

Chapter 25: Mitigation Summary

25.1 Introduction

This chapter provides a summary of the mitigation measures developed to avoid, minimize, rectify, reduce, or compensate impacts from the action alternatives for the State Route (S.R.) 210 Project. Funding for mitigation will be included in the cost of construction for the project with the Utah Department of Transportation (UDOT) having the final responsibility for implementation.

UDOT or its designated contractor will implement a mitigation and monitoring tracking system to ensure that all mitigation identified in this Environmental Impact Statement (EIS) is performed and that appropriate monitoring for effectiveness takes place. If a mitigation measure is determined to be not effective, the contractor will consult with UDOT to develop other appropriate mitigation.

What is the purpose of this chapter?

This chapter provides a summary of the mitigation measures developed to avoid, minimize, rectify, reduce, or compensate impacts from the action alternatives for the S.R. 210 Project.

25.2 Mitigation Measures

25.2.1 Mitigation Measures for Community and Property Impacts

25.2.1.1 Recreation

25.2.1.1.1 S.R. 210 – North Little Cottonwood Road to Alta

Enhanced Bus Service Alternative

No mitigation measures are proposed.

Enhanced Bus Service in Peak-period Shoulder Lane Alternative

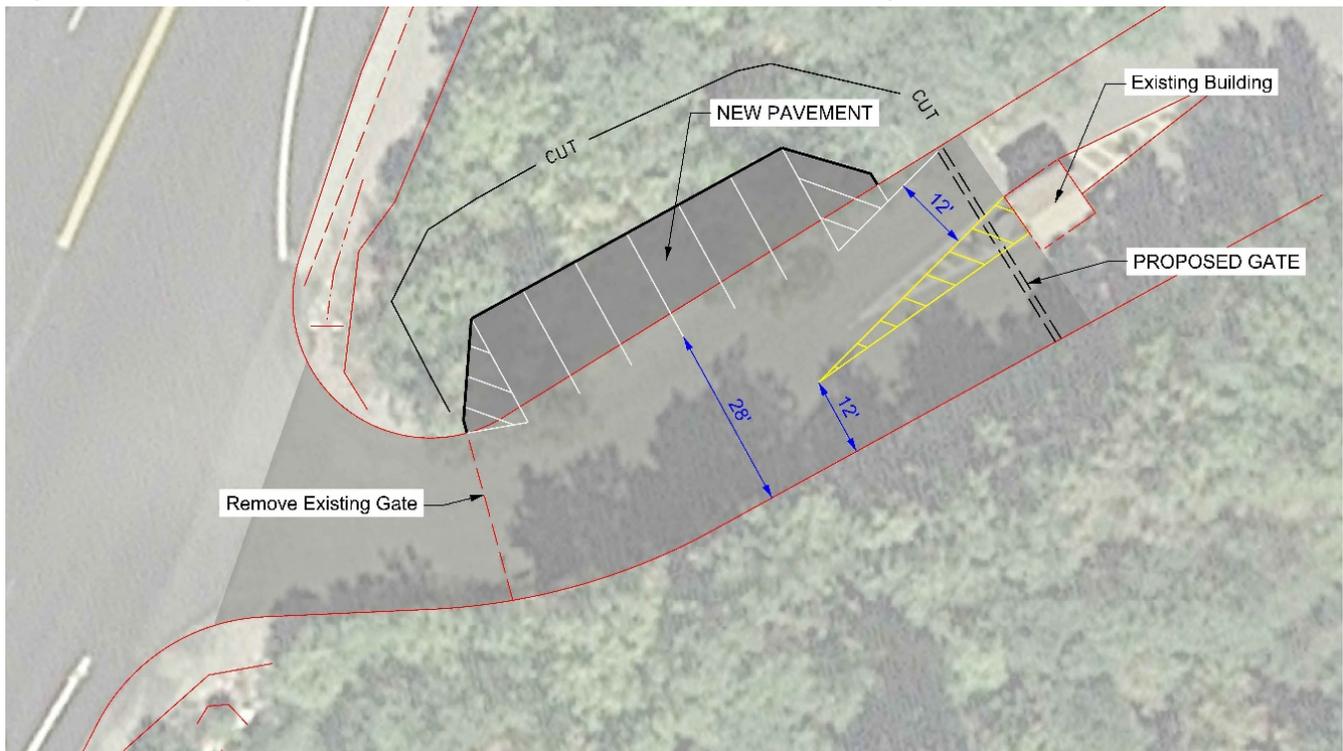
During construction of the peak-period shoulder lanes, access to recreation in Little Cottonwood Canyon would be restricted in specific locations. UDOT will implement a public involvement program to inform recreational users of potential road and recreation site closures.

Given the proximity of climbing boulders to S.R. 210, their use as a climbing resource could be diminished or eliminated. During the final design process for the Selected Alternative, UDOT will look at ways to minimize or avoid impacts to the climbing resources. If a climbing boulder needs to be removed for roadway or rail construction, UDOT will work with the construction contractor to determine whether the boulder can be moved to another location. If moving the boulder is possible, UDOT will coordinate with the USDA Forest Service to find a suitable location in Little Cottonwood Canyon.

