Little Cottonwood Canyon ENVIRONMENTAL IMPACT STATEMENT
S.R. 210 | Wasatch Blvd. to Alta

Supplemental Information Report – Assessment of the Roadless Area Conservation Rule for the Final EIS Alternatives

Little Cottonwood Canyon Environmental Impact Statement Wasatch Boulevard to Alta

Lead agency:
Utah Department of Transportation

March 17, 2023

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by UDOT pursuant to 23 USC 327 and a Memorandum of Understanding dated May 26, 2022, and executed by FHWA and UDOT.

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Abbreviations

BMP	best management practice
CFR	Code of Federal Regulations
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
IRA	Inventoried Roadless Area
KOP	key observation point
LCU	landscape character unit
MP	management prescription
MPC	management prescription category
NEPA	National Environmental Policy Act
NFS	National Forest System
PFC	Property Functioning Condition
PPSL	peak-period shoulder lanes
RACR	Roadless Area Conservation Rule
RHCA	Riparian Habitat Conservation Area
ROD	Record of Decision
ROS	Recreation Opportunities Spectrum
S.R.	state route
SHPO	State Historic Preservation Office
SLCDPU	Salt Lake City Department of Public Utilities
SPM	semi-primitive motorized
SPNM	semi-primitive non-motorized
SWPPP	stormwater pollution prevention plan
U.S.	United States
UDOT	Utah Department of Transportation
UPDES	Utah Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

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1.0 Introduction and Background

1.1 Introduction

The Utah Department of Transportation (UDOT) released a Final Environmental Impact Statement (Final EIS) for the State Route (S.R.) 210 Wasatch Boulevard to Alta Project in August 2022. The Little Cottonwood Canyon Final EIS addressed National Forest System (NFS) lands in the impact analysis area according to the *Revised Forest Plan: Wasatch-Cache National Forest* (Forest Plan; USDA Forest Service 2003a). The Forest Plan provides broad, program-level direction for managing the Wasatch-Cache Planning Area of the Uinta-Wasatch-Cache National Forest and its resources.

What is the purpose of this report?

This report identifies, assesses, and documents how the proposed S.R. 210 Project activities would affect the characteristics of Inventoried Roadless Areas in the project area.

Following publication of the Little Cottonwood Canyon Final EIS, the U.S. Department of Agriculture (USDA) Forest Service requested that UDOT provide supplemental information and analysis regarding the impacts of the S.R. 210 Project to Inventoried Roadless Areas under the 2001 Roadless Area Conservation Rule (RACR; 66 Federal Register 3243 [January 12, 2001]) and the Forest Plan. The RACR required the USDA Forest Service to conduct an inventory of roadless areas for their potential to be designated as wilderness based on size (at least 5,000 acres) or location (contiguous to an existing Wilderness Area). If an area meets these criteria, it becomes an “Inventoried Roadless Area” (IRA) for the purpose of the RACR. In general, the RACR prohibits road construction, road reconstruction, and timber harvesting (timber cutting, sale, or removal) in IRAs unless certain exceptions or circumstances exist. The Forest Plan includes management direction for roadless areas within the Wasatch-Cache Planning Area of the Uinta-Wasatch-Cache National Forest.

In addition to the general absence of constructed roads, IRAs might also contain important environmental values that warrant protection, such as high-quality or undisturbed soil, water, and air resources; sources of public drinking water; diversity of plant and animal communities; habitat for threatened, endangered, proposed, candidate, and sensitive species and those species dependent on large undisturbed areas of land; recreation opportunities in the primitive, semi-primitive non-motorized, and semi-primitive motorized classes; reference landscapes; natural-appearing landscapes with high scenic integrity; traditional cultural properties and sacred sites; and other locally unique characteristics. For more information, see Section 3.0, *Affected Environment*, of this report.

UDOT is issuing this supplemental information report to assess and further document the potential impacts of the S.R. 210 Project (primary alternatives and sub-alternatives) on the roadless values of IRAs in Little Cottonwood Canyon and to assess the approximate amount of any timber harvesting (timber cutting, sale, or removal) that would result from the project components within the IRAs. UDOT has determined that a supplemental EIS is not required under 40 Code of Regulations (CFR) Section 1502.9(d) because substantial changes to the proposed actions have not occurred, nor are there any significant changes or information in this impacts analysis that would have a significant bearing on the findings of the previous National Environmental Policy Act documents. Any proposed activities impacting NFS lands remains subject to the USDA Forest Service’s review and decision.

1.2 Background

Little Cottonwood Canyon contains the White Pine IRA and portions of the Twin Peaks and Lone Peak IRAs. These three IRAs are adjacent to the two Wilderness Areas, Twin Peaks and Lone Peak, in Little Cottonwood Canyon (Figure 1 below). IRAs are identified as areas of NFS land currently inventoried for planning purposes as roadless.

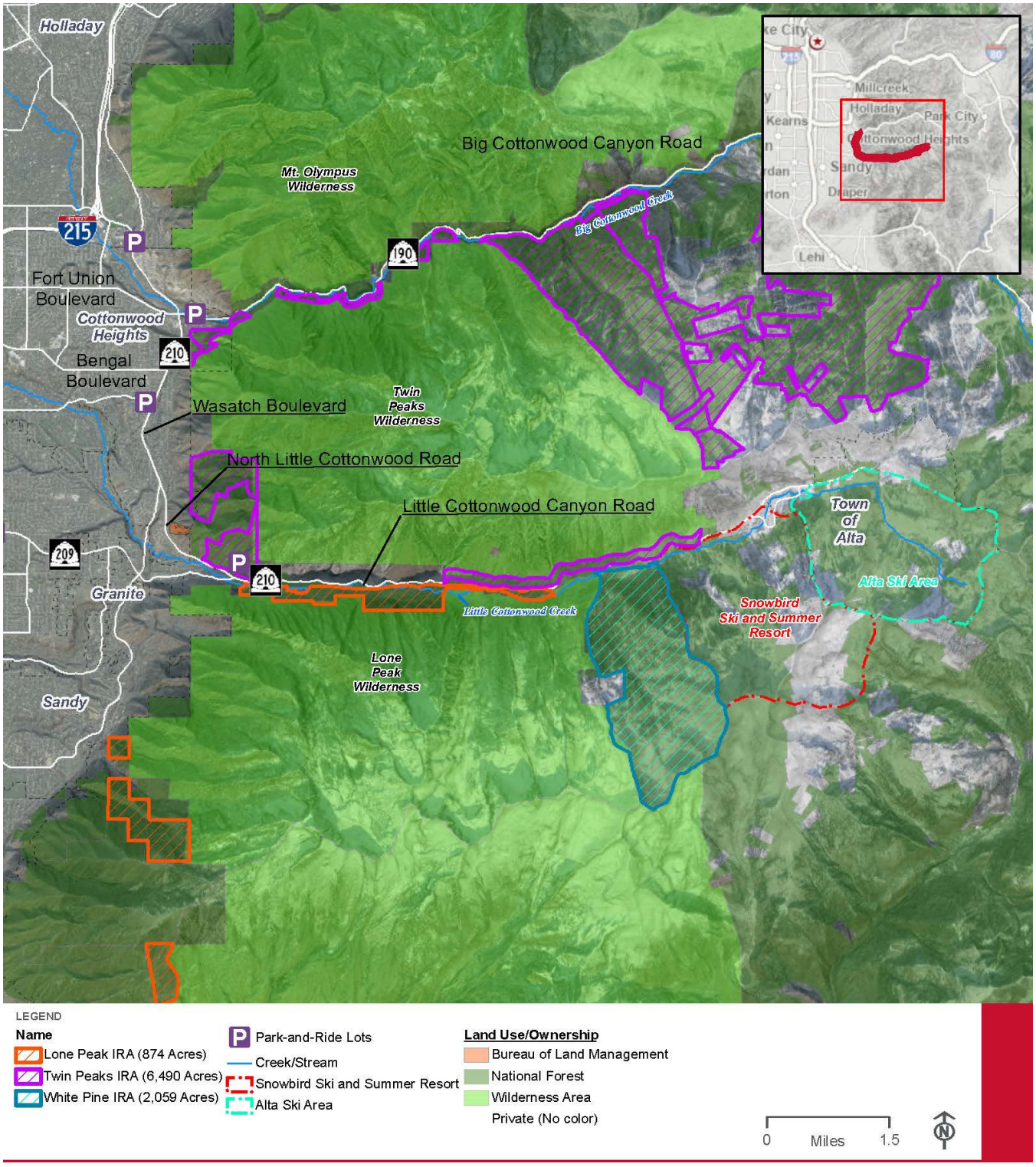
Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS assessed the impacts of the project's primary alternatives and sub-alternatives to the management prescriptions (MPs) in the land use impact analysis area. The MPs in the land use impact analysis area consists of existing wilderness Class II and III (MP 1.2 and MP 1.3), undeveloped areas (MP 2.6), watershed emphasis (MP 3.1W), and developed recreation (MP 4.5).[1] In the *Final EIS for the Wasatch-Cache National Forest, Forest Plan Revision* (Forest Plan Final EIS; USDA Forest Service 2003b), the USDA Forest Service applied management prescription MP 2.6 to IRAs that were not recommended for wilderness designation but are managed by the Forest Plan to maintain the area's roadless values. See Section 3.0, *Affected Environment*, and Section 4.1, *Methodology*, of this report for more detailed description of roadless values, how the existing roadless values were scored within each IRA, and how management prescriptions were applied to protect the roadless values of the IRAs.

Prior to NFS lands being appropriated and/or before granting a special-use authorization, impacts to these MPs, and other Forest Plan standards and guidelines, objectives, goals and subgoals, and desired future conditions, will remain subject to the USDA Forest Service's review and decision, including any issuance of a Record of Decision (ROD) and including any necessary project-level Forest Plan amendments. For more information, see Chapter 28, *U.S. Department of Agriculture Forest Service Forest Plan Amendments*, of the Little Cottonwood Canyon Final EIS. In addition, the USDA Forest Service will analyze the effects on roadless area characteristics of the IRAs pursuant to the RACR.

The purpose of this report is to assess and provide information regarding the expected impacts of the S.R. 210 Project to IRAs. Much of the information for this assessment is contained in the Little Cottonwood Canyon Final EIS. This supplemental information report synthesizes that information and presents it under the RACR framework.

[1] For more information, see Section 3.3.2.1.7, *Revised Forest Plan for the Wasatch-Cache National Forest*, in Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS.

Figure 1. Inventoried Roadless Areas (IRAs)



2.0 Regulatory Setting

IRAs are identified as areas of NFS lands currently inventoried for planning purposes as roadless areas. The purpose of the RACR is to provide, within the context of multiple-use management, protection for inventoried roadless areas within the National Forest System.[2] In general, RACR prohibits certain road construction, road reconstruction, and timber harvesting (timber cutting, sale, or removal) in IRAs on NFS lands unless an exception applies. The Little Cottonwood Canyon Final EIS proposes alternatives and sub-alternatives, which would require activities in IRAs that are not considered roads, but may have associated ground disturbance including timber cutting and removal. The Little Cottonwood Canyon Final EIS also proposes alternatives that would have activities that would be considered construction or reconstruction of the existing S.R. 210 roadway.

The USDA Forest Service may approve exceptions to the RACR in accordance with procedures and guidance, including the *Update to February 3, 2020, Delegation of Authority-Approval of Exceptions to 2001 Roadless Area Conservation Rule* (*Exceptions Update*) for Region 4 (Intermountain Region) of the USDA Forest Service. The *Exceptions Update* includes a Region 4 Implementation Guide for 2001 Roadless Rule Exceptions and Required Reviews (USDA Forest Service 2020). The rule and this guide list exceptions including those allowing road construction, reconstruction, improvement, or realignment. These exceptions include roads deemed essential for public health and safety, road reconstruction if needed to mitigate a hazard, or a federal-aid highway project in the public interest.

As discussed further below in Section 4.0, *Environmental Consequences*, certain components of the proposed alternatives (gondola system construction and trailhead improvements) that could impact identified IRAs would not be considered roads within the road construction prohibitions of the RACR and Forest Plan.[3] These proposed actions are considered "activities not otherwise prohibited" by the RACR. Thus, in areas where timber cutting and removal may be necessary to facilitate construction or improvements, timber removal would be considered incidental to implementing an activity not otherwise prohibited. The peak-period shoulder lane, snow sheds, and possibly a cog rail system could be considered a road or components of a road, and those potential impacts are discussed below in Section 4.0. There is an exception in the RACR for road construction, reconstruction, improvement, or realignment. Maintenance of classified roads is permissible in IRAs.

A "road" in the rule is defined as "a motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary." Because a final decision regarding how federal lands will be appropriated, either an easement or appropriation processed through the Federal Highway Administration (FHWA) or a special-use authorization (easement or special use-permit) granted to UDOT, will be made after UDOT's ROD for the S.R. 210 Project is published. The final decision regarding any activities on NFS lands, including in any ROD, impacting IRAs remain subject to the USDA Forest Service's review and final decision.

Section 3.0, *Affected Environment*, of this report presents a summary of values from the Forest Plan Final EIS for each IRA in the Little Cottonwood Canyon impact evaluation area. Section 4.0, *Environmental Consequences*, of this report presents the potential exceptions to and effects on roadless values.

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[2] 36 CFR Section 294.10 (2001)

[3] Note that the proposed resort bus stops associated with the enhanced bus alternatives are not located in IRAs.

3.0 Affected Environment

Roadless areas refer to areas that are without constructed and maintained roads and that are substantially natural. Some types of improvements and past activities are acceptable to be included in roadless areas. The Forest Plan explains that, in the past, roadless areas were looked at only for their potential for wilderness recommendation but are now recognized as having ecological and social values and characteristics (USDA Forest Service 2003b). The Little Cottonwood Canyon land use impact analysis area (1,000 feet from the S.R. 210 centerline) contains portions of the Twin Peaks, Lone Peak, and White Pine IRAs.

The *Final EIS for the Wasatch-Cache National Forest, Forest Plan Revision* (USDA Forest Service 2003b) assessed each IRA's roadless area characteristics or values. These values were high-quality soil, water, and air resources; sources of public drinking water; biodiversity (assessed in whole as the IRA's degree of "properly functioning condition") and habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; recreation opportunities in the primitive, semi-primitive non-motorized, and semi-primitive motorized classes; reference landscapes; scenic integrity; traditional cultural properties and sacred sites (heritage resources); and other locally unique characteristics.

These roadless value assessments were represented by numbers or scores 1 through 5, with 1 being low and 5 being high. For some values, the USDA Forest Service's interdisciplinary team members could determine only low or high score (a score of 1 or 5); for other values, assessments of 1 – low; 3 – medium, or 5 – high could be discerned; and, finally, for a few IRA values, the full range of scores was used: 1 – low, 2 – low-medium, 3 – medium, 4 – medium-high, and 5 – high. The scores assigned to assess roadless values were not and are not to be used mathematically; they are simply provided as a code to quickly identify scores from low to high. Scores were not added, averaged, or otherwise calculated to determine a relative ranking of IRAs. Rather, each area was considered as a unique landscape with certain inherent values regarded through the filter of the several values and criteria.

Similarly, roadless values were not ranked within an area in terms of their relative merit. That is, a high score for a fishery value is neither higher nor lower than a high score for a scenic landscape or a watershed roadless value. For the Forest Plan Final EIS, the USDA Forest Service conducted an interdisciplinary team exercise to summarize the information regarding each IRA and to sort the IRAs into three sets—those of high value, medium value, or low value—with respect to their overall need for protection of their roadless values.

The Forest Plan Final EIS also evaluated the IRAs for their wilderness potential based on the degree to which they contain the basic characteristics of a wilderness designation. Characteristics include naturalness of the environment, the presence of challenging and primitive recreation opportunities, and feelings of solitude. The Twin Peaks, Lone Peak, and White Pine IRAs were not recommended for wilderness designation.

The USDA Forest Service assigned the following management prescription categories (MPCs) to the IRAs to provide the principal management directions regarding what practices are intended for the IRAs:[4]

1. **Maintains Roadless Values.** Management prescriptions that do not allow any development that might affect base physical values dependent on roadlessness. These do not allow any timber harvest, road building, mechanical fuel treatments, new trail construction, or new recreation development.
2. **Mostly Maintain Roadless Values.** Management prescriptions that allow types of development which may have short term or relatively minor effect on physical values dependent on roadlessness.
3. **Allows Development.** Management prescriptions that allow noticeable and substantial log-term changes to the physical values in roadless areas.

In the Forest Plan ROD, IRAs that were not recommended for wilderness designation are managed to maintain roadless values, and certain management prescriptions were applied to protect more-valuable natural ecosystems. For example, MP 2.6 (undeveloped areas) was assigned to category 1 MPCs, and the Forest Plan directs the USDA Forest Service to maintain the areas' roadless values.[5] Although other uses and activities may occur, the primary emphasis in MP 2.6 is protection to ensure that the values and unique qualities associated with undeveloped areas are recognized and preserved. In the Forest Plan Final EIS, the MP 2.6 management prescription was applied to the White Pine IRA. Category 2 MPCs were assigned other management prescriptions. The Twin Peaks and Lone Peak IRAs (within the land use impact analysis area for the Little Cottonwood Canyon Final EIS) have MP 3.1W (watershed emphasis). An analysis of the alternatives' compliance with MP 3.1W is provided in Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS.

The following provides a summary of the IRAs' roadless values and scores, which were taken from the Forest Plan Final EIS. Section 4.0, *Environmental Consequences*, of this report provides detailed descriptions and the project effects to these roadless values for each primary alternative and sub-alternative in the Little Cottonwood Canyon Final EIS.

3.1 Twin Peaks IRA

The Twin Peaks IRA is a non-continuous area that is about 6,490 acres. The majority of the IRA is in the Big Cottonwood Canyon watershed. An approximately 250-acre portion lies in the land use impact analysis area north of and adjacent to S.R. 210 (North Little Cottonwood Road segment) between Lisa Falls on the west and about Snowbird Entry 1 to the east. Another approximately 208-acre portion is near the entrance to Little Cottonwood Canyon north of the existing park-and-ride lot on the north side of S.R. 210. See Figure 1 above.

The USDA Forest Service ranks the Twin Peaks IRA as an IRA of medium value overall. Most of the roadless values were scored medium (2 to 4) and low (1 to 2). A high (5) score was identified for the public drinking water value; runoff drains into Little Cottonwood Creek (and Big Cottonwood Creek), which are Salt Lake City Department of Public Utilities (SLCDPU) water sources. A medium-high (4) score was assessed

[4] Forest Plan Final EIS, Table RA-8

[5] Forest Plan ROD, pages ROD-28 and ROD-29

by USDA Forest Service for the IRA's properly functioning ecosystem value.[6] A medium-high (4) to high (5) score was assessed for the heritage resources value, although the Forest Plan Final EIS mentioned that data were limited.[7] A high (5) score was reported for the fish species at risk value because of a small population of cutthroat trout that was found in Deaf Smith Canyon, which is outside the impact analysis area and in Little Cottonwood Creek (assessed in the Lone Peak IRA; see Section 3.2, *Lone Peak IRA*).

The Twin Peaks IRA was not recommended for wilderness designation in the Forest Plan Final EIS and ROD. The Forest Plan assigns MP 3.1W (watershed emphasis) to the portions of Twin Peaks IRA in the impact analysis area which would **mostly** maintain the roadless values. The impacts to management prescriptions are also analyzed in Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS.

3.2 Lone Peak IRA

The Lone Peak IRA is a non-contiguous area that is about 874 acres. A 376-acre portion lies south of S.R. 210. The Lone Peak IRA is offset from S.R. 210 a variable distance from the park-and-ride at the entrance to the canyon and terminates west of Tanners Flat Campground. See Figure 1 above.

The USDA Forest Service ranked the Lone Peak IRA as an IRA of medium value. The roadless values were assessed primarily as medium (2 to 4) scores and some low (1 to 2) scores. A high (5) score was reported for the fish species at risk value because of a small population of cutthroat trout in Little Cottonwood Creek. A medium-high (4) score was assessed for the heritage resources (traditional cultural properties and sacred sites) value because of the potential for historic mining and Native American sites. A medium-high (4) score was assessed for the properly functioning ecosystem conditions (diversity of plant and animal communities and threatened, endangered, and special-status species habitat) value.

The Lone Peak IRA was not recommended for wilderness designation in the Forest Plan Final EIS and ROD. The Forest Plan assigns MP 3.1W (watershed emphasis) to the portion of the Lone Peak IRA in the impact analysis area which would **mostly** maintain the roadless values. The impacts to management prescriptions are also analyzed in Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS.

[6] The roadless value *properly functioning ecosystem* is from the Forest Plan Final EIS and corresponds to the roadless values of diversity of plant and animal communities and threatened, endangered, and special-status species habitat.

[7] The roadless value *heritage resources* is from the Forest Plan Final EIS and corresponds to the roadless value of traditional cultural properties and sacred sites.

3.3 White Pine IRA

The White Pine IRA is about 2,059 acres. It is a north-south-running drainage basin adjacent to the eastern boundary of the Lone Peak Wilderness and west of the Snowbird Ski and Summer Resort boundary. See Figure 1 above.

The USDA Forest Service ranked the White Pine IRA as an IRA of medium value. The roadless values were assessed as primarily medium (2 to 4) scores and low (1 to 2) scores. A high (5) score was identified for the public drinking water roadless value; water drains from White Pine Fork into Little Cottonwood Creek, which is an SLCDPU water source. A medium-high (4) score was assessed for the properly functioning ecosystem value. A high (5) score was assessed for the scenic integrity value because the IRA appears natural. A high (5) score was also assessed for the IRA's potential for a semi-primitive recreation experience value.

The Forest Plan EIS characterizes the naturalness of the environment as moderate to high, and this rating was influenced little by human development except for the trails and the reservoir. The area receives heavy hiking and backpacking use primarily on the White Pine and Red Pine trails. Mountain biking use is moderate, with most riders only going as far as the Red Pine/White Pine trail junction. Extreme bikers can continue all the way to the lake. There is some fishing at White Pine Lake. The area is very popular in the winter for outstanding backcountry skiing opportunities. Opportunities for solitude and challenge experiences are excellent away from the White Pine trailhead and trail in the interior of the IRA. There are some very rugged rock climbs and backcountry ski runs. Special features include the IRA's scenic quality and habitat for deer, elk, moose, bears, mountain lions, and golden eagles.

