



National Park Service  
U.S. Department of the Interior  
Zion National Park  
Springdale, Utah

# South Entrance Fee Station Reconfiguration Environmental Assessment

August 2018



*Zion National Park  
South Entrance Fee Station*

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## PURPOSE AND NEED

### Purpose and Need for Action

The National Park Service (NPS) is proposing to redesign the Zion National Park (ZION) South Entrance Fee Station and adjacent roadway to decrease park entry wait times for vehicular traffic, reduce localized vehicle congestion, improve employee safety, develop a renewable energy source to sustain park operations, and replace faulty culverts to improve roadway conditions during weather events. The proposed project is anticipated to require a 240 day construction period, which could be implemented as early as September 2019 and persist until April 2020.

Visitation to ZION has been increasing for decades, but especially large increases have been experienced in the last few years. The peak season in the park is now beginning to extend into early spring and late fall. In 2017, a record total of 4,504,812 people visited the park (NPS 2017a). This was an increase of 209,685 visitors from 2016 which was also a record setting year for visitation. ZION also experienced an increase of 654,808 visitors from 2015 to 2016. During the height of the summer season it is common for visitors to wait in long lines to enter the park and board the park shuttle. Parking in ZION is routinely full by 9:00 a.m. daily, which adds to both traffic and parking congestion in Springdale, the gateway town bordering the South Entrance of ZION.

Recent increases in visitation to ZION has intensified the strain on existing park-infrastructure and has resulted in prolonged visitor wait times to enter the park, particularly at the south entrance. In 2016, on the tenth-busiest day of the year the South Entrance Station had a demand of 324 vehicles per hour. The current fee station configuration only allows for approximately 194 vehicles per hour to be processed. This leads to the current traffic congestion at the South Entrance, often times extending lines of traffic one-quarter (0.25) to one-half (0.5) mile into the neighboring town of Springdale. During the busiest times (weekends and holidays), visitors regularly wait in the queue line for up to an hour just to enter the park, which results in both visitor frustration and increased exhaust emissions from vehicles in the localized area. It also creates a safety hazard for park fee rangers as they "rove the queue" attempting to expedite the flow of traffic and reduce the congestion. Existing culverts positioned on the northern and southern sides of the South Entrance Fee Station are also unable to adequately conduct storm waters away from the roadway which provides the only vehicle ingress and egress route into Zion Canyon along the southern boundary of the park. Minor weather events often result in excess runoff and debris inundating the Floor of the Valley Road thereby inhibiting vehicle passage through the South Entrance. As part of the NPS Green Parks Plan: Be Energy Smart environmental stewardship initiative, ZION would also prioritize the use of sustainable energy sources to increase reliance on renewable energy and strive to preserve outdoor experiences by promoting healthy engagement (NPS 2017b).

### Summary of Project Objectives

- Reduce park entry wait time for vehicular traffic;
- Reduce localized vehicle congestion;
- Improve employee health and safety;
- Replace faulty culverts to improve roadway conditions during weather events; and
- Develop a renewable energy sources to sustain park operations.



## ALTERNATIVES

Two alternatives, no action and action, are carried forward for evaluation in this EA. A number of suggestions and alternate designs were also considered and dismissed, see the Alternatives Considered and Dismissed for additional details.

### Alternatives Carried Forward

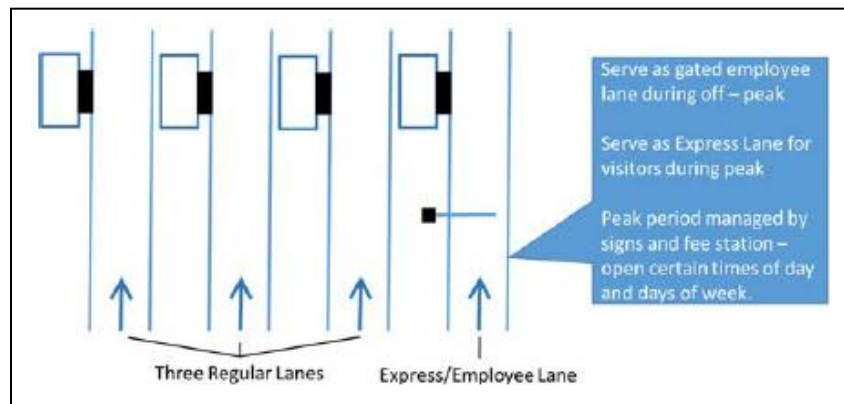
#### Alternative A – No Action

Under Alternative A, the current conditions would persist, no modifications to the landscape or park infrastructure would be made nor would the visitor experience be changed. The South Entrance Fee Station would remain in the current configuration which includes three (3) lanes of traffic entering the park at the South Entrance, including two (2) designated for visitor entry and one (1) designated for NPS employees. The eastern-most NPS employee lane would continue to be used to expedite park entrance for prepaid Park Pass holders when ZION experiences high visitor volumes which requires NPS staff to work in active lanes of traffic.

Upon entry, visitors unfamiliar with the layout of the park would continue to impede traffic when pausing in the middle of the roadway to orient themselves. Existing facilities include two fee booths with restroom facilities unable to accommodate employees with disabled accessibility. NPS staff would continue to utilize the parking area (5 vehicle spaces) on the western side of the roadway and be required to cross active lanes of traffic to reach their duty station. A conventional power source would also continue to supply the electrical needs at the South Entrance Fee Station. Culverts positioned approximately 150 feet north and south of the fee booth would remain undersized, incorrectly angled, and inadequately sloped to sufficiently capture and channel runoff away from the roadway (see Figure 2).

#### Alternative B – South Entrance Fee Station Reconfiguration (NPS Proposed Action and Preferred)

Under Alternative B, the South Entrance Fee Station Reconfiguration would redesign the roadway and construct new or update existing park facilities and infrastructure. Roadway redesign would increase the number of visitor vehicle entry lanes, provide a short-term visitor entry pull-out area, as well as re-route the South Entrance vehicle exit lane to encapsulate a NPS staff parking area. Proactively, the eastern-most employee entrance lane would also serve as an express lane from 8 a.m. to 2 p.m. to prepaid vehicles on days that are expected to have higher visitor volumes (Figure 1). Based on 2016 park conditions, this scenario found the average vehicle queue extending to 50 feet and the average delay per vehicle lasted 170 seconds or 3 minutes (UDOT 2016). This is a decrease of 3,450 feet and 1,090 seconds or 18 minutes when compared to existing conditions. Outdated and undersized culverts within the



**Figure 1.** Employee entrance & prepaid Park Pass holder lane.

project area would also be replaced. Facility and infrastructure improvements would increase the number and size of the fee booths, construct a fee booth shade structure capable of supplying the South Entrance Fee Station with a renewable energy source, and install up to two restroom facilities for NPS staff. Alternative B project component details include (see Figure 2):

1. Roadway Redesign

Upon park entry at the South Entrance, a fourth vehicle lane would be constructed to serve as the employee entrance lane and three (3) designated visitor vehicle entry traffic lanes would be constructed to the west. Existing park entry traffic islands would be removed, reshaped, and reconstructed to separate entry lanes and establish a protected location to install the new fee booths. Similarly, park exit traffic islands would be constructed to establish a protected parking area to facilitate NPS staff access to the facility.

A. Visitor Vehicle Entry Lane Expansion

To construct the employee entrance lane, an area approximately 9,000 square feet in size would be leveled and prepared by depositing approximately 850 cubic yards of native fill dirt across 300 linear feet on the eastern side of Zion Park Blvd. The eastern edge of the deposited fill dirt would be finished with a 2:1 slope and would be blended in to existing contours without any retaining structure. At the widest point, disturbance would extend out 40 feet to the toe of the slope, which measures approximately 25 feet. Erosion control devices would be installed during construction and removed once revegetation efforts are implemented. To construct the fourth vehicle lane, the existing paved area would be increased by 3,900 square feet. Final dimensions of road base and asphalt are expected to be set at a depth of eight (8) and four (4) inches respectively. The existing employee entrance gate would also be reinstalled alongside this lane to manage daily vehicle access for employees and park pass holders as warranted.