As a result of adding the peak-period shoulder lanes, some existing and planned trails used by climbers and hikers would be impacted by removing portions of the trail. To mitigate the impacts to the trails, UDOT will realign any existing named trails at the time of construction to maintain trail connectivity. If this alternative is selected, UDOT will work with the USDA Forest Service and other stakeholders in the design of the trails. Prior to construction, appropriate surveys for cultural resources and sensitive biological resources including wetlands will be conducted so that they can be avoided during trail construction. Once the trail designs are completed, additional environmental documentation might be required before construction.

Access to the Tanners backcountry skiing area would be eliminated with no roadside parking, and the next available parking is at White Pine Trailhead about a mile away. UDOT would mitigate this impact by providing six winter parking spaces at the entrance to the Tanners Flat Campground area, as shown in Figure 25.2-1. There are no cultural resources or important biological resources in the area of the proposed improvements.

Figure 25.2-1. Mitigation for Elimination of Tanners Roadside Parking



Avalanche Mitigation Alternatives

During construction of the snow sheds, access to recreation in Little Cottonwood Canyon would be restricted in the area of snow shed construction. UDOT will implement a public involvement program to inform recreational users of potential road and recreation site closures. UDOT will also look at maintaining access to the White Pine North boulder area on the north side of S.R. 210 as part of the mid-canyon snow sheds and the Main Hellgate, Towers, and East Hellgate climbing areas as part of the upper-canyon snow sheds required for the Cog Rail Alternative.

Trailhead Parking Alternatives

During construction of the trailheads at Gate Buttriss, Bridge, Lisa Falls, and White Pine, access to the trailheads could be restricted during construction. In coordination with the USDA Forest Service, UDOT will implement a public involvement program to inform recreational users of potential trailhead closures. For the trailhead parking alternatives that eliminate parking at the Tanners backcountry skiing area, UDOT will add parking at the entrance to the Tanners Flat Campground as shown in Figure 25.2-1 above. There are no cultural resources or important biological resources in the area of the proposed improvements.

Gondola Alternatives

The first tower at the bottom of Little Cottonwood Canyon (after the Little Cottonwood Canyon park-and-ride lot) and portions of the base station design would be placed on trails developed by the USDA Forest Service and the Salt Lake City Climbers Alliance (Alpenbock Trail, West Leg). To minimize impacts to the trails, the trails will be relocated around the tower, or if possible the tower location will be shifted to avoid the trail during the final design process. If a gondola alternative is selected, UDOT will work with the USDA Forest Service and other stakeholders to design the trails. Prior to construction, appropriate surveys for cultural resources and sensitive biological resources including wetlands will be conducted so that these resources can be avoided during trail construction.

Cog Rail Alternative

During construction of the cog rail system, access to recreation in Little Cottonwood Canyon would be restricted in specific locations. UDOT will implement a public involvement program to inform recreational users of potential road and recreation site closures.

During the final design process and in coordination with the USDA Forest Service, UDOT might identify where pedestrians would be allowed to cross the cog rail alignment to access the Tanners backcountry skiing and climbing area, the Maybird Slide climbing area, and other locations as necessary.

Given the proximity of climbing boulders to S.R. 210, their use as a climbing resource could be diminished or eliminated. During the final design process for the Selected Alternative, UDOT will look at ways to minimize or avoid impacts to the climbing resources. If a climbing boulder needs to be removed for construction, UDOT will work with the construction contractor to determine whether the boulder can be moved to another location. If moving the boulder is possible, UDOT will coordinate with the USDA Forest Service to find a suitable location in Little Cottonwood Canyon.

As a result of the Cog Rail Alternative, some existing and planned trails used by climbers and hikers would be impacted by removing portions of the trail. To mitigate the impacts to the trails, UDOT will realign any existing named trails at the time of construction to maintain trail connectivity. If this alternative is selected, UDOT will work with the USDA Forest Service and other stakeholders to design the trails. Prior to construction, appropriate surveys for cultural resources and sensitive biological resources including wetlands will be conducted so that these resources can be avoided during trail construction.

25.2.1.2 Property Impacts

Property acquisitions will be completed according to the provisions of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended; the Utah Relocation Assistance Act, Utah Code, Section 57-12; and UDOT's relocation guidelines (UDOT 2016).

25.2.1.3 Other Potential Mitigation Measures

25.2.1.3.1 Gondola Alternatives

Representatives with the Granite Mountain Records Facility were concerned that gondola users might be able to look into their secure facility. UDOT evaluated options to mitigate this concern including adding a gondola tower between towers 2 and 3. This additional tower would lower the view from the gondola cabins such that users could not see into the facility. The tower height of gondola tower 2 (Gondola Alternatives A and B) would be reduced from about 50 meters (164 feet) to 40 meters (131 feet). The new tower, which would be located just east of the entrance road to the facility, would be about 33 meters (108 feet) high. No sensitive biological resources, cultural resources, or recreation features are in the area of the proposed new tower. UDOT will further investigate this mitigation during final design if a gondola alternative is selected.

