities in high-use recreation areas, and use of animal-proof garbage receptacles. These elements would be incorporated in site-specific designs for State Park Area redevelopment or rehabilitation and for any new facility developments at the Study Area. Stormwater BMPs would reduce or eliminate stormwater-generated sediment and potentially eliminate untreated stormwater discharge into the reservoir. Vault toilets address impacts from untreated human waste entering the reservoir, and animal-proof garbage receptacles reduce the amount of trash potentially entering the water body.

In addition, removal of invasive plants and restoration of native riparian vegetation at the South Beach Area would result in small benefits to water quality and would also benefit wildlife habitat. Riparian restoration and bank stabilization on Big Brush Creek below the dam would help mitigate impacts at the South Beach Area if necessary under Section 404 of the Clean Water Act (see Vegetation Section of this chapter).

As discussed in Chapter 3, floodplain and riparian functions of Big Brush Creek are currently degraded in the area below the dam due to hydrologic alterations and agricultural practices. If restoration efforts (e.g., no-mow buffer practices, riparian plantings) were implemented in conjunction with the proposed Natural Area designation under either action alternative, substantial benefits to riparian functions would be achieved. Benefits would include increased shading, reduced amounts of bank erosion and sediment loading, and increased filtration of sediment and pollutants.

Under any alternative, Reclamation will continue existing interagency partnerships that maintain Study Area water quality and will participate in any future interagency coordination and partnership efforts associated with the Big Brush Creek watershed.

Residual Impacts

With the previously stated mitigation measures, there would be no residual impacts to water resources resulting from any of the RMP alternatives.

Recreation and Visual Resources

Issues

How would implementation of the RMP affect recreation activities and visual-resource conditions within the Study Area?

Impact Indicators

The following impact indicators were used to determine if implementation of the RMP would affect recreation activities and visual-resource conditions within the Study Area:

- change in recreational opportunities,
- change in visitation and facilities,
- change in Water and Land Recreation Opportunity Spectrum (WALROS) Classification, and
- change in visual-resource conditions.

Analysis Methods

Change in Recreational Opportunities

Recreational opportunities were described using the recreation-based land use categories defined during the development of alternatives (see Chapter 2). Land use categories were applied to each kind of recreational opportunity and the area where it occurs. For purposes of evaluating alternatives, any change in an existing land use category was considered a change in recreational opportunity. The total area involved in the change of land use categories was compared between alternatives.

Change in Visitation and Facilities

Visitation is a function of how many people use the Study Area. Visitation numbers for this analysis are expressed as persons at one time (PAOT) and were estimated for developed camping and day use areas based on facility capacities and an assumed party size.

When the additional campground facilities are added, as in Alternative C, it is assumed to include 20 new campsites. When the additional day-use facilities are added, as in Alternative C, it is assumed to include 20 new picnic sites. The assumed party size is five persons per campsite, day use picnic site, or boat parking stall and 3.5 persons per parking lot stall at trailheads. The resulting calculation (number of campsites, picnic sites, and boat parking stalls multiplied by five persons) is equivalent to PAOT, which represents usage typical of a peak weekend or holiday. During a typical summer weekday, PAOT would likely be less. While PAOT is useful as a relative comparison between alternatives, it is not intended to represent a definitive number of people.

As the number and types of facilities change with the alternatives, it is possible to estimate relative changes in the actual number of people who would use the areas. Again, the total acreage of various kinds of land uses was compared between alternatives, along with the number of developed facilities. This analysis documents how many people would be accommodated at the developed recreation areas in the Study Area under each alternative.

Change in Water and Land Recreation Opportunity Spectrum (WALROS) Classification

Using the Water and Land Recreation Opportunity Spectrum Analysis method (Reclamation 2011b), recreational opportunities have been classified at the Study Area (see Chapter 3). Changes in existing land use categories were evaluated, by alternative, to determine the effect on physical, social, and managerial setting components for each use area. Changes in setting components were evaluated to determine a change in WALROS Classification.

Change in Visual Resource Conditions

As described in Chapter 3 Visual Resources, the BLM uses the Visual Resource Management (VRM) system and the four VRM classes to analyze and determine the visual impacts of proposed activities on the land and gauge the level of disturbance an area can tolerate before it exceeds the visual objectives of each VRM class. The method that the BLM uses to determine whether proposed projects conform to an area's VRM class objectives is a contrast rating system that evaluates the effects of proposed projects on visual resources. Contrast rating is accomplished from critical viewpoints or along a transportation corridor using BLM Contrast Rating Worksheets to determine whether the level of disturbance associated with any of the alternatives would exceed the VRM objectives for that area. The evaluator rates the degree of visual contrasts based on form, line, color, and texture of the existing landform, vegetation, and structures, and determines how these features would look after project implementation. Under this system, it is assumed that the greater the degree of contrast between the existing landscape and the project-altered landscape, the greater the change in the existing character of the landscape.

During a site visit conducted in August 2012, a visual contrast rating worksheet (Form 8400-4) was completed for Alternatives B and C. A knoll overlooking the State Park Area was selected as the key observation point for evaluating proposed projects. Contrast ratings were assigned to the proposed project or activity in comparison to the existing landscape character. Contrast ratings were noted as being strong, moderate, weak, or none depending on degree of change. For a contrast to be rated as strong, the proposed project would be evaluated as dominant and demanding attention and would not be overlooked by the casual observer. For contrast to be rated as moderate, the proposed project would be evaluated as beginning to attract attention and beginning to dominate the characteristic landscape. For a contrast to be rated as weak, the proposed project would be evaluated as being seen but not attracting attention to the casual observer. For the contrast to be rated as none, the proposed project would be evaluated as not attracting attention or not being visible. The four levels of contrast correspond to the Visual Resource Classes IV, III, II, and I, referred to in Chapter 3.

Summary of Impacts

Impacts to recreational resources at the Study Area are summarized in Table 4-3. The change in the amount of land use category areas according to alternative was considered a change in recreational opportunities. A description of the existing recreational opportunities available in each land use category is included in Chapter 2. Tables 2-1 and 2-2 (see Chapter 2) list the change in acreage for each land use category under each alternative and the number and kind of recreation facilities. The Primary Jurisdiction Area and Reservoir Inundation Area land use categories remain unaffected at the Study Area under any of the alternatives. For all other land use categories, there would be changes in recreational opportunities as shown by the change in acreage and PAOT under each alternative.

Table 4-3. Summary of Recreational and Visual Resource Impacts at Red Fleet Reservoir.

INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in recreational opportunities	No change from existing conditions.	Developed Recreation Areas would remain the same. Undeveloped Day Use Recreation Areas would decrease by 1,435.3 acres as Natural Areas would be designated. Administrative, Primary Jurisdiction, and Reservoir Inundation areas would remain the same.	Developed Day Use Recreation Areas would increase by 8.6 acres. Developed Overnight Recreation Areas would increase by 4.3 acres. Developed Overnight and Day Use Group Recreation Areas would increase by 10.1 acres. Undeveloped Day Use Recreation Areas would decrease by 1,023.1 acres as 1,000.1 acres of Natural Areas would be designated and 23 acres of Developed Recreation Areas would be designated.
Change in visitation and recreational facilities	No change from existing conditions. Total developed campgrounds at 1. Total developed campsites at 38. Total day-use picnic sites at 37. Total boat parking at 40. Total persons at one time (PAOT): 575. Total boat ramps at 1.	No change in total developed campgrounds (1). No change in developed campsites (38). No change in day use picnic sites (37). No change in boat parking (40). Total PAOT: 575. Total boat ramps at 1.	Expanding the footprint of the existing State Park Area facilities would increase the developed campsites from 38 to 58 in that area. Adding a Developed Overnight and Day Use Group Recreation Area at the South Beach Area would increase the campsites by 20 and the day-use sites by 20 in that area. Total PAOT would increase to 875.Total boat ramps at 2.
Change in Water and Land Recreation Opportunity Spectrum (WALROS) Classification	No change from existing conditions.	The Inflow Area WALROS Classification would change from RN8 to SP8. The East Side Area WALROS Classification would change from SP9 to SP8. All other areas would exhibit no change in WALROS Classification from existing conditions.	The Inflow Area WALROS Classification would change from RN8 to SP8. The East Side Area WALROS Classification would change from SP9 to SP8. The South Beach Area WALROS Classification would change from SP8 to RD6. All other areas would exhibit no change in WALROS Classification from existing conditions.
Change in visual-resource conditions	No change from existing conditions.	No change in visual resource conditions.	No change in visual resource conditions.

Alternative A: No Action

Change in Recreational Opportunities

There would be no change to existing recreational opportunities under Alternative A for the Study Area. No new recreational opportunities would be added to the current available spectrum.

At the present time, State of Utah administrative rules (R651-411-2(2)) specify that OHVs may be used to access ice fishing areas at Red Fleet Reservoir from the State Park boat ramp. Under Alternative A, Reclamation would officially designate that use under federal regulation 43

CFR § 420.2, but would not designate any other areas, roads, or trails open to public OHV use at Red Fleet Reservoir.

Change in Visitation and Facilities

There would be no change to existing recreational facilities under Alternative A for the Study Area. The current trend in visitation would be expected to continue. The total PAOT would remain at 575 assuming a party size of five persons for 38 campsites, 37 day use picnic tables, and 40 boat parking spaces. The number of boat ramps would remain at one.

Change in Water and Land Recreation Opportunity Spectrum (WALROS) Classification

There would be no change to existing recreational facilities or opportunities under Alternative A for the Study Area. Therefore, there would be no change in WALROS Classification.

Change in Visual Resource Conditions

There would be no changes in resource management at the Study Area under Alternative A; therefore, this alternative meets the visual objectives of VRM Class II and results in no impacts on visual resources within the Study Area.

Alternative B: Resource Conservation Emphasis

Change in Recreational Opportunities

Under Alternative B, recreational opportunities in developed campsites would be the same as those under existing conditions. Substantial portions of the Inflow Area, Dinosaur Trackway Area, North Beach Area, South Beach Area, and East Side Area (1,435.3 acres) would be designated as Natural Area, with a focus on conservation of natural and cultural resources. Because of the Natural Area designation, there would be some reduced recreational motorized access in areas where it currently exists (i.e., North Beach, East Side, and South Side areas) thereby reducing motorized access but improving the nonmotorized recreational user experience. In other areas there would be increased trail connectivity between developed facilities with the addition of proposed trails. Enhanced public information and interpretation projects would also improve visitor experiences.

The South Beach Area would continue to be managed as an Undeveloped Day Use Recreation Area and some access-control facilities (i.e., gates and fences) would remain under Alternative B.

Under Alternative B, Reclamation would allow public OHV access to the Reservoir Inundation Area for ice fishing from the State Park Area boat ramp, as conditions permit and in accordance with Utah administrative rule R651-411-2(2). Reclamation would also coordinate with the appropriate management entities regarding potential OHV use on designated state and county roads, or portions thereof, within the Study Area. An existing informal and undesignated OHV riding area in the East Side Area would be closed to that use, consistent with designation of that area as a Natural Area under Alternative B.

Change in Visitation and Facilities

Some improvements to existing recreational facilities, such as sanitary facilities and utility upgrades, are included. The total number of developed campgrounds would remain at one, the number of developed campsites would remain at 38, the number of day use picnic sites would remain at 37, and the number of boat parking would remain at 40. At an average of five persons per site, overnight facility capacity remains at 190 PAOT, and day use facility capacity remains at 385 PAOT, for a total PAOT of 575 under Alternative B.