Three small traffic islands would be installed to separate the entry lanes and to create a protected area to install the entrance stations. Each island would measure approximately 1,400 square feet (4,200 square feet total) and be lined with 230 linear feet (690 linear feet total) of concrete curbing. Curbing would be constructed of all new material and colored to maintain compatibility with existing park infrastructure.

Four concrete braking pads would be installed in each entry lane, adjacent to each fee booth and/or employee entrance gate. Braking pads are used to prevent rutting that occurs in asphalt from repeated braking/stopping/acceleration at the same spot. To construct each of the breaking pads, approximately 28 cubic yards of concrete would be installed to measure twelve (12) feet wide by ninety-five (95) feet long by six (6) to eight (8) inches deep. Breaking pads would be constructed of all new material and exposed concrete would be colored to maintain compatibility with existing park infrastructure.

On the eastern side of Zion Park Blvd., immediately south of asphalt road leading to the Zion Canyon Visitor Center, a short-term (10 minute) pull-out area would also be constructed to minimize the impediment of incoming park traffic by designating an area for visitors to orient themselves with their preferred destination(s). The pull-out area would occur in an area of existing asphalt and would measure approximately seventy-five (75) feet long by twelve (12) feet wide, totaling 950 square feet. The pull-out area would be able to accommodate up to three (3) vehicles simultaneously.

**B. Vehicle Exit Lane Expansion**

To construct the park exit lane and NPS employee parking area (10 vehicle spaces), an area approximately 5,500 square feet in size would be impacted outside of existing paved areas. This area would be leveled and prepared by removing approximately 150 cubic yards of native soil on the western side of Zion Park Blvd. Final dimensions of road base and asphalt are expected to be set at a depth of eight (8) and four (4) inches respectively. All soil excavated during the project would be backfilled to the original location and/or stored in park stockpiles for future park projects.

Two large traffic islands would be installed to separate the entry and exit lanes and create a protected area for NPS employees to park personal and government-owned vehicles. The traffic island immediately adjacent to the fee station would measure approximately 2,800 square feet and the other 2,200 (5,000 square feet total). Each would be lined with 315 and 260 linear feet (575 linear feet total) of colored concrete curbing. Curbing would be constructed of all new material and colored to maintain compatibility with existing park infrastructure.

**C. Culvert Replacement**

As previously noted, minor amounts of precipitation habitually inundate the primary roadway in Zion Canyon. The largest factor contributing to localized flooding in the engineered landscape is inadequate drainage. To correct the culvert issue, the northernmost culvert would be removed and replaced with a sixty (60) inch concrete box culvert (with headwalls) and the southernmost culvert would be replaced with a thirty-six (36) inch corrugated metal pipe. Both culverts would be angled to complement natural drainage in the area and sloped at a three (3) to five (5) percent grade to reduce blockages from debris. Soil grading and shaping would occur within a thirty (30) foot radius of the openings of both culvert would to maximize drainage. Trenching an area two (2) to three (3) feet wider than the respective culvert would be required to facilitate access to installation laborers. All soil excavated during the project would be backfilled to the original location and/or stored in park stockpiles for future park projects. No in-water work would be required.

**2. Fee Booth Facilities and Infrastructure Improvements**

Two existing fee booths would be removed and replaced with three (3) or four (4) larger fee booths. A shade structure equipped with photovoltaic panels would be installed to cover the newly installed fee booths.

**A. Fee Booths**

Existing fee booths would be dismantled to retain reusable materials for future park projects, specifically the stone siding. Unusable materials would be disposed of as waste at the local landfill. Following the disassembly of the existing fee booths, three (3) fee booths would be constructed immediately (Figure 3). As warranted by future visitor use capacities, a fourth fee booth would be constructed in the eastern most entrance lane. Each booth would be constructed within the proposed traffic island and sit on top of a concrete foundation. The approximate footprint of the fee booths would be nine (9) feet by twenty-one (21) feet. Over-excavation, or the removal of unsuitable foundation material, would penetrate the ground under each fee booth at a minimum depth of two (2) feet but no more than five (5) feet (RB&G 1997). Native soil and non-native gravel would be backfilled and compacted into the excavated area to stabilize the underlying

soils. Fee booths would be built in a neo-rustic architectural style, often referred to as PARKitecture. This architectural concept incorporates the idea of designing with nature (NPS n.d.) and would echo the design theme of the nearby ZION Visitor Center by incorporating the use of heavy wood beams, stone masonry, wood siding, and corten steel columns.

Stacked lanes could also be constructed if needs at the South Entrance Station persist. A “stacked lane” has a single entrance lane and two fee collection booths. This configuration allows two vehicles to be processed simultaneously in each entry lane. As described above, designs drafted for the South Entrance Fee Station Reconfiguration propose the construction of a single fee booth per entrance lane. If stacked lanes are pursued in the future, the stacked booths would be constructed within the proposed traffic island and would be designed to match the neo-rustic architecture used to construct the primary booths. Although the impacts associated with the construction of the stacked lanes do not deviate from the impacts analyzed in this environmental assessment, additional compliance would be completed once preliminary designs are developed to maintain consistency within the viewshed and account for any changes in the area that do not currently exist. Stacking the existing two lane entrance station has been dismissed from consideration for the reasons listed in Table 1. Alternatives Considered but Dismissed.

B. Shade Structure & Photovoltaic System

A shade structure would be installed to shade the fee booths and provide a platform to mount solar panels. The shade structure would be supported by eight (8) columns designed to reflect the surrounding neo-rustic PARKitecture. The height of the shade structure would permit oversized vehicles up to fourteen (14) feet in height. The roof of the shade structure would be constructed of steel slats and would roughly measure 110 feet in length with a 50 foot width. Solid and perforated metal roof decking would be installed to shade the fee station area. Solar panels would also be mounted to the roof of the shade structure from which the energy derived would be used to power the fee station. The remaining components of photovoltaic system, specifically the battery backup or backup generator, would be integrated into the proposed infrastructure using the existing utility lines in place. However, additional compliance would be completed for any supplementary structures required to house the photovoltaic system.

C. Employee Restrooms

Two employee restrooms would also be constructed within two of the proposed traffic islands (Figure 3) and sit on top of a concrete foundation. The approximate footprint of the restrooms would be ten (10) feet by ten (10) feet. Design features would echo those described for the proposed fee booths. Each of the proposed restrooms would be connected to existing utilities (electric, sewage, and water) already occurring within the proposed area of disturbance. Conduit, pipe, and cable would extend an estimated 20 feet underground, at a depth no greater than 2 feet, from the adjacent fee booth. Native soils would be backfilled and the area revegetated as not to obstruct employee use.

3. Revegetation

As described in Alternative A, the current footprint of the roadway and fee station equals approximately one (1) acre and vegetated areas equal approximately one-half (0.5) acre, totaling approximately one and one-half (1.5) acres. All proposed work would be completed

within this previously disturbed areas and would not deviate from existing infrastructure to landscape ratio described.

Construction of the employee lane would require the deposition of fill dirt on the eastern edge of the existing roadway, finished with a 2:1 slope. Ground disturbance resulting from vehicle entry and exit lane expansion would disturb approximately 0.4 and 0.1 acres, respectively. Hence, the areas to be revegetated alongside the roadway and within the new traffic islands would equal approximately one-half (0.5) acre. These areas are currently vegetated with native perennial grasses and shrubs and non-native grass species such as cheat grass. The addition of 3,900 square feet of pavement used to construct the employee lane would be offset through the integration of vegetated traffic islands (9,200 square feet total) as well as the revegetation of the sloped eastern edge of the roadway. Subsequently, the net gain of the overall paved and developed area would equal zero (0) acres and there would be no permanent loss of vegetation.

Transplant and revegetation efforts would be coordinated through the ZION Vegetation Program to echo the existing, native landscape. Existing cacti would be removed from the traffic islands prior to construction, salvaged, and replanted in the new traffic islands after construction along with yucca stock raised in the Zion nursery. The remaining areas of disturbance would be revegetated by seeding and/or planting native grasses, shrubs, and forbs. Select mitigations would reduce the overall removal and damage to vegetation occurring within the proposed project area during and after the construction period, see Mitigation Measures: Vegetation for additional details. Any exotic or non-native vegetation located in the project area throughout revegetation efforts would be removed, thereby reducing competition with native plants and preventing the establishment of additional exotic vegetation. Any soil excavated during the project would be backfilled to the original location or stored in park stockpiles for future park projects.

