

## **6.16 CONSTRUCTION IMPACTS**

Construction impacts are commonly short-term and temporary in nature. Typical impacts resulting from an airport construction project include air, water, and noise pollution, as well as potential impacts resulting from generation and disposal of increased amounts of solid and/or hazardous waste. In addition, impacts to surface traffic patterns and interruption of utility services could occur during construction. Impacts resulting from the construction of the proposed replacement airport are not anticipated to be permanent and would occur primarily within relatively close proximity to the construction site.

### **6.16.1 REGULATIONS GOVERNING CONSTRUCTION**

FAA Order 5050.4A requires that proposed airport construction be compliant with FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*, Change 10, Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*. These federally designed control measures would be incorporated into all temporary erosion and sedimentation controls, as well as air and water pollution control measures implemented for all construction projects associated with the proposed replacement airport. Additionally, all permits and plans that pertain to construction projects and the potential impacts to water quality, hazardous waste, and solid waste would be obtained by the City of St. George prior to initiating construction.

### **6.16.2 POTENTIAL DIRECT AND INDIRECT IMPACTS OF THE NO-ACTION ALTERNATIVE**

Selection of the No-Action Alternative would not result in construction; therefore, no construction impacts would occur.

### **6.16.3 POTENTIAL DIRECT AND INDIRECT IMPACTS OF THE PROPOSED REPLACEMENT AIRPORT**

The following sections describe the potential impacts resulting from construction of the proposed replacement airport.

#### **6.16.3.1 Soil Erosion**

During the site-preparation of the proposed construction project, clearing and excavation of the land would occur to remove existing pavement, vegetation, utility lines, and other structures. Specific permanent erosion control measures (i.e., stormwater detention and sediment basins) would be constructed to accompany other temporary measures implemented during construction to effectively minimize the potential for long-term as well as short-term construction-related soil erosion.

Temporary control measures would be specifically identified in an erosion control plan prepared by the city during the project's design phase as identified in FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, to ensure that there are no long-term impacts to the existing drainage systems and water quality in the area. These provisions would require the development of plans and schedules for the control of erosion, dust, and waste disposal; and in coordination

with permit requirements, in particular pertaining to water and air quality (see **Sections 6.16.3.2 and 6.16.3.3**). Provisions may be added or modified during the construction process, depending on the experience of the city's selected contractor. Permanent and temporary erosion control measures include, but are not limited to, exposing the minimum area of erodible earth required for construction, applying temporary mulch with or without seeding to graded or exposed areas, use of temporary crossing protection of watercourses, and installation and maintenance of temporary slope drains, benches, dikes, dams, and sediment basins.

In the case of conflict between standard requirements and other regulatory standards, the pollution control regulations and laws that are the most stringent would be applied. Additional permanent and temporary erosion and pollution control measures may be implemented during construction, if necessary.

### **6.16.3.2 Water Quality**

Adverse impacts to water quality due to erosion and subsequent sedimentation are prime concerns during the airport construction process. **An increase in suspended sediment concentrations, caused by an increased amount of eroded materials entering waterways, could induce impacts on aquatic life within the airport environs.** Impacts could also result from pollutants released from construction materials and equipment, such as fuels, lubricants, bitumen, concrete, and wash water from concrete mixing. To prevent discharge of these materials into surface and groundwater, storage and use of all materials would be confined to the work area; precautions would be taken to limit and minimize the potential for spills. **Detention and retention basins would be constructed and utilized during construction and follow-on operation of the airport to minimize water quality and sedimentation impacts.**

The primary mechanism for delivery of sediment from construction and borrow sources to water resources is stormwater runoff. Sediment yields and temporary increases in total suspended solids from construction activities would depend on the effectiveness of erosion and sedimentation control measures; fillslope and cutslope length; width of existing vegetation buffers; topographic benches and depressions that act as sinks for eroded material; and available sediment delivery pathways (e.g., ditches and culverts). **To the extent practical, upland overland stormwater flows would be diverted around areas of exposed soils. Vegetative buffers would be retained, as feasible, to provide natural barriers to stormwater movement.**