The White Pine IRA was not recommended for wilderness designation in the Forest Plan Final EIS and ROD. The USDA Forest Service assigned MP 2.6 (undeveloped areas) to the White Pine IRA to maintain the area's roadless values.

4.0 Environmental Consequences

The following sections describe the primary alternatives and sub-alternatives, how they might apply to the exceptions in the RACR, and how the S.R. 210 Project activities would affect roadless values. The following sections also quantify the approximate acres of timber that would be cut incidental to project activities.

4.1 Methodology

As mentioned in Section 1.1, *Introduction*, in addition to a general absence of constructed roads, IRAs contain other important environmental values that warrant protection, including the following nine roadless area values or features identified to characterize IRAs.

1. **Soil, water, and air resources.** These three resources are the foundation on which other resource values and outputs depend. Healthy watersheds provide clean water for domestic, agricultural, and industrial uses; maintain fish and wildlife populations; and provide recreation opportunities. The analysis in the Forest Plan EIS was based on the presence of extensive wetland areas.
2. **Sources of public drinking water.** NFS lands contain watersheds that are important sources of public drinking water. Maintaining these areas in a relatively undisturbed condition is crucial to maintain the flow and affordability of clean water to a growing population.
3. **Diversity of plant and animal communities.** IRAs are more likely to support greater ecosystem health, including a diversity of native and desired non-native plant and animal communities. These areas serve as a buffer against the spread of non-native invasive species. Values were established, in the Forest Plan Final EIS, based on the IRA's "Property Functioning Condition" (PFC) ecosystem.
4. **Habitat for threatened, endangered, and special-status species dependent on large undisturbed areas of land.** IRAs can function as biological strongholds and refuges for many species.
5. **Classes of recreation, primitive and semi-primitive.** IRAs often provide outstanding dispersed recreation opportunities in areas with wilderness-like attributes. These areas reduce recreation pressure on designated wilderness; and, unlike wilderness, the use of mountain bikes and other mechanized means of travel is permitted. A Recreation Opportunities Spectrum (ROS) value is defined based on the IRA's relative amount of semi-primitive motorized (SPM) and semi-primitive non-motorized (SPNM) recreation opportunities present.
6. **Reference landscapes for research study or interpretation.** Reference landscapes of relatively undisturbed areas serve as a barometer to measure the effect of development on other parts of the landscape. Note that, according to the Forest Plan EIS, there are no reference landscapes within the IRAs. Therefore, the following sections do not describe the project's effects on this roadless value.
7. **Landscape character and integrity.** High-quality scenery, especially scenery with natural-appearing landscapes, is a primary reason that people choose to recreate. In addition, quality scenery contributes directly to real estate values in nearby communities and residential areas.

8. **Traditional cultural properties and sacred sites.** Traditional cultural properties are places, sites, structures, art, or objects that have played an important role in the cultural history of a group. Sacred sites are places that have special religious significance to a group. Many of these sites might be eligible for protection under the National Historic Preservation Act.
9. **Other locally unique characteristics.** IRAs might offer other locally identified unique characteristics and values such as uncommon geological formations, unique wetland complexes, or social, cultural, or historical characteristics.

The effects of the No-Action Alternative and each primary action alternative on the IRAs' roadless values are described in Sections 4.2 through 4.7 below.

In general, the assessment of impacts to IRAs was based on whether the S.R. 210 Project's activities would directly or indirectly impact an IRA and, if so, whether associated impacts to roadless values would be of a manner or degree that would change the roadless value score or substantially impair the management of the area. Direct impacts were assessed by quantifying the physical impact (in acres) of the primary alternatives and sub-alternatives to the IRAs.

The presence of IRAs does not create a buffer that would preclude or restrict activities outside the IRA. Therefore, the indirect impact assessment qualitatively assesses how the presence of proposed transportation infrastructure in portions of the IRAs might affect the roadless values in other portions of the IRAs outside the primary alternative or subalternative footprints. The indirect impacts assessments associated with constructing the action alternatives are included in various resource-specific chapters of the Little Cottonwood Canyon Final EIS.

The primary references for potential indirect impacts to roadless values (primarily soil and water resources, sources of public drinking water, diversity of plant and animal communities, and habitat for threatened, endangered, and special-status species roadless values) are included in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. Chapter 20, *Indirect Effects*, of that EIS assesses the potential indirect effects of mobility changes and changes in recreation access that would result from the action alternatives.

The direct and indirect impacts, as well as proposed mitigation measures, were used to assess potential reductions to the existing scores assigned to roadless values and to evaluate whether an IRA's roadless values would be maintained or mostly maintained in accordance with the IRA's assigned management prescriptions. Impacts associated with the IRAs are discussed in Sections 4.3 through 4.7 below for each primary alternative.

Note that the impact assessment for the Twin Peaks IRA did not include any of the IRA's area that overlaps the existing S.R. 210 roadway. About 10.3 acres of the IRA overlap the existing S.R. 210 roadway. In other areas away from the S.R. 210 roadway, a correction or adjustment to IRA boundaries has not been processed (for example, to match the IRA boundary to a Wilderness boundary), and the official boundary as established by Congress was used in this analysis.[8] The IRA acreages stated in this report are from the Forest Plan Final EIS, Appendix C2. The IRA boundaries were developed using mapping products and methods of various types and scales. The standardization and accuracy of modern-day mapping technologies contributes to discrepancies in IRA boundaries, such as the overlaps with transportation

[8] From https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=2001+roadless, accessed January 2023.

infrastructure that existed in Little Cottonwood Canyon prior to the RACR. Therefore, the exact boundaries and sizes of NFS areas based on management prescriptions and other land use databases could be different than the boundaries and sizes of the official IRA boundaries. The impact values reported in this report could be slightly different than in various chapters of the Little Cottonwood Canyon Final EIS due to inconsistencies in the source data.

4.2 No-Action Alternative

With the No-Action Alternative, S.R. 210 would not be improved, existing bus service would continue with no new resort bus stops, a winter roadside parking restriction would not be imposed, no snow sheds would be constructed, and no trailhead improvements would be made. Therefore, there would be no impacts to, or conflicts with, IRAs.

4.3 Enhanced Bus Service Alternative

4.3.1 Alternative Description and Roadless Rule Applicability

4.3.1.1 S.R. 210 – North Little Cottonwood Road

With the Enhanced Bus Service Alternative, there would be no change to the existing S.R. 210 roadway except the addition of a tolling gantry (likely a single pole over the westbound travel lane) immediately adjacent to the travel lane just west of Snowbird Entry 1 and outside the Twin Peaks IRA. The enhanced bus service would operate in mixed-flow traffic with other vehicles (the current roadway configuration) in the canyon.

The Enhanced Bus Service Alternative consists of high-frequency bus service from two mobility hubs directly to the ski resorts. Although the exact hours of operation have not been determined, it is likely that the enhanced ski bus service would operate 7 days per week between 7 AM and 7 PM with peak service in the morning (7 AM to 10 AM) and afternoon (3 PM to 6 PM). The service would run during the winter only and would operate from late November through mid-April, the same as the current ski bus service. The total person-capacity of the enhanced bus service during the peak periods would be about 1,008 persons per hour. The bus service is based on buses leaving every 5 minutes from each mobility hub (the gravel pit mobility hub and the 9400 South and Highland Drive mobility hub) for a total of 24 buses per hour. Summer service is currently not provided in Little Cottonwood Canyon, and it is not evaluated in the Little Cottonwood Canyon Final EIS because such service is not necessary to meet the project's purpose.

The proposed bus stop at Snowbird Entry 1 would be located in an existing developed resort parking area on NFS lands. The Alta ski resort bus stop would be on the south side of S.R. 210 immediately west of Alta's Rustler Lodge in an area of a current uphill bus stop on NFS lands. On NFS lands, the bus stops would overlap about 2 acres under the USDA Forest Service developed recreation areas management prescription (MP 4.5) which is outside the IRA boundaries.

There would be no direct impacts to IRAs from the enhanced bus service component of the Enhanced Bus Service Alternative.

4.3.1.2 Avalanche Mitigation Alternatives

Two avalanche mitigation alternatives are being evaluated for Little Cottonwood Canyon: the Snow Sheds with Berms Alternative and the Snow Sheds with Realigned Road Alternative. With the avalanche mitigation alternatives, there would be less need for active avalanche mitigation such as the use of artillery to trigger avalanches. For more information, see Section 1.4.3.2.2, *Avalanche Mitigation and Related Traffic Congestion*, in Chapter 1, *Purpose and Need*, of the Little Cottonwood Canyon Final EIS.

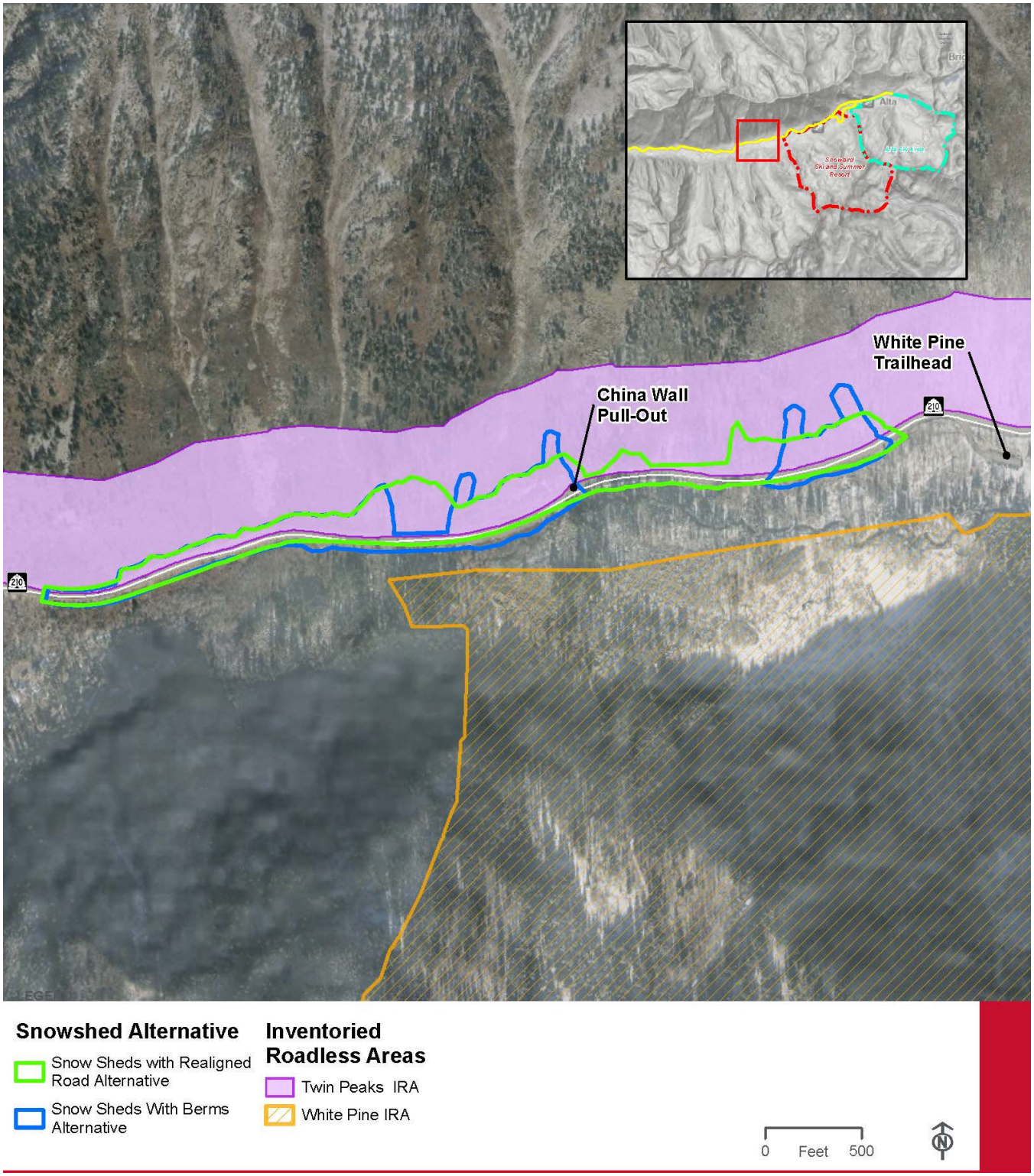
Snow Sheds with Berms Alternative. With the Snow Sheds with Berms Alternative, about 8.9 acres of land in the Twin Peaks IRA would be affected by construction of three snow sheds and avalanche guiding berms. The snow sheds would be built over the road in the White Pine (about 640 feet long), White Pine Chutes 1–4 (about 1,360 feet long), and Little Pine (about 465 feet long) avalanche paths. The snow sheds' construction requires excavation and backfill behind the snow shed (north of the sheds) to extend the elevation of the roof to meet the mountain and to create a suitable material for buried horizontal anchors, which are needed to resist an avalanche's lateral forces. The 8.9-acre area of disturbance equates to about 0.14% of the Twin Peaks IRA's 6,490-acre total area. See Figure 2 below.

Snow Sheds with Realigned Road Alternative. With the Snow Sheds with Realigned Road Alternative, two snow sheds are proposed. The White Pine Chutes and White Pine snow shed would be combined and would be about 2,424 feet long, and the Little Pine snow shed would be extended and be about 770 feet long to help ensure that avalanche flows pass over the top of the shed and not spill into the portal. The existing road would be realigned to be closer to the mountain side in order to reduce the amount of fill needed behind the snow sheds as well as to improve curve radii and sight distances inside the snow sheds. About 11.8 acres of land in the Twin Peaks IRA would be affected by construction of the sheds and realigned road. The 11.8-acre area of disturbance equates to about 0.18% of the Twin Peaks IRA's 6,490-acre total area. See Figure 2 below.

The snow shed alternatives could qualify for an exception from the RACR because they are essential for public health and safety,[9] because construction would be considered a roadway safety improvement project to address avalanche hazards,[10] and/or because it is in the public interest pursuant to Title 23 of the U.S. Code.[11] The final decision regarding the applicability of any RACR exception would be made by the USDA Forest Service in its review and analysis, including any ROD for the S.R. 210 Project following a determination by FHWA regarding the applicability of appropriating NFS lands for the snow sheds under 23 CFR Section 317. See Chapter 28, *U.S. Department of Agriculture Forest Service Forest Plan Amendments*, of the Little Cottonwood Canyon Final EIS.

[9] 66 Federal Register 3243 (Jan. 12, 2001) (36 CFR Section 294.12(b)(4))
[10] 66 Federal Register 3243 (Jan. 12, 2001) (36 CFR Section 294.12(b)(5))
[11] 66 Federal Register 3243 (Jan. 12, 2001) (36 CFR Section 294.12(b)(6) and 23 CFR Section 317(a))

Figure 2. Avalanche Mitigation Alternatives Areas in the Twin Peaks IRA



4.3.1.3 Trailhead Parking Alternatives

Three trailhead parking alternatives are being considered:

- Trailhead Improvements and No S.R. 210 Roadside Parking within ¼ Mile of Trailheads Alternative
- Trailhead Improvements and No Roadside Parking from S.R. 209/S.R. 210 Intersection to Snowbird Entry 1 Alternative
- No Trailhead Improvements and No Roadside Parking from S.R. 209/S.R. 210 Intersection to Snowbird Entry 1 Alternative

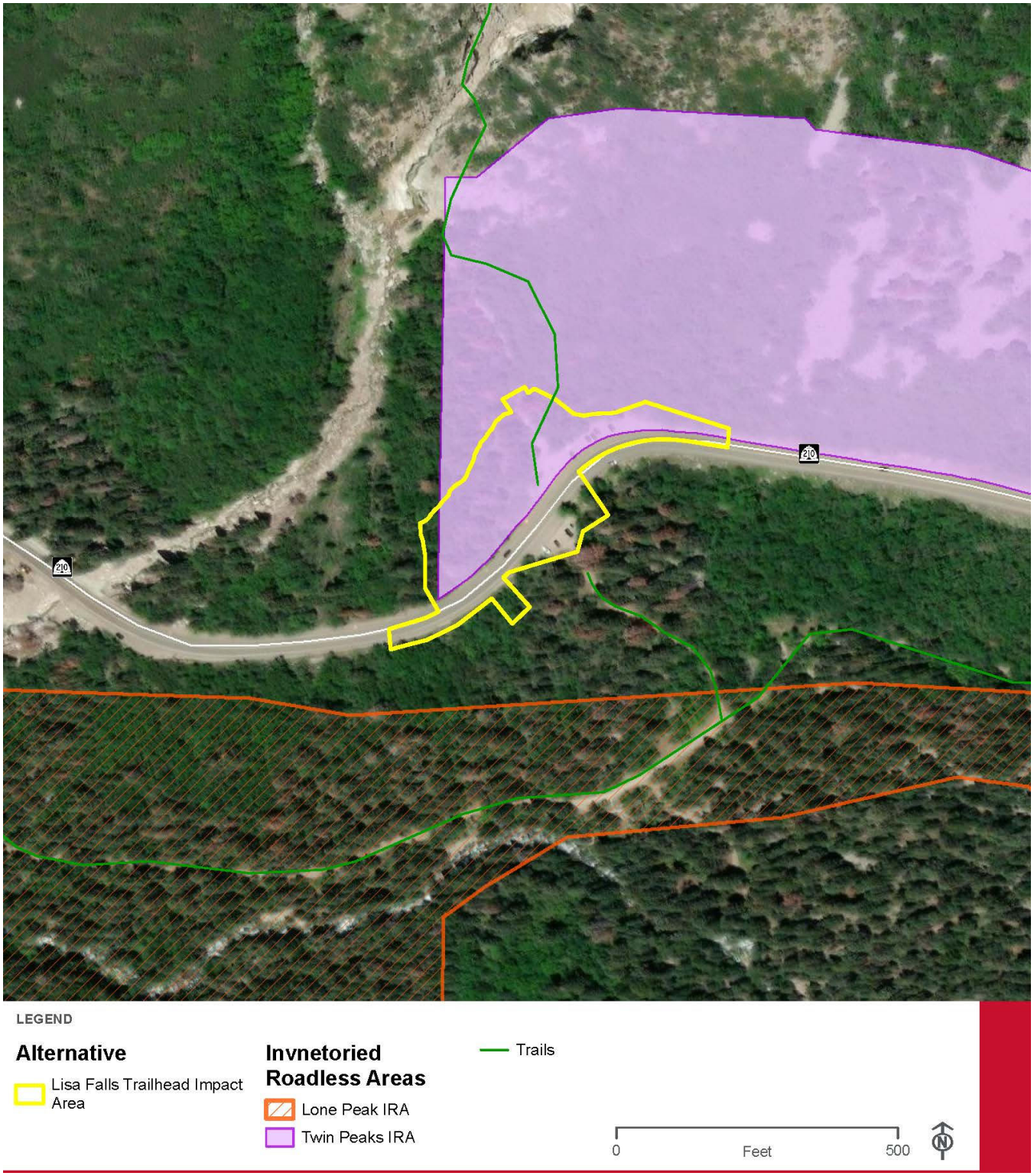
Eliminating parking within ¼ mile from the new Bridge Trailhead and the existing Lisa Falls and White Pine Trailheads would not impact popular roadside parking areas to access dispersed recreation. The improved Lisa Falls Trailhead would replace approximately 17 dirt parking spots with 41 designated paved spaces in a lot along the north side of S.R. 210. The Lisa Falls Trailhead would impact about 1.29 acres (0.02%) of the land in the Twins Peaks IRA. See Figure 3 below. The parking improvements at other trailheads (Bridge, Gate Buttress, and White Pine) would not physically impact any of the IRAs.

With the Trailhead Improvements and No Roadside Parking from S.R. 209/S.R. 210 Intersection to Snowbird Entry 1 Alternative, the Maybird and Tanners roadside pullouts would be eliminated. There are no designated trails in these areas that are used by climbers and backcountry skiers. Note also that the China Wall pullout, which is in the Twin Peaks IRA and is used during the summer only for accessing side canyons and the informal White Pine bouldering area, would also be eliminated by this alternative (and by the snow sheds). These pullouts would not be replaced by formal parking areas (access would be provided by the White Pine Trailhead) and, therefore, the RACR would not apply to this alternative.

The No Trailhead Improvements and No Roadside Parking from S.R. 209/S.R. 210 Intersection to Snowbird Entry 1 Alternative would reduce roadside parking from the approximately 528 existing spaces to 99 spaces (a reduction of 429 spaces). This alternative would also have no physical impact to IRAs and, therefore, the RACR does not apply.

A trailhead is not considered a travelway, and the RACR was not intended to limit access to designated trails. Therefore, expanding the trailheads located in IRAs is an activity not otherwise prohibited by the RACR, and the cutting and removal of timber required for construction would be incidental to an activity not otherwise prohibited.

Figure 3. Lisa Falls Trailhead in the Twin Peaks IRA



4.3.1.4 No Winter Parking Alternative

One no winter parking alternative is being considered in the Little Cottonwood Canyon Final EIS. With the No Winter Parking Alternative, about 230 roadside parking spots would be eliminated during the winter near the ski resorts. The no-winter-parking area would be within UDOT right-of-way only and would not change private or town of Alta parking. See Figure 2.6-18, *No Winter Parking Alternative – Eliminated Parking Areas*, of the Little Cottonwood Canyon Final EIS.

There would be no effects on IRAs from the No Winter Parking Alternative, and the RACR would not apply.

4.3.2 Impacts to Roadless Characteristics

The Enhanced Bus Service Alternative would be consistent with a desired future condition in the Forest Plan, which states that the USDA Forest Service will work actively with other parties to explore options for reducing private vehicle use in Little Cottonwood Canyon. No roadway construction would occur under this alternative. The Enhanced Bus Service Alternative contains two sub-alternatives that would impact the Twin Peaks IRA, which are the snow sheds and trailhead parking improvements at Lisa Falls. A summary of the impacts described above is as follows:

- **Twin Peaks IRA.**
  - The **Snow Sheds with Berms Alternative** would convert about 8.9 acres (0.14%) of mostly developed habitat[12] to transportation use for the construction of the snow sheds with berms.
  - With the **Snow Sheds with Realigned Road Alternative**, about 11.8 acres (0.18%) of mostly developed habitat would be permanently converted to transportation use. See Figure 4 below.

