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National Park Service  
U.S. Department of the Interior



Denali National Park and Preserve  
Alaska

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## **Replacement of Restroom Facilities at Polychrome Overlook, Teklanika Rest Stop, and Teklanika Campground Environmental Assessment March 2009**

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March 2009



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## ACRONYMS AND ABBREVIATIONS

§	Section
ABA	Architectural Barriers Act
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ANILCA	Alaska National Interest Lands Conservation Act of 1980
bgs	below ground surface
BMPs	Best Management Practices
CAA	Clean Air Act of 1977
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COBC	Compliance Order by Consent
dBA	Decibels A-weighted
DCP	Development Concept Plan
DO	Director's Order
EA	Environmental Assessment
EIS	Environmental Impact Statement
E.O.	Executive Order
ESA	Endangered Species Act 1973
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GMP	General Management Plan
HDPE	high-density polyethylene
MBTA	Migratory Bird Treaty Act 1918
MP	mile post
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NOI	Notice of Intent
NPS	National Park Service
park road	Denali Park Road
RFFA	reasonably foreseeable future action
SST	Sweet Smelling Toilet
the park	Denali National Park and Preserve
U.S.	United States
USC	United States Code
USDOI	U.S. Department of Interior
USEPA	U.S. Environmental Protection Agency
USFHA	U.S. Federal Highway Administration
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

## **1.0 INTRODUCTION**

The National Park Service (NPS) is considering replacing the restroom facilities at Polychrome Overlook, Teklanika Rest Stop, and Teklanika Campground (Figure 1) in Denali National Park and Preserve (the park). The NPS is proposing to remove the existing chemical toilets in these sites and replace them, potentially in different locations, with non-chemical toilet facilities.

The Teklanika Rest Stop, Polychrome Overlook and the Teklanika Campground contain chemical toilets that accommodate more than 220,000 visitors per season. These facilities generate over 3,000 gallons per day of chemical laden wastewater which is pumped and hauled to the Riley Creek Wastewater Treatment Facility.

In the spring of 2005, the Alaska Department of Environmental Conservation (ADEC) and the NPS entered into a Compliance Order by Consent (COBC) to correct the Riley Creek Wastewater Treatment Facility non-compliance with the regulations for wastewater treatment discharge. The park conducted a comprehensive study of the waste streams entering the Riley Creek Wastewater Treatment Facility and found that the chemical toilets were the greatest contributing factor to the overloading of the treatment facility. The NPS agreed to remove the chemical toilets as one of the steps to bring the wastewater treatment facility into compliance with state regulations (ADEC 2005).

In addition, the park has been notified by the chemical toilet vendor that they are no longer manufacturing replacement parts for these toilets. The park is currently using stockpiled parts to maintain the existing inventory, but this is not a sustainable practice as all replacement parts were expected to be used by the end of the 2008 visitor season.

This environmental assessment (EA) analyzes the proposed action and alternatives and their impact on the environment. The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1508.9). The complete proposed action and alternatives considered are described in Chapter 2.