Exotic vegetation removal activities for ZION are documented under a NPS National Environmental Policy Act (NEPA) programmatic categorical exclusion and would employ both mechanical and chemical means (i.e. hand-pulling, digging, motorized equipment, herbicides, etc.) to remove the identified non-natives. Techniques utilized would be selected based on species type/size and would remain consistent with NEPA documentation. Revegetation activities for ZION are also documented under a NPS NEPA programmatic categorical exclusion and would reintroduce habitat appropriate, native vegetation to the project area through seed dispersal and/or direct planting. Ropes, stakes, and signs would be installed to deter visitors from tramping newly revegetated areas. NPS staff would also periodically water revegetated areas throughout the dry season.

The proposed project is anticipated to require a 240 day construction period, which could be implemented as early as September 2019 and persist until April 2020. A temporary entrance station with two fee booths would be provided throughout the duration of the construction period and would be placed immediately south of the existing fee booths near the southern boundary of ZION. The need for closures within the South Entrance Fee Station project area has not yet been determined but a vehicle and pedestrian traffic management plan would also be developed as part of this project. Heavy equipment normally associated with earth moving and road construction (excavators, backhoes, pavers, and material delivery trucks) would also be used throughout the project. The equipment staging area would be located completely within the existing parking lot footprint.



Figure 2. Alternative A – South Entrance Fee Station Existing Conditions

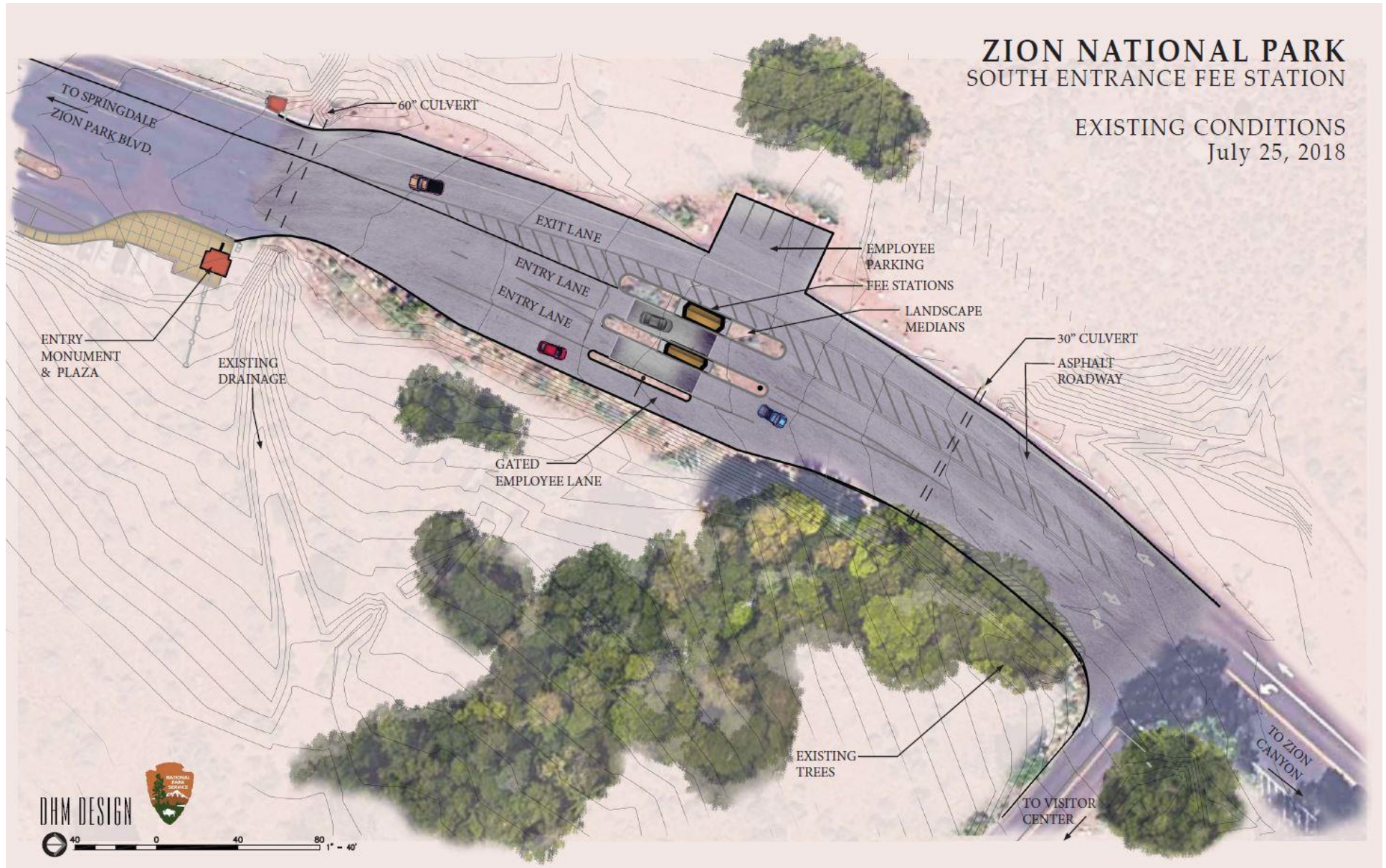
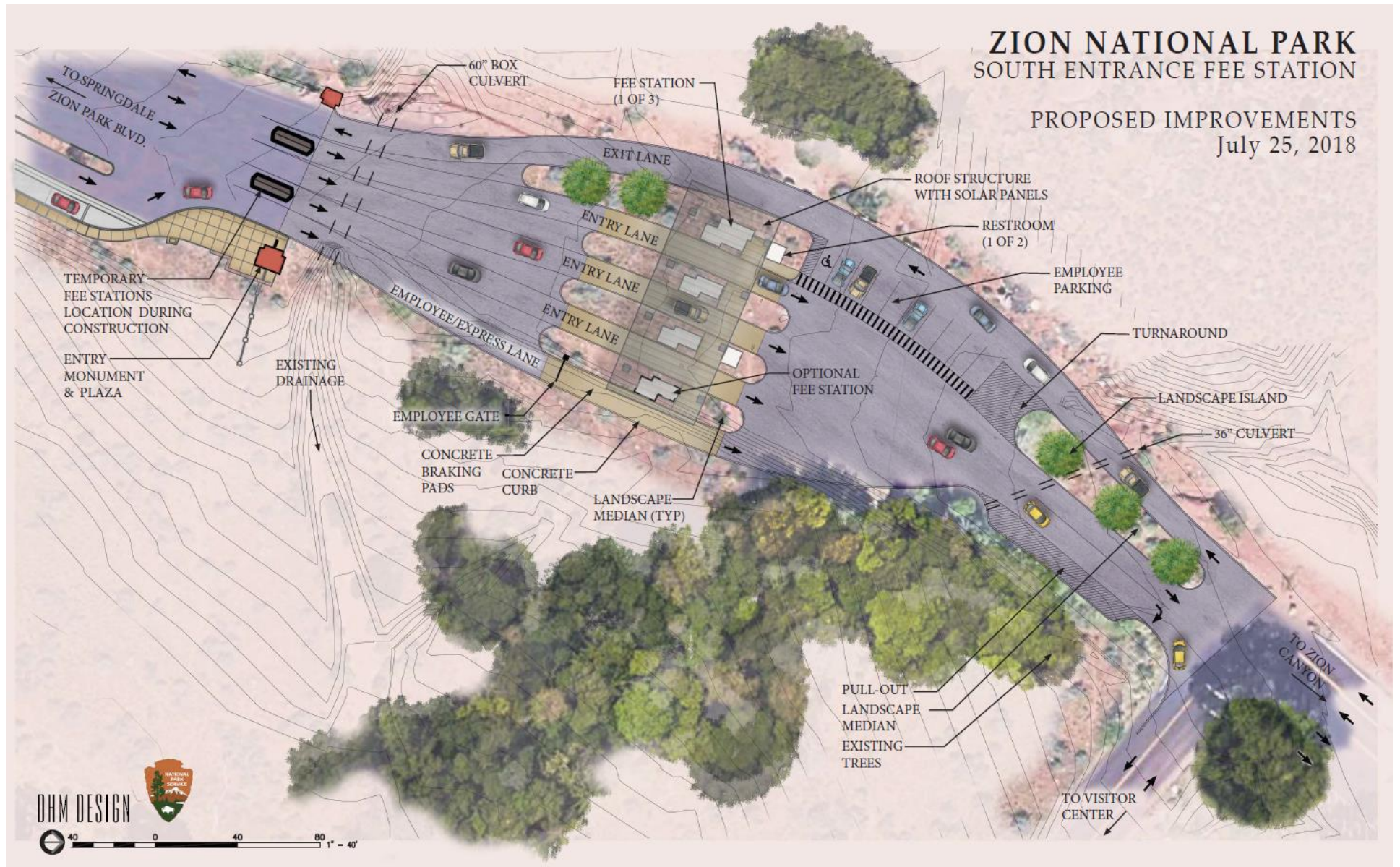