Change in WALROS Classification

Changing the land use designation from Undeveloped Day Use to Natural Area would result in a WALROS Classification change from RN8 to SP8 in the Inflow Area. Adding trailhead parking and improving fishing access in the East Side Area would result in a WALROS Classification change from SP9 to SP8. All other areas would exhibit no change in WALROS Classification from existing conditions.

Change in Visual Conditions

Under Alternative B, site redesign or rehabilitation of existing recreation facilities would be implemented; however, no new recreation development sites would be proposed or developed. A redesign of the existing development areas would be implemented on lands already disturbed. Using the visual contrast rating process by comparing the proposed project features with the major features of the existing landscape's form, line, color, and texture, there would be minimal changes in resource management at Red Fleet Reservoir under Alternative B. Therefore, this alternative meets the visual objectives of VRM Class II and results in minimal impacts on visual resources within the Study Area.

Alternative C: Recreation Development Emphasis

Change in Recreational Opportunities

Recreational opportunities in the Study Area would increase under Alternative C. In addition to enhanced trail connectivity, fishing opportunities, and interpretive programs described for Alternative B, Alternative C would expand existing Developed Day Use, Developed Overnight, and Developed Day Use and Overnight Group Recreation Areas. Rental cabins and/or yurts may also be added. Alternative C would allow the development of a new Developed Day Use Recreation Area at the North Beach Area and a Developed Overnight and Day Use Group Recreation Area at the South Beach Area. Under Alternative C, overall recreation use would likely increase and would occur at more locations around the reservoir.

Under Alternative C, Reclamation would allow public OHV access to the Reservoir Inundation Area for ice fishing from the State Park Area boat ramp, as conditions permit and in accordance with Utah administrative rule R651-411-2(2). Reclamation would also coordinate with the appropriate management entities regarding potential OHV use on designated state and county roads, or portions thereof, within the Study Area. An existing informal and undesignated OHV riding area in the East Side Area would be closed to that use, consistent with designation of that area as a Natural Area under Alternative C.

Change in Visitation and Facilities

New facilities under Alternative C would include parking areas and sanitation facilities. Expanding the footprint of the existing State Park Area facilities would increase the developed campsites from 38 to 58. Adding a Developed Overnight and Day Use Group Recreation Area at the South Beach Area would increase the campsites by 20 and the day use sites by 20 in that area. This would increase total PAOT capacities by 300 (from 575 under Alternative A to 875 under Alternative C). An upward trend in visitation would be expected under alternative C as a result of constructing additional recreation facilities.

Change in WALROS Classification

Changing the land use designation from Undeveloped Day Use to Natural Area would result in a WALROS Classification change from RN8 to SP8 in the Inflow Area. Adding trailhead parking and improving fishing access in the East Side Area would result in a WALROS Classification change from SP9 to SP8. Adding a Developed Overnight and Day Use Group Recreation Area in the South Beach Area would result in a WALROS Classification change from SP8 to RD6. All other areas would exhibit no change in WALROS Classification from existing conditions.

Change in Visual Resource Conditions

There would be some localized changes in visual-resource conditions at the Study Area under Alternative C. New facilities would be constructed on suitable land, including new boating, camping, and picnicking facilities with accompanying parking and access roads. The contrast to the basic visual elements caused by the proposed facilities, while seen, would remain subordinate to the existing landscape and not attract attention. Therefore, this alternative would meet the visual objectives of VRM Class II by retaining the existing character of the landscape within the Study Area.

Cumulative Impacts

The Study Area is frequently visited by recreational users and tourists. Implementation of any proposed projects or actions would have both temporary and permanent effects on the recreational opportunities and the visual resources. However, these effects are not considered to be cumulatively significant. Evaluating cumulative impacts to these resources includes review of proposed onsite projects or actions and offsite projects or actions proposed in the reasonably foreseeable future, any of which may not be significant on its own but when combined could be significant. This assessment is based on information that was reasonably available during the RMP process.

The Study Area's recreational opportunities are mostly water based (e.g., boating and fishing, with associated camping and picnicking) and do not depend on a pristine viewshed. Any proposed facilities are similar to existing facilities and will not change the overall recreational experience. The alternative with the greatest impact on recreation facilities would be Alternative C, which proposes an estimated increase of 300 PAOT. However, this is not enough to create a significant cumulative change from the historical baseline visitation conditions.

Visual conditions of adjacent lands have been or are being altered by past and present actions as development continues in the Ashley Valley and more people visit popular nearby recreation

areas. However, there have been no large projects or actions that have significantly impacted the visual character of lands adjacent to the Study Area.

Some actions on adjacent lands in the foreseeable future include the development of new trails surrounding the Study Area. The BLM's Vernal Field Office indicates that there are plans to expand and harden the OHV trail access to the swimming hole in the Inflow Area, and to harden and add signage to mountain bike standards to the Flat Rock Loop trail in the North Beach Area so that more people will use the trail. The increase in trail usage could mean more visitation pressure on the Study Area, but any reasonably foreseeable changes to the surrounding land uses would not change the overall recreational opportunities, the WALROS designations, or the overall viewshed character of the Study Area.

Mitigation Measures

Because the cumulative impact effects of the proposed projects and actions in all three alternatives are not significant, no major mitigation measures are needed. However, in site-specific design, visual-resource impacts can be reduced or eliminated by using facility design and land-planning techniques that borrow from naturally established line, form, color, and texture. Design considerations include building materials, size and scale, color, location, screening, and distance from critical viewpoints or transportation corridors. Visual-resource values must be considered throughout the RMP process as the assignment of visual-management classes is based on the management decisions made in the RMP. All proposed actions that would result in surface disturbances must consider the importance of the visual resource and the impacts the project may have on the characteristic landscape. Management decisions must reflect the importance of visual resources within the Study Area while also giving consideration to other resource values and uses.

Residual Impacts

Residual impacts to recreation resources from implementation of any alternative could include restricting certain recreational activities, limiting user numbers, or eliminating recreational opportunities in some areas. However, these impacts are not considered significant. There are no foreseeable, residual impacts under any of the proposed alternatives with regard to visual resources.

Natural and Cultural Resources

Geology

This section evaluates the proposed RMP alternatives for potential impacts on the geologic processes within the Study Area.

Issue

How would implementation of an RMP affect geologic processes within the Study Area?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect geologic processes within the Study Area:

- change in the amount of shoreline erosion.

Analysis Methods
The evaluation of impacts to geologic processes was based on a review of ongoing shoreline erosion within the Study Area.

Summary of Impacts
Shoreline erosion is expected to continue with implementation of any of the RMP alternatives. As long as Red Fleet Reservoir is utilized for water storage and water-based recreation purposes, wave action and fluctuating water levels would continue to cause reservoir shoreline erosion. Under Alternative B or C, a Habitat Management Plan would be developed with provisions to protect and maintain Natural Areas for wildlife habitat values. From a geologic standpoint, this may slightly reduce the amount of shoreline erosion in these areas. Table 4-4 provides a summary of impacts to geologic processes at the Study Area.

Table 4-4. Summary of Impacts to Geologic Processes at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the amount of shoreline erosion	Shoreline erosion would be expected to continue. No change from existing conditions and trends.	Slightly reduced shoreline erosion with designation of Natural Area.	Same as Alternative B, with fewer acres designated as Natural Area.

Alternative A: No Action
Alternative A would not change the amount of shoreline erosion within the Study Area.

Alternative B: Resource Conservation Emphasis
Under Alternative B, more portions of the reservoir shorelines would be designated as Natural Areas. These designations would slightly decrease the amount of shoreline erosion in these areas when the reservoir is at full pool. This would be contingent on development of a Habitat Management Plan and assessment of practicability in consultation with State Parks.

Alternative C: Recreation Development Emphasis
Same as Alternative B, with fewer Study Area acres designated as Natural Area.

Cumulative Impacts
The greatest factor influencing past, present, and future shoreline erosion is reservoir water level management. The RMP action alternatives (Alternative B or C) would to a small degree incrementally reduce shoreline erosion, contingent on development and implementation of a Habitat Management Plan.

Mitigation Measures
Shoreline erosion is currently occurring along the reservoir full pool elevation throughout much of the Study Area. Appropriate erosion control and shoreline stabilization measures should be installed where appropriate to prevent further erosion in high-use areas.

Residual Impacts
Implementation of an RMP alternative would not result in any significant residual impacts to geologic processes.

Soils

This section evaluates RMP alternatives for their potential impacts on the soils within the Study Area.

Issue
How would implementation of an RMP affect soils within the Study Area?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect soils within the Study Area:

- change in the amount of soil disturbance.

Analysis Methods
For the soil impact analysis, the amount of soil that would be disturbed or removed from vegetation production because of construction or paving activities was calculated using a GIS database for each RMP alternative. The land areas proposed for campgrounds, access roads, and other improvements were calculated and totaled.

The amount of existing soil disturbance varies with each land use category. Table 4-5 shows the percentage of these disturbances for each land use category under current conditions. Under the proposed RMP alternatives, the amount of soil that would be disturbed or removed from vegetation production as a result of construction or recreation activities was calculated by applying these same disturbance percentages to the action alternatives and their proposed changes in land uses.

Summary of Impacts
Under Alternative A, soil conditions within the Study Area would not be expected to change over the existing conditions. Currently, a total of approximately 69.0 acres, or 2.7 percent, of the entire Study Area is disturbed. Under Alternative B, no soil would be disturbed or lost as a result of constructing new campgrounds, restrooms, roads, or other developed recreational facilities, and overall soil disturbance would decrease compared with Alternative A as a result of Natural Area designation and associated land management and from decommissioning of some unimproved roads. Under Alternative C, overall soil disturbance would also decrease from existing conditions, though to a lesser degree than with Alternative B. The amount of soil disturbance by alternative is presented in Table 4-6.

Table 4-5. Percentage of Existing Soil Disturbance for Each Land Use Category at Red Fleet Reservoir.

LAND USE CATEGORY	PERCENT DISTURBED
Administrative Area	45
Developed Day Use Recreation Area	55
Developed Overnight Recreation Area	85
Developed Overnight and Day Use Group Recreation Area	45
Undeveloped Day Use Recreation Area	2
Natural Area	1
Primary Jurisdiction Area	25

Table 4-6. Acres of Soil Disturbance by Alternative for Red Fleet Reservoir.

LAND USE AREAS	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Administrative Area	1.0	1.0	1.0
Developed Day Use Recreation Area	3.4	3.4	8.1
Developed Overnight Recreation Area	4.2	4.2	7.8
Developed Overnight and Day Use Group Recreation Area	0	0	4.5
Undeveloped Day Use Recreation Area	36.9	8.2	16.5
Natural Area	0	14.4	10.0
Primary Jurisdiction Area	21.9	21.9	21.9
Total Soil Disturbance [a]	67.6	53.1	69.8

[a] Due to rounding, columns may not sum exactly to the total soil disturbance.

Alternative A: No Action

Under Alternative A, minimal or no soil would be lost as a result of new construction or paving activities related to building new camping and recreational facility sites. The existing amount of soil disturbance related to existing roads, campgrounds, campsites, administrative areas, and so forth is estimated to be 67.6 acres (see Table 4-6). However, the amount of total soil disturbance would likely increase as visitation and use of the Study Area increases over time under Alternative A.