### **1.1 Purpose and Need for Action**

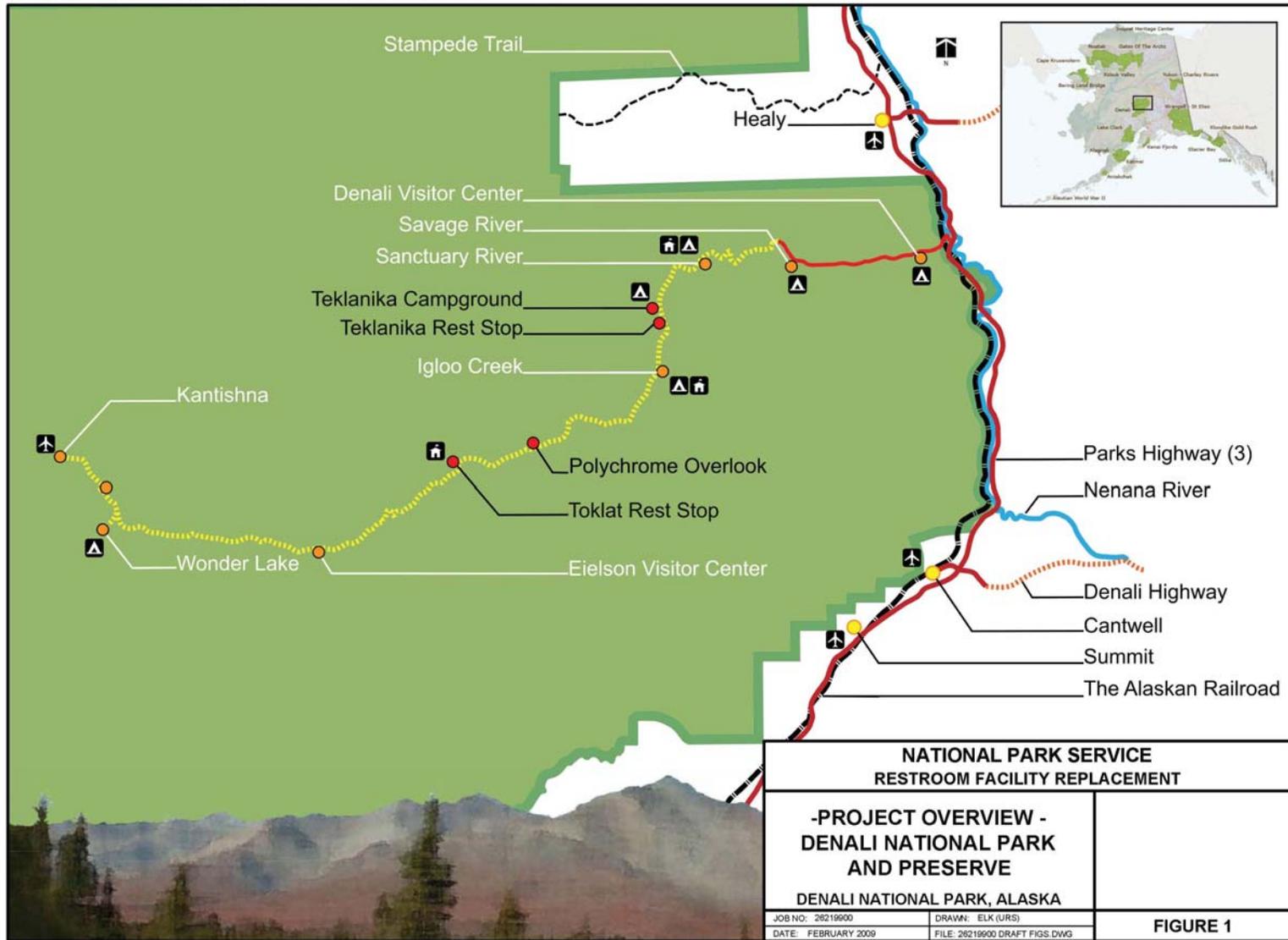
The purposes of the proposed project are to:

- Help bring the Riley Creek Wastewater Treatment Facility into compliance with state regulations.
- Provide sanitary restroom facilities that are designed to efficiently manage the human waste generated by visitors to the park.
- Replace obsolete toilet systems with functional systems that are able to be efficiently maintained.
- Provide a more sustainable operation.

The project is needed to reduce the severe shock loading the chemical laden wastewater puts on the wastewater treatment facility. Installation of an alternate restroom system would also reduce the wastewater pumping and hauling requirements, reducing annual maintenance costs, and improving the operational efficiency of park management. An alternate system would also reduce human exposure to these chemicals.

**Figure 1. Project Location Map**

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## 1.2 Background

Most park visitation occurs during the months of June, July, and August, even though the park is open year-round. Almost all of the visitor use is concentrated along the 90-mile Denali Park Road (park road) corridor. The park road typically opens for vehicular traffic sometime after mid-May and closes to motor vehicles in mid-September. Weather is the determining factor for the actual opening and closing dates of the park road.