Figure 3. Alternative B – South Entrance Fee Station Reconfiguration





**Figure 4.** Alternative B – South Entrance Fee Station Reconfiguration Simulation



## **Mitigation Measures**

The following mitigation measures would minimize the degree and/or extent of adverse impacts and would be implemented during the project.

### **Air Quality**

- Equipment would not be allowed to idle longer than 2 minutes when not in use.
- All motor vehicles and equipment would have mufflers conforming to original manufacturers' specification that are in good working order and are in constant operation to prevent excessive or unusual fumes or smoke.
- All haul loads would be trapped.

### **Archeological, Ethnographic, and Paleontological Resources**

- All contractors and subcontractors would be informed of the procedures to follow in the event of archeological, ethnographic, and paleontological resource discovery, as well as the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties.
- Archaeological resources near the proposed project area would be identified for avoidance prior to the implementation of construction activities.
- During construction, specifically activities involving earthwork or digging, qualified park staff would monitor work zones to confirm the presence or absence of significant archeological, ethnographic, or paleontological resources. Should construction unearth cultural or paleontological resources, work would be stopped in the area of discovery and the park would consult with the State Historic Preservation Office (SHPO) and the Tribal Historic Preservation Officers in accordance with §36 CFR 800.13, Post Review Discoveries.
- In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.

### **Geology and Hydrology**

- Best management practices for erosion control and storm water pollution prevention, such as silt fencing, would be implemented prior to and throughout the duration construction activities.

### **Historic Structures**

- Building and site design would be as compatible as practical with the historic architectural characteristics and incorporate similar architectural features, materials, surface finishes, and color.
- Historic resources near the proposed project area would be identified for avoidance prior to the implementation of construction activities.
- Construction staging areas would be restricted to ensure no fill or materials disturb known historic structures. Site selection would be coordinated with the Zion Cultural Program Manager prior to construction.

### **Human Health and Safety**

- Contractors and NPS staff to include volunteers, interns, etc. shall follow all Park safety and health policies and programs.

- Hierarchy of hazard control shall be implemented. Personal protective equipment is the last line of defense. Hard hats, safety vests, eye protection and other personal protective gear, as needed shall be worn at all times within the construction zone.
- Any safety violations shall be corrected immediately. If the violation is not corrected immediately, the project shall be postponed until such corrections are made.
- Closures and temporary safety fencing would be required to keep visitors out of construction area/s.
- Spill containment kits and fire extinguishers shall be available on site at all times.
- Copies of Safety Data Sheets (SDS) shall be available on site at all times.

### **Lightscares and Soundscapes**

- Hours of outdoor construction would be limited to hours between sunrise and sunset, so no artificial lighting would be required.
- Hours of operation of motorized equipment would be limited to 8:00a.m. to 6:00p.m. to protect dawn, dusk, and nighttime quiet.
- Equipment would not be allowed to idle longer than 2 minutes when not in use.
- All motor vehicles and equipment would have mufflers conforming to original manufacturers' specification that are in good working order and are in constant operation to prevent excessive or unusual noise.

### **Vegetation**

- Construction zones would be identified (i.e. flagging, construction tape, etc.) to confine activity to the minimum work area required.
- Construction equipment would be cleaned before entering the park to minimize the transport of exotic seeds to the site. All equipment entering the park would be inspected and may be required to be pressure washed to remove foreign soil, vegetation, and other materials that may contain non-native seeds or vegetation.
- Construction materials staging areas would be restricted to previously disturbed sites.
- Erosion control measures that provide for soil stability and prevent movement of soils would be implemented, such as installing erosion control wattles along the edge of construction.
- Any disturbed soils would be salvaged and used to restore the area.

### **Visitor Use and Experience**

- Signs, alerts, press releases, and notifications would be issued to inform visitors prior to and throughout the duration of construction.
- Construction zones would be identified (i.e. flagging, construction tape, fencing, etc.) to prevent visitors from entering construction zone unknowingly.
- Construction materials staging would be restricted to areas that would neither impede vehicle traffic of visitors, contractors, or park staff.

### **Wildlife**

- Construction personnel would be oriented on appropriate behavior in the presence of wildlife and proper food storage, handling, and disposal and/or other attractants.
- Construction site and staging areas would be monitored periodically by park natural resource staff throughout the duration of the project in case any special status species unexpectedly appear in the project area. Should any appear and if park staff become

concerned about potential adverse impacts on the species from construction or other project related activities, work would stop and not resume until necessary protective steps are taken to avoid any impacts to the special status species.

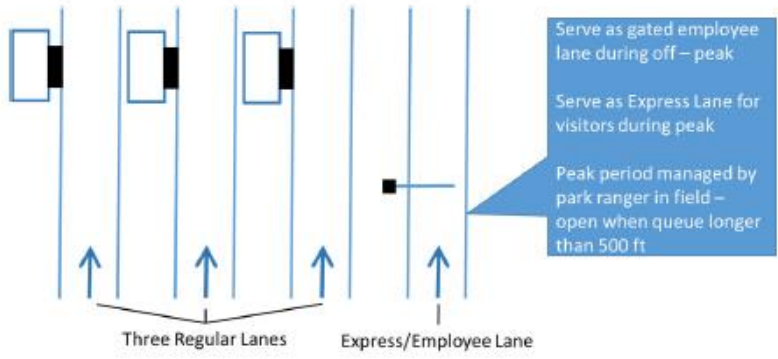
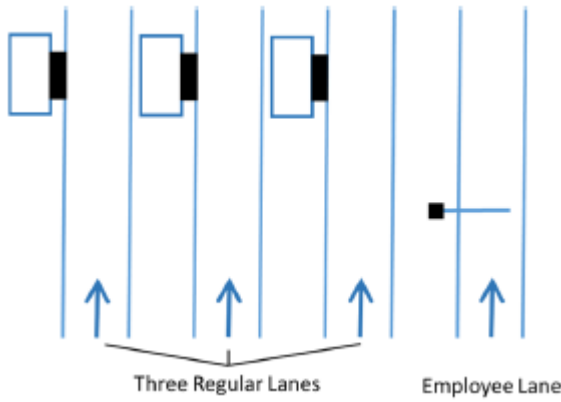
- All construction personnel would be briefed on California condor identification and behaviors.
- All construction activity would cease if a condor is within the proposed action area and the park wildlife biologist would be contacted; construction would not continue until the condor leaves on its own accord or hazed by the wildlife biologist
- The project site will be cleaned up at the end of each day the work is being conducted (i.e. trash disposed of, scrap materials picked up) to minimize the likelihood of condors visiting the project site.
- For any actions involving trenching or digging holes, provisions (generally in the form of ramps; with a slope < 45°) would be made every 20-50' to allow for the escape of animals that may fall into these recesses, and/or they would be covered in such a way as to prevent animals (vertebrates) from falling in them.
- If large rocks or boulder must be moved, the park Wildlife Biologist would be present to ensure reptiles potentially living under the rocks are moved out of the construction area.
- All gate posts, ground pipes, bollards would be permanently capped to negate wildlife entrapment.
- In consultation with the park Wildlife Biologist, all fee station windows would be retrofitted with UV-film to minimize bird window strikes.