Alternative B: Resource Conservation Emphasis

Under Alternative B, no additional soil disturbance or paving would occur in the Study Area. Natural Areas would be designated within the Study Area and an estimated 14.4 acres of soil

disturbance would occur within these areas. This represents a reduction over existing use for these areas, which is primarily Undeveloped Day Use Recreation Area. Removal and reseeding of a number of unimproved roads would also reduce the amount of disturbance over existing conditions. Overall, soil disturbance is estimated as 53.1 acres with Alternative B, or about 14.5 acres less than Alternative A.

Alternative C: Recreation Development Emphasis

Under Alternative C, new developed recreation areas would be created, resulting in additional soil disturbance (Table 4-6). Expansion of the Developed Day Use Recreation Areas would disturb an additional 4.7 acres of soil (8.1 total acres for the land use category). Expansion of Developed Overnight Recreation Area near the existing State Park Area facilities would disturb an additional 3.6 acres (7.8 total acres). The addition of the Developed Overnight and Day Use Group Recreation Area would disturb an estimated 4.5 acres. Factors more than balancing these additional disturbances are designation of Natural Areas and decommissioning unimproved roads. Overall, soil disturbance is estimated as 69.8 acres with Alternative C, or about 2.2 acres more than Alternative A.

Cumulative Impacts

In addition to RMP actions, soil erosion would continue to occur within the Study Area as a result of reservoir water operations. Soils would be removed from vegetative production as a result of campground and associated recreation facility upgrades or construction. Cumulative impacts would include this loss of productive soil, combined with the loss of soils from similar activities in the past. Designating portions of the Study Area as a Natural Area would restrict vehicle access and create a beneficial cumulative impact by reducing soil disturbances and erosion in these areas.

Additionally, federal, state, local, and private entities are expected to conduct a number of projects in the watershed of the Study Area that have the potential to cause soil erosion. These projects include the following: (1) The BLM plans to expand and harden OHV trail access to a swimming hole in the reservoir Inflow Area just outside the Study Area boundary; (2) in the long-term, UDOT plans to widen US-191 for a stretch of road near the Study Area; (3) phosphate mining in the vicinity of the Study Area is expected to expand and to continue over the long-term. It is anticipated that these disturbances would use appropriate mitigation measures to minimize soil erosion impacts.

Mitigation Measures

To mitigate soil erosion impacts, Reclamation would implement erosion control methods for individual projects under Alternatives B and C. Implementation of proper erosion controls would mitigate impacts caused by construction activities and stormwater runoff. Mitigation measures would include requiring a Storm Water Pollution Prevention Plan for all construction operations that disturb 1.0 or more acres; this would require use of published BMPs for controlling erosion and sedimentation from stormwater runoff and would address runoff from all roads (paved and unpaved), trails, campgrounds, parking lots, and administrative buildings.

Other elements of Alternatives B or, to a somewhat lesser extent, Alternative C, would help mitigate soil erosion, including restricting vehicle access to sensitive areas in the Study Area and restoring areas that have been damaged by unmanaged recreation use.

Residual Impacts

Soil erosion is a natural process that occurs as a result of climate conditions and the nature of the soils in the Study Area. Human activity (e.g., construction, recreation, reservoir operations) has the potential to increase soil erosion rates. Under all RMP alternatives, a minor amount of soil would be eroded and deposited in Red Fleet Reservoir as the result of natural and human-induced erosion, both within and outside of the Study Area. Mitigation measures described above would avoid or mitigate significant soil erosion impacts resulting from implementation of the RMP alternatives.

Vegetation

Issue

How would implementation of the RMP affect upland and riparian-wetland vegetation communities within the Study Area?

Impact Indicators

The following impact indicators were used to determine if implementation of the RMP would affect upland and riparian-wetland vegetation communities within the Study Area:

- change in the quantity, condition, and levels of disturbance of the upland vegetation communities; and

- change in the quantity, condition, and levels of disturbance of riparian-wetland vegetation communities.

Analysis Methods

The land use categories defined and described in Chapter 2 provide the basis for the vegetation impact analysis. As the boundaries of the land use categories change with each alternative, so do the condition and amount of disturbance to plant communities within each land use category. Each land use category and its associated quantity of land disturbances for each alternative are listed in Table 4-5 in the Soils Section.

Specifically, decommissioning of unimproved roads, new facility construction, and changes in land use designation were used to describe potential impacts. Typical disturbances related to the RMP alternative actions being considered include elimination of vegetation within developed use areas such as campsites, roads, trails, or parking areas; indirect affects to vegetation conditions resulting from increased use in an area; and increased potential for facilitating the spread of noxious or undesirable species into areas where vegetation was removed.

The placement of dredge or fill material within riparian-wetland communities is regulated under Section 404 of the Clean Water Act. The action alternatives do not identify specific project-related fill activities. These fill activities within riparian-wetlands would need to be identified on

a project-by-project basis and all efforts to avoid and minimize impacts to riparian-wetlands would be required as a part of the Section 404 permitting process. Therefore, for this analysis it is assumed that direct ground disturbance would occur primarily in upland vegetation communities and not in riparian-wetland vegetation communities because of jurisdictional wetlands regulations.

Summary of Impacts

Impacts to vegetation communities are described in Table 4-7. The analysis for vegetation involved comparing changes in the quantity and condition of upland and riparian-wetland vegetation communities as a result of changes in the designated land use classification. Alternative A involves no changes from existing conditions and trends. Alternative B includes decommissioning of existing unimproved roads, construction of new nonmotorized trails, and changes in the designated land use classification affecting upland and riparian-wetland vegetation communities within Natural Areas. Alternative B has the potential to improve the overall condition and decrease the level of disturbance of vegetation within the Study Area. Alternative C includes the decommissioning of existing unimproved roads; the construction of new nonmotorized trails; and the expansion of Developed Day Use, Developed Overnight, and Developed Day Use and Overnight Group Recreation Areas within the Study Area. Therefore, Alternative C has the potential to slightly increase the level of disturbance to upland and riparian-wetland vegetation communities within the Study Area.

Table 4-7. Summary of Upland and Riparian-Wetland Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the quantity, condition, and level of disturbance of upland vegetation communities	Existing level of disturbance is 68 acres. No change in current upland vegetation conditions and trends.	Level of disturbance reduced to 53 acres through designation of 1,435 acres of Natural Area, decommissioning of 2.3 miles of unimproved roads, and conversion of 0.2 mile of unimproved roads to nonmotorized trail. Overall potential for improved condition of upland vegetation.	Level of disturbance increased to 70 acres through development of new recreation areas. Decommissioning of 2.3 miles of unimproved roads. Creation of 1.8 miles of new nonmotorized trails. Overall slight potential for decreasing condition of upland vegetation.
Change in the quantity, condition, and level of disturbance of riparian-wetland vegetation communities	No change to the existing riparian-wetland conditions and trends.	Potential for some improvement due to designation of Natural Areas.	Overall potential for improvement due to designation of Natural Areas that include riparian-wetland vegetation communities. Some localized minor to moderate impacts due to new recreation facility development near riparian-wetlands.

Potential impacts on riparian-wetlands are primarily related to the decommissioning of existing unimproved roads, the construction of new nonmotorized trails, or changes to the designated land use categories. Alternative B would likely provide an increase in the overall function of the riparian-wetland community due to the decommissioning and revegetation of existing unimproved roads as well as changes to the designated land use categories. Alternative C would likely cause minor impacts to the riparian-wetland communities due to new nonmotorized trail construction, new recreation facility construction, and the related increase in disturbance from recreational activity.

Noxious weeds are present in the Study Area as discussed in the Vegetation section of Chapter 3. They tend to occur in scattered patches throughout the Study Area, with more dense growth in high-use recreation areas and along the shoreline of the reservoir. The primary concerns are the propagation of noxious weeds and the introduction of additional populations within the Study Area. The amount of disturbance for each alternative is useful in comparing the potential of noxious weed invasion under each alternative.

Alternative A: No Action

Change in the Quantity, Condition, and Level of Disturbance of Upland Vegetation Communities

Under Alternative A the quantity, condition, and level of disturbance of upland vegetation communities would remain unchanged from existing conditions and trends described in Chapter 3. Currently there are 1,945 acres of upland vegetation communities and approximately 69 acres of disturbance within the Study Area. Reclamation, State Parks, and other partners would continue existing levels of effort in managing access and controlling invasive species. However, no formal Habitat Management or Integrated Pest Management Plans would be developed.

Change in the Quantity, Condition, and Level of Disturbance of Riparian-Wetland Vegetation Communities

The quantity, condition, and level of disturbance of riparian-wetland vegetation communities would not change under Alternative A.

Alternative B: Resource Conservation Emphasis

Change in the Quantity, Condition, and Level of Disturbance of Upland Vegetation Communities

Alternative B includes the decommissioning of approximately 2.3 miles of existing unimproved roads, the conversion of 0.2 miles of unimproved roads to nonmotorized trail, and the designation of 1,435acres of Natural Area. Alternative B has the potential for improving the overall condition of the upland vegetation community through reduction of disturbance levels to 53 acres, or 15 acres less than Alternative A.

Change in the Quantity, Condition, and Level of Disturbance of Riparian-Wetland Vegetation Communities

Designation of Natural Areas and development of Habitat Management and Integrated Pest Management Plans would provide longer-term improvements in condition. Natural Area designations with Alternative B are inclusive of 108 acres of riparian-wetland communities. This

designation and associated management efforts would reduce the existing level of disturbance and increase the overall functions of the riparian-wetland community.

Alternative C: Recreation Development Emphasis

Change in the Quantity, Condition, and Level of Disturbance of Upland Vegetation Communities

Alternative C includes the decommissioning of approximately 2.3 miles of existing unimproved roads and the construction of approximately 1.8 miles of new nonmotorized trails. Alternative C includes the designation of 1,000 acres of Natural Area and an additional 23 acres for developed recreation uses. Alternative C has the potential for slightly decreasing the overall condition of the upland vegetation community through an increase of disturbance levels to 70 acres, or 2 acres more than Alternative A.

Change in the Quantity, Condition, and Level of Disturbance of Riparian-Wetland Vegetation Communities

Alternative C does not involve any loss in the quantity of riparian-wetlands. While additional recreation facility development would occur, riparian-wetland communities have been avoided in the suitability analysis (Chapter 2). However, it is probable that site-specific facility design would involve some minor to moderate impacts to riparian-wetland communities, resulting from nonmotorized trail crossings of washes, nonmotorized trails through wetland communities, boat ramp construction, or other features. Site specific design would require National Environmental Policy Act environmental analysis and would need to comply with Section 404 of the Clean Water Act.

Alternative C proposes decommissioning 2.3 miles of unimproved roads of which a small amount, 25 feet, are within Study Area riparian-wetland communities. New nonmotorized trails that cross within or near riparian communities would increase day use activity, potential for noxious weed introduction and dispersal, disturbance of wetland vegetation due to foot traffic, increased erosion/sedimentation, and disturbance of wildlife. Negative impacts would be concentrated around developed facilities, while benefits from unimproved road decommissioning and development of Habitat Management and Integrated Pest Management Plans would mostly occur in the portions of the Study Area that would be designated as Natural Areas.

With Alternative C, Natural Area designations are inclusive of 108 acres of riparian-wetland communities. This designation and associated management efforts would reduce the existing level of disturbance and increase the overall functions of the riparian-wetland community.

