

Chapter 19: Construction Impacts

19.1 Introduction

This chapter describes the construction impacts of the action alternatives. Construction of any of the action alternatives would cause temporary construction-related impacts from ground disturbance and the operation of construction equipment. Construction could also cause impacts to the public, air quality, water quality, wetlands, streams, wildlife, noise levels, visual resources, cultural resources, hazardous materials, utility service, traffic flow, businesses, noxious and invasive species, and construction staging and material borrow areas. See Chapter 13, *Ecosystem Resources*, for specific construction-related impacts to wildlife habitat, wildlife, sensitive species, and wetlands.

The nature and timing of these impacts would be related to the alternative selected for the State Route (S.R.) 210 Project and the construction methods that would be used to build that alternative. Most construction-related impacts to the public would be associated with travel delays and recreation access during construction.

Little Cottonwood Canyon is within the Salt Lake City Department of Public Utilities watershed and within National Forest System lands used for recreation and wildlife habitat preservation. The canyon also includes designated wilderness. Because of the sensitive water quality requirements and ecological and recreation value of the canyon, the Utah Department of Transportation (UDOT) would coordinate before the start of construction with the Salt Lake City Department of Public Utilities and the U.S. Department of Agriculture (USDA) Forest Service with respect to construction planning and mitigation.

What resources could be affected by construction of the action alternatives?

Construction could cause impacts to the public, air quality, water quality, wetlands, streams, wildlife, noise levels, visual resources, cultural resources, hazardous materials, utility service, traffic flow, businesses, noxious and invasive species, construction staging and material borrow areas, and ecosystem resources.

19.2 Environmental Consequences and Mitigation Measures

19.2.1 No-Action Alternative

With the No-Action Alternative, the improvements associated with the S.R. 210 Project would not be made, so there would be no construction-related impacts from the selected primary alternative.

19.2.2 Action Alternatives

Overall, construction-related impacts would be temporary. The following discussion of construction-related impacts applies to all of the primary action alternatives unless otherwise stated. Table 19.2-1 summarizes the typical construction activities by alternative.

Table 19.2-1. Construction Activity by Primary Action Alternative

Construction Activity	Enhanced Bus Service Alternative	Enhanced Bus Service in Peak-period Shoulder Lane Alternative	Gondola Alternative A	Gondola Alternative B	Cog Rail Alternative
Vegetation removal	✓	✓	✓	✓	✓
Excavation and grading	✓	✓	✓	✓	✓
Paving	✓	✓	✓	✓	✓
Blasting ^a	✓	✓	✓	✓	✓
Helicopter use			✓	✓	
Pile driving					✓

^a Blasting could be required for snow sheds, road widening, and the cog rail tracks. The snow sheds would be part of any action alternative. Blasting debris would likely be used as fill for other parts of the alternative that would need imported material or would remain on site if transporting material would cause further environmental damage.

19.2.2.1 Construction Phasing

In general, the alternatives analysis in a National Environmental Policy Act (NEPA) study for a federal-aid transportation project focuses on the impacts and benefits of the alternatives in a single future year—often called the *design year*—which is usually 25 to 30 years in the future, or, in the case of the S.R. 210 Project, the year 2050 (FHWA 2010). The impacts of the project are defined as the total impacts of the action alternatives in the design year assuming full construction of all elements that are included in those alternatives. Similarly, the benefits of the project are defined as the benefits that would result from full construction of the project in the design year.

At the end of the NEPA process for a project, UDOT issues a Record of Decision (ROD) for the project. The USDA Forest Service might also issue a ROD depending the primary alternative selected. Once the ROD(s) has (have) been issued, and if UDOT selects an action alternative, UDOT might implement the selected alternative through a series of separate contracts for individual sections or components of the alternative. Unless otherwise specified in the ROD(s), UDOT has the flexibility to determine the appropriate construction phasing.

What is a design year?