## Alternatives Considered and Dismissed

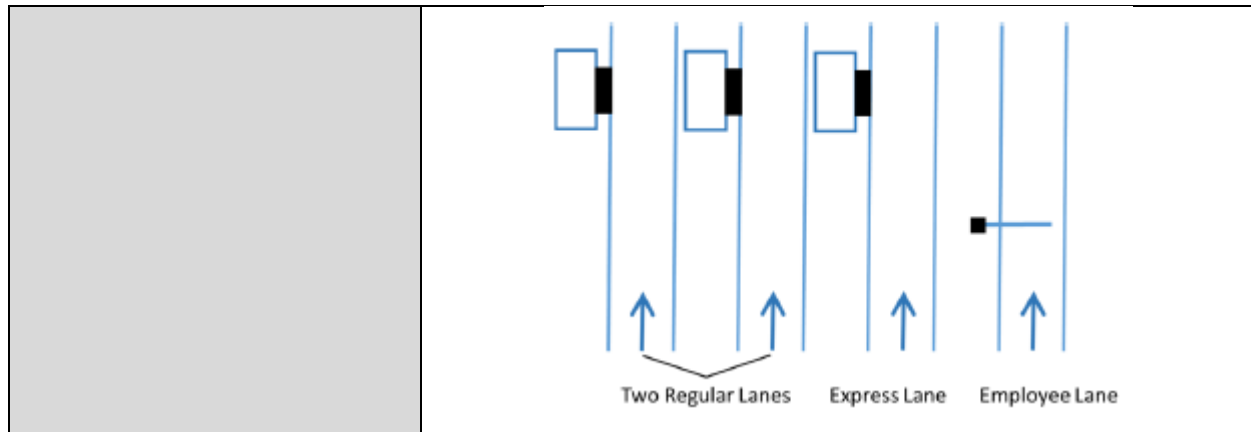
As described in Table 1, the following suggestions and alternative locations for the project were considered but dismissed from further consideration. These include suggestions from public scoping, as well as the project planning team.

**Table 1: Suggestions and alternative locations dismissed from further consideration.**

Suggestions/Alternative Locations Dismissed	Reason for Dismissal
<b>Stacked Lanes in existing configuration:</b> <ul style="list-style-type: none"> <li>• 2 Regular Visitor Entry Lanes</li> <li>• 1 Express/Employee Lane when queue reaches longer than 500 ft.</li> </ul>	<u>Inability to resolve the purpose and need for taking action:</u> A stacked lane only increase the capacity of a single lane by approximately 75 percent (Upchurch 2016). Visitors also have a tendency to confuse directions in stacked settings thus requiring constant coordination between the NPS staff processing vehicles in the same lane. Stacking the lanes in the existing configuration would not accommodate current entry demands and would instead further prolong entry wait times by confusing visitors.
<b>Lane Designations:</b> <ul style="list-style-type: none"> <li>• 3 Regular Visitor Entry Lanes</li> <li>• 1 Express/Employee Lane when queue reaches longer than 500 ft.</li> </ul>	<u>Inability to resolve the purpose and need for taking action:</u> Based on 2016 park conditions, this scenario modeled three (3) regular fee station lanes for tourist vehicles and one (1) shared employee/visitor express lane open to prepaid vehicles when the queue reaches longer than 500 feet. Reactively, vehicles would need to be directed into the employee lane by a park ranger standing in the field. The average queue extended 250 feet and the average delay per vehicle lasted 390 second or 6.5 minutes (UDOT 2016). This is a decrease of 3,250 feet and 870 seconds or 14.5 minutes when compared to existing conditions.

	
<p><b>Lane Designations:</b></p> <ul style="list-style-type: none"> <li>• 3 Regular Visitor Entry Lanes</li> <li>• 1 Employee Lane</li> </ul>	<p><u>Inability to resolve the purpose and need for taking action:</u></p> <p>Based on 2016 park conditions, this scenario modeled three (3) regular fee station lanes for all tourist vehicles and one (1) employee lane that would not service tourist vehicles. The average queue extended 675 feet and the average delay per vehicle lasted 500 seconds or 8.5 minutes (UDOT 2016). This is a decrease of 2,825 feet and 760 seconds or 12.5 minutes when compared to existing conditions.</p> 
<p><b>Lane Designations:</b></p> <ul style="list-style-type: none"> <li>• 2 Regular Visitor Entry Lanes</li> <li>• 1 Express Lane</li> <li>• 1 Employee Lane</li> </ul>	<p><u>Inability to resolve the purpose and need for taking action:</u></p> <p>Dedicating an entrance lane to be an “express lane” does not increase overall capacity of an entrance station (Upchurch 2016) and would not reduce the wait times or vehicle congestion from current conditions. The result of moving many of the fastest transactions away from the other lanes is that the remaining lanes have a high proportion of slow transactions. The main advantage of implementing an express lane would be reducing the time for eligible users or those holding previously purchased entry credentials. Accommodations are currently implemented by NPS staff on busy days by opening the employee lane to eligible users.</p> <p>Based on 2016 park conditions, this scenario modeled two (2) regular fee station lanes for tourist vehicles, one (1) express lane for tourist vehicles that have prepaid, and one (1) employee lane that would not service tourist vehicles. The average queue extended 1,785 feet and the delay per vehicle lasted 710 seconds or 12 minutes (UDOT 2016). This is a decrease of 1,715 feet and 550 seconds or 9 minutes when compared to existing conditions.</p>





## Impact Topics Dismissed from Further Analysis

The following topics are dismissed from further analysis in this EA for the reasons provided. Unless otherwise noted, no impacts are associated under the no action alternative.

### Archaeological Resources

Two archaeological resources occur within or immediately adjacent to the project area, including a multicomponent site (Site #42WS1066), which has been determined ineligible for National Register Listing and a historic canal (Site #42WS4781), which has been listed on the NRHP, but would be avoided and not adversely effected.

#### Site 42WS1066

42WS1066 is a multicomponent site consisting of a prehistoric rock shelter and historic trash scatter related to local agricultural activities. The site was originally recorded by NPS staff in 1978. In 1983 the boulder forming the rock shelter was apparently moved during installation of an underground electrical line. The boulder rolled approximately 5 meters downslope to the bottom of a small drainage. In a subsequent 1984 site update, the site was reported as “destroyed” and “non-significant” due to this disturbance. At that time, NPS did not consult with SHPO regarding the findings or prepare a Determination of Eligibility (DOE). During a recent site visit on February 2, 2018, several prehistoric artifacts were observed around the boulder and in the original rock shelter location charcoal flecking and burnt animal bone fragments were found eroding out of the hillside. The 1984 recording assumed this area with cultural debris was disturbed and out of context.

In order to determine the integrity of the site overall, in April 2018, the NPS conducted a comprehensive re-assessment of the site that included inventory and analysis of surface artifacts, limited testing excavations, and fully updated site documentation. Five test units (four 50 x 50 cm units and one linear 1m x 25 cm trench) were placed in areas of high artifact concentration and with charcoal staining to determine the integrity of cultural deposits within the rock shelter. The results of the test units verify that potential cultural deposits within the rock shelter were either destroyed or completely disturbed during the construction of the power line and subsequent rolling of the boulder.

The site also contains a historic component that consists of a widely dispersed trash scatter of glass shards, historic ceramic sherds, enamelware, metal fragments, and a deteriorated, dry-stacked sandstone alignment, 1-4 courses high, and 3.25 m long. Similar walls have been

discovered throughout the area, identified as livestock enclosures, and are related to historic farming and herding activities. The historic component was also disturbed during construction of the power line, as well as several episodes of drainage control in which the park used heavy equipment to redirect drainages and create earthen berms to contain storm water.

Due to the sparsity and highly dispersed condition of both historic and prehistoric era artifacts, as well as the documented disturbance to surface and subsurface deposits, the site is unlikely to yield additional historical or scientific data. The NPS determined that site 42WS1066 is ineligible for listing in the NRHP, SHPO concurrence pending.