25.2.2 Mitigation Measures for Impacts to Environmental Justice Populations

With all alternatives, paying a toll would cause an adverse impact to low-income populations wanting to recreate during the winter in the lower canyon (below the ski resorts). Practicable measures to avoid or reduce the potential adverse effects to low-income populations will include one or a combination of the following measures:

- Place the toll gantry immediately prior to Snowbird Entry 1. This would allow low-income populations wanting to recreate outside the ski resorts in the lower portions of Little Cottonwood Canyon to avoid having to pay the toll.
- Have the toll in effect only during the morning peak period (7 AM to 10 AM), which would allow low-income populations to avoid paying the toll by recreating after 10 AM.

25.2.3 Mitigation Measures for Impacts to Economics

25.2.3.1 All Alternatives

For businesses that experience short-term access and visibility problems during construction, a traffic access management plan will be developed and implemented by the construction contractor that maintains the public's access to the business during normal business hours. However, with construction in Little Cottonwood Canyon, it might not be possible to keep the road open all of the time during the summer construction period. UDOT will work with the U.S. Department of Agriculture Forest Service and businesses in Little Cottonwood Canyon to inform them of potential closures and try to avoid closures during peak periods.

For impacts related to strip takes from business properties, the business will receive compensation in accordance with UDOT's right-of-way acquisition practices. Property acquisitions will be completed

according to the provisions of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the Utah Relocation Assistance Act, Utah Code, Section 57-12.

25.2.4 Mitigation Measures for Impacts to Considerations Related to Pedestrians and Bicyclists

All existing pedestrian and bicyclist facilities that would be temporarily impacted during construction will be relocated as part of the project. Some facilities could be closed during construction. Project construction for pedestrian and bicyclist facilities will be phased to minimize disruptions to the public to the extent feasible. UDOT will also coordinate with the U.S. Department of Agriculture Forest Service, Cottonwood Heights City, Sandy City, the Town of Alta, and Salt Lake County during the final design of the Selected Alternative to mitigate disruptions to pedestrians, cyclists, and trail users. Potential mitigation for disruption will include providing signed on-road detours where feasible, closing facilities during low-use seasons (trail and use dependent), and providing information to the public about trail closures.

UDOT will work with the municipalities and Salt Lake County during the final design of the Selected Alternative to determine whether additional funding is available for new trails or new trail connections to areas where S.R. 210 improvements are made.

If Gondola Alternative B or the Cog Rail Alternative is selected, UDOT will work with Cottonwood Heights City and Salt Lake County on the design of the bicycle path around the gondola or cog rail base station at La Caille to minimize safety conflicts and maintain the quality of this cyclist route. This could include providing a multi-use path from Wasatch Boulevard on the east side of North Little Cottonwood Road around the base station on land designated as open space by Cottonwood Heights City. The multi-use path could provide access for Cottonwood Heights residents to the open space and connect to the existing unofficial trail that continues to the Little Cottonwood Canyon park-and-ride lot at the intersection of S.R. 209 and S.R. 210.

25.2.5 Mitigation Measures for Impacts to Noise

This section discusses UDOT's methodology for evaluating noise-abatement mitigation measures for the traffic noise impacts identified in Section 11.4.3, Enhanced Bus Service Alternative, through Section 11.4.7, Cog Rail Alternative. As stated in Section 11.4.1, Methodology, noise mitigation typically consists of installing a noise wall or other physical barrier that blocks the line of sight from the roadway noise source to nearby receptors.

According to UDOT's noise-abatement policy (UDOT Policy 08A2-01, *Noise Abatement*, revised May 28, 2020), noise abatement will be considered for new highway construction where noise impacts are identified. The goal of noise abatement is to substantially reduce noise, which might or might not result in noise levels below the NAC.

The two primary criteria to consider when evaluating noise-abatement measures are feasibility and reasonableness. Noise abatement will be provided by UDOT only if UDOT determines that noise-abatement measures are *both* feasible and reasonable.

25.2.5.1 Feasibility Factors

The feasibility of noise-abatement measures deals primarily with construction and engineering considerations such as safety, presence of cross streets, sight distance, and access to adjacent properties, among other considerations, including the following.

- **Acoustic Feasibility.** Noise abatement must be considered acoustically feasible. This is defined as achieving at least a 5-dBA noise reduction for at least 50% of front-row receptors. A 5-dBA change in noise would be perceptible by most people under normal listening conditions. If a noise-abatement measure is determined by UDOT to be acoustically feasible, then the abatement measure will be evaluated to determine whether its construction is reasonable. If a noise-abatement measure is determined by UDOT to be not feasible, it will not be considered any further.
- **Safety on Urban Non-access-controlled Roads.** UDOT's noise-abatement policy states that, "[t]o avoid a damaged wall from becoming a safety hazard, in the event of a failure, wall height shall be no greater than the distance from the back of curb to the face of [the] proposed wall."

What is a front-row receptor?

A front-row receptor is a residence in the first row of homes adjacent to a project alternative.

25.2.5.2 Reasonableness Factors

Under UDOT's noise-abatement policy, reasonableness factors must be collectively achieved in order for a noise-abatement measure to be considered "reasonable." If any of the three reasonableness factors (noise-abatement design goal, cost-effectiveness, and viewpoints of property owners and residents) specified in the policy are not achieved, the noise-abatement measure will be considered not reasonable and therefore not included in the project.