NEPA studies often focus on the impacts and benefits of the alternatives in a single future year—often called the *design year*—which is usually 25 to 30 years in the future, or, in the case of the S.R. 210 Project, the year 2050.

If only partial funding were allocated for construction, UDOT would construct portions or components of the selected alternative based on the amount of the funding while considering safety and operational benefits. Any implemented portion or component of the selected alternative would need to have independent utility and logical termini. The Wasatch Boulevard portion of the S.R. 210 Project is included in the Wasatch Front Regional Council's 2019–2050 *Wasatch Front Regional Transportation Plan* (RTP) for construction in Phase 1 (2019–2030). The construction of the third lane on S.R. 210 between the entrance of Little Cottonwood Canyon and the town of Alta is identified in the RTP as needed in Phase 1 (2019–2030) and as funded in Phase 3 (2040–2050). Neither the gondola alternatives nor the Cog Rail Alternative are included in the RTP; however, these are alternatives to constructing a third lane on S.R. 210 in Little Cottonwood Canyon. The RTP phasing would be the same as the third lane—

sometime between 2019 and 2030. Potential construction phasing by primary alternative could include the following:

- **Enhanced Bus Service Alternative.** UDOT could start with initial smaller mobility hubs and fewer buses and build the bus service as ridership demand increases. Snow sheds, Wasatch Boulevard improvements, and trailhead improvements would be implemented based on construction funding.
- **Enhanced Bus Service in Peak-period Shoulder Lane Alternative.** UDOT could start with initial smaller mobility hubs and fewer buses and build the bus service as ridership demand increases. Construction of the peak-period shoulder lanes could be delayed until the bus service is slowed by congestion on S.R. 210. Snow sheds, Wasatch Boulevard improvements, and trailhead improvements would be implemented based on construction funding.
- **Gondola Alternative A.** Initial construction would require the complete gondola system. UDOT could start with initial smaller mobility hubs and fewer buses and build the bus service as ridership demand increases. Snow sheds, Wasatch Boulevard improvements, and trailhead improvements would be implemented based on construction funding.
- **Gondola Alternative B.** Initial construction would require the complete gondola system and 2,500-space parking garage at the gondola base station at La Caille. Snow sheds, Wasatch Boulevard improvements, and trailhead improvements would be implemented based on construction funding.
 - UDOT has identified its preferred primary alternative as Gondola Alternative B with phased implementation of components of the Enhanced Bus Service Alternative pending completion of Gondola Alternative B. For a detailed discussion of phasing infrastructure improvements with this alternative, see Section 2.6.9, *Basis for Identifying the Preferred Alternative*, in Chapter 2, *Alternatives*. The bus service and support infrastructure (mobility hubs and resort bus stops) would be smaller than described for the Enhanced Bus Service Alternative, which was sized to meet demands in 2050.
- **Cog Rail Alternative.** Initial construction would require the complete cog rail system and 2,500-space parking garage at the cog rail base station at La Caille. Snow sheds, Wasatch Boulevard improvements, and trailhead improvements would be implemented based on construction funding.

What is a mobility hub?

A mobility hub is a location where users can transfer from their personal vehicle to a bus.

A consequence of constructing or phasing the selected primary alternative is the prolonged period of construction impacts. The main impact of prolonged construction is the traffic congestion experienced by the traveling public and potential disruption of recreation access in Little Cottonwood Canyon. Constructing the project in phases would likely prolong constructed-related congestion over a longer period and potentially result in the loss of sales by businesses in the construction area over a longer period. The economic impact for the S.R. 210 Project would be greatest for the businesses at the intersection of Wasatch Boulevard and Fort Union Boulevard; however, construction phasing is unlikely to affect these businesses in the long term.

The S.R. 210 Project has a design year of 2050 so that the project can provide benefits for at least 20 years before other improvements might be required. If construction of the selected alternative spans a long period, the benefit of the project would be reduced, and the full benefits would be realized over a shorter period.