#### Site 42WS4781

42WS4781 is the historic Oak Creek Irrigation Canal (ditch). The NPS maintains dual documentation systems for this property – as an archaeological resource, and as a historic structure currently listed in the NRHP. It is discussed in detail below in the *Historic Structures* section.

If new information about archaeological resources or other subsequent issues are identified as a result of this consultation, the NPS will reconsider this determination.

#### **Cultural Landscapes**

According to the NPS Director's Order-28: *Cultural Resource Management Guideline*, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. A search of the NPS Cultural Landscape Inventory (CLI) database revealed that the proposed project area is not located within an identified cultural landscape but several potential cultural landscapes do occur within the vicinity of the proposed project area. On June 26, 2018, ZION consulted with the NPS IMR Historical Landscape Architect on the impacts to known and/or potentially significant cultural landscapes for the alternatives presented in this EA. As a result of this consultation, the NPS has determined that the elements which commonly comprise a cultural landscape are not present in the proposed project area; therefore, a CLI of the proposed project area would not be undertaken. Additionally, the proposed project area is sufficiently distant from known and/or potentially significant cultural landscapes to have no adverse impacts to these resources.

#### **Environmental Justice**

In accordance with the National Office of Environmental Policy and Compliance (OEPC) Environmental Compliance Memorandum 95-3, Rockville, Springdale, Hurricane, Virgin, and other surrounding communities were assessed to contain both minority and low-income populations. However, this environmental assessment demonstrates that the impacts that could result from implementation of the alternatives would be few and would not be disproportionately high with regard to human health or environmental impacts on minorities or low-income populations. The South Entrance Fee Station would remain available for use by all people regardless of race or income, and any construction workforces would not be hired based on race or income. Furthermore, the park staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.



### **Ethnographic Resources**

The NPS defines ethnographic resources as any “site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it” (Director’s Order-28). On January 30, 2018, a letter was sent to announce the preparation of this EA and inform interested groups on the project objectives of the proposed action. Consultation has occurred in writing with the Backcountry Horsemen of America: Utah Southwest Chapter, the Civilian Conservation Corps (CCC) Legacy, Conserve Southwest Utah, the National Trust for Historic Preservation: Denver Field Office, the Old Spanish Trail Association, Utah Preservation, and twelve American Indian tribes associated with Zion National Park (Confederated Tribes of Goshute; Skull Valley Band of Goshute; Hopi Tribe; Kaibab Band of Paiute Indians; Moapa Band Paiute Tribe; The Navajo Nation Office of the President; Paiute Indian Tribe of Utah; Las Vegas Paiute Tribe; San Juan Southern Paiute; Shivwits Paiute Band; Ute Indian Tribe of the Uintah & Ouray Reservation; Pueblo of Zuni). No responses have been received to date.

The NPS is currently contacting each of these groups by phone and/or letter to confirm receipt of the initial mailing, relay the results of an archaeological survey that occurred in the proposed area of potential effect, and affirm that there are no concerns related to ethnographic resources. The Church of Jesus Christ of Latter-day Saints History Department will also be contacted during this outreach effort to inform them of the proposed project and provide the opportunity to identify any traditionally significant resources that have the potential to be impacted within the proposed project area. Based on current information, the NPS has determined that no ethnographic resources would be impacted by the proposal and are therefore dismissing ethnographic resources from consideration. Should new information regarding ethnographic resources, Tribal concerns, or other subsequent issues be identified by any of these groups as a result of the follow-up calls, the NPS will reconsider this determination.

### **Historic Structures**

Three historic resources occur within the current project, including: the Oak Creek Irrigation Canal, Floor of the Valley Road, and the South Entrance Checking Stations.

#### **Oak Creek Irrigation Canal (Ditch)**

The Oak Creek Irrigation Canal (Ditch) is a functioning historic era irrigation system carrying water from the Virgin River to maintain vegetation in South Campground. The Oak Creek Irrigation Canal retains much of its structural integrity as it still follows its original course and preserves significant examples of its original features, such as the stone whowing drops located just north of the Nature Center. The Oak Creek Irrigation Canal (Ditch) has been determined eligible for listing in the NRHP under Criterion A for its association with the CCC in southern Utah and it was listed in the NRHP on July 7, 1987 (NRIS 86003738). ZION staff also recorded the entire length of the ditch and its associated features as archaeological site 42WS4781.

Oak Creek Ditch consists of 49 features which include retaining walls, control gates, culvert pipes, drop structures and flume/flume support features. The canal is concrete lined for much of its approximate 2-mile length. The historic diversion structure for Oak Creek Ditch is located 180 meters north of Canyon Junction (or the Virgin River Bridge) on the west side of the North Fork of the Virgin River. Below Canyon Junction, the ditch continues south paralleling the Scenic Drive (or Floor of the Valley Road) ending just east of the existing South Entrance Stations. Once the ditch passes under the intersection to the Zion Canyon Visitor Center, the

alignment consists of an earthen ditch that empties into a natural wash returning flow to the Virgin River.

Only a short portion of the ditch is located within the project area – the segment of earthen ditch south of the Zion Canyon Visitor Center intersection. This section of the ditch occurs in very close proximity to the roadway and project area. However, based on the proposed project design, roadway improvements would avoid the ditch alignment. To ensure avoidance, during construction activities, ZION staff would clearly identify the ditch alignment and monitor the work. (See Mitigations below).

#### Floor of the Valley Road

The Zion Canyon Scenic Drive, or more formally known as the Floor of the Valley Road (FVR) was listed in the NRHP in 1996 (NRIS 96000048) under Criterion A for association with early park development of the transportation system; and under Criterion C as the engineering, design and placement of the roadway demonstrate adherence to the philosophy of naturalistic design developed by the NPS Western Office of Design and Construction during the late 1920s and early 1930s.

FVR begins at the south park boundary and entrance stations and continues north for 1.5 miles to the intersection with the Zion Mt. Carmel Highway at Canyon Junction. From this intersection FVR branches off northward (up canyon) closely following the Virgin River, and terminating at the Temple of Sinawava. Contributing features include bridges, sandstone retaining walls and curbing, parking areas, culverts and drop inlets. In the NRHP nomination only the portion of the road from Canyon Junction to the Temple of Sinawava was found to meet National Register criteria for listing. The southernmost or lower 1.5 mile segment was determined to be non-contributing due to lack of integrity. Within this segment, the roadway was realigned and new road features added including center islands at two primary intersections and an overpass bridge, all of which were constructed in association with Mission 66 era park projects. These later modifications fall outside the period of significance for which the remainder of the roadway was evaluated in the NRHP nomination.

When the NPS prepared the nomination in the mid-1990s, Mission 66 era developments were not considered or evaluated as historically significant. For the current project the NPS has re-evaluated the southern 1.5 mile segment of the roadway specifically to analyze the potential for preservation of important Mission 66 era park developments. The NPS has prepared a DOE for this segment of roadway (SHPO concurrence pending).

The proposed South Entrance project area occurs in stretch of the roadway that has experienced several modifications over the last 50+ (see below). As a result, there are no remaining character defining features (buildings or road features) associated with the Mission 66 context within the project area, or visible from the project area. The NPS has determined that the proposed new entrance area would have no adverse effect to the Mission 66 segment of the Floor of the Valley Road (SHPO concurrence pending).

#### South Entrance Checking Stations

Current configuration of the south entrance area includes two checking stations, or fee booths, with directional traffic islands and a separate employee only lane. This layout is the culmination of multiple building episodes over more than 50 years. The east booth, now referred to as South Entrance Station No. 2, was constructed in 1965 and is a Mission 66 development. The west

booth, referred to as South Entrance Station No. 1, was constructed when the South Entrance area was redesigned in 1985. At that time, the first fee booth (i.e., South Entrance No. 2) was completely remodeled from its original Mission 66, mid-century style to reflect a more rustic style appearance. The employee lane was added in 1995.

The oldest structure, South Entrance Station No. 2, is a Mission 66 development. Due to subsequent remodeling efforts, this structure retains no integrity and the NPS has determined it is ineligible for listing in the NRHP. The remaining built structures in the South Entrance area are non-historic recent constructions. The NPS has prepared a DOE summarizing the construction history of these structures and the lack of historical significance. SHPO concurrence is pending.