- **Noise-abatement Design Goal.** UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 7 dBA or greater for at least 35% of front-row receptors. As a result, no abatement measure will be considered reasonable if the noise-abatement design goal cannot be achieved.
- **Cost-effectiveness.** The cost of a noise-abatement measure must be considered reasonable for it to be included in the project. Noise-abatement costs are determined by multiplying a fixed unit cost per square foot by the height and length of the barrier.

For residential receptors (activity category B in Table 11.2-1, UDOT's Noise-abatement Criteria), cost-effectiveness is based on the cost of the abatement measure (for example, a noise wall) divided by the number benefited receptors (dwelling units at which noise is reduced by a minimum of 5 dBA as a result of the abatement measure). Currently, the maximum cost used to determine the reasonableness of a noise-abatement measure is \$30,000 per benefiting residence based on a unit barrier cost of \$20 per square foot of barrier, and \$360 per lineal foot for activity categories A, C, D, or E.

- **Viewpoints of Property Owners and Residents.** If a noise-abatement measure is both feasible and cost-effective, UDOT will also consider the viewpoints of property owners and residents (non-owners) to determine whether the noise-abatement measure is desired. Balloting will be conducted for those noise-abatement measures that both meet the noise-abatement design goal and are cost-effective consistent with the procedures described in UDOT's noise-abatement policy.

25.2.5.3 Noise-abatement Evaluation for the Proposed Alternatives

UDOT evaluated 18 noise walls at locations where noise impacts would occur with the action alternatives. Of the 18 modeled noise barriers for the five action alternatives, 14 met UDOT's feasibility and reasonableness acoustic and cost criteria for all five action alternatives with the Imbalanced-lane Alternative on Wasatch Boulevard, and 13 met UDOT's feasibility and reasonableness acoustic and cost criteria for all five action alternatives with the Five-lane Alternative on Wasatch Boulevard. Maps showing the locations of the noise walls evaluated for the action alternatives and more detailed information is available for each barrier in Appendix 11A, Noise Technical Report.

Table 11.4 2, Barrier Analysis Summary, summarizes the analyzed noise barriers. The locations of the noise barriers are shown in Figure 11.4 - and Figure 11.4-2, Noise Barriers Overview, beginning on page 11-35.

Noise-abatement Consideration during Final Design. The final decision to build a noise barrier will be made on completion of the project design, completion of the public involvement process, and concurrence with UDOT's noise-abatement policy. A barrier identified as recommended for balloting is a barrier that has been shown to be both feasible and reasonable. However, that finding is not a commitment to build a barrier.

25.2.6 Mitigation Measures for Impacts to Water Resources

The following mitigation measures will help ensure that water quality is maintained.

- UDOT or its design consultants will follow UDOT's *Stormwater Quality Design Manual*.
- UDOT or its construction contractors will prepare an SWPPP and obtain a UPDES permit for construction and will monitor restoration efforts for revegetation success.
- UDOT will visually inspect and maintain water quality 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.
- UDOT will work with SLCDPU, Metropolitan Water, and the sewer district to determine the procedures for discharging the fire-suppression water from the snow sheds.
- 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 include leak-detection systems. The tanks will be dual-walled with secondary containment systems.

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 directly contaminate the creek and potentially contaminate the water treatment processes. To address this concern, UDOT evaluated 10 years of accident data to determine the primary location(s) of roadway departure accidents within 200 feet of the creek (HDR 2020).

Based on that analysis and to improve both roadway safety and water quality, UDOT will include concrete 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. Subject to UDOT's final evaluation, the barriers will be located between mileposts 4.9 and 5.7, 6.7 and 7.0, and 8.7 and 9.0. UDOT will work with the USDA Forest Service before installing any barriers to address the Forest Service's concerns about visual impacts.

25.2.7 Mitigation Measures for Impacts to Ecosystem Resources

25.2.7.1 Mitigation Measures for Vegetation Impacts

All of the action alternatives would remove vegetation and could also introduce noxious species into the surrounding areas. To prevent further, permanent effects, UDOT will mitigate temporary impacts to vegetation once construction is complete and no further disturbance is anticipated. Mitigation will include the following measures:

- 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*.
- 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.

25.2.7.2 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.
- 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.
- To the extent practicable, gondola towers and lighting design should consider recommendations from the *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning* (USFWS 2018). Tower lighting should be implemented only if required by FAA, and flashing red lights and an aircraft detection lighting system should be used if allowed.

25.2.7.2.1 Mitigation Measures for Aquatic Resources Impacts

UDOT must submit a preconstruction notification to USACE prior to construction if (1) the loss of waters of the United States exceeds 0.1 acre or (2) there is a discharge in a special aquatic site, including wetlands. Currently, the Enhanced Bus Service in Peak-period Shoulder Lane Alternative is the only alternative that would cause an impact to streams greater than 0.1 acre. The action alternatives would not cause any impacts to wetlands. For the impacts to the streams that require preconstruction notification, USACE may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects.

If preconstruction notification is required by USACE and if compensatory mitigation is required, 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.

25.2.7.2.2 Mitigation Measures for Impacts to USDA Forest Service Sensitive Species

To comply with USDA Forest Service requirements for sensitive plant species, a preconstruction survey will be completed for all alternatives in areas of ground disturbance and/or where impacts to vegetation would occur. The surveys will be completed during the growing season in 2021. The results of the surveys will be included in the Final EIS and in a separate technical memorandum to the Forest Service.