A permit for the discharge of stormwater during construction activities would need to be obtained by the City of St. George prior to initiating construction of the proposed replacement airport. Under the Clean Water Act, the U.S. Environmental Protection Agency (USEPA) regulates stormwater discharges from construction sites involving clearing, grading, and excavation activities, if the disturbed area of land is greater than one acre. The National Pollutant Discharge Elimination System (NPDES) permit program protects water quality by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. In Utah, the State Department of Environmental Quality (UDEQ) administers the NPDES program on behalf of the USEPA. To comply with the Utah Pollution Discharge and Elimination System

(UPDES) Program, the City of St. George would file a "Notice of Intent" (NOI) with UDEQ. The NOI indicates that the operator of the construction site would comply with the erosion, sediment, and stormwater management measures presented in the UPDES General Permit for Storm Water Discharges Associated with Construction Activity, promulgated in the Utah Administrative Code (UAC) R317-8-3.9.

Potential construction impacts and operational impacts would be reduced through the implementation of Stormwater Pollution Prevention Plan (SWPPP). Elements of a SWPPP would include an interconnected system of erosion and stormwater runoff control measures, including best management practices (BMPs) and operational and structural erosion control methods, such as phased clearing and grading; limiting construction to dry periods; installation and maintenance of sediment traps and ponds, interceptor dikes and swales, mulching, filter fabric fencing straw bales, cocoa matting, hydroseeding, and terracing. Although implementation of an effective SWPPP would not remove all total suspended solids (TSS), it is expected to successfully mitigate potential TSS loading and temporary construction impacts on water quality within the proposed replacement airport vicinity.

### 6.16.3.3 Air Quality

Airport construction activities would have a short-term adverse impact on air quality. Air pollution during the construction period would be a consequence of one or more of the following activities:

- Vehicular activity in support of construction operations
- Wind erosion of soils
- Movement of construction vehicles along haul roads
- Excavation
- Cement and aggregate handling

Air pollutants generated by the proposed construction activities would be quite similar to those of automobiles and aircraft. The same National Ambient Air Quality Standards (NAAQS) set forth for vehicles and aircraft must also be met for construction activities. NAAQS has set specific limits for the following criteria pollutants: carbon monoxide (CO), lead (Pb), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter 10 microns (one micron = 10<sup>-6</sup> m) in diameter (PM<sub>10</sub>), and particulate matter 2.5 microns in diameter (PM<sub>2.5</sub>). See Section 6.4 (in the Final EIS), for a detailed discussion of the pollutants and air quality regulations.

Lead (Pb) and ozone (O<sub>3</sub>) are two pollutants that are not normally evaluated when considering the impacts of construction activities. Lead is traditionally not a pollutant associated with construction vehicles or activities and, as such, the impact would be negligible. Ozone is not an emitted pollutant; therefore, it cannot be evaluated with respect to direct emissions from construction vehicles or activities. The impacts from CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are addressed below:

### Construction Vehicle Emissions

The amount of CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions would directly depend on the total number of vehicles employed on the proposed construction projects. A detailed air quality analysis of construction vehicle emissions is provided in **Section 6.4, Air Quality**, in the Final EIS. Construction of the proposed replacement airport would involve using typical construction vehicles. The number and types of vehicles actively used on the site would vary throughout the construction effort depending on project timing, scope of work, funding, weather constraints and other unforeseen factors. Equipment common for use on all parts of the proposed replacement airport project would include backhoes, bulldozers, dump trucks, excavators, graders, loaders, rollers, and scrapers.

The amount of air emissions would depend directly on the total number of vehicles employed on the construction project, which would be dependent upon the type of work being performed.<sup>109</sup> Emissions from construction vehicles would be temporary in nature and would be localized to the construction area and its immediate vicinity. The inventory of construction emissions was provided in **Table 6.19, Construction Emissions Inventory**, in the Final EIS.