    The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches and avalanche mitigation measures, which has removed much of the vegetation along these steep slopes.
  - The **Lisa Falls Trailhead** would impact about 1.3 acres (0.02%) of the Twin Peaks IRA. The conversion of land to trailhead use would consist of 0.08 acre of developed areas, 0.79 acre of forest/woodland habitat, and 0.41 acre of shrubland. See Figure 4 below.
- **Lone Peak IRA.** There would be no impacts to the Lone Peak IRA.
- **White Pine IRA.** There would be no impacts to the White Pine IRA.

Table 1 below presents the existing scores assessed for the roadless values as reported in the Forest Plan Final EIS for the Twin Peaks IRA and the anticipated effects of the Enhanced Bus Service Alternative (including sub-alternatives).

[12] UDOT categorized the vegetation into five broad wildlife habitat types: forest/woodland, shrubland, meadow/grassland, bedrock, and open water. These habitat types are based on the GAP/LANDFIRE National Terrestrial Ecosystems data set. For more information, see Section 13.3.1, *Methodology*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS.

Figure 4. Vegetation Impacts for the Avalanche Mitigation and Lisa Falls Trailhead Alternatives

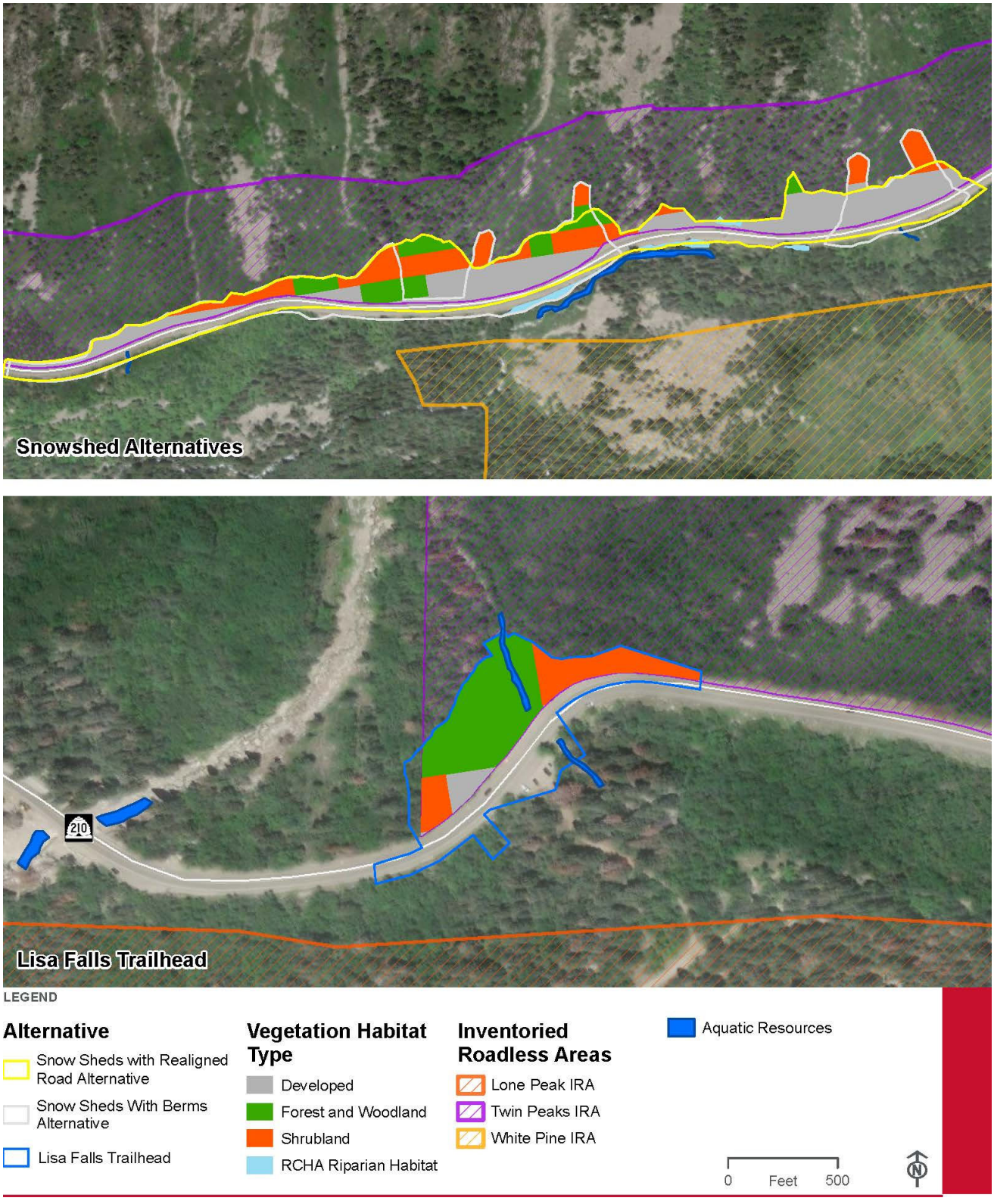


Table 1. Roadless Values and Project Effects from the Enhanced Bus Service Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Twin Peaks IRA (6,490 acres total)			
Soil, Water, and Air Resources	1	The IRA contains few small wetlands along narrow steam corridors.	Construction of the snow sheds and the Lisa Falls Trailhead parking would disturb vegetation and soils and could introduce noxious weed species into the surrounding areas, if not monitored and controlled. UDOT will mitigate temporary impacts to vegetation once construction is complete. See Section 6.0, *Mitigation*, of this report and Section 13.4.7, *Mitigation Measures*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The Snow Sheds with Berms Alternative comprises about 8.9 acres within the Twin Peaks IRA. The land converted to transportation use would consist of 4.55 acres of developed areas, 1.24 acres of forest/woodland habitat, and 3.08 acres of shrubland. The Snow Sheds with Realigned Road Alternative comprises about 11.8 acres within the IRA. The conversion would consist of 6.96 acres of developed areas, 1.91 acres of forest/woodland habitat, and 2.89 acres of shrubland. The proposed Lisa Falls Trailhead comprises about 1.3 acres within the IRA. The conversion would consist of 0.08 acre of developed areas, 0.79 acre of forest/woodland habitat, and 0.41 acre of shrubland. There would be no direct impacts to aquatic resources from the proposed snow sheds. The proposed Lisa Falls Trailhead would require replacing or extending the existing culvert which would convert about 0.03 acre of an intermittent stream About 0.05 acre of riparian vegetation in Riparian Habitat Conservation Areas (RHCAs[13]) would be removed by the Snow Sheds with Realigned Road Alternative. See Figure 4 above. Indirect impacts to soil, water, and air resources could result from stormwater erosion or dust generated from disturbed areas during construction of the snow sheds and trailhead. Sediment could be deposited outside the project footprint, resulting in indirect impacts. Most of these indirect impacts could be reduced or eliminated through the mitigation measures that would be implemented to reduce the risk for soil migration. These mitigation measures would revegetate disturbed areas and stabilize soils once construction is complete. For more information, see Chapter 13, *Ecosystem Resources*, in the Little Cottonwood Canyon Final EIS. The total impact areas for the Enhanced Bus Service Alternative (including sub-alternatives) constitute 0.16% to 0.20% of the

[13] Riparian Habitat Conservation Areas (RHCAs) are areas on either side of a stream (fish-bearing or non-fish-bearing). RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems. See Section 13.2.5, *Riparian Habitat Conservation Areas Defined in the Revised Forest Plan: Wasatch-Cache National Forest*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS.

Table 1. Roadless Values and Project Effects from the Enhanced Bus Service Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			Twin Peaks IRA and, therefore, the alternative would not affect important soil, water, or air resources of the IRA. The low (1) score for this roadless value would not change.
Public Drinking Water	5	Little Cottonwood Creek is an important Class 1 watershed.	The area behind the snow sheds (and guiding berms) would be revegetated and roofs of the snow shed would be covered with soil and revegetated. Therefore, the snow sheds would not introduce new pollutants or change the hydrologic properties in the watershed. The Enhanced Bus Service Alternative would add about 2.4 acres of new pavement area in Little Cottonwood Canyon (1.29 acres from the Lisa Falls Trailhead). The modeled in-stream water quality of Little Cottonwood Creek with the new impervious area at the trailhead was the same as with the No-Action Alternative. Indirect water quality impacts could result from increased winter visitation. However, enhanced bus service would stop only at the resorts, where existing infrastructure is in place to handle the increased use. Some backcountry skiers destined for areas within and above the Twin Peaks IRA could use the bus service, which could increase backcountry use; however, increased backcountry use is difficult to predict. Increased backcountry use could increase the amount of human waste in the backcountry and indirectly affect water quality. The enhanced bus service would not operate during the summer. Adding restroom facilities at the Lisa Falls Trailhead would provide a beneficial indirect impact to water quality. Also see Section 20.4.2.2.3, *Ecosystem Resources (Water Quality, Vegetation, Soils, and Wildlife)*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to water quality. The Enhanced Bus Service Alternative would not affect water quality, and the high (5) score for the public drinking water roadless value would not change.
Diversity of Plant and Animal Communities (PFC)	4	Likely contains stands of the Limber Pine/Oregon Grape habitat type and the Ross Avens cover type.	The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches, which has removed much of the vegetation along these steep slopes in these areas and in the cut areas surrounding the existing road. Impacts to migratory birds and raptors from the snow sheds would include a loss of 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. However, the habitat that would be converted to transportation use is disturbed roadside habitat on a steep slope. Impacts to migratory birds and raptors from the Lisa Falls Trailhead would include a loss of about 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. Enhanced bus service would not operate during the summer, so there would be no change to visitor summer use as a result of bus service and no associated indirect impacts to plant and animal

Table 1. Roadless Values and Project Effects from the Enhanced Bus Service Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			communities. See Section 20.4.2.2.3, E*cosystem Resources (Water Quality, Vegetation, Soils, and Wildlife)*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to ecosystem resources from the Enhanced Bus Service Alternative. The total impact areas for the Enhanced Bus Service Alternative (including sub-alternatives) constitute 0.16% to 0.20% of the Twin Peaks IRA and, therefore, the alternative would not affect the biodiversity of the IRA. The medium-high (4) score for this roadless value would not change.
T&E and Special-status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: Wasatch jamesia, Garrett's fleabane, Garrett's bladderpod, and broadleaf penstemon occur in this IRA, and habitat is present for the nearby occurring *Lepidium montanum* var. *alpinum*.	Species-specific surveys identified individuals of one plant species on the USDA Forest Service watch list, broadleaf beardtongue plants, that would be removed by the Snow Sheds with Berms Alternative. The local impacts from the Snow Sheds with Berms Alternative to an already disturbed site are not expected to cause species-level impacts, nor are they likely to cause a loss of species viability. Also see Section 13.3.2.1.2, *Special-status Plant Species*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The medium (3) score for this roadless value would not change. There would be a potential indirect benefit from improved trailhead parking alternatives. Eliminating roadside parking would reduce the indirect impacts of "spider web" trails, including the potential for invasive species, soil erosion, litter, and poor sanitation practices caused by recreation users parking along the road and entering the forest at random locations, as users could with the No-Action Alternative, which impacts more vegetation away from formal trail.
	2	Terrestrial Wildlife at Risk: Peregrine falcon habitat is present.	For the areas where the snow sheds and the Lisa Falls Trailhead are proposed, suitable habitat for several USDA Forest Service sensitive bird species, including northern goshawk and peregrine falcon (foraging habitat only), and monarch butterflies might be present. If suitable habitat is present, sensitive bird species could be temporarily displaced during construction, but no long-term direct or indirect impacts would occur, since the habitat that would be converted to transportation use is disturbed roadside habitat. Given that milkweed (*Asclepias* spp.) is an essential feature of quality monarch butterfly habitat, monarch butterflies would be forced to relocate if milkweed plants are removed. The medium-low (2) score for this roadless value would not change.
	5	Fish Species at Risk: There is a small population of cutthroat trout in Deaf Smith Canyon.	No impacts to cutthroat trout in Deaf Smith Canyon. Therefore, the high (5) score for this roadless value would not change.

Table 1. Roadless Values and Project Effects from the Enhanced Bus Service Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Class of Recreation (Measures as ROS)	1	Recreation opportunities in the IRA include climbing (no formally designated trails or recreation areas are in the IRA) and backcountry skiing. Climbing and backcountry access in the IRA is provided with informal roadside pullouts at Maybird, Tanners, China Wall, Snowbird Boulders, and the designated White Pine trailhead. Due to the avalanche dangers, no winter parking is allowed at Maybird, Tanners, and China Wall. See Chapter 4, *Community and Property Impacts*, of the Little Cottonwood Canyon Final EIS. According to the Forest Plan Final EIS, 0% of the IRA contains SPM areas and 48% of the IRA contains SPNM areas.	The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches and avalanche mitigation measures, which has removed much of the vegetation along these steep slopes in these areas and in the cut areas surrounding the existing road. The snow sheds would eliminate the China Wall pullout and restrict access to three climbing boulders, and one boulder (Wall Boulder) would be eliminated. About 260 feet of the existing Lisa Falls Trail would be paved by the trailhead improvement. The Enhanced Bus Service Alternative would not operate during the summer, so there would be no change to summer visitation as a result of bus service and no associated indirect impacts to summer recreation within the IRA. Some backcountry skiers could take the bus to the resorts and walk to the Twin Peaks IRA, which could increase backcountry use. See Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts. The minor amount (between 0.16% and 0.20%) of land disturbance adjacent to the existing road, the minor amount of impact to the existing Lisa Falls Trail, elimination of the China Wall roadside pullout, and elimination of other roadside pullouts would not alter the recreation opportunities of the Twin Peaks IRA. The low (1) score for the primitive and semi-primitive recreation roadless value would not change.
Landscape Character and Integrity	3	There was a lot of historic mining activity in the IRA. There are remnants of tailings piles and disturbed areas. There are a number of roads, and ghost roads and maintenance roads for the mines still on the mountain.	Landscape alterations would be adjacent to the existing S.R. 210 in areas where the naturally appearing landscape character unit (LCU) is within the IRA.[14] The Snow Sheds with Berms Alternative would impact about 8.9 acres, the Snow Sheds with Realigned Road Alternative would impact about 11.8 acres, and the Lisa Falls Trailhead would impact about 1.3 acres of the naturally appearing LCU in the Twin Peaks IRA. Project elements, such as alterations to slope and a snow shed, would introduce elements and/or patterns that would be visually dominant and would create strong contrast compared with other features in the landscape. A high level of impact was assessed for the impacts of the snow sheds. The snow sheds and Lisa Falls Trailhead would not result in a scenic integrity level of Unacceptably Low. Therefore, UDOT anticipates that the Enhanced Bus Service Alternative would be in conformance with the Forest Plan's scenic management standard (S22). The Enhanced Bus Service Alternative (including sub-alternatives) totals about 10.2 to 13.0 acres in the naturally appearing LCU in the Twin Peaks IRA. The total impact areas for the Enhanced Bus

[14] Landscape character units are described in Section 17.3.2, *Landscape Character*, in Chapter 17, *Visual Resources*, of the Little Cottonwood Canyon Final EIS.

Table 1. Roadless Values and Project Effects from the Enhanced Bus Service Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			Service Alternative (including sub-alternatives) constitute 0.16% to 0.20% of the Twin Peaks IRA and, therefore, the alternative would not affect the landscape character or integrity of the IRA. This alternative would not change the medium (3) score for the landscape character and integrity roadless value of the Twin Peaks IRA.
Cultural Sites	4 to 5	Low data but high potential for mining sites.	The snow sheds would adversely affect 1 site: about 0.19 acre of the D&RG Railroad/Wasatch & Jordan Valley Railroad/Salt Lake & Alta site (42SL419, known as the "China Wall"). Archaeological data recovery will be conducted in consultation with the USDA Forest Service and the Utah State Historic Preservation Office (SHPO). See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. Impacts to this 1 site would not change the medium-high (4) to high (5) score for this roadless value. The improved Lisa Falls Trailhead would not impact any cultural sites. Indirect impacts are considered in the determination of adverse effects to cultural sites. See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS for more information.
Unique Characteristics	3	Renowned example of glaciation and segment of one river in wild and scenic inventory.	For roadway users and forest users near the snow sheds, the landscape would appear severely altered, and the snow shed infrastructure would dominate the visual setting in the immediate foreground and foreground areas. The snow sheds would diminish but not limit the management of the scenic byway by the USDA Forest Service to protect scenic vistas and intrinsic scenic qualities of the canyon overall. Therefore, the Enhanced Bus Service Alternative would not change the medium (3) score for this roadless value. Per Forest Plan Amendment 5, Little Cottonwood Creek is not managed as a potential wild and scenic river (USDA Forest Service 2008).
Lone Peak IRA (874 acres total)			
No components of the Enhanced Bus Service Alternative would impact the Lone Peak IRA.			
White Pine IRA (2,059 acres total)			
The Enhanced Bus Service Alternative would not impact the White Pine IRA.			

4.3.2.1 Summary of Effects

About 99.8% of the Twin Peaks IRA would not be affected by the Enhanced Bus Service Alternative, there would no changes to the assessed roadless value scores, and the IRA's roadless values would be maintained. The roadless values that were scored highest (public drinking water and the diversity of plant and animal communities) would be affected most by construction of the snow sheds. However, the snow sheds would not affect Little Cottonwood Creek's water quality or water supply nor impact the biodiversity of the 6,490-acre Twin Peaks IRA over the long term.

4.3.3 Timber Harvesting

The RACR prohibits timber harvesting (timber cutting, sale, or removal) in IRAs unless certain exceptions or circumstances exist. Components of the Enhanced Bus Service Alternative (avalanche mitigation alternatives and Lisa Falls Trailhead) qualify for a Roadless Rule exception and are "activities not otherwise prohibited"; any timber removal would be incidental to their implementation. These exceptions include limited, incidental timber removal in the IRA for special-use authorizations and/or the transfer of easements for a federal-aid highway project (for the snow sheds) or an exception from the RACR's management prohibitions because trailheads are not considered roads.[15]

The Enhanced Bus Service Alternative would require the following amounts of timber removal in the Twin Peaks IRA:

- Avalanche activity has removed much of the vegetation along the areas of the proposed snow sheds. Within the 8.9 to 11.8 acres of total disturbance, the majority (4.5 to 6.96 acres) of the area that would be converted is in developed vegetation type. The snow sheds would remove 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. See Figure 4 above.
- The Lisa Falls Trailhead would remove 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. See Figure 4 above.

The total amount of timber that would be removed for the Enhanced Bus Service Alternative (including sub-alternatives) of 1.03 to 2.70 acres of forest/woodland vegetation is not a substantial amount of timber (0.02% to 0.04% of the IRA) relative to the size of the Twin Peaks IRA (6,490 acres).

[15] See *Hogback Basin Preservation v. U.S. Forest Serv.*, 577 F.Supp.2d. 1139 (W.D. Wash. 2008).

4.4 Enhanced Bus Service in Peak-period Shoulder Lane Alternative

4.4.1 Alternative Description and Roadless Rule Applicability

4.4.1.1 S.R. 210 – North Little Cottonwood Road

The Enhanced Bus Service in Peak-period Shoulder Lane Alternative includes widening S.R. 210 from North Little Cottonwood Road to the Alta Bypass Road to add peak-period shoulder lanes (PPSL). These lanes would be for buses only, in the winter, to improve bus travel times over that of personal vehicles. When not in use on non-busy winter days, between mid-April through late November, the PPSL would be available to cyclists and pedestrians. The bus service is based on buses leaving every 5 minutes from each mobility hub for a total of 24 buses per hour. Summer bus service is currently not provided in Little Cottonwood Canyon, and it is not evaluated in the Little Cottonwood Canyon Final EIS because it is not necessary to meet the project's purpose.