25.2.7.3 Threatened and Endangered Species Commitments

Because no federally threatened or endangered species and no critical habitat was identified in the ecosystem resources impact analysis area, no mitigation is proposed.

25.2.7.4 Mitigation Measures for Impacts to Riparian Habitation Conservation Areas

Up to about 2.5 acres of riparian habitat within the RHCAs would be converted to transportation use. In accordance with the 2003 *Revised Forest Plan: Wasatch-Cache National Forest*, the following Riparian Management Objectives have been developed for alternatives being analyzed by UDOT for the Little Cottonwood Canyon EIS that would be constructed within, or otherwise impact, RHCAs as defined in the *Forest Plan*. 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 a stormwater pollution prevention plan 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.

25.2.8 Mitigation Measures for Impacts to Floodplains

UDOT and/or its construction contractor will take measures to reduce floodplain impacts and to ensure that the project complies with all applicable regulations. These mitigation measures will include the following:

- The action alternatives would require a number of stream and floodplain crossings in the same locations where they presently exist. Where new or rehabilitated bridges and culverts are included in the design of an alternative, the design will follow FEMA requirements and the requirements of UDOT's *Drainage Manual of Instruction*, where applicable. Where no regulatory floodplain is defined, culverts and bridges will be designed to accommodate a 50-year (2%-annual-chance) or greater-magnitude flood. Where regulatory floodplains are defined, hydraulic structures will be designed to accommodate a 100-year (1%-annual-chance) flood. Energy-dissipation measures will be included in the alternative's design as applicable.
- Stream alteration permits will be obtained for stream crossings as required by the Utah Division of Water Rights. Note that the stream alteration permitting process is a separate process from the floodplain permitting process. The stream alteration permitting process is required to satisfy state regulations and under certain circumstances may also be used to meet Clean Water Act Section 404 permitting requirements (through use of Army Corps of Engineers Programmatic General Permit 10).
- Floodplain development permits will be obtained for all locations where the proposed roadway embankment or structural elements would encroach on a regulatory floodplain, and structures will be designed to meet the more stringent of FEMA requirements and local floodplain ordinances. FEMA requires that construction within a floodway must not increase the base (100-year) flood elevation. FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) processes will be executed in compliance with 44 CFR Sections 60.3 and 65.12 as necessary based on hydrologic and hydraulic analyses and the nature of anticipated changes in base flood elevation and/or floodplain limits. The following case applies:
 - For areas of Zone A floodplain impacts, the approach will be to analyze existing and proposed conditions and design project features such that compliance is achieved (that is, such that a CLOMR is not required) as much as possible. In these areas, FEMA performed floodplain mapping based on approximate methods. The absence of a detailed study or floodway delineation places the burden on the project proponent (in this case, UDOT) to perform hydrologic and hydraulic analyses consistent with FEMA standards. These analyses will confirm or refine the FEMA floodplain mapping and could increase or decrease the estimate of affected areas.
- UDOT will obtain flood-control permits from Salt Lake County for actions affecting County-controlled waterways, which include Little Cottonwood Creek and Big Cottonwood Creek. UDOT will obtain flood-control permits from Cottonwood Heights City for Unnamed Creek near 3500 East and Unnamed Creek near 9000 South.
- Roadway elevations will be a minimum of 2 feet above adjacent floodplain elevations, where those elevations are defined, so that flooding will not interfere with a transportation facility needed for emergency vehicles or evacuation.
- Walls will be designed and constructed to minimize longitudinal floodplain impacts.

25.2.9 Mitigation Measures for Impacts to Cultural Resources

25.2.9.1 Avalanche Mitigation Alternatives

If either the Snow Sheds with Berms Alternative or the Snow Sheds with Realigned Road Alternative is selected, mitigation measures will include the following:

- Archaeological data recovery for site 42SL419 will be conducted in consultation with the USDA Forest Service and the Utah SHPO.

25.2.9.2 Gondola Alternative A or B

If Gondola Alternative A or B is selected, mitigation measures will include the following:

- Single-pole gondola towers will be used to reduce visual impacts to the Iron Blossam Lodge, the Inn at Snowbird, The Lodge at Snowbird, the Snowbird Center, and the Alta Lodge.
- Construction monitoring will be conducted for sites 42SL52 and 42SL109.
- Archaeological data recovery for site 42SL52 will be conducted in consultation with the USDA Forest Service and the Utah SHPO.

25.2.9.3 Cog Rail Alternative

If the Cog Rail Alternative is selected, mitigation measures will include the following:

- Archaeological data recovery for sites 42SL109 and 42SL419 will be conducted in consultation with the USDA Forest Service and the Utah SHPO.

25.2.10 Mitigation Measures for Impacts to Hazardous Materials and Waste Sites

Site investigations conducted by UDOT during the final design of the Selected Alternative will determine potential hazards, if any, and the appropriate protective measures. In the case of an identified chemical hazard, UDOT will negotiate the site remedy with the property owner before property is acquired and through possible coordination with DERR. If a smelter site or historic mine site in Little Cottonwood Canyon is impacted, UDOT will also coordinate with the U.S. Department of Agriculture Forest Service and the Salt Lake City Department of Public Utilities to address each Department's watershed concerns.