As previously discussed in **Section 6.4.3** in the Final EIS, the inventory of construction emissions is given in **Table 6.19, Construction Emissions Inventory**, in the Final EIS. Although a construction schedule has not been determined, construction is assumed to be complete before 2010 and is projected to occur over a three-year period. Construction equipment use non-road engines powered by gasoline and diesel fuel. Gasoline combustion causes higher emissions of CO, whereas diesel combustion causes higher emissions of NO<sub>x</sub>. Considering the volume of soil that would be disturbed to construct the proposed replacement airport and the number of buildings proposed for construction, an inventory with relatively high levels of CO and NO<sub>x</sub> would be expected. These emissions would be temporary and would be mitigated as the construction contractor complies with the guidelines in the FAA *Standards for Specifying Construction at Airports*.<sup>110</sup>

Fill materials may need to be brought in from off-site borrow locations, requiring materials to be hauled into the construction site. Construction-related air emissions would be mitigated through the use of best management and construction practices.

### Fugitive Dust

Fugitive dust, or suspended particulates, would be generated by two physical occurrences – pulverization and abrasion of surface materials by application of mechanical force and entrapment of dust particles by the action of turbulent air currents created by the wind and weather elements and by construction vehicle activity. The air emissions impact potential of fugitive dust sources would depend on the quantity of the dust injected into the atmosphere and the drift potential created by atmospheric conditions at any given moment in time during the

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<sup>109</sup> Refer to **Section 6.4, Air Quality** (in the Final EIS), for the methodology used for estimation of construction emissions.

<sup>110</sup> FAA, *Standards for Specifying Construction of Airports*, Item P-156 *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, AC 150/5370-10A, February 17, 1989.

construction phase. The atmospheric parameters that would determine the drift potential, namely, wind speed and direction, temperature, and stability, and the corresponding construction activity during the varied meteorological conditions would be impossible to predict. Therefore, standards for controlling emissions of fugitive dust for airport projects were developed by the FAA.

The measures contained in FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, were developed and would be followed to directly mitigate impacts of fugitive dust from construction equipment. Measures for controlling fugitive dust on paved roads focus on either preventing materials from being deposited on the roads, or removal of any material from the lanes of travel. The methods commonly used to prevent the deposit of dust include: covering loads in trucks or wetting the material being hauled; cleaning vehicles before they exit the construction site; using bump strips, rumble strips, or grates to shake dust from the vehicles; and paving the construction site access roads nearest to the paved roads.

To minimize the stirring or entrapment of fugitive dust already on roads, mitigation measures would include frequent sweeping and/or flushing of the roads with water. In order to minimize fugitive dust transport, unpaved roads and inactive portions of the construction site would be either watered (achieving a 50 percent reduction in fugitive dust) or chemically stabilized (achieving an 80 percent reduction). Another measure frequently used in the suppression of dust is the placement of seeding and mulching as construction areas are completed. The actual method or combination of methods for abatement or erosion, and therefore, suppression of fugitive dust for the proposed replacement airport, has not yet been determined.

Utah's *Air Quality Rules* specify that fugitive dust must be minimized and the dispersion of fugitive particulate matter be prevented.<sup>111</sup> Construction emissions from the Sponsor's Proposed Project will contribute to fugitive emissions of particulate matter in combination with the Southern Corridor and other nearby development. Therefore, the City of St. George would ensure that all possible measures would be taken to reduce fugitive dust during construction by requiring the construction contractor to submit a proposed method of erosion and dust control, and disposal of waste materials pursuant to guidelines included in the *FAA Standards for Specifying Construction of Airports*.<sup>112</sup> The following methods of controlling dust and other airborne particles will be implemented to the maximum possible extent:

- Minimizing the exposed area of erodible earth
- Applying temporary mulch with or without seeding to exposed erodible earth
- Using water sprinkler trucks for material piles and unpaved haul roads
- Use of particulate trap exhaust filters
- Use of B20 biodiesel fuel or on-road highway-grade ultra-low-sulfur diesel fuel, and oxidation catalysts

<sup>111</sup> Utah Administrative Code, Rule 307-205, *Emission Standards: Fugitive Emissions and Fugitive Dust*, Section R307-205-3, *Fugitive Dust*, August 3, 2004.

<sup>112</sup> FAA, *Standards for Specifying Construction of Airports*, Item P-156 *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, AC 150/5370-10A, February 17, 1989.

- Reduction of idling of diesel engines
- Using covered haul trucks to move construction material
- Using dust palliatives or penetration asphalt on haul roads
- Using plastic sheet coverings for material piles

The complete list of assumptions and calculations used to prepare the construction equipment emissions inventory is presented in **Appendix H** in the Final EIS.