Cumulative Impacts

Public use and the continued threat of noxious weed invasion are the most likely cumulative impacts expected as a result of past, present, and reasonably foreseeable future impacts on both upland and riparian-wetland plant communities within the Study Area and on surrounding lands. Reasonably foreseeable projects outside of the Study Area that have been discussed in earlier sections of this chapter (Water Resources and Soils) included BLM recreation developments, US-191 highway widening, and ongoing phosphate mining. These projects would have potential to facilitate noxious weed invasions in the general vicinity; however, it is also anticipated that

these disturbances would be accompanied by appropriate mitigation measures to minimize this potential.

An RMP action alternative would incrementally improve Study Area riparian-wetland conditions. Alternative B provides greater improvements throughout, while Alternative C provides less overall improvement and some localized minor-to-moderate (less-than-significant) impacts. Past, present, and future fluctuations in the water level of Red Fleet Reservoir have the greatest overall impact on both the quantity and condition of riparian-wetland plant communities in the Study Area. The impacts of water fluctuation are both detrimental and beneficial depending on seasonal timing, duration of flooding or low-water period, and depth. However, water level rises are based on a combination of water right delivery requirements and climate conditions, both of which are beyond the scope of the RMP decision.

Mitigation Measures

Mitigation measures for either action alternative will include the development of noxious and invasive weed control strategies as a part of an Integrated Pest Management Plan. Fence lines can facilitate weed invasion as winds blow invasive vegetation against fences, where it becomes trapped and releases seed. Therefore, including a provision for removal of redundant or unnecessary fence lines as part of the Integrated Pest Management Plan would provide some weed management benefit. Additionally, the plan should address weed control strategies to be implemented along all existing and future boundary and access control fences in the Study Area.

After site-specific environmental assessment and design, appropriate sediment and erosion control strategies would be implemented during construction activities to limit impacts to the upland and riparian-wetland vegetation communities. In site-specific designs, disturbed areas would be replanted with appropriate native species. Should it be found that any site-specific projects would involve filling of wetlands, Reclamation would need to comply with Section 404 of the Clean Water Act. Section 404 requires wetland impacts be mitigated and that no net loss of wetland occurs. The Section 404 permitting and mitigation process is under the jurisdiction of the U.S. Army Corps of Engineers.

Residual Impacts

With the previously stated mitigation measures, impacts of Alternative B would be avoided or fully mitigated. Pending site-specific design and environmental assessment, Alternative C would likely include some minor-to-moderate (less-than-significant) impacts to riparian-wetland plant communities as a result of new recreation facility development.

Wildlife

Wildlife of interest to state and federal agencies and the general public in the Study Area include special status species (federally and state-threatened and endangered species and other species of concern), big game, raptors, waterfowl, and general wildlife populations. Wildlife viewing opportunities, big game and vehicle conflicts, presence of nuisance wildlife species, and the impact of reservoir uses on wildlife habitats are also concerns in the Study Area. Sources of information used in developing this assessment of impacts to wildlife and habitat included

UDWR reports, websites, data, and maps; published literature; consultations with agency personnel; and field observations made in October 2011.

Issue
How would implementation of an RMP alternative affect wildlife and their habitat in the Study Area?

Impact Indicators
The following impact indicators were used to determine if implementation of the RMP would affect wildlife and their habitat within the Study Area:

- changes in the quality and amount of wildlife habitat, and
- changes in the amount of human-related disturbance.

Analysis Methods
Changes in the amount and quality of available habitat were determined by the habitat type and amount of area that would be impacted as a result of constructing recreation facilities (e.g., campgrounds, picnic areas, parking areas, boat facilities), trails and roadway systems, the designation of Natural Areas, and developing a Habitat Management Plan for the Study Area.

Increased human activity and loss of habitat can have a direct impact on wildlife and would increase stress, reduce reproductive success, and cause displacement. Disturbance is detrimental during critical seasonal periods, especially during spring and winter. Changes in disturbance were determined based on the estimated increase or decrease in public use and the location of the use in relation to important wildlife habitat. The amount and location of public use were based on the review of each alternative in terms of the types of recreation facilities, trail systems, and roadways; the decommissioning of roads; and the designation of Natural Areas.

Summary of Impacts
Impacts to wildlife are summarized in Table 4-8. Under Alternative A, wildlife conditions within the Study Area would not be expected to change from existing conditions and trends. Alternative B would potentially improve wildlife conditions through improved management of resources and increased protection of sensitive wildlife habitat and important wildlife areas. Alternative C would potentially negatively impact wildlife, based on the increased recreational activities and facility development impacts to wildlife and wildlife habitat. Mitigation measures are included with action alternatives to eliminate or reduce potential impacts, as described in the subsections below for each alternative.

Alternative A: No Action
Additional recreational facility site development would not be pursued under Alternative A. In addition, land use category changes, trail decommissioning, erosion control measures, and protective wildlife habitat measures would not be pursued. Therefore, these actions would not change wildlife habitat or disturbance levels from existing conditions and trends.

Table 4-8. Summary of Impacts to Wildlife at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the overall quality and amount of wildlife habitat	No change from existing conditions and trends.	Little or no impacts related to the loss of wildlife habitat. Enhancement and protection of important habitats as a result of designating Natural Areas.	Minimal impacts related to habitat loss as a result of recreational development and uses.
Change in the amount of human-related disturbance	No change from existing conditions and trends.	Decrease in disturbance related to restrictions of vehicle access, designated parking areas, and decommissioning unimproved roads. Short-term increase in disturbances during construction of facilities in localized areas where recreational use would increase in association with the development of new facilities. Impacts would be minimal because of the limited amount of proposed development, current condition of areas proposed for development, and availability of similar habitat in the surrounding area.	New recreation facility sites would be constructed under Alternative C, resulting in more short- and long-term wildlife disturbances. Impacts would be minimal because of the current condition of areas proposed for development and the availability of similar habitat in the surrounding area.

Alternative B: Resource Conservation Emphasis

Under Alternative B, wildlife in the Study Area would generally benefit from reduced disturbance, especially in key wildlife habitat and proposed Natural Area designations.

Change in the Quality and Amount of Wildlife Habitat

Under Alternative B, approximately 1,435.3 acres would be designated as Natural Area, which under present management receives no protection from day use recreation impacts. Classification of this land use category would potentially enhance wildlife habitat by reducing the amount and intensity of recreational use and providing long-term protection of areas that support a relatively higher diversity and number of wildlife species than other portions of the Study Area.

While the amount of wildlife habitat would not increase, the quality of habitat would improve with development and implementation of a Habitat Management Plan. Specific management efforts that would be included in the Habitat Management Plan under Alternative B would be to limit the carrying capacity of boats on the reservoir to the current maximum capacity of 45 boats, decommission unimproved roads, and manage habitat needs for special status species.

Change in the Amount of Human-Related Disturbance

Under Alternative B, wildlife in the Study Area would generally benefit from reduced disturbance, especially in key wildlife habitat within the proposed Natural Area designations. In addition, wildlife would benefit from decommissioning unimproved roads. Protecting quality wildlife areas, restricting vehicle access to sensitive areas, decommissioning unimproved roads, and managing for a reduced number of users would decrease the amount of stress to and

displacement of wildlife over the long term, especially during critical periods such as the nesting season.

Short-term disturbance to wildlife would likely occur during the improvement of existing recreational facilities (e.g., picnic and camping areas, sanitary facilities, utility upgrades) and future implementation of erosion control measures and habitat enhancements. No long-term impacts are anticipated. Short-term impacts would include greater stress to the inhabitants and possible temporary displacement of wildlife to adjacent habitats. However, impacts would be minimal because of the limited amount of proposed development and the availability of similar habitat in the surrounding area.

Of the sensitive species identified as potentially occurring in the Study Area, greater sage-grouse (*Centrocercus urophasianus*) in particular would benefit from the decrease in human disturbance under Alternative B. The designation of the entire area classified as occupied greater sage-grouse habitat would provide protection from disturbance during critical periods, such as when birds gather on leks for breeding, and during nesting and brood rearing. Protecting sensitive areas from recreation and removing unimproved roads fragmenting habitat have been identified as important management actions for protecting and enhancing greater sage-grouse populations (Stiver et al. 2006). Surveys specifically targeting the greater sage-grouse are recommended to document the species' presence and use within the project boundary, in order to properly estimate the number of birds impacted by management actions.

Other special status species that would be potentially impacted by Alternative B include the black-footed ferret (*Mustela nigripes*), Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). However, suitable habitat for these species does not currently exist within the Study Area and is not likely to be created by current or proposed management actions, and therefore the impacts on these species from Alternative B would be limited.

Alternative C: Recreation Development Emphasis

Under Alternative C, wildlife in the Study Area would generally benefit from improved management and the designation of parking areas as described under Alternative B.

Change in the Quality and Amount of Wildlife Habitat

Under Alternative C, more recreational opportunities would be pursued, including developing new camping, picnicking, and recreational facilities; improving developed camping facilities; and developing new hiking trails. This would occur throughout the Study Area but primarily in areas where some level of recreational use already exists. While the development of facilities would result in some loss of habitat, impacts would be restricted to currently disturbed areas or upland plant communities that are common in the surrounding area. Construction of the hiking trail in the South Beach Area would remove a minor amount of habitat in an area that is currently undisturbed. Construction of the trail to Lookout Point involves conversion of existing motorized access to nonmotorized and would therefore not involve additional habitat loss. Overall, impacts of habitat loss would be minimal under Alternative C, although greater than those described under Alternative B.

Change in the Amount of Human-Related Disturbance

Under Alternative C, as under Alternative B, wildlife in the Study Area would generally benefit from reduced disturbance in important wildlife areas. Similar to Alternative B, vehicle access would be restricted to the proposed parking areas and designated roads and trails, thereby protecting sensitive wildlife habitat and important wildlife areas. This would decrease the amount of stress to and displacement of wildlife over the long term, especially during critical periods such as the nesting season. Additionally, some unimproved roads would be decommissioned, which would prevent vehicle disturbance in some areas.

Short-term disturbance to wildlife would likely occur during the development of new boating, camping, and picnicking facilities and associated access roads; construction of the proposed trail segments; and implementation of erosion control measures. Impacts would be minimal because of the limited duration of the disturbance activities and availability of similar habitat in the surrounding area.

Wildlife would be impacted long-term by disturbance in areas where recreational use would increase in association with the new facilities and the hiking trails. Impacts include greater stress to the inhabitants and temporary displacement of wildlife to adjacent habitats. Activity during the nesting season would also lead to loss of reproductive success for bird species. Improvements in the North Beach Area would increase use and disturbance in that area, which may indirectly affect the surrounding area, which includes designated greater sage-grouse habitat. This developed area also fragments the Natural Area along the northern and eastern sides of the Study Area, and the two disconnected sections would not provide as much benefit to greater sage-grouse as the contiguous Natural Area designated in Alternative B.

Cumulative Impacts

Past actions that have contributed to current conditions for wildlife in the Study Area and surrounding lands include grazing and agricultural development, reservoir construction, reservoir water level fluctuations, phosphate mining, and human disturbance from recreational activity. Alternative C would incrementally add to wildlife habitat disturbances by developing new recreation facilities. Either of the action alternatives (Alternative B or C) would result in some incremental improvements to wildlife habitat over existing conditions by decommissioning user-created unimproved roads, designating portions of the Study Area as Natural Areas, and cooperatively developing and implementing a Habitat Management Plan that would increase consistency of wildlife management objectives inside and outside the Study Area.

Mitigation Measures

Mitigation measures that will minimize or avoid impacts to wildlife are recommended below. These measures will be integrated into development of a Habitat Management Plan if either action alternative were selected for the RMP:

- At appropriate locations, signs will be posted to encourage recreationists to stay on the trail and within developed recreation facility boundaries to minimize the amount of vegetation trampling and disturbance to wildlife.