During the peak use season, the chemical toilets at Teklanika Rest Stop are pumped every day and the chemical toilets at Polychrome Overlook are pumped every other day. Between the time of road opening and early June, portable toilets are located at these rest stops because the chemical toilet systems use water and the temperatures frequently dip below freezing during this time. The portable toilets are generally pumped every other day. The Polychrome Overlook restroom facilities are closed by the beginning of September and are not open for the annual road lottery in mid-September. The Teklanika Rest Stop toilets are pumped approximately weekly in the late season, until they are closed by the beginning of September. Portable toilets are used during the annual road lottery.

Restroom facilities at the Polychrome Overlook are proposed to be removed in 2009. An additional five-place urinal restroom building is being proposed for the Toklat Rest Stop to compensate for the removal of facilities at the Polychrome Overlook. The Teklanika Rest Stop and Campground have been proposed for replacement in 2010. However, due to irreversible damage to the Teklanika Campground chemical toilet facilities from an atypical ice flow, the lower loop of the Teklanika Campground could be proposed for replacement in 2009.

## 1.3 Park Purpose and Significance

In 1917, Congress established Mt. McKinley National Park:

*“... as a public park for the benefit and enjoyment of the people ... said park shall be, and is hereby established as a game refuge”* (39 Statute 938, as referenced in NPS 1986a).

Additions to the park were made in 1922 and 1932 to provide increased protection for park values, in particular wildlife, and moved the eastern park boundary from just east of the Sanctuary River to the western bank of the Nenana River.

The Alaska National Interest Lands and Conservation Act of 1980 (ANILCA) added approximately 2,426,000 acres of public land to Mt. McKinley National Park and approximately 1,330,000 acres of public land as Denali National Preserve and re-designated the entirety Denali National Park and Preserve. ANILCA directs the NPS to preserve the natural and cultural resources in the park for the benefit, use, education, and inspiration of present and future generations.

## 1.4 Laws, Regulations, and Policies

### Organic Act and General Authorities Act

The NPS Organic Act of 1916 and the General Authorities Act of 1970 prohibit impairment of park resources and values. The 2006 NPS Management Policies use the terms “resources and values” to mean the full spectrum of tangible and intangible attributes for which the park is established and managed, including the Organic Act’s fundamental purpose and any additional purposes as stated in the park’s establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in an unimpaired condition that will allow people to have present and future opportunities for enjoyment of them.

The evaluation of whether impacts of a proposed action would lead to an impairment of park resources and values is included in this EA. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

## **1.5 Relationship of Proposal to Other Planning Projects**

Many plans have been developed for Denali, including the 1986 General Management Plan (GMP) and the Entrance Area and Road Corridor Development Concept Plan (DCP)/Environmental Impact Statement (EIS) (NPS 1986a, 1997a). The GMP is a broad planning document, setting general management direction for the park. The plan's focus is on managing ever-increasing visitor use to ensure access to a high quality wilderness experience for visitors of all ages and abilities while ensuring that the natural and cultural values are not degraded. The DCP/EIS amended the 1986 GMP. The DCP/EIS provides analysis and management direction for the frontcountry of Denali, including direction for road management and facility development for the entrance area and road corridor.

The Park Development Zone generally includes the road corridor and major facilities. The proposed project is consistent with the existing zoning and would not represent a change or amendment to the park's 1986 GMP or the park's 1997 DCP/EIS.

This EA is consistent with the goals identified in the GMP and the DCP/EIS for management of the park road. The project would address visitor safety as well as employee safety.

EAs have also been conducted regarding the Front Country Wastewater Treatment Facility, Eielson Visitor Center, and the Toklat Rest Stop. This project is directly related to the Front Country Wastewater Treatment Facility EA.