Phased construction could cause more air quality impacts because of multiple construction mobilization and demobilization periods, because of traffic congestion during construction, and because the full congestion relief of the project, which would reduce traffic-related emissions, would not be realized earlier in the project.

19.2.2.2 Easements

UDOT might need to obtain permanent or temporary easements for some properties that are not included in the right-of-way analysis in this Environmental Impact Statement (EIS) in order to construct the action alternatives. Construction easements would be required for properties that are outside the right of way but would be affected by the cuts or fills during construction, would be used by equipment during construction, would be necessary for utility relocations, or would accommodate property access modifications.

In situations requiring easements, UDOT would use these properties and would provide compensation to the landowner for the use. For some construction and utility easements, the property would be fully returned to the owner when the use of the property is no longer required, typically when construction is complete or the utility is buried. These properties might be temporarily affected, but no long-term impacts are expected. If easements on National Forest System lands are needed for construction, UDOT would coordinate with the Federal Highway Administration and the USDA Forest Service to acquire those easements and any necessary easements and/or special-use permits.

For some utilities such as water lines, sewer lines, and power poles, permanent easements might be required. The locations of these easements would be determined during the final design phase of the project in coordination with the utility companies. For this reason, the exact locations of the easements were not known when this EIS was published. For permanent easements, the appropriate additional environmental documentation would be prepared for any potential impacts if the easements are beyond the project impacts included in this EIS.

19.2.2.3 Public Impacts due to Construction

A thorough public information program would be implemented to inform the public and businesses about construction activities and to minimize construction-related impacts. Information would include work hours and alternate routes. Construction signs would be used to notify drivers about work activities and changes in traffic patterns. In addition, night and weekend work could be scheduled to shorten the duration of construction impacts. UDOT would develop a website and release public information through social media about potential delays and restrictions for recreation users in Little Cottonwood Canyon.

19.2.2.4 Air Quality Impacts from Construction

Air quality impacts during construction of any of the action alternatives would be limited to short-term increases in fugitive dust, particulates, and local air pollutant emissions from construction equipment. Construction would generate air pollutant emissions from the following activities:

- Excavation related to cut-and-cover
- Mobile emissions from construction workers' vehicles as they travel to and from the project site
- Mobile emissions from delivering and hauling construction supplies and debris to and from the project site
- Stationary emissions from on-site construction equipment
- Mobile emissions from vehicles whose speeds are slowed because of increased congestion caused by construction
- Blasting (related dust)

Because construction would be local and short-term, any impacts to individual air quality receptors would also be short-term. The most common air pollutant caused by construction would be particulate matter 10 microns in diameter or less (PM₁₀).

19.2.2.5 Water Quality Impacts from Construction

Excavation, grading, blasting, and other construction activities could increase sediment and pollution (oil, gasoline, lubricants, cement, pollutants from temporary restrooms, and so on) levels in stormwater runoff, and these pollutants could enter nearby waterways used for public drinking water. The potential for sediment and pollution levels to increase would exist until the project construction is completed and permanent soil-stabilization measures are fully functional.

Any impact to waterways in the Little Cottonwood Canyon watershed could degrade the ability of the Little Cottonwood Water Treatment Plant to process drinking water (see Chapter 12, *Water Resources*). The primary alternatives and sub-alternatives that could increase sedimentation and pollution in Little Cottonwood Canyon are the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, the gondola alternatives, the Cog Rail Alternative, the avalanche mitigation alternatives, and the trailhead parking alternatives that improve parking at the trailheads. Based on acres of disturbance, the Cog Rail Alternative would have the greatest potential for construction-related water quality impacts followed by the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, the avalanche mitigation alternatives, the gondola alternatives, and trailhead parking alternatives that improve parking.

To reduce the potential for construction adjacent to or near Little Cottonwood Creek to impact water quality, UDOT would coordinate as appropriate with the Salt Lake City Department of Public Utilities and the USDA Forest Service with respect to best management practices (BMPs) and other measures to minimize runoff and sediment.