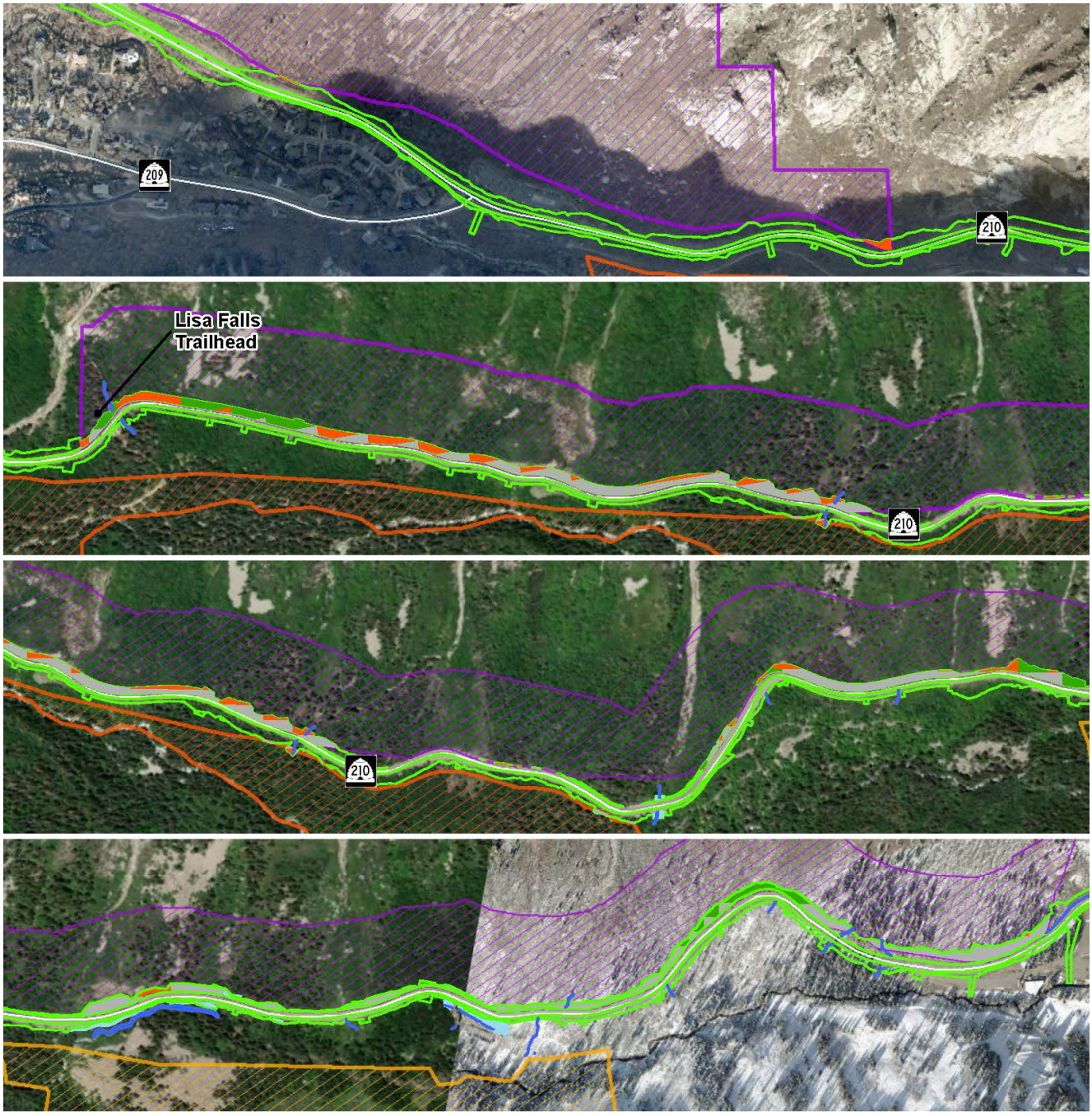
A PPSL is an upgraded roadway shoulder that functions as a bus-only travel lane during periods of peak congestion. During non-peak times, it functions as a shoulder. PPSLs are a way to provide additional traffic capacity within a constrained right-of-way and improve mobility during periods of peak congestion without adding another lane. PPSLs would be implemented both eastbound and westbound on S.R. 210 for 8.6 miles from the intersection with Wasatch Boulevard (milepost 2.2) to the Alta Bypass Road (milepost 10.8). S.R. 210 would be widened to include two 11-foot-wide shoulders with 2 feet of pavement beyond the shoulder stripe. The total pavement width would be 50 feet. The clear zone would be measured from the edge of the PPSL, for a total roadway width of 78 feet. In areas near Little Cottonwood Creek and with steep canyon walls or dropoffs, it might not be reasonable to have a full clear zone width because of the potential environmental impacts. The final design of this alternative might also increase the shoulder width to 12 feet and reduce the personal vehicle lane width to 11 feet. This would not change the overall width of the roadway.

The majority of the roadway widening for the PPSL would occur on the north side of the road, to avoid encroaching on the stream corridor, and partially encroach into the Twin Peaks IRA, which abuts the north side of the road. The Lone Peak and White Pine IRAs are offset from the south side of the roadway a variable distance (about 40 feet to more than 100 feet in most locations). Based on preliminary design, the pavement and earthwork (cut and fill) needed to create the roadway prism for the PPSL would impact about 14.0 acres (or about 0.22%) of the Twin Peaks IRA and about 0.10 acre (0.01%) of the Lone Peak IRA. The White Pine IRA would not be impacted by the PPSL. See Figure 5 below.

If selected, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would qualify for an exception from the RACR if FHWA determines that the alternative is in the public interest and the transfer of easements would occur pursuant to Title 23 of the U.S. Code.[16] The final decision regarding the applicability of any exceptions will be made by the USDA Forest Service in its ROD for the S.R. 210 Project.

[16] 36 CFR Section 294.12(b)(6) and 23 CFR Section 317(a)

Figure 5. Enhanced Bus Service in Peak-period Shoulder Lane Alternative



4.4.1.2 Avalanche Mitigation Alternatives

The impacts from the avalanche mitigation alternatives with the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would be the same as with the Enhanced Bus Service Alternative. Although the roadway would be about 10 feet wider with the PPSL than the existing roadway, with the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, the tieback anchors and backfill behind the snow sheds structure (north side) would cover the same construction footprint. The Snow Sheds with Berms Alternative would fill about 8.9 acres of land (0.14%) and the Snow Sheds with Realigned Road Alternative about 11.8 acres of land (0.18%) in the Twin Peaks IRA. See Section 4.3.1, *Alternative Description and Roadless Rule Applicability*, of this report and Figure 2 above.

4.4.1.3 Trailhead Parking Alternatives and No Winter Parking Alternative

The trailhead parking alternatives and the no winter parking alternative would be essentially the same as with the Enhanced Bus Service Alternative. The Lisa Falls Trailhead would impact about 1.29 acres of land (0.02%) in the Twins Peaks IRA.

With the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, the Bridge Trailhead would be partially within the Lone Peak IRA (0.005 acre, or 0.001% of the 874-acre Lone Peak IRA).

4.4.2 Impacts to Roadless Characteristics

The Enhanced Bus Service in Peak-period Shoulder Lane Alternative would be consistent with a desired future condition in the Forest Plan, which states that the USDA Forest Service will work actively with other parties to explore options for reducing private vehicle use in Little Cottonwood Canyon. Combining the estimated impacts of the PPSL, the snow sheds, and the trailheads results in the following impacts to each IRA:

- **Twin Peaks IRA.** Within the Twin Peaks IRA, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative (considering the PPSL, snow sheds, and Lisa Falls Trailhead) would have about 24.2 acres of disturbance with the Snow Sheds with Berms Alternative and about 27.1 acres with the Snow Sheds with Realigned Road Alternative. This impact constitutes 0.37% to 0.42% of the total area (6,490 acres) of the Twin Peaks IRA. See Figure 5 above.
- **Lone Peak IRA.** Within the Lone Peak IRA, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would impact about 0.1 acre of disturbance due, primarily, from slivers of land needed for fills placed to construct the PPSL embankments (0.1 acre) and the Bridge Trailhead (0.005 acre). This impact constitutes about 0.01% of the total area (874 acres) of the Lone Peak IRA.[17] See Figure 5 above.
- **White Pine IRA.** The Enhanced Bus Service in Peak-period Shoulder Lane would not impact the White Pine IRA. See Figure 5 above.

Table 2 below presents the existing scores assessed for the roadless values as reported in the Forest Plan Final EIS for each IRA and the anticipated effects of the Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including sub-alternatives).

[17] Total impact rounded to the nearest tenth of an acre.

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Twin Peaks IRA (6,490 acres total)			
Soil, Water, and Air Resources	1	The IRA contains few small wetlands along narrow steam corridors.	Construction of the PPSL, snow sheds, and the Lisa Falls Trailhead parking would disturb vegetation and soils and could introduce noxious weed species into the surrounding areas, if not monitored and controlled. UDOT will mitigate temporary impacts to vegetation once construction is complete. See Section 6.0, *Mitigation*, of this report and Section 13.4.7, *Mitigation Measures*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The PPSL comprises about 14.0 acres within the Twin Peaks IRA. The conversion to transportation use would consist of 9.63 acres of developed areas, 2.20 acres of forest/woodland habitat, and 2.21 acres of shrubland. The Snow Sheds with Berms Alternative comprises about 8.9 acres. The conversion to transportation use would consist of 4.55 acres of developed areas, 1.24 acres of forest/woodland habitat, and 3.08 acres of shrubland. The Snow Sheds with Realigned Road Alternative comprises about 11.8 acres within the IRA. The conversion would consist of 6.96 acres of developed areas, 1.91 acres of forest/woodland habitat, and 2.89 acres of shrubland. The proposed Lisa Falls Trailhead comprises about 1.3 acres within the IRA. The conversion would consist of 0.08 acre of developed areas, 0.79 acre of forest/woodland habitat, and 0.41 acre of shrubland. Indirect impacts to soil, water, and air resources could result from stormwater erosion or dust generated from disturbed areas during construction of the PPSL snow sheds, and trailhead, and sediment could be deposited outside the direct project footprint. Most of these indirect impacts could be reduced or eliminated through the mitigation measures that would be implemented. For more information, see Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The PPSL would require replacing or extending the existing culverts which would convert about 0.01 acre of an intermittent stream and 0.02 acre of an ephemeral stream. There are no perennial stream crossings or riparian areas immediately adjacent to the proposed snow sheds. The proposed Lisa Falls Trailhead would require replacing or extending the existing culvert which would convert about 0.03 acre of an intermittent stream. Several of the existing culverts lack energy dissipation, which causes indirect impacts from the downstream sedimentation of eroded channel material. Outlet conditions would be improved with the PPSL, and indirect impacts would be reduced compared to the No-Action Alternative. The PPSL would permanently convert 0.04 acre of riparian vegetation within RHCAs to transportation use. Effects on riparian areas would also occur as a result of extending culverts to

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			accommodate the wider roadway. Once the culverts are installed, disturbed areas around the culverts would be revegetated. Up to about 0.05 acre of riparian vegetation within RHCAs would be filled by the snow shed alternatives. The proposed Lisa Falls Trailhead would not impact riparian vegetation in RHCAs. The total impact areas for the Enhanced Bus Service in Peak-Period Shoulder Lane Alternative (including sub-alternatives) constitute 0.37% to 0.42% of the Twin Peaks IRA and, therefore, the alternative would not affect important soil, water, or air resources of the IRA. The low (1) score for this roadless value would not change.
Public Drinking Water	5	Little Cottonwood Creek is an important Class 1 watershed.	The Enhanced Bus Service in Peak-Period Shoulder Lane Alternative would add a total of about 22 acres of new pavement area in Little Cottonwood Canyon (this includes about 1.3 acres for the Lisa Falls Trailhead and 14.0 acres from that PPSL which are within the Twin Peaks IRA; the other approximately 7 acres are outside the IRA on private land and the area between the IRA and Snowbird Entry 1). The modeled in-stream water quality of Little Cottonwood Creek from the new impervious area showed *de minimis* differences between the Enhanced Bus Service in Peak-Period Shoulder Lane Alternative with the No-Action Alternative for most contaminants of concern. For other contaminants of concern, the modeling shows a minor discernable difference, but the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would not contribute pollutant concentrations at levels that would impair Little Cottonwood Creek's beneficial uses or impair Metropolitan Water's ability to deliver safe drinking water. See Section 12.4.4, *Enhanced Bus Service in Peak-period Shoulder Lane Alternative*, of the Little Cottonwood Canyon Final EIS. Indirect water quality impacts could result from increased winter visitation. However, the enhanced bus service would stop only at the resorts, where existing infrastructure is in place to handle the increased use. Enhanced bus service would not operate during the summer. Adding restroom facilities at the Lisa Falls Trailhead would provide a beneficial indirect impact to water quality. Also see Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to water quality. The Enhanced Bus Service in Peak-period Shoulder Lane Alternative would not affect water quality, and the high (5) score for the public drinking water roadless value would not change.
Diversity of Plant and	4	Likely contains stands of the Limber Pine/Oregon Grape	Impacts of the PPSL to migratory birds and raptors would include a loss of 2.20 acres of forest/woodland habitat and 2.21 acres of

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Animal Communities (PFC)		habitat type and the Ross Avens cover type.	shrubland in the IRA, which would reduce habitat and prey availability. However, the habitat that would be converted is adjacent to the road and is mostly disturbed roadside habitat that is already degraded and is heavily affected by human disturbance. Impacts to migratory birds and raptors from the snow sheds would include a loss of 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. However, the habitat that would be converted to transportation use is disturbed roadside habitat on a steep slope. Impacts to migratory birds and raptors from the Lisa Falls Trailhead would include a loss of about 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. Enhanced bus service would not operate during the summer, so there would be no change to visitor summer use as a result of bus service and no associated indirect impacts to ecosystem resources. See Section 20.4.2.2.3, E*cosystem Resources (Water Quality, Vegetation, Soils, and Wildlife)*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to ecosystem resources from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative. The total impact areas for the Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including sub-alternatives) constitute 0.37% to 0.42% of the Twin Peaks IRA and, therefore, the alternative would not affect the biodiversity of the IRA. The medium-high (4) score for this roadless value would not change.
T&E and Special-status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: Wasatch jamesia, Garrett's fleabane, Garrett's bladderpod, and broadleaf penstemon occur within this IRA and habitat is present for the nearby occurring *Lepidium montanum* var. *alpinum*.	Species-specific surveys identified individuals of one plant species on the USDA Forest Service watch list, broadleaf beardtongue, that would be removed by the PPSL and the Snow Sheds with Berms Alternative. The local impacts to already disturbed sites are not expected to cause species-level impacts, nor are they likely to cause a loss of species viability. See Section 13.3.2.1.2, *Special-status Plant Species*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The medium (3) score for this roadless value would not change. The potential indirect benefit of controlling access locations would be the same as with the Enhanced Bus Service Alternative.
	2	Terrestrial Wildlife at Risk: Peregrine falcon habitat is present.	Within the Enhanced Bus Service in Peak-period Shoulder Lane Alternative and where the snow sheds and the Lisa Falls Trailhead are proposed, there is suitable habitat for several USDA Forest Service sensitive bird species, including northern goshawk and peregrine falcon (foraging habitat only), and monarch butterflies

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			might be present. If suitable habitat is present, sensitive bird species could be temporarily displaced during construction of the snow sheds, but no long-term direct or indirect impacts would occur. Given that milkweed (*Asclepias* spp.) is an essential feature of quality monarch butterfly habitat, monarch butterflies would be forced to relocate if milkweed plants are removed. The medium-low (2) score for this roadless value would not change.
	5	Fish Species at Risk: There is a small population of cutthroat trout in Deaf Smith Canyon.	No impacts to cutthroat trout in Deaf Smith Canyon. Therefore, the high (5) score for this roadless value would not change.
Class of Recreation (Measures as ROS)	1	0% of the IRA contains SPM areas, and 48% of IRA contains SPNM areas.	The majority of the roadway widening for the PPSL would occur on the north side of the road and partially encroach into the Twin Peaks IRA, which abuts the north side of the road and mostly consists of disturbed roadside areas. The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches, which has removed much of the vegetation along these steep slopes in these areas and in the cut area surrounding the existing road. The snow sheds would eliminate the China Wall pullout and restrict access to three climbing boulders, and one boulder (Wall Boulder) would be eliminated. About 260 feet of the existing Lisa Falls Trail would be paved by the trailhead improvements. Enhanced bus service would not operate during the summer, so there would be no change to summer visitation as a result of bus service and no associated indirect impacts to summer recreation within the IRA. Some backcountry skiers could take the bus to the resorts, which could increase backcountry use in the winter. See Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts. The minor amount (between 0.37% and 0.42%) of land disturbance adjacent to the existing road, the minor amount of impact to the existing Lisa Falls Trail, elimination of the China Wall roadside pullout, and elimination of the other roadside pullouts would not alter the recreation opportunities of the Twin Peaks IRA. The low (1) score for the primitive and semi-primitive recreation roadless value would not change.

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Landscape Character and Integrity	3	There was a lot of historic mining activity in the IRA. There are remnants of tailings piles and disturbed areas. There are a number of roads, and ghost roads and maintenance roads for the mines still on the mountain.	Landscape alterations would be adjacent to the existing S.R. 210 in the Twin Peaks IRA. The PPSL would impact about 12.8 acres of the naturally appearing LCU, 0.7 acre of the naturally evolving LCU, and 0.5 acre of the resort natural setting LCU in the Twin Peaks IRA. The Snow Sheds with Berms Alternative would impact about 8.9 acres, the Snow Sheds with Realigned Road Alternative would impact about 11.8 acres, and the Lisa Falls Trailhead would impact about 1.3 acres of the naturally appearing LCU in the Twin Peaks IRA. Project elements, such as alterations to slope and a snow shed, would introduce elements and/or patterns that would be visually dominant and would create strong contrast compared with other features in the landscape. A high level of impact was assessed for the impacts of the snow sheds. The PPSL, snow sheds, and Lisa Falls Trailhead would not result in a scenic integrity level of Unacceptably Low. Therefore, UDOT anticipates that the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would be in conformance with the Forest Plan's scenic management standard (S22). The Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including sub-alternatives) totals about 23.7 to 26.6 acres in the naturally appearing and naturally evolving LCUs in the Twin Peaks IRA. The total impact areas for the Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including sub-alternatives) constitute 0.37% to 0.42% of the Twin Peaks IRA and, therefore, the alternative would not affect the landscape character or integrity of the IRA. This alternative would not change the medium (3) score for the landscape character and integrity roadless value of the Twin Peaks IRA.
Cultural Sites	4 to 5	Low data but high potential for mining sites.	PPSL impacts would be outside the Twin Peaks IRA in the vicinity of the Little Cottonwood Grit Mill and Granite Quarry (42SL109) and would not impact the site. The snow sheds would adversely affect 1 site: about 0.19 acre of the D&RG Railroad/Wasatch & Jordan Valley Railroad/Salt Lake & Alta site (42SL419, known as the "China Wall"). Archaeological data recovery will be conducted in consultation with the USDA Forest Service and the Utah SHPO. See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. Impacts to this 1 cultural site would not change the medium-high (4) to high (5) score for this roadless value. The improved Lisa Falls Trailhead would not impact any cultural sites.

Table 2. Roadless Values and Project Effects from the Enhanced Bus Service in Peak-period Shoulder Lane Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Unique Characteristics	3	Renowned example of glaciation and segment of one river in wild and scenic inventory.	For roadway users and forest users near the snow sheds, the landscape would appear severely altered, and the snow shed infrastructure would dominate the visual setting in the immediate foreground and foreground areas. The snow sheds would diminish but not limit the management of the scenic byway by the USDA Forest Service to protect scenic vistas and intrinsic scenic qualities of the canyon overall. Therefore, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative would not change the medium (3) score for this roadless value.
Lone Peak IRA (874 acres total)			
The Enhanced Bus Service in Peak-period Shoulder Lane Alternative would have about 0.1 acre (0.01% of the total area) in the Lone Peak IRA. The minor amount of IRA land needed for construction of the PPSL and Bridge Trailhead would not materially affect any of the Lone Peak IRA's roadless area values.			
White Pine IRA (2,059 acres total)			
The Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including the snow sheds and trailhead sub-alternatives) would not have any impacts to the White Pine IRA.			

4.4.2.1 Summary of Effects

About 99.6% of the Twin Peaks IRA would not be affected by the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, there would be no major changes to the assessed roadless value scores, and the IRA's roadless values would be mostly maintained. The roadless values that were scored highest (public drinking water and the diversity of plant and animal communities) would be affected by construction of the PPSL and snow sheds. The snow sheds would not affect Little Cottonwood Creek's water quality or water supply nor impact the biodiversity of the IRA over the long term. The PPSL would add about 14 acres of impervious area in the IRA. However, the increased stormwater runoff would not cause Little Cottonwood Creek to exceed water quality standards. The conversion of forested/woodland and shrubland vegetation to transportation use would not substantially affect the biodiversity-related roadless values of the Twin Peaks IRA.

The minor amount of IRA land potentially impacted during construction of the PPSL and Bridge Trailhead (0.01% of the total area) would not materially affect any of the Lone Peak IRA's roadless area values.

4.4.3 Timber Harvesting

Any timber harvesting (timber cutting, sale, or removal) would be incidental to implementing the Enhanced Bus Service in Peak-period Shoulder Lane Alternative subject to further U.S. Forest Service review and decision that construction is considered an activity not otherwise prohibited by the RACR.

The Enhanced Bus Service in Peak-period Shoulder Lane Alternative would require the following amounts of timber removal in the Twin Peaks IRA:

- Within the 14.04 acres of total disturbance for the PPSL, the majority (9.63 acres) of the area converted would be in developed areas. The PPSL would convert 2.20 acres of forest/woodland habitat and 2.21 acres of shrubland. See Figure 5 above.
- Avalanche activity has removed much of the vegetation along the areas of the proposed snow sheds. Within the 8.9 to 11.8 acres of total disturbance for the snow sheds, the majority (4.55 to 6.96 acres) of the area that would be converted is in developed areas. The snow sheds would impact 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. See Figure 5 above.
- The Lisa Falls Trailhead would impact 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. See Figure 4 above.

The total amount of timber that would be removed for the Enhanced Bus Service in Peak-period Shoulder Lane Alternative (including sub-alternatives) of 4.23 to 4.90 acres of forest/woodland vegetation (0.07% to 0.08%) is not a substantial amount of timber relative to the size of the Twin Peaks IRA (6,490 acres).

4.5 Gondola Alternative A

4.5.1 Alternative Description and Roadless Rule Applicability

4.5.1.1 S.R. 210 – North Little Cottonwood Road

The base station for Gondola Alternative A would be located at the existing Little Cottonwood Canyon park-and-ride lot on the north side of S.R. 210 at the entrance to Little Cottonwood Canyon. The gondola alignment, which was situated to avoid wilderness areas and minimize encroachment to Little Cottonwood Creek, includes an angle station west of Tanner Flats Campground and terminal stations at the Snowbird and Alta resorts. There would be no intermediate stops at trailheads in the canyon.

The existing park-and-ride lot is used as an access point for the Alpenbock Loop Trailhead. To accommodate use of the trailhead and employee parking for the gondola base station, about 95 parking spaces would be placed within the Gondola Alternative A base station complex. The trailhead improvements would include restrooms for trailhead users. Reconfiguring the parking for the Alpenbock Loop Trail would require about 0.14 acre of the Twin Peaks IRA that is adjacent to the park-and-ride lot at the entrance to the canyon.

Twenty gondola towers would be needed for Gondola Alternative A. The tower spacing depends on the topography under the alignment, the elevation gain needed in each segment, and the vertical clearance required from obstacles (including snow and avalanche flows) below the alignment. About 15 of the 20 towers would be on NFS lands. Eight of the towers (towers 1, 6, 7, 8, 9, 10, 12, and 13) would be partially

or completely within the three IRAs in Little Cottonwood Canyon as described below and shown in Figure 6 below.