Previously unidentified sites or contamination could be encountered during construction activities. The construction contractor will implement measures to prevent the spread of contamination and to limit worker exposure. In such a case, all work will stop in the area of the contamination according to UDOT Standard Specifications, and the contractor will consult with UDOT and DERR to determine the appropriate remedial measures. Hazardous materials will be handled according to UDOT Standard Specifications and the requirements and regulations of DERR.

During construction, coordination will take place among UDOT or DERR, the construction contractor, and the appropriate property owners. This coordination will involve determining the status of the sites of concern, identifying newly created sites, identifying the nature and extent of remaining contamination (if any), and minimizing the risk to all parties involved. Environmental site assessments might be conducted at the sites of

concern to further evaluate the nature and extent of contamination and to better identify the potential risks of encountering hazardous materials when constructing the Selected Alternative.

Engineering controls (such as dust mitigation, temporary soil covers, and groundwater extraction) and personal protective equipment for construction workers will be used to reduce the potential for public or worker exposure to hazardous materials as determined necessary by UDOT.

25.2.11 Mitigation Measures for Impacts to Visual Resources

All aesthetic treatments will be coordinated with the USDA Forest Service landscape architect and implemented in accordance with UDOT Policy 08C-03, *Project Aesthetics and Landscaping Plan Development and Review* (UDOT 2014a); the *UDOT Aesthetics Guidelines* (UDOT 2014b); and the guidelines in the *Cottonwood Canyons Scenic Byways Corridor Management Plan* in coordination with the USDA Forest Service and local municipal agencies. UDOT's policy is to set a budget for aesthetics and landscape enhancements based on the aesthetics guidelines. The aesthetic features considered during the final design phase of a project could include lighting; vegetation and plantings; the color of bridges, structures, and retaining walls; and other architectural features, such as railings. UDOT typically evaluates aesthetic treatments during the final design phase of a project after an alternative is selected in the project's Record of Decision and funding has been allocated for the project.

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.

25.2.12 Mitigation Measures for Construction Impacts

The following mitigation measures will be implemented during construction.

25.2.12.1 Mitigation Measures for Construction Phasing

No specific mitigation has been identified for construction phasing. If a phased approach is taken, the project mitigation identified in this EIS will be implemented for the specific design for each phase. Future mitigation for subsequent phases will take into account the final design of the Selected Alternative for that phase and any changes in regulations or potential improvements to BMPs at the time of implementation.

25.2.12.2 Mitigation Measures for Public Impacts from Construction

A thorough public information program will be implemented to inform the public about construction activities and to reduce impacts. Information will include work hours and alternate routes. Construction signs will be used to notify drivers about work activities and changes in traffic patterns.

If nighttime construction is required, impacts from lighting will be reduced by aiming construction lights directly at the work area and/or shielding the lights. Utility agreements will be completed to coordinate utility relocations. UDOT will also reach out to owners of property adjacent to construction areas including homeowners who have special-use permits to access their homes on National Forest System lands.

25.2.12.3 Mitigation Measures for Air Quality Impacts from Construction

The contractor will follow the appropriate BMPs included in UDOT’s plans and specifications for roadway and bridge construction. This includes items such as fugitive-dust control and street sweeping (UDOT Standard Specification 01355, *Environmental Compliance*).

25.2.12.4 Mitigation Measures for Water Quality Impacts from Construction

To reduce the temporary impacts to water quality, a UPDES stormwater permit would be required. As part of the requirements of the permit, the contractor will develop and implement a stormwater pollution prevention plan. The plan will identify measures to reduce impacts to receiving waters from construction activities including site grading, materials handling and storage, fueling, and equipment maintenance. As part of the stormwater pollution prevention plan, the contractor will develop a water quality protection BMP implementation and effectiveness and monitoring plan. The development of this plan will be coordinated with the USDA Forest Service and the Salt Lake City Department of Public Utilities.

For disturbance adjacent to or near Little Cottonwood Creek, UDOT will coordinate as appropriate with the Salt Lake City Department of Public Utilities and the USDA Forest Service with respect to BMPs and other measures to minimize runoff and sediment. For construction on National Forest System lands, UDOT will obtain approval from the USDA Forest Service regarding BMPs and will develop a stormwater pollution prevention plan prior to construction.

25.2.12.5 Mitigation Measures for Impacts to Wetlands, Streams, and Wildlife from Construction

Mitigation measures for construction impacts to wetlands, streams, and wildlife are identified in Section 25.2.7, Mitigation Measures for Impacts to Ecosystem Resources.

25.2.12.6 Mitigation Measures for Noise Impacts from Construction

The contractor will comply with all state and local regulations relating to construction noise. The contractor will be required to obtain a UDOT temporary noise permit and to notify the local government authority in advance of any percussive noise activity and for any nighttime work.

25.2.12.7 Mitigation Measures for Visual Impacts from Construction

UDOT will prepare and implement an appropriate seeding vegetation and/or landscaping plan to restore or enhance aesthetics after the project is completed. The plan will be implemented by the contractor. For construction on National Forest System lands, UDOT will coordinate with the USDA Forest Service regarding an acceptable seed mix and other components of the landscaping plan.