## **1.6 Issues**

To focus this EA, the NPS selected specific issues (also called "Impact Topics") for further analysis and eliminated others from evaluation. Issues selected for analysis in this EA were determined through internal scoping with the park and NPS Alaska Region staff.

### **1.6.1 Issues Selected for Detailed Analysis**

#### Natural Sounds

With vast undeveloped expanses, the park offers outstanding opportunities for natural sounds to prevail. NPS Director's Order (DO) 47 covers soundscape preservation and noise management, affirming the need to preserve and/or restore natural sounds. Natural sounds in the vicinity of the project area could be impacted by demolition, construction and operation activities. Human sounds are concentrated in the developed sites, particularly during the peak use season of the summer months.

#### Recreation and Visitor Use

The GMP and DCP/EIS for the park identify goals for recreation and visitor use, as well as the related restroom facilities to support these uses. The existing restroom facilities at these three sites are water-based and cannot adequately serve visitors in the shoulder season when temperatures drop below freezing, so portable toilets must be brought into the park. During the peak use season, these existing restroom facilities require high levels of service; the Teklanika Rest Stop holding tank must be pumped daily and the Polychrome Overlook holding tanks must be pumped every other day. The existing restroom facilities are also facing obsolescence, as replacement parts are no longer unavailable to service the chemical toilet facilities.

## Soils and Vegetation

The NPS seeks to maintain the natural vegetation and soils in the park (NPS 2001). While the proposed project would be largely located on sites that have previously supported developed facilities, existing soil strata could be altered or removed and land contours could be changed as a result of construction and demolition activities. New areas could also be impacted. There is substantial heaving and subsidence of the deck structure at the Polychrome Overlook; an buried ice lens has been identified below the existing structure.

The areas support low and tall shrub vegetation, mixed white spruce and white spruce-black spruce hybrids, and aspen vegetation. Some vegetation could be removed or disturbed during the construction and demolition processes. Invasive plants could colonize disturbed soils.

## Visual Quality

Visual resources within the project areas could be altered by facilities being constructed or removed. The project areas are generally visible from the park road and from trails and viewpoints. Traffic and dust from the construction and demolition phases of the project could potentially impact the visual resources in the vicinity of the site.

## Water Resources

The Riley Creek Wastewater Treatment Facility is not in compliance with state regulations for wastewater treatment discharge; the existing chemical toilet facilities have been found to be one of the greatest contributing factors to exceeding the standards. The proposed project would need to be designed to manage wastewater effluent so that it would not impact groundwater or surface water resources. The Toklat Rest Stop and the Teklanika Campground are located adjacent to surface water bodies. Water is currently pumped from a well to a holding tank near Teklanika Campground.

## Wildlife Habitat

One of the key purposes of the park identified in the legislation is the preservation of wildlife (39 Statute 938). A variety of mammals and birds utilize the area along the road in the vicinity of the project areas. Construction and demolition activities associated with the proposed project could cause animals to disperse from nearby areas. While the proposed projects are largely associated with previously developed sites, small amounts of additional habitat could be directly impacted.

Although no species listed under the Endangered Species Act (ESA) of 1973 occur in the park, one federal species of concern, the olive-sided flycatcher, could occur near the project area. The Teklanika Campground and the Toklat Rest Stop are likely areas for this species as they are directly adjacent to wet drainages. However, Teklanika Rest Stop and the Polychrome Overlook are open areas as well and may also be likely foraging areas for the olive-sided flycatcher. This species nests in woodland/dwarf forests and in open coniferous forests with bog ponds and marshy streams. It is most associated with these open, wet areas due to the rich food source these habitats provide in the form of large flying insects (Alaska Department of Fish and Game [ADFG] 2008). Nests are typically built in black spruce trees near such drainages (NPS 2005b).

The State of Alaska maintains a “species of special concern” list. Species on this list that occur within the park include the American peregrine falcon, northern goshawk, olive-sided flycatcher, gray-cheeked thrush, and blackpoll warbler. These species could potentially occur in the project area, although little is known about population abundance or distribution (ADFG 1996).