- **Tower 1** is within the portion of the Twin Peaks IRA that is north of S.R. 210 near the entrance to Little Cottonwood Canyon. About 0.15 acres of this tower would be in the IRA. The Little Cottonwood Canyon Final EIS assumes that a crane or helicopter could be used to deliver materials for construction.
- **Tower 6** has a footprint of about 0.07 acre in the Lone Peak IRA. The tower would be about 110 feet south of S.R. 210, and the Little Cottonwood Canyon Final EIS assumes, subject to final design, that a crane or helicopter could be used to deliver materials for construction.
- **Tower 7** has a small footprint of about 0.01 acre within the Lone Peak IRA. The tower would be about 100 feet south of S.R. 210, and the Little Cottonwood Canyon Final EIS assumes that a crane or helicopter could be used to deliver materials for construction.
- **Tower 8** is west of the angle station and has a 0.07-acre footprint within the Twin Peaks IRA. Because it is adjacent to S.R. 210, the Little Cottonwood Canyon Final EIS assumes that a construction access road would be built; however, this temporary road would be outside the IRA.
- **Tower 9** is east of the proposed angle station near Tanners Flat Campground and has a 0.07-acre footprint within the Twin Peaks IRA. The Little Cottonwood Canyon Final EIS assumes that a crane or helicopter could be used to deliver materials for construction.
- **Tower 10** is south of S.R. 210 near the western limits of the White Pine IRA, and about 0.06 acre would be within the IRA. The Little Cottonwood Canyon Final EIS assumes that a crane or helicopter could be used to deliver materials for construction.
- **Tower 12** is east of the White Pine Trailhead on the north side of S.R. 210. About 0.27 acre would be within the Twin Peaks IRA. The Little Cottonwood Canyon Final EIS assumes that a crane or helicopter could be used to deliver materials for construction.
- **Tower 13** is just east of Snowbird Entry 1 on the north side of S.R. 210 near the eastern limits of the Twin Peaks IRA. The tower would be about 0.17 acre within the IRA.

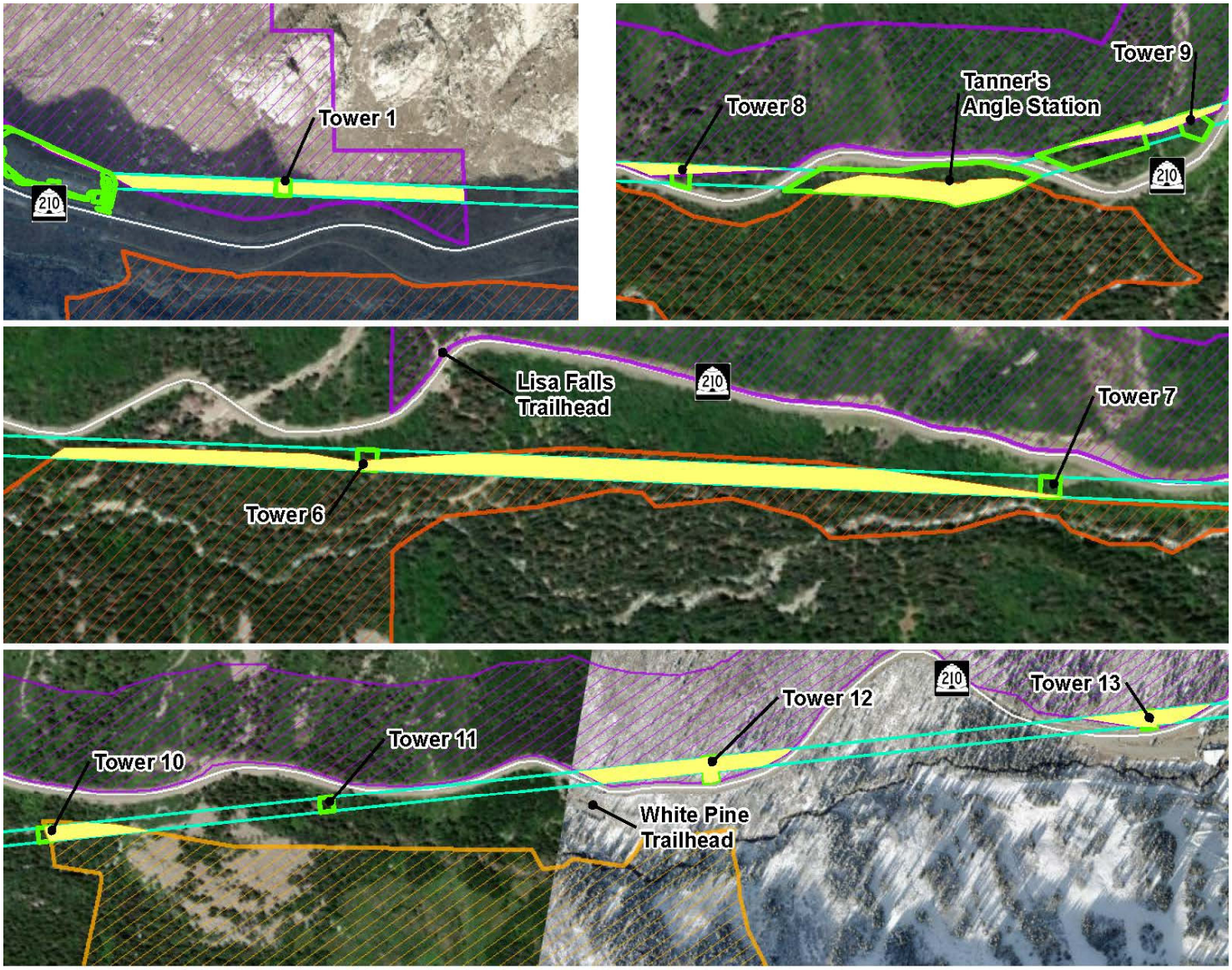
Gondolas require straight alignment segments between stations because gondolas can turn only very small angles at towers. A maximum 7-degree deflection can be made at towers but that is not desired, so angle stations are needed to turn sharper angles. The angle station for Gondola Alternative A would be located about 0.25 mile west of Tanners Flat Campground partially within the Lone Peak IRA. The angle station would be located on the south side of S.R. 210 immediately adjacent to the road to avoid constructing an access road. At the angle station, the gondola cabins would move into the station, which would be constructed near ground level. For this reason, vegetation would need to be cleared around the angle station for cabin access into the station.

A total of about 2 to 3 acres of vegetation would be removed depending on the final design. The area would be planted with native vegetation that would not obstruct the gondola cabins. About 1.52 acres of the vegetation removal would be within the Lone Peak IRA, which is south of the S.R. 210, and about 0.18 acre of vegetation removal would be within the Twin Peaks IRA, which is north of S.R. 210. See Figure 6 below.

The gondola alignment (not including towers and angle stations) would be located over about 13.3 acres of the IRAs total—about 6.6 acres in the Twin Peaks IRA (0.10%), 5.9 acres in the Lone Peak IRA (0.67%), and 0.8 acre in the White Pine IRA (0.04%). Trees below the gondola alignment would not need to be removed except near the angle station. The use of NFS lands would be in the form of a nonexclusive right-of-way for highway purposes by FHWA or through a special-use authorization. The USDA Forest Service would still administer the appropriated lands, but UDOT would have an easement on these lands. See Chapter 28, *U.S. Department of Agriculture Forest Service Forest Plan Amendments*, of the Little Cottonwood Canyon Final EIS.

Gondola Alternative A would be consistent with a desired future condition in the Forest Plan, which states that the USDA Forest Service will work actively with other parties to explore options for reducing private vehicle use in Little Cottonwood Canyon. A gondola system is not considered a motor vehicle travelway, and construction would be authorized under a special use lease; therefore, Gondola Alternative A would be an activity not otherwise prohibited by the RACR. The removal of timber around the base and angle station would, therefore, be considered incidental to the construction of the gondola. The final decision will be made by the USDA Forest Service in its ROD for the S.R. 210 Project.

Figure 6. Gondola Alternative A



4.5.1.2 Avalanche Mitigation Alternatives

The impacts to the IRAs from the avalanche mitigation alternatives would be the same as from the Enhanced Bus Service Alternative.

4.5.1.3 Trailhead Parking Alternatives and No Winter Parking Alternative

The impacts to IRAs from the trailhead parking alternatives and the no winter parking alternative would be the same as from the Enhanced Bus Service Alternative.

4.5.2 Impacts to Roadless Characteristics

Gondola Alternative A would be consistent with a desired future condition in the Forest Plan, which states that the USDA Forest Service will work actively with other parties to explore options for reducing private vehicle use in Little Cottonwood Canyon. Combining the estimated impacts of the gondola towers and angle station, the snow sheds, and the trailhead results in the following impacts to each IRA.

- **Twin Peaks IRA.** Within the Twin Peaks IRA, Gondola Alternative A (including the base station and Lisa Falls Trailhead) would have about 11.2 acres of disturbance with the Snow Sheds with Berms Alternative and about 14.1 acres with the Snow Sheds with Realigned Road Alternative. This impact constitutes 0.17% to 0.21% of the total area (6,490 acres) of the IRA. The gondola alignment would require an aerial easement with about 6.6 acres (0.01%) in the Twin Peaks IRA (see Figure 7 below).
- **Lone Peak IRA.** Within the Lone Peak IRA, Gondola Alternative A would have about 1.6 acres of disturbance due, primarily, from the gondola angle station and the vegetation that would need to be cleared from the station approaches. This impact constitutes about 0.18% of the total area (874 acres) of the IRA. The gondola alignment would require an aerial easement with about 5.9 acres (0.67%) in the Lone Peak IRA (see Figure 7 below).
- **White Pine IRA.** Within the White Pine IRA, Gondola Alternative A would have about 0.06 acre of disturbance from one gondola tower (tower 10) that would be partially within the IRA. This impact constitutes 0.003% of the total area (2,059 acres). The gondola alignment would require an aerial easement with about 0.8 acre (0.04%) in the White Pine IRA (see Figure 7 below).

Table 3 below presents the existing scores assessed for the IRAs' roadless values as reported in the Forest Plan Final EIS and the anticipated effects of Gondola Alternative A (including sub-alternatives).

Figure 7. Vegetation Impacts for Gondola Alternative A

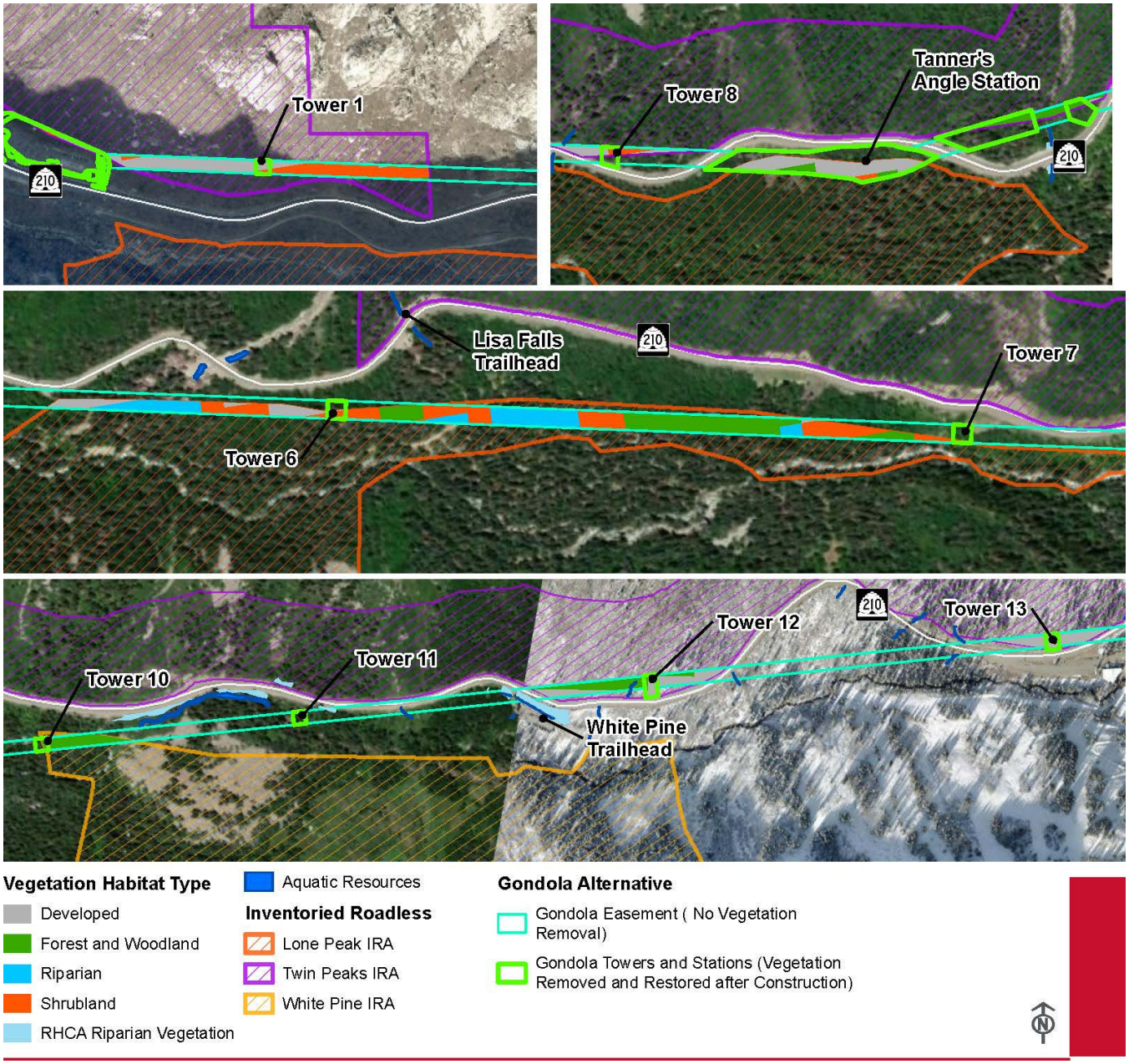


Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Twin Peaks IRA (6,490 acres total)			
Soil, Water, and Air Resources	1	The IRA contains few small wetlands along narrow steam corridors.	Construction of Gondola Alternative A, the snow sheds, and the Lisa Falls Trailhead parking would disturb vegetation and soils and could introduce noxious weed species into the surrounding areas, if not monitored and controlled. UDOT will mitigate temporary impacts to vegetation once construction is complete. See Section 6.0, *Mitigation*, of this report and Section 13.4.7, *Mitigation Measures*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. Gondola Alternative A would have about 1.1 acres of physical impact from the base station and towers that are in the Twin Peaks IRA. These areas consist of 0.61 acre of developed areas, 0.31 acre of forest/woodland habitat, and 0.13 acre of shrubland. The Snow Sheds with Berms Alternative comprises about 8.9 acres. The conversion to transportation use would consist of 4.55 acres of developed areas, 1.24 acres of forest and woodland habitat, and 3.08 acres of shrubland. The Snow Sheds with Realigned Road Alternative comprises about 11.8 acres. The conversion would consist of 6.96 acres of developed areas, 1.91 acres of forest/woodland habitat, and 2.89 acres of shrubland. The proposed Lisa Falls Trailhead comprises about 1.3 acres. The conversion would consist of 0.08 acre of developed areas, 0.79 acre of forest/woodland habitat, and 0.41 acre of shrubland. Gondola Alternative A would not impact any wetlands or require any permanent stream crossings. There are no perennial stream crossings or riparian areas immediately adjacent to the proposed snow sheds. The proposed Lisa Falls Trailhead would require replacing or extending an existing culvert which would convert about 0.03 acre of an intermittent stream. Gondola Alternative A and the proposed Lisa Falls Trailhead would not impact riparian vegetation. The avalanche mitigation alternatives would fill up to about 0.05 acre of riparian vegetation within RHCAs. Indirect impacts to soil, water, and air resources could result from stormwater erosion or dust generated from disturbed areas during construction of the gondola, snow sheds, and trailhead. Sediment could be deposited outside the project footprint, resulting in indirect impacts. Most of these indirect impacts could be reduced or eliminated through the mitigation measures that would be implemented to reduce the risk for soil migration. These mitigation measures would revegetate disturbed areas and stabilize soils once construction is complete. For more information, see Chapter 13, *Ecosystem Resources*, in the Little Cottonwood Canyon Final EIS. The total impact areas for Gondola Alternative A (including sub-alternatives) constitute 0.17% to 0.22% of the Twin Peaks IRA and, therefore, the alternative would not affect important soil, water,

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			or air resources of the IRA. The low (1) score for this roadless value would not change.
Public Drinking Water	5	Little Cottonwood Creek is an important Class 1 watershed.	Gondola Alternative A would add about 2.4 acres of new pavement area in Little Cottonwood Canyon (1.3 acres from the Lisa Falls Trailhead). The modeled in-stream water quality of Little Cottonwood Creek with the new impervious area showed *de minimis* differences between Gondola Alternative A and the No-Action Alternative. The impacts of the snow sheds to water quality would be the same as those from the Enhanced Bus Service Alternative. Indirect water quality impacts could result from increased winter visitation. However, the gondola would stop only at the resorts, where existing infrastructure is in place to handle the increased use. Some backcountry skiers destined for areas within and above the Twin Peaks IRA could use the gondola, which could increase backcountry use; however, increased backcountry use is difficult to predict. Increased backcountry use could increase the amount of human waste in the backcountry and indirectly affect water quality. The gondola could operate in the summer but with stops only at the resorts. Indirect impacts would occur outside the IRAs. See Section 20.4.3.2, *Recreation*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS. The indirect impacts of the trailheads would be the same as those from the Enhanced Bus Service Alternative. Gondola Alternative A would not affect water quality, and the high (5) score of the public drinking water roadless value would not change.
Diversity of Plant and Animal Communities (PFC)	4	Likely contains stands of the Limber Pine/Oregon Grape habitat type and the Ross Avens cover type.	The impacts of Gondola Alternative A to migratory birds and raptors would include a loss of 0.31 acre of forest/woodland habitat and 0.13 acre of shrubland in the IRA. Wildlife would be negatively affected by removal of vegetation and disturbance from the construction and operation of the gondola, but no long-term impacts to populations would occur. Impacts to migratory birds and raptors from the snow sheds would include a loss of 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. However, the habitat that would be converted to transportation use is disturbed roadside habitat on a steep slope. Impacts to migratory birds and raptors from the Lisa Falls Trailhead would include a loss of about 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. See Section 20.4.3.3, *Ecosystem Resources (Water Quality, Vegetation, Soils, and Wildlife)*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to ecosystem resources from Gondola Alternative A.

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			The total impact areas for Gondola Alternative A (including sub-alternatives) constitute 0.17% to 0.22% of the Twin Peaks IRA and, therefore, the alternative would not affect the biodiversity of the IRA. The medium-high (4) score for this roadless value would not change.
T&E and Special-status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: Wasatch jamesia, Garrett's fleabane, Garrett's bladderpod, and broadleaf penstemon occur in this IRA, and habitat is present for the nearby occurring *Lepidium montanum* var. *alpinum*.	No USDA Forest Service sensitive or watch list plant species were identified in the construction area for Gondola Alternative A during species-specific field surveys. Individuals of one plant species on the USDA Forest Service watch list, broadleaf beardtongue plants, would be removed by the Snow Sheds with Berms Alternative. The local impacts from the Snow Sheds with Berms Alternative to an already disturbed site are not expected to cause species-level impacts, nor are they likely to cause a loss of species viability. See Section 13.3.2.1.2, *Special-status Plant Species*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The small area of disturbance from the gondola and snow sheds would not change the medium (3) score for this roadless value.
	2	Terrestrial Wildlife at Risk: Peregrine falcon habitat is present.	Suitable habitat for USDA Forest Service sensitive wildlife would be affected by removal of vegetation and disturbance from the construction and operation of the gondola and from construction of the snow sheds and the Lisa Falls Trailhead. The loss of habitat would reduce habitat availability for sensitive wildlife species. If suitable habitat is present, sensitive species could be temporarily displaced during construction, but no long-term impacts to populations would occur. Given that milkweed (*Asclepias* spp.) is an essential feature of quality monarch butterfly habitat, monarch butterflies would be forced to relocate if milkweed plants are removed. The small area of disturbance from the gondola and snow sheds would not change the medium-low (2) score for this roadless value.
	5	Fish Species at Risk: There is a small population of cutthroat trout in Deaf Smith Canyon.	No impacts to cutthroat trout in Deaf Smith Canyon. Therefore, the high (5) score for this roadless value would not change.
Class of Recreation (Measures as ROS)	1	0% of the IRA contains SPM areas, and 48% contains SPNM areas.	Gondola Alternative A would have about 1.06 acres of impact (0.88 acre for tower construction and 0.18 acre of vegetation clearing for the angle station approach) in the Twin Peaks IRA. The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches, which has removed much of the vegetation along these steep slopes in these areas and in the cut area surrounding the existing road. The snow sheds would eliminate the China Wall pullout and restrict access to three climbing boulders, and one boulder (Wall Boulder) would be eliminated.