- Wetland and riparian habitats will be protected in accordance with existing federal regulations. During the development and expansion of recreation facilities, construction will, to the extent possible, avoid disturbance (both directly and indirectly) of wetland and riparian areas.

- Wildlife management will be coordinated between Reclamation and appropriate partner agencies to specify suitable recreation within the Natural Areas and identify measures to target areas that were previously impacted by recreationists and are in need of restoration.

Residual Impacts

Under either action alternative, beneficial impacts to wildlife would occur. Potential negative impacts under each alternative would be minimized or avoided by implementing mitigation measures. However, regardless of the mitigation measures, some wildlife habitat would be impacted by the development of recreation facilities and recreational use, especially under Alternative C. Disturbance levels would also increase in localized areas. Overall net impacts of either action alternative would be beneficial because of improved management of Study Area resources.

Fisheries

This section evaluates RMP alternatives for potential impacts on Study Area fishery resources, including habitat quantity and quality, angling pressure, and potential threat of aquatic invasive species (AIS) infestation.

Issue

How would implementation of the RMP affect the fishery within the Study Area?

Impact Indicators

The following impact indicators were used to determine if implementation of the RMP would affect the fishery within the Study Area:

- change in the quality or quantity of fish spawning and recruitment habitat,
- change the amount of angling pressure, and
- change in the threat of AIS infestation.

Analysis Methods

Impacts to spawning and recruitment habitat were assessed qualitatively by assuming that various resource management actions would have negative, beneficial, or no impacts on littoral and inflow habitats important to egg, larval, and juvenile stages of fishes. Beneficial resource management actions include revegetating disturbed areas, implementing erosion control measures, providing access controls to riparian, shoreline, and inflow areas. Proposed resource management actions where changes to shoreline areas would increase siltation or disturbance to littoral areas, such as the creation of new campground facilities, were considered negative. Areas where the existing management situation, if left unchanged, would result in a negative impact to the fishery were also included in the analysis.

Change in the amount of angling pressure was assessed by reviewing proposed resource management actions that would impact angling pressure on the reservoir. Factors such as boating restrictions and the amount of development or enhancement of recreational facilities were analyzed to determine whether these actions would be beneficial, negative, or have no influence on fishing pressure. Those improvements that had the potential to considerably increase angling pressure were identified as negative impacts, while those that limited fishing pressure, such as boating limits, were identified as positive impacts.

Infestation of AIS was assessed by reviewing the proposed resource management actions that would impact numbers of boaters utilizing the reservoir. Factors such as boat launching and trailer parking capacity and development or enhancement of recreational facilities were analyzed to determine whether these actions would be beneficial, negative, or have no influence on the potential for AIS infestation. Improvements that had the potential to increase the number of boats traveling to and launching in the reservoir were identified as negative impacts, while those which limited boat traffic were identified as positive impacts.

Summary of Impacts

Alternative A would have a slight negative impact on the existing fishery at Red Fleet Reservoir because ongoing resource management conditions are allowing for bank erosion and siltation in some areas. Alternative B should have no negative impacts to the fishery. Alternative C would have a slight negative impact from developing camping and picnicking facilities and associated access roads, trails, and boat ramps. Impacts to fisheries are summarized in Table 4-9.

Table 4-9. Summary of Fishery Resources Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the quality and quantity of fish spawning and recruitment habitat	Ongoing negative impacts associated with unfettered shoreline access around Red Fleet Reservoir.	Minimal positive impact associated with designating Natural Areas, revegetating disturbed areas, restricting vehicle access to sensitive areas.	Minimal positive impact associated with revegetating disturbed areas and restricting vehicle access to sensitive areas. Negative impact associated with continued unfettered shoreline access, as well as developing new recreational facilities.
Change in the amount of angling pressure	No change from existing conditions. However, a future increase in visitation would continue to increase fishing pressure.	Slight positive impact associated with access restrictions to the Inflow, North Beach, and South Side Areas.	Negative impact associated with developing new recreational facilities with more boat launching and recreational capacity.
Change in the threat of aquatic invasive species infestation	No change from existing conditions. However, a risk is always present.	Slight positive to no impact with restrictions on access to the Inflow, North Beach, and South Side Areas. However, the risk remains with boat launching.	Negative impact associated with developing new recreational facilities and boat launching areas allowing for greater potential for infestation.

Alternative A: No Action

Change in the Quality or Quantity of Fish Spawning and Recruitment Habitat

The minimal negative impacts resulting from Alternative A would be related to continued bank erosion and trampling of littoral habitat by vehicle and foot traffic. Currently, there is uncontrolled access to the Study Area from adjacent lands by uncontrolled vehicular access to shoreline areas which also contributes to soil erosion. An anticipated increase in future visitation would also result in the disturbance of surface soils through the creation of informal use areas. Reducing the amount of sediment entering the reservoir and reducing the access to shoreline areas by motor vehicles would help maintain a littoral area that contains substrates and plants important to macroinvertebrates, young sport fish, and prey species.

Change in the Amount of Angling Pressure

If Study Area visitation and angling pressure increased under Alternative A, it is likely that the quality of the fishing experience would diminish. If angling pressure were to increase without actions to improve the fishery, it is likely that fish recruitment and survival would decrease for some species.

Change in the Threat of Aquatic Invasive Species Infestation

Alternative A would result in continued existing conditions with regard to AIS. If visitation increased in the future the added boat traffic would increase the likelihood for AIS infestation. Continuing to limit boat capacity and parking would diminish the opportunity for increased traffic. Maintaining the boat washing facility would likely deter visitors and maintain limited boat traffic.

Alternative B: Resource Conservation Emphasis

Change in the Quality or Quantity of Fish Spawning and Recruitment Habitat

As under Alternative A, minimal beneficial impacts to spawning and recruitment habitat in the Study Area would result from Alternative B. Reducing use within the North Beach and South Side Areas by decommissioning unimproved roads would have a beneficial impact on the fishery. There would be a slight reduction in impacts to riparian vegetation and shoreline substrate from reduced shoreline erosion.

Change in the Amount of Angling Pressure

An anticipated increase in future visitation would negatively impact the fishery by increasing angling pressure. Higher angler pressure could reduce sport fish catch rates. If angling pressure were to increase, it is possible that fish recruitment and survival would decrease for some species. However, changes in management to the Inflow, North Beach, and South Side Areas that would reduce use or access would mitigate the anticipated increase in angling pressure for the Study Area.

Change in the Threat of Aquatic Invasive Species Infestation

As with Alternative A, Alternative B would result in continued existing conditions with regard to AIS. If visitation increases in the future, the added boat traffic would increase the likelihood for AIS infestation. Continuing to limit boat capacity and parking would diminish the opportunity

for increased traffic. Maintaining the boat washing facility would likely deter visitors and maintain limited boat traffic.

Alternative C: Recreation Development Emphasis

Change in the Quality or Quantity of Fish Spawning and Recruitment Habitat

Minimal beneficial impacts to spawning and recruitment habitat should result from implementing Alternative C. There would be a slight reduction in impacts to riparian vegetation and shoreline substrate from reduced shoreline erosion. These benefits would result from implementing erosion control measures and designating Natural Areas.

Negative impacts to the fishery would be associated with expanding existing recreation facilities at the State Park Area and developing new recreation facilities in the South Beach and North Beach Areas. These activities would contribute to erosion and siltation of the reservoir's littoral area. Of these areas, creating an overnight, day use, or group area in the South Beach Area would potentially have the most direct impacts on littoral habitat due to increased erosion resulting from increased use. Alternative C would have a slight negative impact from developing new camping and picnicking facilities and associated access roads and trails.

Change in the Amount of Angling Pressure

Alternative C would result in a slight negative impact associated with increased angling pressure from the development of new recreation facilities in the South Beach and North Beach Areas. Angling would increase as more access becomes available. This is especially true in the South Beach Area with the development of a new boat launching area.

Change in the Threat of Aquatic Invasive Species Infestation

Alternative C would result in increased likelihood of an AIS infestation. With increased angling pressure and increased boat traffic, the threat of an AIS being brought into Red Fleet Reservoir becomes higher. Maintaining the boat washing station would reduce the threat, but with increased access points boat washing becomes more difficult to regulate.

Cumulative Impacts

Other factors impacting the Study Area fishery include reservoir water level fluctuations and water quality conditions. Under past, present, and reasonably foreseeable conditions, late spring and summer irrigation draw-downs typically occur during the spawning and young-of-the-year rearing periods. At times, such dewatering likely impacts the reproductive success of littoral spawning fishes and reduces the aquatic invertebrate food base available to these fishes. Additionally, summer low-water levels are usually associated with depressed dissolved oxygen levels, which at times would result in fish kills. Low dissolved oxygen levels would also lead to anoxic conditions during winter when ice and snow covering the reservoir limit oxygen-producing photosynthetic activity. Water quality is also influenced by upstream land use practices such as grazing, timber management, agriculture, mining, and other factors. Sediment inputs from upstream and nearshore activities can impair littoral habitat and also contribute to reduced water quality.

Assuming fishery management practices continue as they have in the past or improve as a result of developing a Fishery Management Plan (Alternative B or C), and because the reservoir is managed as a put-and-take fishery, there is little threat of losing quality angling opportunities at the Study Area.

Although not approved or scheduled at this time, the UDWR has submitted a scope of work to the Colorado River Recovery program outlining treatment plans for Red Fleet Reservoir in an effort to eradicate unwanted fish species such as walleye. Should this plan be implemented, fishing opportunity would be diminished for an undetermined period of time during and after the treatment. However, the treatment plan is designed to accommodate the needs of the angling community and the resource agencies. The quality of the put-and-take fishery would be improved after the treatment and during restocking.

With any alternative, the threat of introducing AIS to the reservoir is possible. Under Alternative C, as facilities are improved or added, visitation is more likely to increase along with the distance traveled to visit. With visitors traveling from other regions, the risk of new AIS invasions would potentially increase.

Mitigation Measures

Under Alternative B or C, Reclamation would engage partners, particularly State Parks and UDWR, in developing a Fishery Management Plan. Among other elements, the Fishery Management Plan will include goals to emphasize AIS awareness and preventive measures for the Study Area.

Residual Impacts

With the previously stated mitigation measures, neither of the RMP action alternatives would have residual impacts to the Study Area fishery.

Threatened, Endangered, and Other Special Status Species

Issues

How would the implementation of an RMP affect threatened, endangered, and other special status species and their habitats in the Study Area?

Impact Indicators

The following impact indicators were used to determine if implementation of the RMP would affect threatened, endangered, and other special status species and their habitats within the Study Area:

- change in the quantity and quality of habitat for a given species, and
- change in the level of human-related disturbance.

Analysis Methods

Methods used to assess impact indicators for special status wildlife and fish species are similar to those described in the wildlife and fisheries sections of this chapter. Species potentially occurring in the Study Area are the American white pelican (*Pelecanus erythrorhynchos*), bald eagle

(*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), greater sage-grouse, big free-tailed bat (*Nyctinomops macrotis*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), white-tailed prairie dog (*Cynomys leucurus*), and flannelmouth sucker (*Catostomus latipinnis*).