25.2.12.8 Mitigation Measures for Construction-related Impacts to Cultural Resources

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. The construction contractor will notify UDOT of the nature and exact location of the finding and will not damage or remove the resource. 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 State Historic Preservation Office (SHPO) and tribes. The course of action and the construction delay would vary depending on the nature and location of the discovery. Construction would not resume until the contractor receives written authorization from UDOT to continue. For discoveries on National Forest System lands, UDOT will coordinate with the USDA Forest Service regarding the course of action taken for any discoveries. A programmatic agreement might be developed between UDOT, the USDA Forest Service, and the Utah SHPO regarding potential discoveries.

25.2.12.9 Mitigation Measures for Construction-related Discoveries of Hazardous Materials

If contamination is discovered during construction, mitigation measures will be coordinated according to UDOT Standard Specification 01355, *Environmental Compliance*, which directs the construction contractor to stop work and notify UDOT of the possible contamination. Any hazardous materials will be disposed of according to applicable state and federal guidelines.

25.2.12.10 Mitigation Measures for Utility Service Impacts from Construction

UDOT will consult with all utility providers affected by construction to complete utility agreements before construction, and the construction contractor will coordinate with all utility providers to minimize interruptions to utility service. Before beginning work, the contractor is required to contact Blue Stakes to identify the locations of all utilities. The contractor will use care when excavating to avoid unplanned utility disruptions. If utilities are unintentionally disrupted, UDOT will work with the contractor and the utility companies to restore service as quickly as possible. UDOT will coordinate with the USDA Forest Service for the relocation of any utilities on National Forest System lands including those within UDOT's right of way on National Forest System lands.

25.2.12.11 Mitigation Measures for Traffic Impacts from Construction

The contractor will develop a maintenance-of-traffic plan that defines measures to reduce construction impacts to traffic. A general requirement of this plan is that, to the extent reasonably practical, safe access to businesses, residences, and recreation areas must be maintained and existing roads kept open to traffic.

Even with the implementation of the maintenance-of-traffic plan, traffic congestion would increase over the short term in the construction area. Road closures would be limited to what is specified in the maintenance-of-traffic plan as approved by UDOT before the start of construction. UDOT will coordinate with the USDA Forest Service regarding an appropriate outreach program for notifying the public of potential construction delays and temporary closures of resources (trailheads, campgrounds, or other recreation areas).

25.2.12.12 Mitigation Measures for Economic Impacts from Construction

To the extent practicable, access to businesses will be maintained during the construction and post-construction phases of this project. For each phase of the project, UDOT will coordinate with property owners and businesses to evaluate ways to maintain access while still allowing efficient construction operations. This coordination could entail sharing a temporary access or identifying acceptable timeframes when access is not needed. Adequate signs will be placed in construction areas to direct drivers to businesses. Other potential mitigation measures for construction impacts could include the following:

- Frequently notify all businesses in the construction area regarding the progress of the construction and upcoming construction events.
- Provide business access signs that identify business access points within the construction limits.
- Hold meetings with business representatives to inform them of upcoming construction activities and to provide a forum for the representatives to express their concerns with the project.
- For construction in Little Cottonwood Canyon, avoid activities during peak recreation times such as holidays and weekends.
- To the extent practicable, UDOT will reach out to special-event organizers, permitted commercial activities, outfitters, and guides about construction activities. UDOT will coordinate with the USDA Forest Service with regard to an appropriate outreach program.

25.2.12.13 Mitigation Measures for Invasive Species Impacts from Construction

To mitigate the possible introduction of invasive weeds due to construction activities, the invasive weed BMPs in UDOT's current *Standard Specifications for Road and Bridge Construction* will be implemented, monitored, and included in the plans and specifications for the project. 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 National Forest System lands.

- The contractor will follow the noxious weed mitigation and control measures identified in UDOT's Supplemental Specification 02924S, *Invasive Weed Control*.
- The contractor will reduce the potential for weed infestations by strictly following BMPs.
- On National Forest System lands, with the USDA Forest Service's coordination and approval, the contractor will obtain and import certified weed-free soil from a vendor or other certified source, and UDOT will retain the certification documentation in the project files.
- On National Forest System Lands, areas disturbed by construction work will be monitored by UDOT for new invading weeds for a minimum of 3 years, and, when weeds are located, they will be treated or removed immediately.
- The contractor will avoid selecting and placing staging areas in locations that have existing invasive and noxious weed infestations.
- The contractor will avoid selecting borrow areas that have existing invasive and noxious weed infestations.
- The contractor will reseed the construction area with native plants, and UDOT will monitor seedlings to determine when vegetation becomes re-established. This measure will mitigate direct-disturbance impacts and reduce the potential for weed invasions.
- On National Forest System lands, UDOT will use only Forest Service–approved seed mixes.
- Daily or multiple times a day if needed, the contractor will wash vehicles and equipment at a portable wash station set up at the exit of the staging area before the equipment goes into any work locations that are currently weed-free.

25.2.12.14 Mitigation Measures for Construction Staging and Material Borrow Areas

Earth-disturbing activities would be generally confined to the limits of cut and fill, although staging areas and some construction activity might be located outside the limits of cut and fill included in the EIS impacts. Any ground disturbances on National Forest Service lands, including those at staging areas, will comply with the USDA Forest Service requirements listed in this chapter.