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			About 260 feet of the existing Lisa Falls Trail would be paved by the trailhead improvements. The minor amount (between 0.17% and 0.22%) of land disturbance adjacent to the existing road, the minor amount of impact to the existing Lisa Falls Trail, elimination of the China Wall roadside pullout, and elimination of the roadside pullouts would not alter the recreation opportunities of the Twin Peaks IRA. The low (1) score for the primitive and semi-primitive recreation roadless value would not change.
Landscape Character and Integrity	3	There was a lot of historic mining activity in the IRA. There are remnants of tailings piles and disturbed areas. There are a number of roads, and ghost roads and maintenance roads for the mines still on the mountain.	Including the easement for Gondola Alternative A, Gondola Alternative A would impact about 6.8 acres of the naturally appearing LCU, 0.5 acre of the naturally evolving LCU, and 0.4 acre of the resort natural setting LCU in the Twin Peaks IRA. The Snow Sheds with Realigned Road Alternative would impact about 11.8 acres, and the Lisa Falls Trailhead would impact about 1.3 acres, of the naturally appearing LCU in the Twin Peaks IRA. Project elements, such as the gondola and alterations to slope and a snow shed, would introduce elements and/or patterns that would be visually dominant and would create strong contrast compared with other features in the landscape. A high level of impact was assessed for the impacts of the gondola and snow sheds. Gondola Alternative A, the snow sheds, and the Lisa Falls Trailhead would not result in a scenic integrity level of Unacceptably Low. Therefore, UDOT anticipates that Gondola Alternative A would be in conformance with the Forest Plan's scenic management standard (S22). The total affected area for Gondola Alternative A (including sub-alternatives) would be about 30.2 to 33.1 acres in the naturally appearing and naturally evolving LCUs in the Twin Peaks IRA. This alternative would not change the medium (3) score for the landscape character and integrity roadless value of the Twin Peaks IRA.
Cultural Sites	4 to 5	Low data but high potential for mining sites.	The snow sheds would adversely affect 1 site: about 0.19 acre of the D&RG Railroad/Wasatch & Jordan Valley Railroad/Salt Lake & Alta site (42SL419, known as the "China Wall"). Archaeological data recovery will be conducted in consultation with the USDA Forest Service and the Utah SHPO. See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. The improved Lisa Falls Trailhead would not impact any cultural sites. Gondola Alternative A would impact about 2.5 acres of the Little Cottonwood Grit Mill and Granite Quarry (42SL109), a portion of which is in the Twin Peaks IRA. The redesigned Alpenbock Loop Trail parking and one gondola tower would be within this site. If constructed, Gondola Alternative A would result in no adverse effect.

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. With adverse impacts to 1 site, Gondola Alternative A would not change the medium-high (4) to high (5) score for this roadless value.
Unique Characteristics	3	Renowned example of glaciation and segment of one river in wild and scenic inventory.	For roadway users and forest users near the gondola alignment and snow sheds, the landscape would appear severely altered, and the snow shed infrastructure would dominate the visual setting in the immediate foreground and foreground areas. The gondola and snow sheds would diminish but not limit the management of the scenic byway by the USDA Forest Service to protect scenic vistas and intrinsic scenic qualities of the canyon overall. The medium (3) score for this roadless value would not change.
Lone Peak IRA (874 acres total)			
Soil, Water, and Air Resources	1	The IRA contains few small wetlands along narrow steam corridors.	Construction of Gondola Alternative A would disturb vegetation and soils and could introduce noxious weed species into the surrounding areas, if not monitored and controlled. UDOT will mitigate temporary impacts to vegetation once construction is complete. See Section 6.0, *Mitigation*, of this report and Section 13.4.7, *Mitigation Measures*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. Gondola Alternative A would remove existing vegetation in about 1.6 acres (0.08 acre for tower construction and 1.52 acres for the angle station and necessary vegetation clearing) that are within the Lone Peak IRA. These areas consist of 1.23 acres of developed areas, 0.21 acre of forest/woodland habitat, and 1.89 acre of shrubland. This alternative would not impact any wetlands, streams, or riparian vegetation in the IRA. The total impact areas for Gondola Alternative A (including sub-alternatives) would constitute 0.18% of the IRA and, therefore, the alternative would not affect important soil, water, or air resources. The low (1) score of this roadless value of the Lone Peak IRA would not change.
Public Drinking Water	1	The Forest Plan Final EIS states that there are no surface sources of public drinking water downstream of roadless area. However, the IRA includes Little Cottonwood Creek, which is an important drinking water source.	A gondola system would not introduce pollutants into the watershed. No substantial amount of new impervious areas would be added for the gondola angle station and destination stations. The area around the gondola towers' foundations and the area disturbed by the angle station would be revegetated, and the stormwater runoff properties of the Lone Peak IRA would not materially change. Indirect impacts to water quality are described in Table 1 for the Enhanced Bus Service Alternative and in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS. The modeled in-stream water quality of Little Cottonwood Creek with the new impervious area showed *de minimis* differences between

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			Gondola Alternative A and the No-Action Alternative. The alternative would not contribute pollutant concentrations at levels that would impair Little Cottonwood Creek's beneficial uses or impair Metropolitan Water's ability to deliver safe drinking water. The low (1) score for this roadless value would not change.
Diversity of Plant and Animal Communities (PFC)	4	Likely contains the Aspen/Bracken Fern community type. Although Dyer's woad is not a conspicuous component, the is the Lone Peak IRA includes prime habitat for the expansion of this noxious weed, especially on the western unit.	Gondola Alternative A would impact about 1.6 acres (0.08 acre for tower construction and 1.52 acres for the angle station and necessary vegetation clearing) in the IRA. The impacts of the gondola to migratory birds and raptors would include a loss of 0.21 acre of forest/woodland habitat and 1.89 acre of shrubland in the IRA. Wildlife would be negatively affected by removal of vegetation and disturbance from the construction and operation of the gondola, but no long-term impacts to populations would occur. The impact area constitutes 0.18% of the IRA and, therefore, the alternative would not change the biodiversity of the Lone Peak IRA. The medium-high (4) score for this roadless value would not change.
T&E and Special Status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: No known Species at Risk plants occur in this roadless area, though habitats for the nearby occurring Wasatch jamesia, Wasatch rockcress, and Utah fleabane are present, and these species are likely to occur.	No USDA Forest Service sensitive or watch list plant species were identified within the construction area for Gondola Alternative A during species-specific field surveys. Therefore, the medium (3) score for this roadless value would not change.
	2	Terrestrial Wildlife at Risk: Peregrine falcon habitat is present.	Suitable habitat for USDA Forest Service sensitive wildlife would be negatively affected by removal of vegetation and disturbance from the construction and operation of the gondola. The loss of habitat would reduce habitat availability for sensitive wildlife species. If suitable habitat is present, sensitive species could be temporarily displaced during construction, but no long-term impacts to populations would occur. Given that milkweed (*Asclepias* spp.) is an essential feature of quality monarch butterfly habitat, monarch butterflies would be forced to relocate if milkweed plants are removed. The small area of disturbance would not change the medium-low (2) score for this roadless value.
	5	Fish Species at Risk: There is a small population of cutthroat trout in Little Cottonwood Creek.	No impacts to cutthroat trout in Little Cottonwood Canyon. Therefore, the high (5) score for this roadless value would not change.
Class of Recreation	3	The Lone Peak IRA contains segments of the Little	Two gondola towers (towers 6 and 7, 0.08 acre total) and the angle station (about 1.52 acres) would be along the northern edge of and

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
(Measures as ROS)		Cottonwood Creek Trail, which (along with undefined roadside pullouts outside the IRA) provides access to dispersed recreation in the IRA and to the semi-primitive recreation opportunities around Lone Peak, the Lone Peak Wilderness, and its side canyons (Coalpit Gulch, Hogum Fork, and Maybird Gulch). No other designated trails or trailheads are located along S.R. 210 near this IRA. 0% of the IRA contains SPM areas, and 57% contains SPNM areas.	partially within the IRA. About 0.18% of the IRA would be impacted, which would not materially affect the primitive and semi-primitive recreation opportunities in the Lone Peak IRA. The Bridge Trailhead (with Gondola Alternative A) would not directly impact the Lone Peak IRA. The Bridge Trailhead would replace the 15 existing roadside pullout spaces and, therefore, the trailhead would not increase use of the Lone Peak IRA and would not cause indirect impacts. The medium (3) score for this roadless value would not change.
Landscape Character and Integrity	4	The area is adjacent to North Little Cottonwood Road, and it has had a lot of activity in the past. From an aerial section view, the landscape appears intact, but numerous features are visible in the foreground landscape when viewing the landscape from the ground. Scenic Attractiveness Level: Distinct	Including the easement for Gondola Alternative A, Gondola Alternative A would impact about 7.5 acres (0.85%) of the naturally appearing LCU in the Lone Peak IRA. The gondola would introduce elements and/or patterns that would be visually dominant and would create strong contrast compared with other features in the landscape. A high level of impact was assessed for the impacts of the gondola. This alternative would alter a portion of the landscape character and integrity in the Lone Peak IRA from two towers, the angle station, and segments of the gondola alignment located along the northern boundary of the IRA. The gondola infrastructure and the movement of cabins would dominate the visual setting where viewers are close to the gondola. The majority of the gondola alignment in the IRA (5.9 acres, or 0.67%) would be around the Lisa Falls area between S.R. 210 and the Little Cottonwood Creek Trail. Gondola Alternative A (including sub-alternatives), which is adjacent to the existing S.R. 210 roadway, would not change the medium-high (4) score of the landscape character and integrity roadless value of the overall Lone Peak IRA.
Cultural Sites	4	Low data but high potential for mining and Native American sites.	Gondola Alternative A would not impact any cultural sites in the Lone Peak IRA. The medium-high (4) score for this roadless value would not change.
Unique Characteristics	1	Portion of one stream (Little Cottonwood Creek) found eligible in wild and scenic river inventory.	There would be no impacts to the creek, which as described for the Enhanced Bus Service Alternative is not managed as a potential wild and scenic river. The gondola towers and station would not impact riparian vegetation in the RHCAs in the Lone Peak IRA.

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
White Pine IRA (2,059 acres total)			
Soil, Water, and Air Resources	1	Few small wetlands along small narrow streams corridors	The total impact areas for Gondola Alternative A (including sub-alternatives) constitute 0.06 acre (0.003%) of forest/woodland habitat in the extreme northwest corner of the White Pine IRA and, therefore, the alternative would not affect important soil, water, or air resources of the IRA. The low (1) score for this roadless value would not change. Indirect impacts to soil, water, and air resources could result from stormwater erosion or dust generated from disturbed areas during construction of the snow sheds and trailhead. Sediment could be deposited outside the project footprint, resulting in indirect impacts. Most of these indirect impacts could be reduced or eliminated through the mitigation measures that would be implemented to reduce the risk for soil migration. These mitigation measures would revegetate disturbed areas and stabilize soils once construction is complete. For more information, see Section 13.4.4, *Gondola Alternative A*, in Chapter 13, *Ecosystem Resources*, in the Little Cottonwood Canyon Final EIS. No riparian vegetation in the RHCAs would be impacted. The base physical roadless values and unique qualities associated with the assigned undeveloped areas management prescription (MP 2.6) would be maintained.
Public Drinking Water	5	White Pine Fork flows into Little Cottonwood Creek, which is a surface water public drinking source.	The minor amount of surface disturbance from the construction of gondola tower 10 (0.006 acre) would, after reclamation, not change the stormwater runoff properties of the White Pine IRA. The gondola system would not introduce pollutants into the watershed. Indirect water quality impacts could result from increased winter visitation. However, the gondola would stop only at the resorts, where existing infrastructure is in place to handle the increased use. Some backcountry skiers destined for areas within the White Pine IRA could use the gondola service, which could increase backcountry use; however, increased backcountry use is difficult to predict. Increased backcountry use could increase the amount of human waste in the backcountry and indirectly affect water quality. The gondola might operate during the summer. Also see Section 20.4.3.3, *Ecosystem Resources (Water Quality, Vegetation, Soils, and Wildlife)*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to water quality. Gondola Alternative A would not affect water quality, and the high (5) score for the public drinking water roadless value would not change.
Diversity of Plant and Animal	4	This roadless area includes alpine and subalpine plant communities and likely	The expected 0.06 acre of disturbance to the IRA would not impact plant and animal communities or change the medium-high (4) score for this roadless value.

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Communities (PFC)		contains stands of the Limber Pine/Oregon Grape habitat type and the Ross Avens cover type.	
T&E and Special Status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: Wasatch fitweed, Garrett's fleabane, and broadleaf penstemon occur in this roadless area, while habitat for Garrett's bladderpod is present.	No USDA Forest Service sensitive or watch list plant species were identified in the construction area for the gondola during species-specific field surveys. The medium (3) score for this roadless value would not change.
	2	Terrestrial Wildlife at Risk: Goshawk and peregrine falcon habitat are present.	A small loss of vegetation (0.06 acre of forest/woodland habitat) and disturbance from the construction and operation of the gondola located near the edge of this IRA would not impact USDA Forest Service sensitive wildlife habitat. The medium-low (2) score for this roadless value would not change.
	2	Fish Species at Risk: Fish habitat is available in White Pine Creek, but the stream would need to be treated to remove existing trout.	No impacts to fish habitat in White Pine Creek. Therefore, the medium-low (2) score for this roadless value would not change.
Class of Recreation (Measures as ROS)	5	0% of the IRA contains SPM areas, and 81% contains SPNM areas.	Impacting 0.06 acre (0.003%) in the extreme northwest corner of the White Pine IRA would not affect the primitive and semi-primitive recreation opportunities of this IRA. The gondola alignment would be about 200 feet from the existing roadway and about 1,000 feet from Tanners Flat Campground, which currently affect the opportunities for primitive recreation and solitude within the northwest perimeter of the IRA. Therefore, the high (5) score for this roadless value would not change in the IRA overall. The gondola would not stop at the White Pine Trailhead and, therefore, the alternative would not increase use of the White Pine or Red Pine Trails in the IRA. No indirect impacts to recreation in the IRA would result from the gondola. Also see Section 20.4.3.2, *Recreation*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information.
Landscape Character and Integrity	5	Area generally appears natural. The Scenic Attractiveness Level is Distinct, with steep rugged peaks and glaciation topography. Alpine fir exists in pockets and lakes in depressions in the IRA.	Including the easement for the gondola, the Gondola Alternative A alignment would impact about 0.8 acre of the naturally appearing LCU in the White Pine IRA. A moderate level of visual impact was assessed from key observation point (KOP) 17, which is about 0.40 mile from the gondola alignment and represents the views from within the White Pine IRA. From KOP 17, project elements, such as the

Table 3. Roadless Values and Project Effects from Gondola Alternative A

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			gondola tower and tower pad, would introduce form, line, color, texture, or scale not common in the landscape and would be visually prominent in the landscape. Views toward the gondola infrastructure, which is mostly outside the White Pine IRA (except for one tower and 500 feet of gondola cable) would be partially screened by vegetation and topography. Some visitors could, however, experience a negative visual impact due to the presence of the gondola infrastructure. Also see Section 17.4.5, *Gondola Alternative A (Starting at Canyon Entrance)*, of the Little Cottonwood Canyon Final EIS. Gondola Alternative A would not change the high (5) score for the landscape character and integrity roadless value of the overall White Pine IRA.
Cultural Sites	3 to 4	Low data but high potential for mining and Native American sites.	There would be no impacts to cultural sites in the White Pine IRA. The medium (4) score for this roadless value would not change.
Unique Characteristics	1	Other unique values include a portion of one river (Little Cottonwood Creek) found eligible in the wild and scenic river inventory (but no longer managed as a potential Wild and Scenic River) and its renowned example of glaciation.	There would be no impacts to Little Cottonwood Creek. As explained for the landscape character and integrity value, there would be a moderate level of visual impact from the gondola infrastructure, which is mostly outside the IRA. The low (1) score for unique characteristic roadless value would not change.

4.5.2.1 Summary of Effects

Gondola Alternative A would have the following effects on the IRAs.

- **Twin Peaks IRA.** About 99.8% of the Twin Peaks IRA would not be affected by Gondola Alternative A, and, for the 0.2% of the Twin Peaks IRA potentially impacted, there would be no major changes to the assessed roadless values scores, and the IRA's roadless values would be mostly maintained. The roadless values that were scored highest (public drinking water and the diversity of plant and animal communities) would be affected primarily by construction of the snow sheds. As described for the Enhanced Bus Service Alternative, the snow sheds would not affect water quality or water supply nor impact the biodiversity of the IRA over the long term. Gondola Alternative A's infrastructure would have 1.1 acres of physical impact to the Twin Peaks IRA. Water quality would not be affected by the gondola system. Biodiversity-related roadless values of the Twin Peaks IRA would be maintained by implementing the gondola.
- **Lone Peak IRA.** About 99.8% of the Lone Peak IRA would not be affected by Gondola Alternative A, and, for the 0.2% of the Lone Peak IRA potentially impacted, there would be no major changes to the assessed roadless values scores, and the IRA's roadless values would be mostly maintained.

The roadless values that were scored the highest were diversity of plant and animal communities and landscape character and integrity. Gondola Alternative A would remove existing vegetation in about 1.6 acres (0.08 acre for tower construction and 1.52 acres for the angle station and necessary vegetation clearing) that are in the Lone Peak IRA. The impact area constitutes 0.18% of the IRA and, therefore, the alternative would not substantially affect the biodiversity-related roadless values of the Lone Peak IRA. The majority of the gondola alignment in the Lone Peak IRA (5.9 acres, or 0.67%) would be along the northern IRA boundary around the Lisa Falls area and west of Tanners Flat Campground and adjacent to S.R. 210. Gondola Alternative A would not change the medium-high (4) score for the landscape character and integrity roadless value of the Lone Peak IRA.

- **White Pine IRA.** About 99.9% of the White Pine IRA would not be affected by Gondola Alternative A. The roadless values that were scored the highest were public drinking water, diversity of plant and animal communities, primitive recreation, and landscape character and integrity. Impacting 0.06 acre (0.003%) of vegetation in the extreme northwest corner of the White Pine IRA would not materially affect the important soil or water roadless value in the IRA, and water quality would be maintained. The biodiversity-related roadless values associated with the assigned undeveloped areas management prescription (MP 2.6) would be maintained in over 99.9% of the White Pine IRA. Gondola Alternative A would not affect the primitive recreation opportunities that occur mostly in the interior of the IRA. Views toward the gondola infrastructure, which would be mostly outside the White Pine IRA, would be partially screened by vegetation and topography. Gondola Alternative A would not change the high (5) score for the landscape character and integrity roadless value of the overall White Pine IRA. Gondola Alternative A would not affect 99.9% of the IRA, and the roadless values associated with MP 2.6 (undeveloped areas) would be maintained.

Analysis for this supplemental information report discovered a discrepancy between the impact assessment in Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS and in this IRA assessment. Gondola tower 10 would impact NFS land inside the boundary of the White Pine IRA. Chapter 3, *Land Use*, of the Little Cottonwood Canyon Final EIS does not report any impacts to NFS lands assigned management prescription MP 2.6 (undeveloped areas). The geographic information systems (GIS) analysis using the official IRA boundary determined that, based on preliminary design, the footprint for gondola tower 10 could overlap the White Pine IRA by about 0.06 acre. This small discrepancy does not materially affect the land use impact conclusions of the Little Cottonwood Canyon Final EIS. If a gondola alternative is selected, UDOT, during final design, will evaluate shifting the tower west to avoid the White Pine IRA.

4.5.3 Timber Harvesting

A gondola system is not considered a motor vehicle travelway and, therefore, construction would be an activity not otherwise prohibited. Removing timber (timber cutting, sale, or removal) for the towers and around the angle station would be incidental to constructing the gondola. Any exceptions from the RACR remain subject to the USDA Forest Service's review and decision.

The amount of timber removal in the Twin Peaks IRA for the snow sheds and Lisa Falls Trailhead would be the same are with the Enhanced Bus Service Alternative.

Gondola Alternative A would require the following amounts of timber removal in the IRAs:

- **Twin Peaks IRA.** The gondola towers and angle station would remove about 0.31 acre of forested/ woodland vegetation. See Figure 7 above. Adding the snow sheds and the Lisa Falls Trailhead sub-alternative (see Figure 4 above), the total for Gondola Alternative A of 2.34 to 3.02 acres of forest/woodland vegetation removed would not be a substantial amount of timber relative to the size of the Twin Peaks IRA (6,490 acres).
- **Lone Peak IRA.** The towers and angle station for Gondola Alternative A would require the removal of 0.21 acre of forested/woodland vegetation. See Figure 7 above. The sub-alternatives would not impact the Twin Peaks IRA.
- **White Pine IRA.** With Gondola Alternative A, one tower, if not relocated, would be within the IRA and would require removal of about 0.06 acre of forested/woodland vegetation. See Figure 7 above. The sub-alternatives would not impact the White Pine IRA.

4.6 Gondola Alternative B

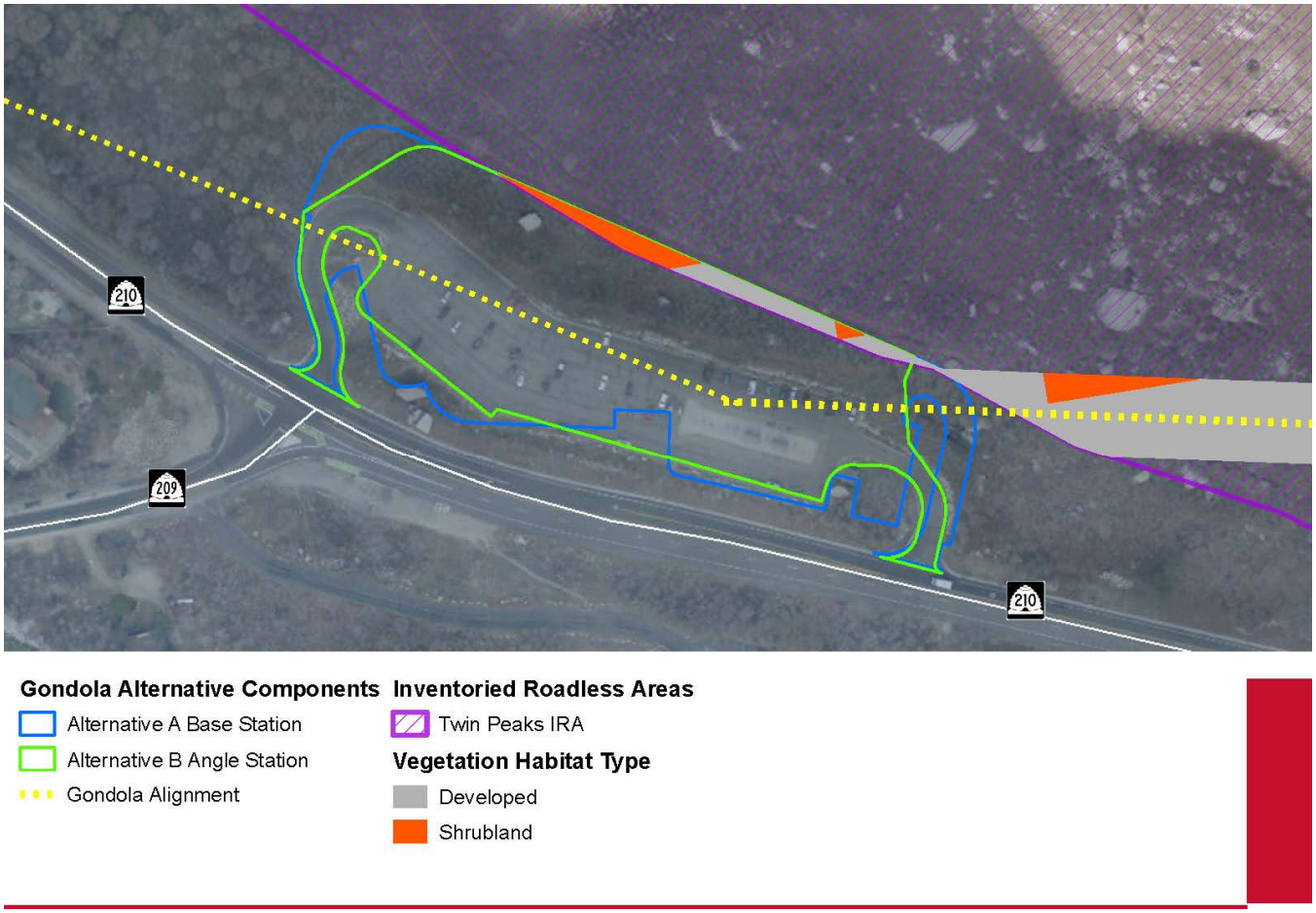
4.6.1 Alternative Description and Roadless Rule Applicability

4.6.1.1 S.R. 210 – North Little Cottonwood Road

Gondola Alternative B would be similar to Gondola Alternative A, but the base station would be located at a proposed development west of North Little Cottonwood Road, east of the La Caille restaurant, and about 0.75 mile northwest of the intersection of S.R. 209 and S.R. 210. An additional segment of the gondola alignment would run for about 0.75 mile from the base station to the Little Cottonwood Canyon park-and-ride lot, which would contain an angle station (see Figure 8 below).