For special status plants (rare plants), RMP alternatives were compared with existing rare plant habitat to provide an estimate of how each alternative would impact appropriate habitat within vegetation communities. Each community within the Study Area with potential to support rare plant habitat was analyzed. Specifically, decommissioning unimproved roads, new nonmotorized trail construction, and changes in the land use designation were used to describe potential impacts. Typical disturbances related to the RMP alternative actions would include elimination of vegetation within developed use areas, construction of new nonmotorized trails, increased foot traffic disturbance, and increased potential for noxious weed invasion.

Summary of Impacts

Impacts of RMP alternatives to special status wildlife and fish species are summarized in Table 4-10. Under Alternative A, conditions for special status wildlife and fish species would not be expected to change. Alternatives B and C would generally provide benefits to special status species by improving resource management and increasing habitat protection within the Study Area. Alternative C would have less benefit because of its emphasis on recreational development and resulting increases in area disturbed by human activity and fewer acres of Natural Area land use designation. Site-specific assessments would be required for any new recreation facility developments under Alternative C in order to determine actual presence and potential for impacts to special status species.

Table 4-10. Summary of Impact Assessments for Special Status Wildlife and Fish Species at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the quantity and quality of habitat for special status species	No change from existing conditions and trends.	Minimal impacts to the quantity and quality of habitat related to facility upgrades and improvements. Enhancement of habitat through designation of Natural Areas and development of a Habitat Management Plan.	Minimal impacts of habitat loss due to new developed recreation facilities; site-specific environmental analysis required. Enhancement of habitat through designation of Natural Areas and development of a Habitat Management Plan.
Change in the level of human-related disturbance for special status species	No change from existing conditions and trends.	Short-term increase in disturbance during improvements to recreational facilities in localized areas. Long-term decrease in disturbance due to decommissioning of unimproved roads and Natural Area designations.	Some localized increase in disturbance with recreation facility improvement and new facility development; site-specific environmental analysis required. Long-term decrease in disturbance due to decommissioning of unimproved roads and Natural Area designations.

Impacts to the vegetation communities that have potential to support rare plants are described in Table 4-11. The Threatened, Endangered, and Other Special Status Species section of Chapter 3 describes the rare plants that potentially occur in each vegetation community. The analysis involved comparing changes in the quantity and condition of potential rare plant habitat. Alternative A involves no actions that would alter existing conditions and trends for rare plants. Alternative B has the potential for improving the overall condition and decreasing the level of disturbance of rare plant habitat. In addition to 1,435 acres of Natural Area land use designation, Alternative B includes decommissioning unimproved roads (2.3 miles) and the conversion of a unimproved road to nonmotorized trail (0.2 mile). Alternative C includes 1,000 acres of Natural Area, decommissioning of 2.3 miles of unimproved road, the construction of new nonmotorized trails, and conversion of unimproved road to nonmotorized trail totaling 0.2 miles. Collectively, Alternative C actions would slightly increase the level of disturbance within some localized areas that would support rare plants; site-specific surveys would be required before implementing new disturbances.

Table 4-11. Summary of Potential Rare Plant Habitat Impacts at Red Fleet Reservoir.

VEGETATION COMMUNITIES WITH POTENTIAL TO SUPPORT RARE PLANTS	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Bedrock Canyon and Tableland	No change from existing conditions and trends.	Minor benefit from 0.1 mile of unimproved road decommissioning.	Minor increased disturbance from 0.2 mile of new nonmotorized trails.
Pinyon-Juniper Woodland	No change from existing conditions and trends.	Potential benefits from 1.0 miles of unimproved road decommissioning and conversion of 0.2 mile from unimproved road to nonmotorized trail.	Minor benefits or neutral effects of decommissioning unimproved roads (0.9 mile) and creating new nonmotorized trails (1.0 mile).
Sagebrush Shrubland	No change from existing conditions and trends.	Potential benefit by decommissioning 0.5 mile of unimproved roads.	Same as Alternative B.
Mixed Low Sagebrush	No change from existing conditions and trends.	Potential benefit by decommissioning 0.6 mile of unimproved roads.	Same as Alternative B.
Shrub Steppe	No change from existing conditions and trends.	Potential minor benefit by decommissioning 0.4 mile of unimproved roads.	Potential minor net benefit by decommissioning 0.4 mile of unimproved roads and creating 0.4 mile of new nonmotorized trails.
Riparian	No change from existing conditions and trends.	Potential minor benefit of decommissioning unimproved roads near riparian vegetation communities.	Potential minor impact of creating 0.1 mile of new nonmotorized trail.
Subalpine Meadow	No change from existing conditions and trends.	Same as Alternative A.	Same as Alternative A.

Alternative A: No Action

Additional recreational development would not occur under Alternative A. In addition, land use category changes, trail decommissioning, special erosion control measures, and protective habitat measures would not be pursued under Alternative A. Because these management actions would not occur under Alternative A, there would be no change in habitat quantity and quality, or disturbance levels for threatened, endangered, and other special status species, compared with existing conditions and trends.

The status of the flannelmouth sucker in Red Fleet Reservoir is largely unknown. Because individuals have been found in recent years, it may be (based on some preliminary aging) that these fish are in fact spawning and recruiting within the reservoir/inflow area. If so, protecting the inflow habitat would be critical for maintaining a recruiting population. Maintaining a relatively more turbid, flowing, vegetated inflow area that provides spawning gravel and nursery habitat (cover) would then become important. Under Alternative A, Reclamation would not make specific efforts to encourage UDWR to develop a Fishery Management Plan for the Study Area, nor to determine the status of the flannelmouth sucker or determine what, if any, management specific to the species may be implemented as part of an overall Fishery Management Plan.

Under Alternative A the quantity of potential rare plant habitat would remain unchanged. There are currently approximately 14.1 miles of motorized and nonmotorized trails within vegetation communities that have the potential to support rare plant habitat. Alternative A would result in continued access to rare plant habitat and would increase disturbance over time in Bedrock Canyon and Tableland, Mixed Low Sagebrush, Pinyon-Juniper Woodland, Sagebrush Shrubland, Riparian, and Shrub Steppe communities.

Alternative B: Resource Conservation Emphasis

Change in the Quantity and Quality of Wildlife and Fish Habitat for Given Species

Under Alternative B, special status wildlife and fish species would generally benefit from reduced disturbance in those portions of the Study Area designated as Natural Areas (1,435 acres, or 58% of total Study Area acreage). Special status species also would likely benefit from the following management actions: maintaining the current carrying capacity of no more than 45 boats on the reservoir at any given time, decommissioning unimproved roads, revegetation of disturbed areas, and restricting motorized access in Natural Areas.

Under Alternative B, Reclamation would encourage UDWR, in consultation with Reclamation and other entities, to determine goals and objectives for managing the Study Area fishery; this would include developing goals and objectives for determining the status of the flannelmouth sucker and determining what, if any, management specific to the species may be implemented as part of an overall Fishery Management Plan. Because individuals have been found in recent years, it may be (based on some preliminary aging) that these fish are in fact spawning and recruiting within the reservoir/inflow area. If so, protecting the inflow habitat would be critical for maintaining a recruiting population. Maintaining a relatively more turbid, flowing, vegetated inflow area that provides spawning gravel and nursery habitat (cover) would then become important.

Change in the Level of Human-Related Disturbance

Under Alternative B, special status species in the Study Area would generally benefit from reduced amounts of human-related disturbance in areas that provide suitable habitat. Short-term disturbance to special status species would likely occur during the improvement of existing recreational facilities (e.g., sanitary facilities, utility upgrades) and implementation of erosion control measures and habitat improvements. Short-term impacts would include greater stress to the inhabitants and temporary displacement of wildlife to adjacent habitats. However, impacts would be minimal because of the limited amount of proposed development and availability of similar habitat in the surrounding area. No long-term impacts are anticipated on any of the listed species.

The American white pelican would benefit from Alternative B. Although the designation of Natural Areas is most likely to benefit terrestrial species, Alternative B also would provide the opportunity to develop a Fisheries Management Plan that would include addressing habitat needs for aquatic species.

For the bald eagle, specific benefits or impacts under Alternative B are likely directly related to Study Area visitation levels and, just as importantly, the presence of super-canopy roost trees, such as eastern cottonwood (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), and Fremont cottonwood (*Populus fremontii*). During winter, the bald eagle has less specific foraging habitat requirements than it does during the breeding season (Buehler 2000). Under Alternative B, creation of Natural Areas and decommissioning of unimproved roads would reduce the likelihood of harassment or disturbance by visitors, but the benefits would be minimal, at least during winter, when there are fewer visitors and associated disturbances.

The ferruginous hawk is likely to benefit from Alternative B through the creation of Natural Areas and from decommissioning of existing unimproved roads in the southwestern portion of the Study Area. The ferruginous hawk may use several Study Area vegetation communities—Shrub Steppe, Semi-Desert Grasslands, Mixed Low Sagebrush Shrubland, and Sagebrush Shrubland—as well as the interface between the Shrub Steppe and Pinyon-Juniper Woodland habitat types. Additionally the Bedrock Canyon and Tableland habitat type would protect nest sites for this species, which are typically located on slightly elevated terrain, such as rocky outcroppings (Bechard and Schmutz 1995).

Greater sage-grouse would likely benefit substantially from Alternative B. Habitat included in the Natural Areas of Alternative B are continuous with areas of greater sage-grouse brood habitat and winter habitat beyond the Study Area, as delineated by UDWR. Under Alternative B, the greater sage-grouse also would likely benefit from decommissioning unimproved roads located within the Dinosaur Trackway and North Beach areas. Natural Area designation would also provide the ability to close these areas during part of the year, should greater sage-grouse be found utilizing these habitats in the future.

The white-tailed prairie dog is likely to benefit because, under Alternative B, at least some of the southwestern portion of the Study Area would be included in a Natural Area and this portion of the Study Area includes potential habitat for the white-tailed prairie dog. Under Alternative B decommissioning unimproved roads in the South Side Area, in the southwestern portion of the

Study Area, would also benefit the white-tailed prairie dog, should they occur there now or in the future.

Potential benefits of Alternative B for the white-tailed prairie dog would similarly benefit the burrowing owl, because throughout much of its range the burrowing owl uses prairie dog burrows as both nest and roost sites (Poulin et al. 2011).

Three bat species would potentially benefit from Natural Area designations and decommissioning unimproved roads under Alternative B. Potential habitats for the Townsend's big-eared bat, the big free-tailed bat, and the spotted bat are found within the Study Area.

As a fish that is not sought after for angling and not easily captured on rod and reel, increased fishing pressure should not have a negative impact on the flannelmouth sucker. In fact, it would be positive for this species if walleye (*Sander vitreus*) and other piscivores are removed from the system with increased angling due to increased fishing access. Consequently, with implementation of Alternative B, Reclamation would encourage UDWR to include objectives in a Fishery Management Plan to determine the status of the flannelmouth sucker population in the Study Area and to address the management of walleye in relation to its potential impacts on other species that may be reproducing in the reservoir.

Alternative B includes the decommissioning of approximately 2.3 miles of unimproved road and the conversion of approximately 0.2 miles of motorized trail to nonmotorized trail in rare plant habitat. These actions would decrease overall disturbance and increase habitat quality in impacted vegetation communities.