### **1.6.2 Issues Dismissed from Detailed Analysis**

The following issues have been considered but dismissed from detailed analysis. Issues dismissed from detailed analysis are not addressed further in this EA.

## Air Quality

Both the Clean Air Act of 1977 (CAA) and NPS 2006 Management Policies (NPS 2006) require the NPS to consider air quality impacts from their projects. The park is a Federal Class 1 Air Quality Area under the CAA. Air quality is monitored near park headquarters and no exceedances of National Ambient Air Quality Standards have been documented within the park (Blakesley 2005). Construction associated with this project could generate fugitive dust, exhaust from dump trucks, chain saws, generators, and other machinery. These types of short-term, localized impacts are unlikely to exceed the National Ambient Air Quality Standard.

## Biodiversity

The NPS management principles include the conservation of biodiversity (Management Policies 2006 and NPS Advisory Board Report 2001). The proposed project would occur within developed sites, largely within previously impacted areas. The proposed project would not be expected to change the biodiversity of the park or its functions.

## Climate Change

Secretarial Order 3226 directs federal agencies to ensure that climate change impacts are taken into account in connection with departmental planning and decision making. The 2006 Management Policies directs the NPS to operate and manage facilities, vehicles, and equipment in a manner to minimize the consumption of energy, water, and nonrenewable fuels. The proposed project would be expected to reduce the amount of sewerage tonnage hauled for disposal and thus could potentially reduce vehicle emissions. A propane generator could be used to meet new electrical demands for odor control in Alternatives 2 and 3 for Teklanika Rest Stop. The proposed project would not be expected to contribute to climate change.

## Coastal Zone

The Coastal Zone Management Act of 1972, as amended, and the Alaska Coastal Management Act of 1977 govern activities within the coastal zone. The proposed project, to replace toilet facilities, does not include uses or activities that would require a consistency review of applicable Alaska and district coastal management enforceable policies.

## Cultural Resources

The NPS has completed the cultural resources review required by Section (§) 106 of the National Historic Preservation Act (NHPA) of 1966 and NEPA. No historic properties would be affected by the proposed project. An Assessment of Affect was signed by the Park Superintendent on January 5, 2009.

## Environmental Justice

Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed project would not result in significant changes in the socioeconomic environment of the area, and is expected to have no direct or indirect impacts to minority or low-income populations or communities.

## Floodplain Management

The project site at the Toklat Rest Stop is located on the alluvial fan (floodplain) of an intermittent stream. E.O. 11988, *Floodplain Management*, requires federal agencies to evaluate the likely impacts of federal actions on floodplains. This E.O. requires that short- and long-term adverse impacts associated with occupancy, modification, or destruction of floodplains be avoided whenever possible. Indirect support of development and new construction in such areas should also be avoided wherever there is a

practicable alternative. To comply with these orders, the NPS has established procedures for implementing floodplain protection and management actions in units of the National Park System. The revised Procedural Manual 77-2 Floodplain Management Guideline provides guidance for managing activities which result in the modification or occupation of floodplains, or which result in impacts to floodplain values (NPS 2003b).

The siting of the Toklat Rest Stop was evaluated in an EA and Floodplains Statement of Findings in 2004 (NPS 2004). In that document the NPS found that:

*“...there are no practicable alternatives to disturbing floodplains and to building facilities within floodplains for the construction and operation of the proposed Toklat Rest Area in Denali National Park. Floodplains have been avoided to the maximum practicable extent. The floodplain impacts that could not be avoided will be minimized. The NPS acknowledges that some natural localized floodplain processes of erosion, deposition and canalization would be altered by the Rest Area project. The NPS acknowledges that the Rest Area facilities, built in a floodplain, would face some risk of damage by flooding and the NPS accepts that risk.”*

The construction of an additional Sweet Smelling Toilet (SST) structure placed in the existing parking lot at the Toklat Rest Stop would not change the impacts to floodplain resources already evaluated and approved by the Finding of No Significant Impact (FONSI) for the 2004 EA.