If new information about historic resources or other subsequent issues are identified as a result of this consultation, the NPS will reconsider this determination.

### **Indian Trust Resources and Sacred Sites**

Trust resources are those natural resources reserved by or for Indian tribes through treaties, statutes, judicial decisions, and executive orders, which are protected by fiduciary obligation on the part of the United States (NPS 2006). There are no Indian trust resources in ZION. Sacred sites are those places having established religious meaning and as locales of private ceremonial activities (NPS 2006). Through consultation efforts (see Ethnographic Resources), the park has not been made aware of any Indian sacred sites at or near the project site. In summary, no Indian Trust Resources nor Sacred sites would be impacted as a result of implementing either Alternative discussed in this EA.

### **Soundscape**

Zion has developed a Soundscape Management Plan to protect sound resources in the park (NPS 2010). Natural sounds (e.g. flowing water, wind blowing through trees, birds calling) predominate in Zion, where visitors have opportunities throughout most of the park to experience natural sounds in an unimpaired condition. The sounds of civilization (mechanical and other human-created sounds) are generally confined to developed areas. In the frontcountry, particularly in Zion Canyon which includes the proposed project area, visitors regularly experience the sounds of automobiles and buses, generators, motorized equipment, and other people that at times interfere with the natural sounds of the park. Construction projects, often geared toward visitor use improvements, occur both periodically and sporadically throughout the Visitor Center/Watchman Campground complex as well as along the Scenic Canyon Drive (6.5 miles) and Mt. Carmel Highway (10 miles).

The proposed project area occurs immediately within the park boundary and is located within the Frontcountry High Development Zone, meaning: 1) both natural processes and the natural landscape are already highly modified; 2) a wide array of visitor services and facilities are available; visitors experience highly social conditions, although there may be some opportunity at certain times for solitude; and limits are only placed on the number of people to address resource protection concerns or facility design capacities (NPS 2001). The proposed project would increase sound levels in the project area throughout the 240 day construction period but would not constitute any uncharacteristic human-created noise given what is already occurring, nor would construction noise expected to extend beyond the designated Frontcountry High Development Zone. Use of various types of equipment (pavers, tampers, rollers, etc.) over the 240 day construction period would produce sounds that are comparatively localized to those

produced from highway transportation throughout the park, and would make an inconsequential contribution to the park's overall soundscape profile (see Mitigation Measures). Any increase in construction noise would cease once construction is complete; therefore no permanent impacts to the soundscape would occur under either Alternative discussed in this EA.

### **Impact Topics Retained for Further Analysis**

The following topics are carried forward for further analysis in this EA:

- Visitor Use and Experience

## **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (direct, indirect, and cumulative impacts or effects) that would occur as a result of implementing the alternatives.

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). In order to determine the cumulative impacts it was necessary to examine past, present, and reasonably foreseeable future actions at Zion National Park. Cumulative impacts are considered for the no action and the preferred alternative. The following projects were identified as part of the Cumulative Impact Scenario for the purpose of conducting the cumulative effects analysis:

### ***Past Actions***

- **1864** – Floor of the Valley Road is established as a Wagon Road.
- **1911-1917** – Federal improvements to Floor of the Valley Road.
- **1923** – Floor of the Valley Road graded and lined with white gravel and two (2) feet red clay shoulders.
- **1958** – Realignment of a 1.4 mile section of the Floor of the Valley Road from the southern boundary of ZION to the Virgin River Bridge.
- **1963-1966** – As part of the Mission 66 Parks Initiative, the South Entrance Station was moved from near the ZION Human History Museum to its current location. The previous sandstone fee booth was dismantled and a new booth was constructed. The Floor of the Valley Road was also realigned and widened.
- **1975** – To address safety concerns, the exiting traffic lane was extended 82 feet at the South Entrance Station.
- **1988** – Realignment of South Entrance: the west pylon was shifted to increase road width, which increased the distance between the two pylons from 30 ft. to 47.5 ft.; a retaining wall was install on the south face of the west pylon to reduce soil erosion alongside the roadway; and a concrete footing was installed under the west pylon.
- **2016-2018** – UDOT State Highway 9 road construction and Town of Springdale paid parking.

- **2017 – South Entrance Monument Reconfiguration:** relocated the South Entrance Monument, install a monument plaza, and reconfigured the adjacent parking area to improve visitor safety, mitigate factors contributing to vehicle congestion in the immediate vicinity, and expand cultural resource protection measures.

### ***Present Actions***

- Kolob Canyon Road Reconstruction & Accessibility Improvements – proposed action would remove and replace pavement to establish a standard road width along the length of the route. Culverts would be resized and/or replaced as needed and guardrails would be replaced to meet federal safety standards. Curbs, pullouts, and other features would replace, removed, reduced, or reshaped to comply with Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) standards.
- Visitor Use Management Plan – the proposed action would develop strategies to manage increasing peak season visitation, such as: establishing visitor capacities, reservation systems, timed-entry, etc.

### ***Foreseeable Future Actions***

- Emerald Pools Trail Complex Repair & Reroute – the proposed action would repair and reroute sections of the Emerald Pool Trail Complex damaged from weather events in 2010 and 2016.
- Watchman Campground Accessibility Improvements – the proposed action would reroute, regrade, and repave the access trail at the River Entrance Station. Improvements to the amphitheater, additional access paths, and campsite refinishing would comply with Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) standards.
- Pa’rus Trail Accessibility Improvements – the proposed action would regrade and repave sections of the Pa’rus trail to ensure full compliance with ADA and ABA standards. Informative waysides and shade structures would also be installed to provide shaded areas along the trail to educate park visitors and help prevent heat related injuries along the trail.
- Visitor Center Plaza and Shuttle Stop Modifications – the proposed action would modify existing park infrastructure to accommodate a transition to electric buses.
- Zion Canyon Scenic Drive Rehabilitation – the proposed action would replace existing asphalt with a stone matrix asphalt to maximize durability and decrease road deformation.
- South Entrance Infrastructure Improvements – the proposed action would redesign the existing south entrance area infrastructure (roadways, parking areas, trails, campgrounds, etc.) to manage increased visitation levels at ZION.

## **Visitor Use and Experience**

### **Affected Environment**

Although Zion has two entrances areas to access the park (east and south fee stations) the southern entrance, and analysis area for this project (see Figure 3), consistently experiences the heaviest use in terms of tourist traffic and regularly overwhelms the transportation system (UDOT 2016). As described in the Purpose and Need, an unprecedented increase in visitation is being experienced at ZION. Collectively, ZION served over 4.5 million visitors in 2017 from around the globe and is experiencing a prolonged peak visitation season throughout the calendar year. Visitors come to enjoy a wide variety of experiences and features offered by the Park. Most visitors enjoy the Floor of the Valley road scenic drive, view the waysides, visitor

center and museum, and hike both the front country and backcountry trails available throughout the park.

Also noted in the Purpose and Need section, it is common for the visitor experience to be diminished at the South Entrance as a result of extended wait times and difficulty in securing vehicle parking. The most current data to reflect existing conditions at the south Entrance approximate the average length of the vehicle queue entering the park at 3,500 feet which correlates to a 21 minute average delay per vehicle (UDOT 2016). Increasing visitation has intensified conditions by extending the vehicle queue regularly into the town of Springdale, approaching one mile in length, and prolonging entry wait times to nearly an hour in duration. The longest recorded vehicle queue reached approximately three miles in length with wait times in excess of 2 hours (NPS 2018).

### **Impacts of Alternative A—No Action**

Under Alternative A, the continual increase of park visitors, particularly during the peak season, would continue to exacerbate current conditions at the south entrance by prolonging entry wait times and worsening vehicle congestion. Vehicles waiting to enter the park would continue to contribute to localized congestion and emissions at the South Entrance. Air quality within many National Park units, including ZION, has been categorized as statistically indistinguishable from the twenty (20) largest U.S. metropolitan areas (Keiser et al. 2018). Adverse impacts experienced by visitors from poor air quality result in the reduced visibility of scenic vistas as well as elevated exposure to harmful air pollutants, specifically ozone. The duration of park entry wait-times would increase respective to the number of visitors simultaneously occupying the area and, as recent trends indicate, increases in annual visitation are expected in future years. These increases would continue to diminish a range of desired visitor experiences and opportunities but not a point where visitors are completely unable to enjoy their visit; annual visitor satisfaction surveys repeatedly indicate more than ninety-eight (98) percent of visitors are satisfied with their experience at ZION (NPS 1997; NPS 2016).