Alternative C: Recreation Development Emphasis

Change in the Quantity and Quality of Habitat for Given Species

Under Alternative C, special status wildlife and fish species would generally benefit from reduced disturbance in those sections designated for conversion to Natural Areas (1,000 acres, or 40.3% of total Study Area acreage). The benefits to those species would be less than those under Alternative B, however, because under Alternative C fewer acres would be converted to Natural Areas and therefore fewer acres would be closed to motorized vehicles. Special status species would also likely benefit from decommissioning unimproved roads in the Dinosaur Trackway, North Beach, and South Side areas; the extent to which these planned closures benefit a specific species is dependent upon the occurrence of that species' required habitat at those locations. Also, because Alternative C emphasizes recreation over natural areas, there would be fewer acres that would have closures imposed on them; 857 acres (34.6%) of Study Area lands would be available for recreation. Although direct habitat loss would not occur, habitat degradation would and perhaps is likely to occur, depending upon visitation levels and recreational use. Accordingly, there would be short-term and long-term impacts to those same species, as detailed below.

Under Alternative C, Reclamation would encourage UDWR, in consultation with Reclamation and other entities, to determine goals and objectives for managing the Study Area fishery; this would include developing goals and objectives for determining the status of the flannelmouth

sucker and determining what, if any, management specific to the species may be implemented as part of an overall Fishery Management Plan. Because individuals have been found in recent years, it may be (based on some preliminary aging) that these fish are in fact spawning and recruiting within the reservoir/inflow area. If so, protecting the inflow habitat would be critical for maintaining a recruiting population. Maintaining a relatively more turbid, flowing, vegetated inflow area that provides spawning gravel and nursery habitat (cover) would then become important.

Change in the Level of Human-Related Disturbance

Any of the special status wildlife species have potential to be impacted by actions proposed under Alternative C. Short- and long-term disturbance impacts for any of these special status species under Alternative C would be similar to the impacts previously described for general wildlife. Short-term disturbance would occur during the development of new recreation facilities. These impacts would be minimal because of the limited duration of the activities and availability of similar habitat in the surrounding area. Longer-term disturbance would occur in areas where recreational use would increase in association with the new facilities. Impacts would include stress, reduced reproductive success, and displacement.

Potential impacts of Alternative C on flannelmouth sucker are the same as those described for Alternative B.

Because actual occurrence of any of the special status species is not known, surveys for species and assessment of potential impacts should be completed prior to implementation of site-specific designs.

Alternative C includes the decommissioning of approximately 2.3 miles of unimproved road, the construction of approximately 1.6 miles of new nonmotorized trails and the conversion of 0.2 miles of unimproved road to nonmotorized trail. The construction of new trails would result in an increase of rare plant habitat disturbance; however, the conversion of unimproved road to nonmotorized trail would result in a decrease of rare plant habitat disturbance. These actions would negate any benefit or degradation resulting in the overall condition of the potential rare plant habitat remaining unchanged. Vegetation communities that would have a slight increase in rare plant habitat disturbance include Bedrock Canyon and Tableland, Pinyon-Juniper Woodland, Shrub Steppe, and Riparian. Alternative C also includes a proposed boat ramp at the South Beach Area that would impact riparian habitat potentially supporting rare plants; plant surveys would be required as a component of site-specific environmental assessment.

Cumulative Impacts

Cumulative impacts to special status wildlife, fish, and rare plant species would be the same as those described in the wildlife, fisheries, and vegetation sections of this chapter. For rare plants, public use and the continued threat of noxious weed invasion are the most likely cumulative impacts within the Study Area that would be expected as a result of past, present, and reasonably foreseeable actions. Riparian areas are especially vulnerable to weed invasion. Alternative C would slightly increase the level of cumulative impacts on rare plant habitat.

Mitigation Measures
Mitigation measures for special status species are inclusive of those previously described for vegetation, wildlife, and fisheries. Surveys for special status species would be completed as a component of site-specific environmental analysis prior to implementing any recreation facility developments. With implementation of Alternative B or C, Reclamation would encourage UDWR to include objectives in a Fishery Management Plan to determine the status of the flannelmouth sucker population in the Study Area.

Residual Impacts
With the previously stated mitigation measures and pending site-specific environmental assessments, the RMP action alternatives would not have significant residual impacts on any special status species occurring in the Study Area.

Cultural Resources

Issue
How would implementation of an RMP affect the physical integrity of cultural resources within the Study Area?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect the cultural resources within the Study Area:

- change in the integrity of cultural resource sites.

Analysis Methods
A Class I cultural resource literature search was conducted by Reclamation's archeologist to identify any previously conducted cultural resource inventories and recorded cultural resource sites within the Study Area. Files at Reclamation and General Land Office maps were also examined. Previously determined site integrity information ascertained from the literature search was used as a basis to address the impact indicator for each RMP alternative.

Summary of Impacts
Each alternative has the potential to impact to a varying degree the integrity of cultural resource sites within the Study Area. As proposed development increases within an alternative, so does the potential for impacts to the integrity of cultural resources. A summary of the projected impacts to cultural resources as a result of each alternative are shown in Table 4-12.

Alternative A: No Action
Under Alternative A, there is a potential for impacts to the integrity of cultural resources. This alternative maintains existing recreation development areas but allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. This alternative also involves managing a large portion of the Study Area as an Undeveloped Day Use Recreation Area. This potentially increases public access into these areas.

Table 4-12. Summary of Cultural Resources Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the integrity of cultural resource sites	Potential impacts to integrity of surficial and subsurface cultural resources unchanged.	Potential slight increased impact to the integrity of surficial and subsurface cultural resources.	Increased potential to impact the integrity of surficial and subsurface cultural resources caused by increased development.

Increased public access has the potential to increase the unauthorized collection or excavation of cultural resources, thus impacting site integrity. Alternative A potentially involves the replacement or repair of existing facilities, which in some cases represent cultural resources themselves. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of implementing management practices under Alternative A. This type of activity has the potential to impact the integrity of both surficial and subsurface cultural resources.

Alternative B: Resource Conservation Emphasis

Under Alternative B, a large portion of the Study Area would be designated as Natural Areas; however, there is still a potential for impacts to the integrity of cultural resources. The land use proposed under this alternative is similar to that of Alternative A, with lands devoted to developed recreation remaining unchanged. Alternative B still allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. This alternative would also continue the management of a portion of the Study Area as Undeveloped Day Use Recreation Area. This designation potentially increases public access into these areas. Increased public access has the potential to increase the unauthorized collection or excavation of cultural resources, thus impacting site integrity. As with Alternative A, Alternative B potentially involves the replacement or repair of existing facilities, which in some cases represent cultural resources themselves. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of implementing management practices under Alternative B. This type of activity has the potential to impact the integrity of both surficial and subsurface cultural resources.

Alternative C: Recreation Development Emphasis

Under Alternative C, there is an increased potential for impacts to the integrity of cultural resources. Alternative C still allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. Additionally, Alternative C includes the development of additional boating, camping, picnicking, and parking facilities as well as associated access roads. This alternative also includes potential development of group recreation sites, rental cabins/yurts, hiking trails, shoreline access, and an accessible fishing dock. Development increases the potential to impact the integrity of both surficial and subsurface cultural resources.

Alternative C also involves expanding developed portions of the Study Area, including Developed Day Use, Developed Overnight, and Developed Day Use and Overnight Group Recreation Areas. These designations potentially increase public access into these areas.

Increased public access has the potential to increase the unauthorized collection or excavation of cultural resources, thus impacting site integrity. As with Alternatives A and B, Alternative C potentially involves the replacement or repair of existing facilities, which, in some cases represent cultural resources themselves. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of implementing management practices under Alternative C. This type of activity has the potential to impact the integrity of both surficial and subsurface cultural resources.

Cumulative Impacts

Potential cumulative impacts to cultural resources would result from reasonably foreseeable future actions associated with all three alternatives. Fluctuations in reservoir levels (wave action) as well as sedimentation would lead to cumulative cultural resource impacts located near Red Fleet Reservoir. Upgrades to existing facilities, which in some cases represent cultural resources themselves, are another form of potential cumulative impact. Other potential cumulative impacts, such as unauthorized collection or excavation of cultural resources and erosion, would result from development and increased public use within the Study Area.

Mitigation Measures

Reclamation will ensure the completion of cultural resource compliance for all site-specific undertakings as a means to fulfill Section 106 of the National Historic Preservation Act, as well as to avoid, reduce, or mitigate impacts to the integrity of cultural resources. Avoidance is the preferred method of cultural resource mitigation. If historic properties are located within the area of potential effects associated with a specific undertaking, and if they would be impacted by activities associated with the undertaking, a Memorandum of Agreement (MOA) would be developed. The MOA would be among Reclamation, the Utah State Historic Preservation Office, the Advisory Council on Historic Preservation (if it chooses to participate), and any other party that assumes responsibility under the agreement. The MOA would include the terms and conditions agreed upon to resolve (mitigate) the impacts of the undertaking upon historic properties.

Residual Impacts

Cultural resources are, by definition, nonrenewable resources. If alternative impacts to cultural resources remain unmitigated, the integrity of the resource is likely to be lost. In turn, information and data associated with the resource also becomes unavailable. With implementation of the above-stated mitigation measures, selection of an action alternative would not cause significant residual impacts to cultural resources.

Paleontological Resources

Issue

How would implementation of an RMP affect paleontological resources within the Study Area?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect the paleontological resources within the Study Area:

- change in the condition of paleontological resource localities.

Analysis Methods
A paleontological resource file search was conducted by the Utah Geological Survey, at the request of Reclamation, to identify any previously conducted paleontological resource surveys and recorded paleontological resource localities within the Study Area. Files at Reclamation were also examined. Previously determined locality condition information ascertained from the file search was used as a basis to address the impact indicator for each RMP alternative.

Summary of Impacts
Each alternative has the potential to impact to a varying degree the condition of paleontological resource localities within the Study Area. As proposed development increases within an alternative, so does the potential for impacts to the condition of paleontological resource localities. A summary of the projected impacts to paleontological resources as a result of each alternative are shown in Table 4-13.

Table 4-13. Summary of Paleontological Resources Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the condition of paleontological resource localities	Potential impacts to condition of surficial and subsurface paleontological resources.	Potential impacts to condition of surficial and subsurface paleontological resources.	Increased potential to impact the condition of surficial and subsurface paleontological resources caused by increased development.

Alternative A: No Action
Under the Alternative A, there is a potential for impacts to the condition of paleontological resources. This alternative maintains existing recreation development areas but allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. This alternative also continues management of a large portion of the Study Area as Undeveloped Day Use Recreation Area. This designation potentially increases public access into these areas, which has the potential to increase the unauthorized collection or excavation of paleontological resources, thus impacting locality condition. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of implementing management practices under Alternative A. This type of activity has the potential to impact the condition of both surficial and subsurface paleontological resources.

Alternative B: Resource Conservation Emphasis
Under Alternative B, a large portion of the Study Area would be designated as Natural Area, which would limit public access to these areas. However, there is still a potential for impacts to

the condition of paleontological resources. Other land uses proposed under this alternative are similar to Alternative A, with lands devoted to developed recreation remaining unchanged. Alternative B still allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. This alternative also involves designating a portion of the Study Area for an Undeveloped Day Use Recreation Area. This designation potentially increases public access into these areas. Increased public access has the potential to increase the unauthorized collection or excavation of paleontological resources, thus impacting locality condition. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of implementing management practices under Alternative B. This type of activity has the potential to impact the condition of both surficial and subsurface paleontological resources.

Alternative C: Recreation Development Emphasis

Under Alternative C, there is an increased potential for impacts to the condition of paleontological resources. Alternative C still allows for facility upgrades, site redesign, and the installation, maintenance, or upgrading of boundary fencing, gates, and cattle guards. Additionally, Alternative C includes the development of additional boating, camping, picnicking, and parking facilities as well as associated access roads. This alternative also includes potential development of group recreation sites, rental cabins/yurts, hiking trails, shoreline access, and an accessible fishing dock. Development increases the potential to impact the condition of both surficial and subsurface paleontological resources.