### Socioeconomics

Construction activities and costs associated with the proposed project could provide a temporary stimulus to the local or regional economy. Wages, overhead expenses, material costs, and profits would last only as long as the project, thus impacts to local communities and socioeconomic resources would be short-term.

Traffic delays during construction would be minimized. Work that would substantially impact traffic flow would be accomplished during the night hours; all other work would be performed during daylight hours. Delays would have a temporary impact on tourism services and businesses.

### Subsistence

Subsistence activities are not allowed in the project area. An ANILCA §810 evaluation is included in Appendix A.

### Threatened and Endangered Species

The ESA requires an analysis of impacts on all federally listed threatened and endangered species. In compliance with ESA §7, the U.S. Fish and Wildlife Service (USFWS) has been consulted. No federally designated threatened or endangered species are known to occur within the park (Swem 2000) and none are anticipated to be affected by this project. No species proposed for listing occur in the park and no critical habitat occurs in the park. Species of special concern are addressed in the wildlife habitat sections of this EA.

### Wetlands

E.O. 11990, *Protection of Wetlands*, directs federal agencies to avoid adverse impacts to wetlands. No direct impacts to wetlands would occur under the proposed project. Silt fencing around the construction project would be required.

### Wilderness

Project activities would not occur in designated or eligible wilderness; no structures or fill areas would encroach upon designated wilderness areas. All of the proposed alternatives would be built in the non-wilderness road corridor, in the Park Development Zone. This zone extends 150 feet from the centerline of the existing road, or 150 feet from the edge of pullouts existing as of 1980. Construction would not

directly encroach upon the designated wilderness area. The project would not substantially change the visual impacts of the park road as seen from nearby wilderness.

### **1.7 Permits and Approvals Needed to Implement Project**

#### Clean Water Act §402(p) [33 United States Code (USC) 1342(p)]

Construction projects that expose more than 1 acre of cleared land to erosion and runoff require a National Pollution Discharge Elimination System permit from the U.S. Environmental Protection Agency (USEPA). A Notice of Intent (NOI) would be provided to USEPA to use the Construction General Permit. A copy of the NOI would be provided to the ADEC for comment. The construction contractor would be required to prepare a Storm Water Pollution Prevention Plan for submission to ADEC.

## **2.0 ALTERNATIVES**

### **2.1 Introduction**

This chapter includes a description of the no action and action alternatives for each site and a brief summary of the impacts of the alternatives. Also discussed are any alternatives and actions that have been considered but dismissed from further analysis. Table 2-1 summarizes the components and attributes of each alternative. Table 2-2 summarizes the predicted impacts for each alternative on the issues of concern.

The Park proposes to replace chemical toilets with a low odor vault style toilet that is called a Sweet Smelling Toilet or SST. The SSTs proposed in action alternatives for each site are designed to better manage odors for the user, decrease the maintenance demands, and eliminate chemicals from the waste stream. With the exception of the urinals, the SSTs would serve either gender, unless specified in the alternative. The NPS has installed SSTs in other locations in the park, such as Toklat Rest Stop, Riley Creek Campground, Savage Campground and Primrose Rest Stop.

### **2.2 Teklanika Campground**

There is a no action alternative and one action alternative being considered for this site. This site is not within the floodplain and has no surface water features associated with it, although there is a high water table near the site. During the winter of 2007 – 2008, there was an ice backup of up to 3 feet in some areas of the campground.