25.2.13 Mitigation Measures for Indirect Effects

25.2.13.1 Mitigation Measures for Indirect Effects on Environmental Justice Populations

The implementation of tolling in Big Cottonwood Canyon could cause an adverse impact to low-income populations wanting to recreate during the winter in the lower canyon (below the ski resorts) or at Guardsman Pass. Practicable measures to avoid or reduce these potential adverse effects could include the following:

- Place the toll gantry immediately prior to the Solitude ski resort. This would allow low-income populations wanting to recreate outside the ski resorts in the lower portion of Big Cottonwood Canyon to avoid having to pay the toll.
- Have the toll in effect only during the morning peak period (7 AM to 10 AM), which would allow low-income populations to recreate after 10 AM to avoid having to pay the toll.

25.2.14 Mitigation Measures for Cumulative Impacts

25.2.14.1 Mitigation Measures for Cumulative Impacts to Recreation

As population along the Wasatch Front increases, this increase in population could cause additional pressure from recreation on the Little Cottonwood Creek watershed. To minimize these impacts, the USDA Forest Service, through its management and special-use permitting on National Forest System lands, will continue to implement recreation management to reduce the impacts of visitation on the watershed, specifically in regard to the watershed desired future condition stated in the *Revised Forest Plan: Wasatch-Cache National Forest* (USDA Forest Service 2003).

The USDA Forest Service's decisions responding to increasing recreation demands will first consider desired water quality and riparian conditions and the limited wildlife habitat in the watershed. The USDA Forest Service will make provisions for a wide range of recreation uses including access and sanitation facilities that prevent watershed conditions from deteriorating. Major trailheads and restrooms will be provided and maintained in cooperation with partners such as Salt Lake City. The USDA Forest Service will protect the watershed and educate the public about appropriate behavior in the watershed in cooperation and partnership with other agencies.

25.2.14.2 Mitigation Measures for Cumulative Impacts to Water Resources

All action alternatives and future developments are subject to stormwater quality management plans and ordinances. Alta Ordinance 9-4-6, which would apply to the Patsey Marley Hill Subdivision and the *Alta Lifts Master Plan*, requires erosion control, revegetation, and drainage best practices to address stormwater quality. The *Cottonwood Heights Stormwater Management Plan* is implemented to limit the discharge of pollutants from the Cottonwood Heights storm drain system through the use of minimum control measures and BMPs. UDOT assumes that the *Cottonwood Heights Stormwater Management Plan* would be applied to the Giverny and La Caille developments. UDOT would manage stormwater from its facilities using its *Stormwater Quality Design Manual*. When these stormwater management plans are implemented, stormwater quality would be improved, and the resulting in-stream concentrations of pollutants in Little Cottonwood Creek would be less than those reported in Table 21.3-2, Cumulative Water Quality Model Results.

25.2.14.3 Mitigation Measures for Cumulative Impacts to Ecosystem Resources

Mitigation measures for cumulative impacts to ecosystem resources are identified in Section 25.2.7, Mitigation Measures for Impacts to Ecosystem Resources.

25.2.14.4 Mitigation Measures for Cumulative Impacts to Visual Resources

In addition to the project-specific mitigation measures listed in Section 17.4.8, Mitigation Measures, in Chapter 17, Visual Resources, the following are recommended mitigation measures to reduce potential adverse cumulative impacts to visual resources:

- For large-scale buildings proposed as part of the action alternatives, design elements to use natural materials and colors to harmonize with the existing residential and recreation character.
- In the upper canyon, design new facilities to blend with the existing resort setting, or natural evolving setting where appropriate, to maintain a cohesive landscape character and avoid expanding the area characterized as a resort setting. For example, the gondola alternatives and the Alta Ski Lifts Master Development Plan Improvement Projects both plan to introduce additional towers into the landscape. To reduce impacts from additional vertical intrusions into the setting, both projects could paint the towers the same natural color to establish a more cohesive landscape character.

25.3 References

HDR, Inc.

- 2020 Memorandum on Recommendations for Placing Additional Barrier along S.R. 210. December 21.

[UDOT] Utah Department of Transportation

- 2014a UDOT Policy 08C-03: Project Aesthetics and Landscaping Plan Development and Review. <https://www.udot.utah.gov/main/uconowner.gf?n=3388010425887466>.
- 2014b UDOT Aesthetics Guidelines. <https://www.udot.utah.gov/main/uconowner.gf?n=5361113714159942>. November 5.
- 2016 Relocation Assistance Brochure. https://www.udot.utah.gov/main_old/uconowner.gf?n=200602240821161. October 1.

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- 2003 Revised Forest Plan: Wasatch-Cache National Forest. South Jordan, Utah: U.S. Department of Agriculture, Forest Service, Intermountain Region, Uinta-Wasatch-Cache National Forest. <https://www.fs.usda.gov/detailfull/uwcnf/landmanagement/planning/?cid=stelprdb5076923&width=full>.

[USFWS] United States Fish and Wildlife Service

- 2018 Recommended Best Practices for Communication Towers Design, Siting, Construction, Operation, Maintenance, and Decommissioning. April.