Alternative C also involves expanding developed portions of the Study Area including Developed Day Use, Developed Overnight, and Developed Day Use and Overnight Group Recreation Areas. Many of these designations potentially increase public access into these areas. Increased public access has the potential to increase the unauthorized collection or excavation of paleontological resources, thus impacting locality condition. In addition, there would likely be other ground-disturbing activities, such as erosion control, revegetation, and road maintenance, as a result of practices under Alternative C. This type of activity has the potential to impact the condition of both surficial and subsurface paleontological resources.

Cumulative Impacts

Potential cumulative impacts to paleontological resources would result from reasonably foreseeable future actions associated with all three alternatives. Fluctuations in reservoir levels (wave action) as well as sedimentation would lead to cumulative paleontological resources impacts located near Red Fleet Reservoir. Other potential cumulative impacts, such as unauthorized collection or excavation of paleontological resources and degradation, would result from development and increased public use within the Study Area.

Mitigation Measures

Reclamation will ensure the completion of paleontological resource compliance for all site-specific projects as a means to fulfill Section 6302 of the Paleontological Resources Preservation Act, as well as to avoid, reduce, or mitigate impacts to the condition of paleontological resources. Avoidance is the preferred method of paleontological resource mitigation. If avoidance of paleontological resources is not possible, a mitigation plan would be developed.

The mitigation plan would include the terms and conditions agreed upon to resolve (mitigate) the impacts to paleontological resources.

Residual Impacts

Paleontological resources are, by definition, nonrenewable resources. If alternative impacts to paleontological resources remain unmitigated, the resource is likely to be destroyed. In turn, information and data associated with the resource also becomes unavailable. With implementation of the above-stated mitigation measures, selection of an action alternative would not cause significant residual impacts to paleontological resources.

Indian Trust Assets

Issue

How would implementation of an RMP affect Indian Trust Assets (ITAs) within the Study Area?

Impact Indicators

The following impact indicator was used to determine if implementation of the RMP would affect the ITAs within the Study Area:

- change in the use and quality of ITAs.

Analysis Methods

Reclamation contacted the Bureau of Indian Affairs (BIA) Uintah and Ouray Agency in Fort Duchesne, Utah, to identify any potential impacts to ITAs within the Study Area. According to the BIA, the only known ITA involves a water right in the Green River held in trust for the Ute Indian Tribe of the Uintah and Ouray Reservation. This ITA information was used as a basis to address the impact indicator for each RMP alternative.

Summary of Impacts

The water right in the Green River held in trust for the Ute Indian Tribe of the Uintah and Ouray Reservation would not be impacted by any RMP alternative. A summary of the projected impacts to ITAs as a result of each alternative are shown in Table 4-14.

Table 4-14. Summary of Indian Trust Assets (ITAs) Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the use and quality of Indian Trust Assets (ITAs)	No projected impact to ITAs.	No projected impact to ITAs.	No projected impact to ITAs.

Alternative A: No Action

Under Alternative A, there is no projected impact to ITAs.

Alternative B: Resource Conservation Emphasis
Under Alternative B, there is no projected impact to ITAs.

Alternative C: Recreation Development Emphasis
Under Alternative C, there is no projected impact to ITAs.

Cumulative Impacts

There are no projected cumulative impacts to ITAs following implementation of any of the RMP alternatives.

Mitigation Measures
Reclamation will ensure the completion of ITA compliance for all site-specific projects as a means to fulfill both U.S. Department of Interior (512 DM 2) and Reclamation policies regarding ITAs, as well as to avoid, reduce, or mitigate impacts to ITAs. Avoidance is the preferred method of ITA mitigation. If avoidance of ITAs is not possible, a mitigation plan would be developed. The mitigation plan would include the terms and conditions agreed upon to resolve (mitigate) the impacts to ITAs.

Residual Impacts
There are no projected residual impacts to ITAs following implementation of any of the RMP alternatives.

Land Management

Energy, Minerals, and Other Extractive Resources

This section evaluates RMP alternatives for potential impacts on the energy, minerals, and other extractive resources within the Study Area.

Issue
How would implementation of an RMP affect the exploration and development of energy, minerals, and other extractive resources within the Study Area?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect energy, minerals, and other extractive resources within the Study Area:

- change in the development of locatable, saleable, or leasable mineral resources.

Analysis Methods
The impact indicator noted above was used to determine impacts to locatable, saleable, and leasable mineral resources. Impacts to these mineral resources are discussed qualitatively below.

Summary of Impacts

Impacts to locatable mineral resources (e.g., gold and silver) would not occur because these types of mineral resources do not occur within the Study Area. The potential for saleable (e.g., sand, gravel, and cobbles) and leasable mineral resources does exist within the Study Area. Saleable mineral resources may exist in portions of the Study Area overlain by alluvial deposits, but it has not yet been shown that these resources can be mined economically. Leasable mineral resources are located in the vicinity of the Study Area, but they have not been documented within the Study Area. Table 4-15 summarizes the impacts to the development of mineral resources.

Table 4-15. Summary of Energy, Minerals, and Other Extractive Resources Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the development of locatable, saleable, or leasable mineral resources	No projected impacts to energy, minerals, and other extractive resources.	No projected impacts to energy, minerals, and other extractive resources.	No projected impacts to energy, minerals, and other extractive resources.

Alternative A: No Action

Under Alternative A, there would be no change in the management of the exploration and development of locatable mineral resources because these resources do not occur in the Study Area. Saleable mineral resources may exist in portions of the Study Area overlain by alluvial deposits, but it has not yet been shown that these resources can be mined economically. Impacts to the exploration or development of saleable or leasable mineral resources within the Study Area would not occur because there would be no change in management of these resources under Alternative A. There are no known plans for development of saleable or leasable mineral resources within the Study Area.

Alternative B: Resource Conservation Emphasis

Impacts to mineral resources under Alternative B would be the same as those described for Alternative A.

Alternative C: Recreation Development Emphasis

Impacts to mineral resources would be the same as those described for Alternative A.

Cumulative Impacts

Implementation of an RMP would not result in any cumulative impacts to the exploration and development of locatable, saleable, or leasable mineral resources in the Study Area.

Mitigation Measures

No mitigation measures for locatable, saleable, or leasable mineral resources are necessary as there are no impacts to the exploration and development of the resources in the Study Area.

Residual Impacts
Implementation of a RMP under Alternative A, B, or C would result in no residual impacts to the exploration and development of locatable or leasable mineral resources in the Study Area.

Waste Water, Solid Waste, and Hazardous Materials

This section evaluates RMP alternatives for the potential of waste water, solid waste, and hazardous materials to contaminate soil, groundwater, and surface water in the Study Area.

Issue
How would implementation of an RMP affect the likelihood of contamination of soil, groundwater, and surface water by wastewater, solid waste, and hazardous materials?

Impact Indicators
The following impact indicator was used to determine if implementation of the RMP would affect the likelihood of contamination of soil, groundwater, and surface water by wastewater, solid waste, and hazardous materials within the Study Area:

- change in the amount of sanitation facilities.

Analysis Methods
Existing and proposed recreational facility plans were used to determine the variation in the amount of restroom facilities and refuse control proposed for each RMP alternative. Potential impacts to soil, groundwater, and surface water are discussed qualitatively.

Summary of Impacts
There would not be a change in impacts to groundwater, soil, or surface water under Alternative A because there would be no change in the amount of sanitation facilities. Alternative B would contribute a vault toilet at the proposed Lookout Point trailhead on the east side of the reservoir. This vault toilet would not pose a risk for groundwater, soil, or surface water contamination because the restroom would be pumped on a regular basis. Under Alternative C, the existing Developed Day Use Recreation Area and Developed Overnight Recreation Area would be expanded. This expansion would include the addition of a small number of vault toilets. Additionally, under Alternative C, a Developed Overnight and Day Use Group Recreation Area at the South Beach Area and a Developed Day Use Recreation Area at the North Beach Area would be added to the Study Area. Several vault toilets would be added to the South Beach Area and one vault toilet would be added to the North Beach Area. Additionally, a vault toilet would be added to the Lookout Point trailhead on the east side of the reservoir. The vault toilets added to the Study Area would not pose a risk for groundwater, soil, or surface water contamination because the restrooms would be self-contained and would be pumped regularly. The possible expansion of septic systems under Alternative C has the potential to slightly increase nitrogen loads to Red Fleet Reservoir via groundwater transport (Table 4-16).

Table 4-16. Summary of Wastewater, Solid Waste, and Hazardous Materials Impacts at Red Fleet Reservoir.

IMPACT INDICATOR	ALTERNATIVE A: NO ACTION	ALTERNATIVE B: RESOURCE CONSERVATION EMPHASIS	ALTERNATIVE C: RECREATION DEVELOPMENT EMPHASIS
Change in the amount of sanitation facilities	No change from existing conditions.	Addition of a vault toilet at the Lookout Point trailhead on the east side of the reservoir.	Increase in the number of vault toilets and possible expansion of existing septic systems.

Alternative A: No Action

Under Alternative A, numbers and types of restroom facilities and refuse controls would not change. Currently, Study Area has flush toilets and a vault toilet at the existing State Park Area. The waste from the flush toilets is discharged to a septic tank and absorption field. No additional sanitation facilities would be added under Alternative A, so there would not be an increased risk to groundwater, soil, or surface water quality. All solid waste is currently transported out of the Study Area for disposal in a local landfill.

Alternative B: Resource Conservation Emphasis

Under Alternative B, the only change in the amount of sanitation facilities in the Study Area would be an additional vault toilet at the proposed Lookout Point trailhead on the east side of the reservoir.

Alternative C: Recreation Development Emphasis

Under Alternative C, the existing Developed Day Use Recreation Area and Developed Overnight Recreation Area would be expanded. This expansion would include the addition of a small number of vault toilets. Additionally, under Alternative C a Developed Overnight and Day Use Group Recreation Area at the South Beach Area and a Developed Day Use Recreation Area at the North Beach Area would be added to the Study Area. Several vault toilets would be added to the South Beach Area and one vault toilet would be added to the North Beach Area. Additionally, a vault toilet would be added to the Lookout Point trailhead on the east side of the reservoir. An increase in the number of vault restrooms does not pose a risk for groundwater, soil, or surface water contamination because the restrooms would be pumped on a regular basis. An increase in the number of visitors would increase the loads on the existing septic system and would necessitate additional refuse collection in the Study Area.

Cumulative Impacts

Implementing an RMP action alternative would contribute incrementally to existing Study Area waste water impacts. As a result of increased visitor use and campground and associated recreation facility construction, the potential for groundwater, soil, or surface water quality degradation would increase slightly with Alternative C.

Mitigation Measures

Under Alternative A or B, no mitigation measures are necessary for waste water, solid waste, or hazardous materials, as there are no anticipated impacts. Under Alternative C and pending site-specific environmental analysis and design, local and state regulations concerning septic tank renovations would be followed during the possible expansion of the existing septic systems in

the Developed Overnight Recreation Area. Additionally, providing adequate refuse collection frequency at all refuse collection locations in the Study Area will help reduce the potential for accumulated trash to create groundwater, soil, or surface water contamination.

Residual Impacts

With implementation of the above-stated mitigation measures, none of the RMP alternatives would result in significant residual impacts to Study Area resources related to waste water, solid waste, and hazardous materials.