To accommodate use of the Alpenbock Loop Trailhead and employee parking for the gondola base station, about 95 parking spaces would be placed within the gondola angle station complex. Reconfiguring the parking for the Alpenbock Loop Trail would require about 0.14 acre of the Twin Peaks IRA that is adjacent to the park-and-ride lot at entrance to the canyon. See Figure 8 below.

Figure 8. Vegetation Impacts for Gondola Alternatives at the Alpenbock Trailhead



Two additional towers (1A and 1B) would be needed between the gondola base station and an angle station at the existing park-and-ride lot. Tower 2B would be on NFS lands but outside the Twin Peaks IRA (towers are outside the area shown in Figure 8 above). The other 20 towers, 8 with the IRAs, and the Tanner angle station would be the same as with Gondola Alternative A.

A gondola system is not considered a road or motor vehicle travelway.[18] Therefore, Gondola Alternative B would be an activity not otherwise prohibited by the RACR, and the removal of timber around the base and angle station would be considered incidental to an activity not prohibited (construction of the gondola). The final decision will be made by the USDA Forest Service in its ROD for the S.R. 210 Project.

4.6.1.2 Avalanche Mitigation Alternatives

The avalanche mitigation alternatives would be the same as with the Enhanced Bus Service Alternative.

4.6.1.3 Trailhead Parking Alternatives and No Winter Parking Alternative

The trailhead parking alternatives and the no winter parking alternative would be the same as with the Enhanced Bus Service Alternative.

4.6.2 Impacts to Roadless Characteristics

The impacts from Gondola Alternative B to the roadless values of the Twin Peaks, Lone Peak, and White Pine IRAs would be the same as from Gondola Alternative A. See Section 4.5.2, *Impacts to Roadless Characteristics*, of this report.

4.6.3 Timber Harvesting

The amount of timber removal incidental to constructing Gondola Alternative B in the Twin Peaks, Lone Peak, and White Pine IRAs would be the same as with Gondola Alternative A. See Section 4.5.3, *Timber* , of this report.

The Gondola Alternative B angle station at the entrance to Little Cottonwood Canyon would impact shrubland vegetation.

[18] See, for example, 66 Federal Register 3243 (Jan. 12, 2001) (36 CFR Section 294.11).

4.7 Cog Rail Alternative

4.7.1 Alternative Description and Roadless Rule Applicability

4.7.1.1 S.R. 210 – North Little Cottonwood Road

The Cog Rail Alternative would start at a base station located at a proposed development south of North Little Cottonwood Road, about 0.75 mile northwest of the intersection of S.R. 209 and S.R. 210, and would travel on the north side of S.R. 210 to both the Snowbird and Alta ski resorts. The cog rail system would use diesel-electric locomotives and therefore would not require an overhead catenary system for power. The cog rail would stop at the Snowbird and Alta ski resorts only with no intermediate stops at trailheads. During peak periods (7 AM to 10 AM and 3 PM to 6 PM), the cog rail would operate about every 15 minutes with a total hourly person-capacity of about 1,000 people.

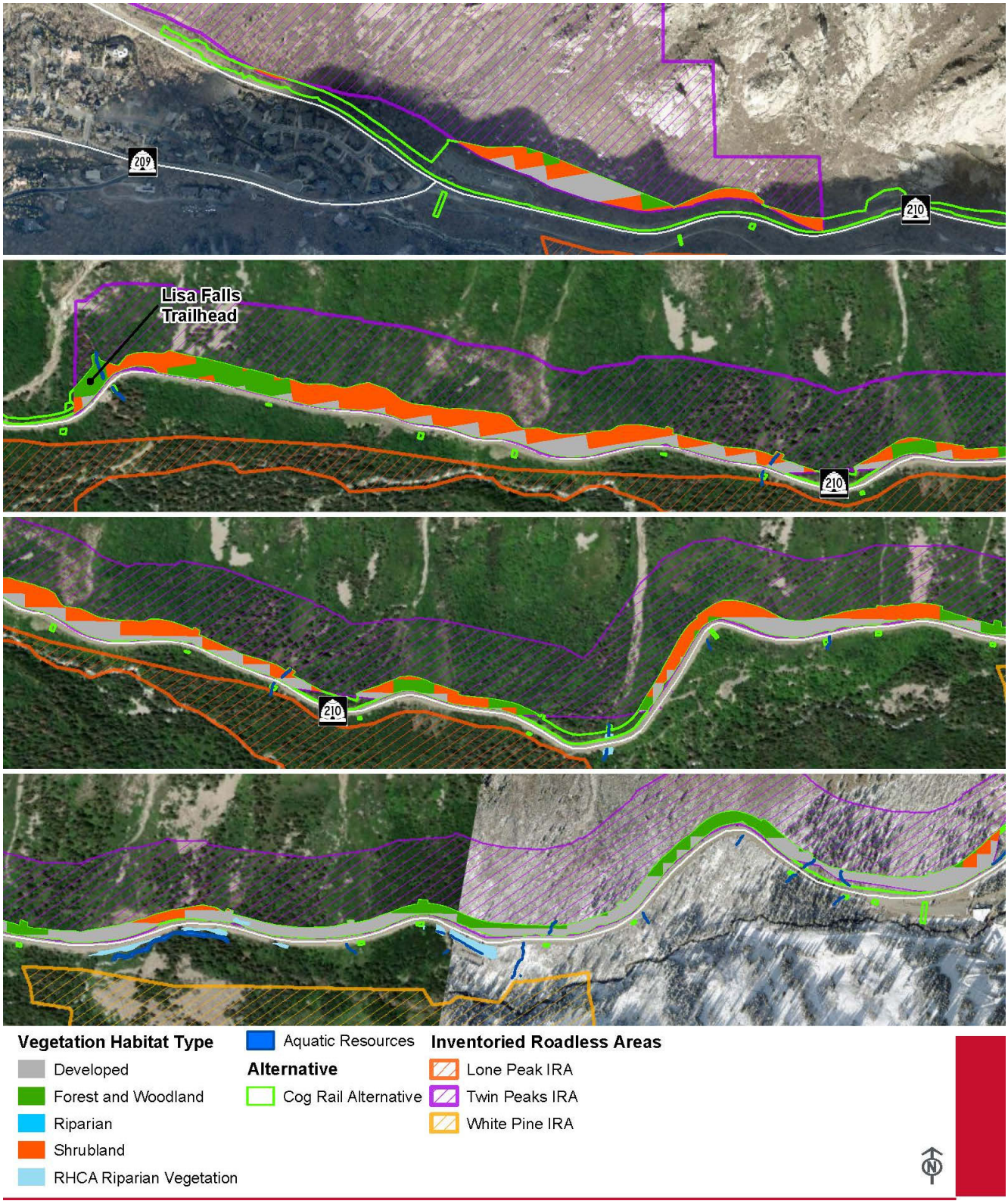
The cog rail would include both single- and double-track sections as well as ballasted and embedded track. The single-track section, about 2.2 miles, would be located in sections of the canyon where it would reduce impacts to the Grit Mill, Gate Buttress, and Lisa Falls Trailheads. The double-track sections would be about 12 miles total (two tracks over a total of 6 miles). There would be an 8-foot-wide shoulder with a concrete barrier between the roadway travel lane and the rail alignment to keep vehicles from entering the tracks.

There would be eight vehicle crossing points over cog rail alignment at trailheads (two crossings at the Alpenbock Loop Trailhead and one each at the Gate Buttress, Grit Mill, and Lisa Falls Trailheads), two crossings for businesses in the lower canyon, and one crossing for a residential property. Each of these crossings would have safety gates that would make an audible noise when in use. Cog rail trains would not sound a train horn at these gates except during emergencies (to warn vehicles or pedestrians on the track). The cog rail locomotive would make an audible sound when leaving and entering a station.

During the final design process and in coordination with the USDA Forest Service, UDOT might identify other locations where pedestrians would be allowed to cross the cog rail alignment, such as to access the Tanners backcountry ski and climbing area and the Maybird Slide climbing area. Without access across the cog rail alignment, these areas would no longer be available for recreation use.

The earthwork (cut and fill) needed to create the prism for the cog rail would impact about 40.4 acres (or about 0.62%) of the Twin Peaks IRA. The White Pine IRA and Lone Peak IRA would not be impacted by the Cog Rail Alternative (see Figure 9 below).

Figure 9. Cog Rail Alternative



The USDA Forest Service is currently unaware whether a cog rail transportation system would fall under the authority of FHWA (pending FHWA's determination), which if selected, could qualify the Cog Rail Alternative for an exception from the RACR.[19] A train engine is a self-propelled motorized vehicle that travels on a travelway, which is inclusive of railroads as defined by the Forest Plan (USDA Forest Service 2003a, page GL-25). Considering that the majority of the proposed alignment for the Cog Rail Alternative is adjacent to and integrated into the existing road prism, constructing the Cog Rail Alternative could be considered road construction under the definition of "motor vehicle travelway" in the current Forest Plan. However, *Forest Service Manual 7700 – Travel Management* excludes self-propelled vehicles that are operated on rails as motor vehicles. Therefore, a cog rail travelway would not be classified as a road under the RACR.

4.7.1.2 Avalanche Mitigation Alternatives

The design of the avalanche mitigation alternatives and operation would be similar to those with the Enhanced Bus Service Alternative. However, the two snow sheds in mid-canyon would be slightly wider to accommodate both the cog rail tracks and vehicles on the roadway. The Cog Rail Alternative would also require an additional snow shed in the upper segment of the canyon. The snow sheds are required to mitigate the high avalanche risk associated with the Superior, Little Superior, and Hilton avalanche paths. The snow shed design would accommodate only the cog rail tracks, since vehicles can use the Alta Bypass Road to avoid this high-avalanche-risk area when necessary. The upper-canyon snow sheds would be outside the IRAs in Little Cottonwood Canyon. See Figure 2.6-33, *Cog Rail Alternative – Alignment and Station Locations*, in Chapter 2, *Alternatives*, of the Little Cottonwood Canyon Final EIS.

The rail snow sheds would be the similar to the snow sheds with the Enhanced Bus Service Alternative. The approximately 13-acre area of disturbance with the Snow Sheds with Berms Alternative equates to about 0.20% of the Twin Peaks IRA's 6,490-acre total area. About 14.7 acres of land in the Twin Peaks IRA would be affected by construction of the rail Snow Sheds with Realigned Road Alternative, which equates to about 0.23% of the Twin Peaks IRA's 6,490-acre total area. As described for the Enhanced Bus Service Alternative, the snow sheds would not materially affect the IRA's roadless value scores, and the roadless values would be mostly maintained.

4.7.1.3 Trailhead Parking Alternatives

Three trailhead parking alternatives are being considered, which are in the locations as described for the Enhanced Bus Service Alternative. The same general configuration (number of spaces, restrooms, and runoff water quality treatment buffer) would apply to the Cog Rail Alternative.

The Lisa Falls Trailhead would be within the Twin Peaks IRA. The trailhead parking would be pushed farther north into the IRA to make space for the tracks, which would run adjacent to the road. Vegetation in about 1.29 acres of the IRA would be removed by the trailhead.

The parking improvements at other trailheads (Bridge, Gate Buttress, and White Pine) would not physically impact any of the IRAs.

[19] 66 Federal Register 3243 (Jan. 12, 2001) [36 CFR Section 294.12(b)(6) and 23 CFR Section 317(a)]

4.7.1.4 No Winter Parking Alternative

The no winter parking alternative with the Cog Rail Alternative would be the same as with the Enhanced Bus Service Alternative.

4.7.2 Impacts to Roadless Characteristics

The Cog Rail Alternative would be consistent with a desired future condition in the Forest Plan, which states that the USDA Forest Service will work actively with other parties to explore options for reducing private vehicle use in Little Cottonwood Canyon. Combining the estimated impacts of the cog rail, the snow sheds, and the Lisa Falls Trailhead results in the following impacts to each IRA.

- **Twin Peaks IRA.** Within the Twin Peaks IRA, the Cog Rail Alternative (including the Lisa Falls Trailhead) would have about 54.7 acres of disturbance with the Snow Sheds with Berms Alternative and about 56.4 acres with the Snow Sheds with Realigned Road Alternative. This impact constitutes 0.84% to 0.87% of the total area (6,490 acres) of the Twin Peaks IRA.
- **Lone Peak IRA.** The Cog Rail Alternative would not impact the Lone Peak IRA.
- **White Pine IRA.** The Cog Rail Alternative would not impact the White Pine IRA.

The Cog Rail Alternative remains subject to FHWA's determination regarding whether this type of transportation facility falls under the authority of FHWA and exceptions in the RACR. However, Table 4 below presents the potential impacts of the Cog Rail Alternative (including sub-alternatives) to the IRA's roadless value scores in the event the Cog Rail Alternative does not fall under the authority of FHWA and an exception does not apply.

Table 4. Roadless Values and Project Effects from the Cog Rail Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
Twin Peaks IRA (6,490 acres total)			
Soil, Water, and Air Resources	1	The IRA contains few small wetlands along narrow steam corridors.	Construction of the cog rail, snow sheds, and the Lisa Falls Trailhead parking would disturb vegetation and soils and could introduce noxious weed species into the surrounding areas, if not monitored and controlled. UDOT will mitigate temporary impacts to vegetation once construction is complete. See Section 6.0, *Mitigation*, of this report and Section 13.4.7, *Mitigation Measures*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The cog rail comprises about 40.4 acres within the Twin Peaks IRA. The conversion to transportation use would consist of 17.29 acres developed areas, 7.62 acres of forest/woodland habitat, and 15.5 of shrubland. The Snow Sheds with Berms Alternative comprises about 13.0 acres within the Twin Peaks IRA. The conversion to transportation use would consist of 5.74 acres of developed areas, 1.57 acres of forest/woodland habitat, and 5.67 acres of shrubland. The Snow Sheds with Realigned Road Alternative comprises about 14.7 acres. The conversion would consist of 7.21 acres of developed areas, 2.75 acres of forest/woodland habitat, and 4.76 acres of shrubland. The proposed Lisa Falls Trailhead comprises about 1.3 acres. The conversion would consist of 0.08 acre of developed areas, 0.79 acre of forest/woodland habitat, and 0.41 acre of shrubland. The cog rail would require replacing or extending the existing culverts, which would convert about 0.03 acre of an intermittent stream and 0.04 acre of an ephemeral stream. There are no perennial stream crossings or riparian areas immediately adjacent to the proposed snow sheds. The proposed Lisa Falls Trailhead would require replacing or extending the existing culvert, which would convert about 0.03 acre of an intermittent stream. The cog rail would permanently convert 0.06 acre of riparian vegetation within RHCAs to transportation use. Effects on riparian areas would also occur as a result of extending culverts to accommodate the wider roadway. Once the culverts are installed, disturbed areas around the culverts would be revegetated. About 0.05 to 0.06 acre of riparian vegetation within RHCAs would be impacted by the rail snow shed alternatives. The proposed Lisa Falls Trailhead would not impact riparian vegetation. Indirect impacts to soil, water, and air resources could result from stormwater erosion or dust generated from disturbed areas during construction of the cog rail, snow sheds, and trailhead. Sediment could be deposited outside the project footprint, resulting in indirect impacts. Most of these indirect impacts could be reduced or eliminated through the mitigation measures that would be implemented to reduce the risk for soil migration. These mitigation

Table 4. Roadless Values and Project Effects from the Cog Rail Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			measures would revegetate disturbed areas and stabilize soils once construction is complete. For more information, see Section 13.4.6, *Cog Rail Alternative*, in the Little Cottonwood Canyon Final EIS. The total impact areas for the Cog Rail Alternative (including sub-alternatives) constitute 0.84% to 0.87% of the Twin Peaks IRA and, therefore, the alternative would not affect important soil, water, or air resources of the IRA. The low (1) score for this roadless value would not change.
Public Drinking Water	5	Little Cottonwood Creek is an important Class 1 watershed.	All of the rail alignment components would be constructed on the north side of S.R. 210 away from Little Cottonwood Creek. In total, the Cog Rail Alternative would require construction (earthwork and track placement) in about 40.4 acres in the Twin Peaks IRA. The area behind the snow sheds (and guiding berms) would be revegetated and roofs of the snow sheds would be covered with soil and revegetated. Therefore, the snow sheds would not introduce new pollutants or change the hydrologic properties in the watershed. The Cog Rail Alternative would add about 23 acres of new impervious area (ballasted and embedded track elements) in Little Cottonwood Canyon (inclusive of the areas within and outside the Twin Peaks IRA). The modeled in-stream water quality of Little Cottonwood Creek showed *de minimis* differences for most contaminants compared to the No-Action Alternative. For the few contaminants where a discernable difference was modeled, the resulting in-stream water quality would meet water quality standards. See Section 12.4.7, *Cog Rail Alternative (Starting at La Caille)*, of the Little Cottonwood Canyon Final EIS. Indirect water quality impacts could result from increased winter visitation. However, the Cog Rail Alternative would stop only at the resorts, where existing infrastructure is in place to handle the increased use. The cog rail would operate during the summer. The indirect impacts from the Cog Rail Alternative would be the same as those from Gondola Alternative A. Since the Cog Rail Alternative would have impacts across less than 1% of the Twin Peaks IRA, the Cog Rail Alternative would not affect watershed properties or reduce water quality, and the high (5) score for the public drinking water roadless value would not change.
Diversity of Plant and Animal Communities (PFC)	4	Likely contains stands of the Limber Pine/Oregon Grape habitat type and the Ross Avens cover type.	The impacts of the cog rail to migratory birds and raptors would include a loss of 7.62 acres of forest/woodland habitat and 15.5 acres of shrubland in the IRA, which would reduce habitat and prey availability. However, the habitat that would be converted is adjacent to the road and is largely disturbed roadside habitat that is already degraded and is heavily affected by human disturbance. The addition of a rail alignment and concrete barrier would increase the barrier effect in an area that already has many barriers to wildlife movement, resulting in a minor impact to wildlife movement. Also see Section

Table 4. Roadless Values and Project Effects from the Cog Rail Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			13.4.6, *Cog Rail Alternative*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. Impacts to migratory birds and raptors from the snow sheds would include a loss of 1.24 to 1.91 acres of forest/woodland habitat and 2.89 to 3.08 acres of shrubland. However, the habitat that would be converted to transportation use is disturbed roadside habitat on a steep slope. Impacts to migratory birds and raptors from the Lisa Falls Trailhead would include a loss of about 0.79 acre of forest/woodland habitat and 0.41 acre of shrubland. See Section 20.4.5, *Cog Rail Alternative*, in Chapter 20, *Indirect Effects*, of the Little Cottonwood Canyon Final EIS for more information regarding the potential indirect impacts to ecosystem resources from the Cog Rail Alternative. The total impact areas for the Cog Rail Alternative (including sub-alternatives) constitute 0.84% to 0.87% of the IRA and, therefore, the alternative would not affect biodiversity in the Twin Peaks IRA. The medium-high (4) score for this roadless value would not change.
T&E and Special Status Species Habitat	See scores below.		No impacts to threatened and endangered species would occur.
	3	Vegetation at Risk: Wasatch jamesia, Garrett's fleabane, Garrett's bladderpod, and broadleaf penstemon occur within this IRA, and habitat is present for the nearby occurring *Lepidium montanum* var. *alpinum*.	Species-specific surveys identified individuals of one plant species on the USDA Forest Service watch list, broadleaf beardtongue plants, that would be removed by the Cog Rail Alternative and the Snow Sheds with Berms Alternative. The local impacts from the Snow Sheds with Berms Alternative to an already disturbed site are not expected to cause species-level impacts, nor are they likely to cause a loss of species viability. See Section 13.3.2.1.2, *Special-status Plant Species*, in Chapter 13, *Ecosystem Resources*, of the Little Cottonwood Canyon Final EIS. The disturbance across less than 1% of the IRA from the cog rail would not change the medium (3) score for this roadless value.
	2	Terrestrial Wildlife at Risk: Peregrine falcon habitat is present.	Within the alignment for the Cog Rail Alternative and where the snow sheds and the Lisa Falls Trailhead are proposed, there is suitable habitat for several USDA Forest Service sensitive bird species, including northern goshawk and peregrine falcon (foraging habitat only), and monarch butterflies might be present. If suitable habitat is present, sensitive bird species could be temporarily displaced during construction of the snow sheds, but no long-term impacts would occur. Given that milkweed (*Asclepias* spp.) is an essential feature of quality monarch butterfly habitat, monarch butterflies would be forced to relocate if milkweed plants are removed. The disturbance across less than 1% of the IRA from the cog rail would not change the medium-low (2) score for this roadless value.