A Utah Pollutant Discharge Elimination System (UPDES) stormwater permit for construction activities and a stormwater pollution prevention plan would be required for construction activities (for more information, see Chapter 24, *Permits, Reviews, Clearances, and Approvals*). BMPs specified in the stormwater pollution prevention plan would be used during construction to reduce impacts to surface water. For construction on

National Forest System lands, UDOT would obtain approval from the USDA Forest Service regarding BMPs and would develop a stormwater pollution prevention plan prior to construction.

19.2.2.6 Construction Impacts to Wetlands, Streams, and Wildlife

During construction, some erosion might occur outside the specific construction zone, and this erosion might increase sediment levels in adjacent streams. BMPs such as silt fences and other erosion-control features would be used in areas adjacent to streams and in areas where construction activities could affect wetlands outside the project area. If any construction activities would affect wetlands through increased sediments or fill, the construction contractor would identify the amount of wetlands that would be affected. The contractor would also obtain the necessary authorization from the U.S. Army Corps of Engineers (USACE) and all other environmental clearances before affecting these areas.

Construction activities could disrupt the feeding, nesting, and reproductive activities of wildlife in or near the right of way because of higher noise levels, construction equipment activity, and lights. Although it would be short-term and intermittent, blasting (with the Enhanced Bus Service in Peak-period Shoulder Lane Alternative, the Cog Rail Alternative, and potentially with the avalanche mitigation alternatives) and helicopter use (with the gondola alternatives) could startle wildlife, causing them to avoid the area. These temporary construction activities are of particular concern during nesting periods for migratory birds near the right of way because the activities could disrupt nesting or cause birds to flee the nest. For more information, see Chapter 13, *Ecosystem Resources*.

19.2.2.7 Noise Impacts from Construction

Construction causes a substantial amount of temporary noise. Noise during construction could be an annoyance to nearby residents, businesses, or, in Little Cottonwood Canyon, recreationists. Noise that would occur sporadically in different locations throughout the construction period would be from engine-powered machinery such as earth-moving equipment (bulldozers), material-handling equipment (cranes), and stationary equipment (generators). Mobile equipment (such as trucks and excavators) operates in a sporadic manner, while stationary equipment (generators and compressors) generates noise at fairly constant levels.

Because of safety hazards, most construction sites would have a buffer, and the nearest sensitive receptor would typically be 50 feet from operating equipment. Typical noise levels from construction equipment range from 69 A-weighted decibels (dBA) to 106 dBA at 50 feet from the source; however, the majority of typical construction activities fall within the 75-to-85-dBA range at 50 feet (Table 19.2-2). To some people, noise at 65 dBA is intrusive and 80 dBA is disruptive. At 80 dBA, people must shout to be heard. As an example, typical vacuum cleaners have a noise level of 85 dBA.

Construction noise at locations farther away than 50 feet would decrease by 6 to 8 dBA for each doubling of the distance from the source. For example, if the noise level from a jackhammer is 90 dBA at 50 feet, it would decrease to about 83 dBA at 100 feet and 76 dBA at 200 feet.

For the proposed cog rail bridge over North Little Cottonwood Road, there is the potential for pile driving of the columns that support the structure. Earthborne vibration levels from impact pile driving range from 1.1 millimeters per second (mm/sec) to 38.5 mm/sec (0.04 inch per second [in/sec] to 1.5 in/sec), depending on the force of the pile driver, the distance from the pile driver to the receptor, and the type of soil between

the pile driver and the receptor. Vibrations from impact pile-driving activities generally do not exceed the threshold for damage to historic buildings of 5 mm/sec (0.2 in/sec) farther than 200 feet from the pile driver, even with poor soil conditions. Pile-driving activities more than 75 feet from newer, non-historic buildings would not exceed the risk criterion for these buildings (HDR 2004). There are no historic structures within 200 feet and no other structures within 75 feet of the proposed pile-driving locations.