#### 6.16.3.4 Noise

Earthwork and site preparation activities would result in elevated levels of noise generated by the types of equipment likely to be used on the proposed construction site. Noise from this equipment would vary from model to model, and would change according to the operation involved.

**Table 6.330** provides an estimate of the typical sound level from each item of construction equipment at a distance of 50 feet. It also provides an estimate of the total sound energy produced by each item of equipment during an average day when it is in use. The total sound energy is a function of the machine's sound level and the amount of time it operates. In any given construction situation, the total sound energy would also be a function of the number of machines in service at any one time. (Since the details of the proposed construction methods are not known at this time, these levels are provided to give a sense of the noise impact. No calculations have been prepared based on proposed construction methods and types and number of equipment.) Although pile drivers and rock drills produce the highest sound levels, it is dump trucks, air compressors, and concrete mixers that, due to their greater numbers and longer operating times, that tend to produce the most total sound energy.<sup>113</sup> Noise levels resulting from operation of construction equipment are generally higher than those generated by normal traffic flows.

However, with few exceptions, there would be limited off-airport construction-related noise impacts because of the distance of most residential areas from the sound sources at the construction site. The nearest neighborhood is approximately 1.5 statute miles (8,000 feet) west-northwest of the proposed replacement airport site, east of River Road. The next closest neighborhood is approximately 2.2 statute miles (11,300 feet) west of the proposed replacement airport site.

**Table 6.330** also shows the estimated sound level of each type of construction equipment at a distance of 8,000 feet. With the exception of the pile driver and the rock drill, the noise levels of all other types of equipment when they are operating on the replacement airport site itself would be less than 50 dBA at the nearest

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<sup>113</sup> May, D.S.N., Editor, 1978. *Handbook of Noise Assessments*, Page 215. Van Nostrand Reinhold Company, New York.

residential area. The pile driver and the rock drill, the two loudest types of equipment, would produce noise levels between 50 and 60 dBA, very near the estimated ambient sound levels in residential areas in the St. George area.<sup>115</sup>

#### 6.16.3.5 Solid/Hazardous Waste

It is expected that a moderate amount of construction waste would be generated from construction of the proposed replacement airport. The majority of the waste material would come from the removal of the existing pavement, structures, and other debris to accommodate construction of the replacement airport facilities. All construction waste would be disposed in accordance with St. George city and Washington County Solid Waste District guidelines and applicable Federal regulations. Clean construction debris (concrete, asphalt, etc.) would be used as fill material on the proposed replacement airport site and off-site, as needed, or recycled in accordance with present practices. The disposal of demolition and construction debris would be arranged between the City of St. George, the construction manager, and a licensed waste hauler.

In the event of a release of hazardous materials (including petroleum products) in an amount greater than the reportable quantity as established by the USEPA, measures would be taken to contain and possibly remediate the release and the National Response Center would be contacted and provided details of the incident. Following consultation with the National Response Center, measures would be taken to remediate the effects of the release. At the time of the release, additional coordination would also take place with the UDEQ Division of Solid and Hazardous Waste to identify and implement appropriate control, containment, and remediation efforts. If hazardous materials are identified within the proposed replacement airport study area during construction, consultation with the appropriate state agency UDEQ Division of Solid and Hazardous Waste or USEPA would be initiated by the City of St. George.

#### 6.16.3.6 Surface Transportation

Standard traffic engineering techniques would be utilized to maintain traffic during construction. However, temporary impacts on vehicular traffic patterns and volumes could occur, resulting in increased commercial traffic on neighborhood roads, increased traffic congestion, increased truck traffic, increased travel times to common destinations, and increased travel distances due to detours.

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<sup>115</sup> Ambient noise in residential areas is a function of population density. Based on a formula correlating population density with ambient noise, and assuming an average population density of 2,000 to 2,500 people per square mile in the local area, typical sound levels in St. George and Washington City neighborhoods is estimated at 55 dBA. The source of the estimation formula is: Galloway, W.S., et al. *Population Distribution in the United States as a Function of Outdoor Noise Levels*. EPA-550-9-74-009, June 1974. See Section 6.3 for further discussion on the estimation of "indigenous noise" in residential areas.