Table 4. Roadless Values and Project Effects from the Cog Rail Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
	5	Fish Species at Risk: There is a small population of cutthroat trout in Deaf Smith Canyon.	No impacts to cutthroat trout in in Deaf Smith Canyon. Therefore, the high (5) score for this roadless value would not change.
Class of Recreation (Measures as ROS)	1	Recreation opportunities in the IRA include climbing (no formally designated recreation areas in the IRA) and backcountry recreation. Climbing and backcountry access in the IRA is provided with informal roadside pullouts at Maybird, Tanners, China Wall, Snowbird Boulders, and the designated White Pine Trailhead. Due to the avalanche dangers, no winter parking is allowed at Maybird, Tanners, and China Wall. According to the Forest Plan Final EIS, 0% of the IRA contains SPM areas, and 48% of IRA contains SPNM areas.	The majority of the roadway widening for the cog rail consists of disturbed roadside areas. During the final design process and in coordination with the USDA Forest Service, UDOT might identify other locations where pedestrians would be allowed to cross the cog rail alignment, such as to access the Tanners backcountry ski and climbing area and the Maybird Slide climbing area. Without access across the cog rail alignment, these areas would no longer be available for recreation use. The majority of the areas where the snow sheds are proposed are regularly disturbed by avalanches and avalanche mitigation measures, which has removed much of the vegetation along these steep slopes in these areas and in cut areas surrounding the existing road. The snow sheds would eliminate the China Wall pullout and restrict access to three climbing boulders, and one boulder (Wall Boulder) would be eliminated. About 260 feet of the existing Lisa Falls Trail would be paved by the trailhead improvements. The minor amount (between 0.84% and 0.87%) of land disturbance adjacent to the existing road, the minor amount of impact to the existing Lisa Falls Trail, elimination of the China Wall roadside pullout, and elimination of the roadside pullouts would not alter the recreation opportunities in the Twin Peaks IRA. The low (1) score for the primitive and semi-primitive recreation roadless value would not change.
Landscape Character and Integrity	3	There was a lot of historic mining activity in the IRA. There are remnants of tailings piles and disturbed areas. There are a number of roads, and ghost roads and maintenance roads for the mines still on the mountain.	Landscape alterations would be adjacent to the existing S.R. 210 within the IRA. The cog rail would impact about 38.2 acres of the naturally appearing LCU, 1.7 acre of the naturally evolving LCU, and 0.5 acre of the resort natural setting LCU in the Twin Peaks IRA. The Snow Sheds with Berms Alternative for the cog rail would impact about 13.0 acres, the Snow Sheds with Realigned Road alternative would impact about 14.7 acres, and the Lisa Falls Trailhead would impact about 1.3 acres of the naturally appearing LCU in the Twin Peaks IRA. Project elements, such as alterations to slope and a snow shed, would introduce elements and/or patterns that would be visually dominant and would create strong contrast compared with other features in the landscape. A high level of impact was assessed for the impacts of the snow sheds. The Cog Rail Alternative (including sub-alternatives) totals about 51.2 to 52.9 acres in the naturally appearing and 1.7 acres of the naturally evolving LCUs in the Twin Peaks IRA. This alternative would not change the medium (3) score for the landscape character and integrity roadless value of the Twin Peaks IRA.

Table 4. Roadless Values and Project Effects from the Cog Rail Alternative

Roadless Values	Existing Value Score	Existing Roadless Value Description	Project Effects
			The cog rail system, snow sheds, and Lisa Falls Trailhead would not result in a scenic integrity level of Unacceptably Low. Therefore, UDOT anticipates that the Cog Rail Alternative would be in conformance with the Forest Plan's scenic management standard (S22). For more information, see Section 17.4.7.7, *Conformance with USDA Forest Service Scenic Management Objectives, Guidelines, and Standards – Cog Rail Alternative*, in Chapter 17, *Visual Resources*, of the Little Cottonwood Canyon Final EIS.
Cultural Sites	4 to 5	Low data but high potential for mining sites.	The Cog Rail Alternative would impact about 10 acres of the Little Cottonwood Grit Mill and Granite Quarry (42SL109) within the Twin Peaks IRA. If constructed, the cog rail would result in an adverse effect. See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. The snow sheds would adversely affect 1 site: about 0.19 acre of the D&RG Railroad/Wasatch & Jordan Valley Railroad/Salt Lake & Alta site (42SL419, known as the "China Wall"). See Chapter 15, *Cultural Resources*, of the Little Cottonwood Canyon Final EIS. The improved Lisa Falls Trailhead would not impact any cultural sites. Archaeological data recovery will be conducted in consultation with the USDA Forest Service and the Utah SHPO. With adverse impacts to 2 sites, the Cog Rail Alternative would not change the medium-high (4) to high (5) score for this roadless value for the overall Twin Peaks IRA.
Unique Characteristics	3	Renowned example of glaciation and segment of one river in wild and scenic inventory.	For roadway users and forest users near the snow sheds, the landscape would appear severely altered, and the snow shed infrastructure would dominate the visual setting in the immediate foreground and foreground areas. The snow sheds would diminish but not limit the management of the scenic byway by the USDA Forest Service to protect scenic vistas and intrinsic scenic qualities of the canyon overall. The medium (3) score for this roadless value would not change.
Lone Peak IRA (874 acres total)			
The Cog Rail Alternative would not impact the Lone Peak IRA.			
White Pine IRA (2,059 acres total)			
The Cog Rail Alternative would not impact the White Pine IRA.			

4.7.2.1 Summary of Effects

About 99.1% of the Twin Peaks IRA would not be affected by the Cog Rail Alternative. The potential impacts to 0.9% of Twin Peaks IRA would minimally impact the roadless values, there would be no change to the assessed roadless value scores, and the roadless values would overall be mostly maintained. The roadless values that were scored highest (public drinking water and the diversity of plant and animal communities) would be affected by construction of the cog rail system and snow sheds. The snow sheds would not affect water quality or water supply nor impact the biodiversity of the IRA over the long term. The Cog Rail Alternative would require construction (earthwork and track placement) in about 40.4 acres in the Twin Peaks IRA. However, the increased stormwater runoff would not cause Little Cottonwood Creek to exceed water quality standards. The impacts of the Cog Rail Alternative to terrestrial wildlife would include a loss of 7.62 acres of forest/woodland habitat and 15.5 acres of shrubland in the IRA, which would reduce habitat and prey availability. However, the habitat that would be converted is adjacent to the road and is mostly disturbed roadside habitat that is already degraded and is heavily affected by human disturbance. The conversion of forested/woodland and shrubland vegetation to transportation use would not affect the biodiversity-related roadless values of the Twin Peaks IRA.

4.7.3 Timber Harvesting

The Cog Rail Alternative remains subject to FHWA's determination regarding whether a cog rail transportation system falls under the authority of FHWA, which would qualify the cog rail for an exception from the RACR. However, a cog rail travelway is not considered a road under the RACR. Therefore, construction would be considered an activity not otherwise prohibited, and timber harvesting (timber cutting, sale, or removal) would be incidental to the activity not otherwise prohibited.

With the Cog Rail Alternative, the following amount of vegetation would be converted to transportation use in the Twin Peaks IRA:

- The Cog Rail Alternative would convert 7.62 acres of forested/woodland and 15.51 acres of shrubland vegetation to transportation use. See Figure 9 above.
- The rail Snow Sheds with Berms Alternative would remove about 1.57 acres of forested/woodland vegetation and 5.7 acres of shrubland vegetation. The rail Snow Sheds with Realigned Road Alternative would impact about 2.75 acres of forested/woodland vegetation and 4.8 acres of shrubland vegetation. See Figure 4 above.
- The Lisa Falls Trailhead would convert 0.79 acre forested/woodland vegetation and 0.41 acre of shrubland vegetation to transportation use. See Figure 4 above.

Combining the cog rail components with the snow sheds and the Lisa Falls Trailhead, about 10.0 to 11.1 acres of timber would be removed within the Twin Peaks IRA. The amount of acreage would constitute conversion of between 0.15% and 0.17% of the 6,490 acres in the Twin Peaks IRA (depending on the snow shed alternative selected), which is not a substantial amount relative to the size of the IRA (6,490 acres).

5.0 Impacts Summary

As described for each alternative in Section 4.0, *Environmental Consequences*, less than 1% of each of the three IRAs would be affected by any of the action alternatives. Resource impacts within local areas of IRAs would not substantially affect roadless values of the IRAs overall.

As discussed in more detail above, the action alternatives were evaluated in the context of the RACR. A summary of the review is provided below.

- The PPSL and snow sheds are considered roads or components of a road for the purpose of the RACR. If FHWA determines that these alternative components are essential for public safety and in the public interest, the components would meet an exception in the RACR. Timber harvesting (timber cutting, sale, or removal) would be incidental to construction.
- The gondola system and trailheads are not considered roads for the purpose of the RACR. As activities that are not otherwise prohibited by the RACR, any timber removal would be incidental to construction.
- A cog railway is not considered a road under the RACR. Therefore, construction would be considered an activity not otherwise prohibited. Timber harvesting (timber cutting, sale, or removal) would be incidental to construction.

Any exceptions from the RACR remain subject to the USDA Forest Service's review and decision, which is based on FHWA's characterization of whether components of the action alternatives fall under FHWA's authority.

For all action alternatives, the roadless values of the Twin Peaks and Lone Peak IRAs would be maintained in compliance with the watershed emphasis management prescription (MP 3.1W) assigned to these IRAs. The footprint of the gondola alternatives (one tower and about 500 feet of cable) would be within the White Pine IRA. The base physical values and unique qualities of the White Pine IRA would be maintained in compliance with its assigned undeveloped area management prescription (MP 2.6).

Table 5 below summarizes the alternatives' areas within each of the IRAs. All alternatives are consistent with the RACR.

Table 5. Summary of Alternative Areas within IRAs

Alternative	Twin Peaks IRA (6,490 total acres)			Lone Peak IRA (874 total acres)			White Pine IRA (2,059 total acres)			Consistent with RACR? [c]
	Alternative Footprint in IRA [a]		Scores of Roadless Values Unchanged?	Alternative Footprint in IRA [a]		Scores of Roadless Values Unchanged?	Alternative Footprint in IRA [a]		Scores of Roadless Values Unchanged?	
	Acres [b]	Percent of IRA		Acres [b]	Percent of IRA		Acres [b]	Percent of IRA		
Enhanced Bus Service	10.2 to 13.0	0.16% to 0.20%	Yes	0.0	0.00%	Yes	0.0	0.00%	Yes	Yes
Enhanced Bus Service in Peak-period Shoulder Lane	22.9 to 25.8	0.35% to 0.40%	Yes	0.1	0.01%	Yes	0.0	0.00%	Yes	Yes
Gondola Alternative A (including easement area)	17.8 to 20.7	0.28% to 0.32%	Yes	7.5	0.77%	Yes	0.8	0.04%	Yes	Yes
Gondola Alternative B (including easement area)	17.8 to 20.7	0.27% to 0.32%	Yes	7.5	0.77%	Yes	0.8	0.04%	Yes	Yes
Cog Rail	54.4 to 54.7	0.84% to 0.87%	Yes	0.0	0.00%	Yes	0.0	0.00%	Yes	Yes

[a] Alternative footprint includes sub-alternative components.
[b] Total impact rounded to the nearest tenth of an acre and does not include areas that overlap the existing S.R. 210, which consists of 10.3 acres of the Twin Peaks IRA.
[c] Remains subject to the USDA Forest Service's review and decision and FHWA's characterization of whether components of the alternatives fall under FHWA's authority.

6.0 Mitigation

Chapter 25, *Mitigation Summary*, of the Little Cottonwood Canyon Final EIS summarizes the mitigation measures developed to avoid, minimize, rectify, reduce, or compensate impacts from the action alternatives for the S.R. 210 Project. Mitigation measures from the Little Cottonwood Canyon Final EIS that are most applicable to impacts from alternatives in IRAs and their roadless values are summarized below.

Additionally, if one of the gondola alternatives is selected, during final design, UDOT will assess moving tower 10 to a location outside the White Pine IRA.

6.1 Recreation

- UDOT will implement a public involvement program to inform recreation users of potential road and recreation site closures.
- Some existing and planned trails used by climbers and hikers would be impacted by removing portions of trails. To mitigate the impacts to trails, UDOT will realign any existing named trails at the time of construction to maintain trail connectivity. With the trailhead parking alternatives, part of the Lisa Falls Trail would be affected. UDOT would work with the USDA Forest Service and other stakeholders in the design of the trails.

6.2 Water Resources

- UDOT or its design consultants will follow UDOT's *Stormwater Quality Design Manual*.
- UDOT or its construction contractors will prepare a stormwater pollution prevention plan (SWPPP) and obtain a Utah Pollutant Discharge Elimination System (UPDES) permit for construction and will monitor restoration efforts for revegetation success.
- UDOT will visually inspect and maintain water quality best management practices (BMPs) to check that they are functioning properly.
- During construction, inspectors for the project will certify that the BMPs were installed according to contract documents and UDOT standards.
- After construction, UDOT will document and maintain records of inspections, any deficiencies identified during inspections, and the repairs performed on the BMPs.
- If a gondola or cog rail alternative is selected, UDOT will ensure that the emergency generators and fuel storage tanks are inspected for damage and evidence of leaks, and if feasible that they will include leak-detection systems. The tanks will be dual-walled or will have a secondary containment system.
- SLCDPU and Metropolitan Water (Sandy City) stated that one of their primary water quality concerns is vehicle accidents in which a vehicle leaves the roadway and enters Little Cottonwood Creek, with the result that vehicle fluids leak and directly contaminate the creek and potentially contaminate the water treatment processes. To improve both roadway safety and water quality, UDOT will include safety barriers with all of the action alternatives if the required shoulder and 2-foot

safety distance between the travel lane and barrier can be maintained and if the barriers do not substantially impede UDOT's ability to remove snow from the roadway. UDOT will work with the USDA Forest Service before installing any barriers to address the Forest Service's concerns about visual impacts.

6.3 Ecosystem Resources

6.3.1 Mitigation Measures for Vegetation Impacts

- All fill materials brought onto the construction site will be required to be clean of any chemical contamination per UDOT's General Standard Specifications, Section 02056, *Embankment, Borrow, and Backfill*. Topsoil for landscaping must also be free of weed seeds per UDOT's General Standard Specifications, Section 02912, *Topsoil*.
- Compacted soils will be ripped, stabilized, and reseeded with native seed mixes.
- The contractor will be required to follow noxious weed mitigation and control measures identified in the most recent version of UDOT Special Provision Section 02924S, *Invasive Weed Control*. In addition, UDOT will follow USDA Forest Service guidelines for inspecting equipment and vehicles for invasive plant and noxious weed species and will coordinate with the USDA Forest Service regarding any additional required Forest Service noxious and invasive species BMPs to be implemented on NFS lands.
- Reseeding with native plants, followed by monitoring seedlings and invasive species until the vegetation has re-established, will mitigate direct-disturbance impacts and reduce the potential for weed invasions. UDOT will be responsible for monitoring and determining when vegetation becomes re-established.
- UDOT will comply with USDA Forest Service requirements by continuing to treat noxious and other invasive weeds on areas disturbed by this project for a period of three growing seasons.
- UDOT will coordinate with the USDA Forest Service to determine the proper methods for disposing of any vegetation slash generated from the selected alternative.
- UDOT will coordinate with the USDA Forest Service and follow Salt Lake County Watershed Protection Ordinances regarding the use of any herbicides in Little Cottonwood Canyon.

6.3.2 Mitigation Measures for Wildlife Impacts

UDOT will implement the following mitigation measures to conserve and minimize impacts to migratory birds and in furtherance of Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*:

- Trees and shrubs will be removed during the non-nesting season (about August 15 to April 1). If this is not possible, UDOT or its contractor will arrange for preconstruction nesting surveys, to be conducted no more than 10 days before ground-disturbing activities, by a qualified wildlife biologist of the area that would be disturbed to determine whether active bird nests are present. If active nests are found, the construction contractor will coordinate with the UDOT Natural Resources Manager/Biologist to avoid impacts to migratory birds. If necessary, UDOT will coordinate with the U.S. Fish and Wildlife Service (USFWS).
- Coordination with the USDA Forest Service will be conducted to determine any known raptor nests in the helicopter flight path or in areas that could be disturbed by construction activities and to determine when and where preconstruction raptor nest surveys should occur. If active nests are found, UDOT will coordinate with the USDA Forest Service and USFWS regarding protocols to protect the active nests.

6.3.3 Mitigation Measures for Aquatic Resources Impacts

If the U.S. Army Corps of Engineers (USACE) requires compensatory mitigation for impacts to streams, UDOT will prepare a mitigation plan during the Clean Water Act Section 404 permitting phase of the project. UDOT will discuss mitigation concepts with USACE and the USDA Forest Service that might include the restoration or enhancement, maintenance, and legal protection (for example, through a conservation easements) of riparian areas next to streams that would be affected. In addition, other mitigation measures will include the following:

- BMPs will be used during all phases of construction to reduce impacts from sedimentation and erosion. BMPs will include the use of erosion-control blankets, silt fences, straw-bale barriers, and other measures developed during final design.
- No equipment staging, refueling, or storing of construction materials will occur within 50 feet of wetlands or other waters.
- Temporary fill material will not be stored within wetlands or other waters.
- Properly sized and engineered culverts will be used for stream crossings to minimize indirect impacts to aquatic resources and provide unobstructed, continuous flow for fish and macroinvertebrates.
- All areas of temporary disturbance will be regraded to match existing conditions following construction.
- All disturbed wetlands will be revegetated with a seed mix determined in coordination with the USDA Forest Service.

6.3.4 Mitigation Measures for Impacts to USDA Forest Service Sensitive Species

Species-specific surveys for USDA Forest Service sensitive and watch list plant species conducted in the summer of 2021 identified individual broadleaf beardtongue plants that would be removed by the Snow Sheds with Berms Alternative, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, and the Cog Rail Alternative. This species is on the USDA Forest Service's watch list. The local impacts are not expected to cause species-level impacts, nor are they likely to cause a loss of species viability.

Based on discussion with the USDA Forest Service, UDOT will avoid staging equipment, supplies, or personnel within sensitive plant populations within 50 feet of the project footprint. UDOT will also coordinate with the USDA Forest Service to collect seeds from the broadleaf beardtongue stand that would be impacted by the avalanche mitigation alternatives and will subsequently use these seeds in the seed mix used to revegetate the site.

6.3.5 Mitigation Measures for Impacts to Riparian Habitat Conservation Areas (RHCAs)

UDOT will implement the following mitigation measures to minimize impacts to riparian habitat:

- Establish vegetation cover and stem density equal to or greater than 90% of preconstruction conditions in disturbed, nonhardened areas.
    - Use only USDA Forest Service–approved seed mixes.
    - In some areas, the USDA Forest Service may reduce re-established tree stand density requirements to improve forest health.
- Structural changes to a stream channel or bed will not induce significant changes in stream velocities.
    - Removing trees outside RHCAs, in areas that are otherwise not hardened, might be subject to Riparian Management Objectives.
    - In some areas, the USDA Forest Service may reduce re-established tree stand density requirements to improve forest health.
- Restore a minimum of 80% of preconstruction effective stream shading within ¼ mile of riparian canopy disturbances along streams.
- Obtain USDA Forest Service approval of BMPs and an SWPPP prior to submission for Utah Division of Water Quality permitting.
- Follow USDA Forest Service guidelines and requirements for performing inspections of equipment and vehicles for invasive plant and noxious weed species.

6.4 Cultural Resources

- Archaeological data recovery for specified sites identified in the Little Cottonwood Canyon Final EIS will be conducted in consultation with the USDA Forest Service and the Utah SHPO.
- Construction monitoring will be conducted for specified sites identified in the Little Cottonwood Canyon Final EIS.
- In accordance with UDOT Standard Specification 01355, *Environmental Compliance*, if cultural resources are discovered during construction, activities in the area of the discovery will immediately stop. Work in the area of the discovery would be delayed until UDOT evaluates the extent and cultural significance of the site in consultation with the Utah SHPO and tribes. For discoveries on NFS lands, UDOT will coordinate with the USDA Forest Service regarding the course of action taken for any discoveries.

6.5 Visual Resources

UDOT will consider, on a case-by-case basis and in conjunction with the USDA Forest Service and municipal agencies as appropriate, the following mitigation measures for minimizing the adverse effects of the selected alternative on visual resources:

- When siting a facility, incorporate measures to minimize the profile of all facility-related structures, particularly for facilities proposed within the immediate foreground and foreground distance of sensitive viewing locations.
- Use custom-designed gondola structures, buildings, and avalanche-control structures in key areas when such designs would soften the visual impact and blend more effectively with the surroundings.
- Select materials and surface treatments for structures, cog rail, gondola, and roads that repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. Improvements should consider and be consistent with the visual guidelines in the *Cottonwood Canyons Scenic Byways Corridor Management Plan*. For example, if the elements of the selected alternative would be viewed against an earthen or other non-sky background, appropriately colored materials will be selected to help blend structures with the elements' backdrop.
- Identify appropriate colors and textures for facility materials by considering both summer and winter appearance, as well as seasons of peak visitor use.
- On structures, use materials, coatings, or paints that have little or no reflectivity.
- Use variable-length tower legs to reduce the cut and fill needed to form a level tower pad.
- Minimize vegetation clearing to the extent practicable, especially adjacent to S.R. 210 or the locations of other sensitive viewers.
- Where vegetation would be cleared, feather the edges to reduce the creation of geometric clearings incongruent with the existing landscape character.
- Use nonreflective gondola cable infrastructure to reduce glare and reflectiveness.
- Design facilities and structures using natural materials (for example, wood or stone) to blend with the "forest" aesthetic.

7.0 References

[USDA Forest Service] United States Department of Agriculture, Forest Service

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