Table 19.2-2. Typical Construction Noise Level

Construction Equipment or Operation	Noise Level at 50 Feet (dBA) ^a	Common Noise Level for Comparison ^b
	105–110	Rock band at 16 feet
	100–105	Jet flyover at 985 feet
Pile driving	101	
Blasting	94	
Concrete saw	90	
	90–95	Gas lawn mower at 3 feet
Excavator	85	
Crane	85	
Dozer	85	
Concrete mixer truck	85	
Grader	85	
Paver	85	
Generator	82	
	80–85	Food blender or garbage disposal at 3 feet
Backhoe	80	
Air compressor	80	
Front end loader	80	
	73–78	Shouting at 3 feet
	60–65	Normal speech at 3 feet

^a Source: FHWA 2006

^b Source: FHWA 2018

In Little Cottonwood Canyon, blasting might be required to remove rock for road, cog rail, and snow shed construction. Specific locations and the need for blasting would be determined based on final on-the-ground assessments. Blasting is an intermittent and infrequent construction activity and can result in noise levels up to 94 dBA at 50 feet. Because blasting would occur in remote locations removed from residential receptors, the blasting noise would likely attenuate to a level below daytime noise standards in the nearest residential areas. Because of the intermittent and infrequent occurrence of blasting activities, the remote locations of blasting activities, the timing that avoids the more sensitive times of the day, and the avoidance of blasting near sensitive receptors, blasting would not cause a substantial temporary increase in noise levels at sensitive receptors.

Helicopters would be used to transport materials and personnel to gondola construction sites that are inaccessible by road. Helicopters can emit noise levels of 87.9 dBA at 50 feet overhead. Use of helicopters would be infrequent, occurring intermittently during the period during which gondola towers are constructed. Helicopters would be used during the day, avoiding sensitive evening and nighttime hours. The helicopter flight path would likely be over the center of Little Cottonwood Canyon, and the helicopter noise would disturb residents of the Wasatch Resort and visitors recreating in the canyon.

For information regarding wildlife impacts from construction noise, see Chapter 13, *Ecosystem Resources*.

19.2.2.8 Visual Impacts from Construction

During construction, the work zone would be cleared of vegetation, and the exposed bare ground would contrast visually with the surrounding forest or open land and with recreation and residential areas that viewers of the area are accustomed to seeing. In addition, construction equipment and materials would clutter views in the construction area. Visual quality from sensitive viewer locations such as homes and recreation areas would be temporarily reduced during construction. Until construction is completed and the right of way is revegetated, the construction area would visually stand out.

19.2.2.9 Cultural Resource Construction Impacts

During construction of all of the action alternatives, previously unknown archaeological, paleontological, or historical resources might be discovered beyond those identified during the cultural resource surveys (see Chapter 15, *Cultural Resources*).

19.2.2.10 Hazardous Materials Construction Impacts

As with any ground-disturbing activities, previously unknown sites such as underground storage tanks, leaking underground storage tanks, and other hazardous materials sites could be encountered. Exposure to these sites could pose a health risk. Because the general public would not be allowed onto construction sites, there would be no health risks to the public from ground contamination.

19.2.2.11 Utility Service Impacts from Construction

Although utility service would be maintained throughout most construction activities, utility service could be temporarily disrupted during construction. The affected utilities could include electric, natural gas, water, sewer, telephone, cable/internet, and storm drainage. UDOT would consult with all utility providers affected by construction to complete utility agreements before construction, and the construction contractor would coordinate with all utility providers to minimize utility service interruptions.

19.2.2.12 Traffic Impacts from Construction

The primary construction impacts that could affect vehicle traffic during construction of any of the action alternatives are the following:

- Traffic detours and some temporary road closures could change frequently throughout construction. Changes in roadway conditions could include rerouting of traffic onto other roads, temporary closure of lanes or sections, and temporary lane shifts. Detours and road closures could temporarily increase vehicle travel times, fuel use, and air pollutant emissions. Delays in Little Cottonwood Canyon could deter people from recreating until construction is completed.
- Access to commercial properties could be temporarily disrupted, which could cause longer commute times and a potential loss of revenue for some businesses.