### ***Cumulative Effects***

All of the past, present, and reasonably foreseeable future actions listed in the cumulative impact scenario have or could impact visitor use and experience under Alternative A. All of the ***Past Actions*** undertaken by the park previously described have had positive impacts because they provided visual appeal and integrated necessary safety components while enabling an increased number and larger vehicles overall to enter and exit the park. However, the installation of parking meters throughout the Town of Springdale has encourage visitors to locate areas within ZION to park their vehicles which has resulted in increased vehicle entry wait times earlier in the morning.

All of the ***Present Actions*** undertaken by the park previously described would have beneficial and adverse impacts associated with overall visitor use and experience at ZION. The Kolob Canyon Road Reconstruction & Accessibility Improvement project has adversely impacted visitors by limiting access to only those laborers involved in the road reconstruction project. All visitor access has been restricted to safeguard employee and visitor safety as well as to reduce the amount of time required to complete the project. This closure decreases overall visitor access to ZION and obligates visitors to use alternative areas of the park, to include the heavily occupied ZION Canyon which further exacerbates extended wait times and vehicle congestion at the South Entrance. Moreover, the Kolob Canyon project will correct existing safety concerns and improve accessibility for future visitors which may help alleviate crowded

conditions at the South Entrance by improving an alternate location within ZION for more types of visitors to recreate. The Visitor Use Management Plan may initially have negative impacts on visitor use by requiring visitors to observe capacity limitations and utilize a reservation system or timed-entry system, but the plan is ultimately expected to improve visitor use and experience by reducing congestion in highly popular areas of the park, including the South Entrance.

All of the *Foreseeable Future Actions* proposed by the park as previously described would also have beneficial and adverse impacts associated with overall visitor use and experience at ZION. The Emerald Pools Trail Complex Repair and Reroute project would require temporary closures to areas currently accessible to visitors throughout the complex during the construction period. These closure may compound wait times for visitors wishing to access the area but would ultimately reopen sections of the trail that have been closed since a 2010 weather event. The Watchman Campground and Pa'rus Trail Accessibility Improvement projects would also compound wait times for visitors wishing to access those areas. Increased levels of construction noise and safety barricades may also disrupt the visitor experience. Upon completion, visitors would experience increased educational opportunities in a setting compliant with ABA and ADA standards. Similarly, the Visitor Center Plaza and Shuttle Stop Modification and Zion Canyon Scenic Drive Rehabilitation would also prolong and disrupt visitor enjoyment as described above. Project outcomes are expected to alleviate vehicle and pedestrian congestion, reduce road hazards, and permit ZION to transition to a more sustainable public transit system. The South Entrance Infrastructure Improvements project is expected to expand existing infrastructure to accommodate increasing visitation, improve visitor access to park attractions, and enhance visitor accessibility in and around the South Entrance. Ultimately, the proposed *Foreseeable Future Actions* would provide longstanding benefits to visitor use and experience by expanding visitor access in areas of high use and reducing visitor wait times and congestion throughout ZION.

Collectively, the impacts of past, present, and reasonably foreseeable future actions have and could result in both adverse and beneficial impacts on visitor use and experience. As previously described in this EA, the direct and indirect impacts of Alternative A on visitor use and experience would continue to prolong park entry wait times which may carry over to other areas in the park where construction is anticipated in the foreseeable future. When the impacts of Alternative A are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impacts on visitor use and experience would impact visitors adversely into the foreseeable future since no actions would be implemented to help reduce or mitigate the adverse conditions described. The ongoing incremental impacts of Alternative A would contribute to, but would not substantially change, the impacts that are already occurring.

### **Impacts of Alternative B— (Proposed Action and NPS Preferred)**

Under Alternative B, visitor use and experience would be adversely impacted as a result of area closures and the introduction of construction noise throughout the 240 day construction period. As stated in Alternative B, the need for closures within the South Entrance Fee Station project area has not yet been determined but a vehicle and pedestrian traffic management plan would be developed as part of this project. Closures could last anywhere from a few days to the entire 240 day period but are likely to rotate within the propose project area to accommodate visitors entering the park through the South Entrance. The introduction of construction noise would occur within the Front Country High Development Zone (NPS 2001) where it is



common for visitors to periodically experience noise from a variety of mechanical and other human-made sounds (see Impact Topics Dismissed From Further Analysis: Soundscape section). Mitigation measures implemented prior to and during construction would benefit visitors by publicly announcing the upcoming project, assist in planning their visit accordingly, and clearly identify area closures to maintain visitor safety throughout the 240 day construction period (see Visitor Use and Experience in the Mitigation Measures sections for further details). These mitigation measures have been taken into account in the analysis of impacts above and so would not change the level of impact described.

According to the 2016 Utah Department of Transportation ZION South Entrance Fee Station Traffic Analysis, an additional visitor entry lane would return a 50% increase in the number of vehicles that could be processed and would fully accommodate current entry demands at the South Entrance which would improve the range of desired visitor experiences and opportunities by decreasing the amount of time spent attempting to enter the park (NPS 1997).

### *Cumulative Effects*

Impacts of past, present, and reasonably foreseeable future actions would be the same as described in the Cumulative Effects section under Alternative A. Alternative B would be implemented beginning Fall 2019 so actions that have or could impact visitor use and experience include the previously described include all of the *Past Actions*, the Visitor Use Management Plan, and the South Entrance Infrastructure Improvements. All other actions are expected to be completed prior the onset of the proposed action and would all contribute to accommodating increased visitation volumes as is described for all ongoing or future projects. Collectively, the impacts of these past, present, and reasonably foreseeable future actions have and could result in both adverse and beneficial impacts on visitor use and experience. As previously described in this EA, the direct and indirect impacts of Alternative B on visitor use and experience would be diminished temporarily as a result of repeat exposure to delays and noise during the 240-day construction period. However, visitors would benefit from reduced vehicle entry wait times and congestion while being provided with improved and/or expanded visitor access to park attractions and enhanced visitor accessibility in and around the South Entrance. When the impacts of the site reconfiguration are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on visitor use and experience would have temporary adverse impacts but would result in long-term benefits on visitor use and experience. The incremental impacts of Alternative B would contribute to, but would not substantially change, the impacts that are already occurring.

## COMPLIANCE REQUIREMENTS, CONSULTATION, AND COORDINATION

### List of Agencies and Persons Contacted

Name	Title, Agency
<b>External NPS Consultation &amp; Coordination</b>	
Roger Roper	Deputy SHPO/Historic Preservation Coordinator, Utah State Historic Preservation Office
Larry Crist	Field Supervisor, U.S. Fish and Wildlife Service
Rhett Boswell	Assistant Habitat Manager: Southern Region, Utah Division of

	Wildlife Resources
Sarah Lindsay	Database Manager, Utah Natural Heritage Program
<b>Internal NPS Consultation &amp; Coordination</b>	
Heather Rice	NEPA Specialist, NPS IMR Environmental Quality Team
Amy Pallante	Regional Section 106 Compliance Coordinator, NPS IMR Environmental Quality Team
T. Fielding Link	Historical Landscape Architect, NPS IMR
Rosemary Sucec	Cultural Anthropologist, NPS IMR Anthropology Program
Jeff Bradybaugh	Superintendent, ZION
Cassity Bromley	Chief, Resource Management & Research, ZION
Dave Sharrow	Physical Scientist, Zion National Park
Laura Schrage	Botanist & Vegetation Program Manager, ZION
Janice Stroud-Settles	Biologist & Wildlife Program Manager, ZION
Jim Butterfus	Landscape Architect/Project Manager, ZION
Sarah Horton	Archaeologist & Cultural Program Manager, ZION
Shauna Ertolacci	Environmental Protection Specialist, ZION

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