19.2.2.13 Business Impacts from Construction

The only businesses along Wasatch Boulevard are located at the intersection with Fort Union Boulevard near the gravel pit. The businesses most likely to be affected are convenience businesses—those that cater to impulse shopping or “in-route” shopping. Gas stations belong to this first group and are considered high-impact businesses (the businesses that would experience the most impacts from construction). Destination businesses that have extensive competition, such as grocery stores, hardware stores, and sit-down restaurants, are the group that would experience the second-most impacts and are therefore considered moderate-impact businesses.

Low-impact businesses include specialty and unique stores or services such as ski rental businesses, outfitters, guides, special events, and ski resorts because these businesses are likely to be only slightly affected by construction. Low-impact businesses could also include businesses using National Forest System lands under a permit, such as commercial filming and photography. The fourth group of businesses, which includes offices, industrial parks, schools, and churches, is expected to be negligibly affected. Construction activities would most likely not affect this group’s day-to-day operations since consumer traffic generally does not sustain their business activities.

What are convenience and destination businesses?

Convenience businesses are those that customers visit on impulse or when passing by. Destination businesses are businesses that customers plan to visit in advance of their trip.

What is the gravel pit?

The gravel pit is an existing aggregate (gravel) mine located on the east side of Wasatch Boulevard between 6200 South and Fort Union Boulevard.

19.2.2.14 Invasive Species Impacts from Construction

Construction operations for all of the action alternatives would remove the existing hard surfaces and established vegetation, which would expose the underlying soils to the risk of being invaded by invasive and noxious weeds. Materials and equipment delivered to the job site could introduce noxious and invasive weeds into the area if seeds are present in imported gravel or soil or on equipment that is not properly cleaned.

19.2.2.15 Construction Staging and Material Borrow Areas

During construction, the contractor would establish staging areas for equipment and would obtain fill material for improvements. Because a contractor has not yet been selected, the exact locations of staging areas and sources of fill material are not known. To the extent practicable, construction staging areas would be located in previously disturbed areas.

19.2.2.16 Mitigation Measures for Construction Impacts

The following mitigation measures will be implemented during construction.

19.2.2.16.1 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 primary alternative for that phase and any changes in regulations or potential improvements to BMPs at the time of implementation.

19.2.2.16.2 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. UDOT will work with the U.S. Department of Agriculture Forest Service to inform recreation users (climbers, hikers, cyclists, and others) that access to recreation areas might be restricted during construction. UDOT will also work with recreation groups such as the Salt Lake Climbers Alliance to inform them of construction activities so that they can inform their members.

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.

19.2.2.16.3 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*).

19.2.2.16.4 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.

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

For proposed mitigation measures for impacts to wetlands, streams, and wildlife, see Chapter 13, *Ecosystem Resources*.

19.2.2.16.6 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.

19.2.2.16.7 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.

19.2.2.16.8 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.

19.2.2.16.9 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.

19.2.2.16.10 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. UDOT will inform affected residents and businesses about any planned utility disruptions.

19.2.2.16.11 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).

19.2.2.16.12 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, as much as possible avoid lane restrictions 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.

19.2.2.16.13 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.

19.2.2.16.14 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.

19.3 References

[FHWA] Federal Highway Administration

- 2006 Construction Noise Handbook Final Report. August.
- 2010 Interim Guidance on the Application of Travel and Land Use Forecasting in NEPA. March.
- 2018 Techniques for Reviewing Noise Analyses and Associated Noise Reports Final Report. June 1.

HDR, Inc.

- 2004 Vibration Impacts on Historic Structures Final Technical Report, Legacy Parkway Environmental Re-evaluation. April.