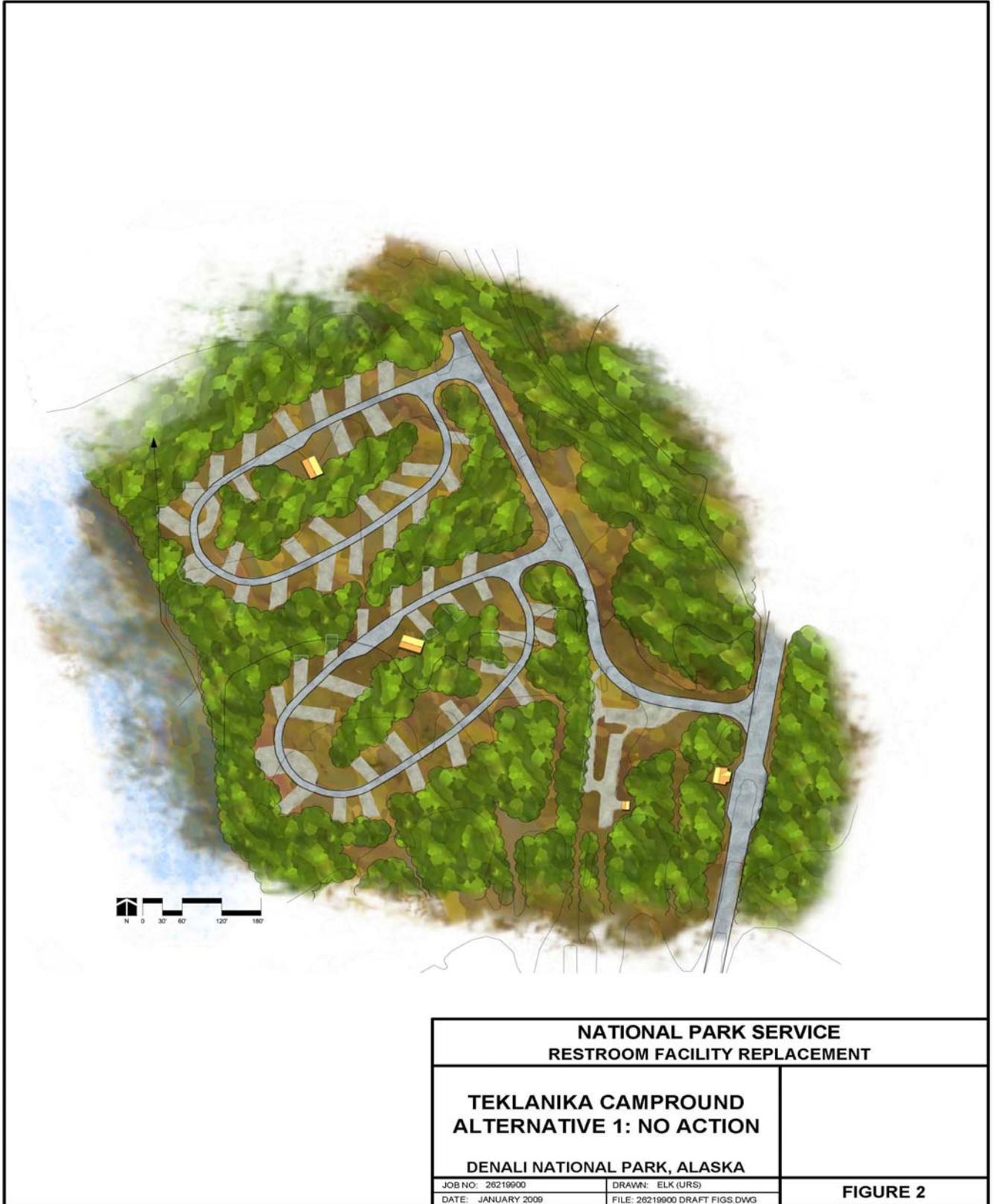
#### **2.2.1 Teklanika Campground Alternative 1 – No Action**

The Teklanika Campground currently has two toilet buildings, which contain four chemical toilets each (Figure 2). Each building has an external potable water standpipe for visitor use. This alternative assumes two working facilities; however, one of the two existing facilities at this campground is not operational at this time. The facility that is not operational would be repaired, consistent with current maintenance operations.

#### **2.2.2 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative)**

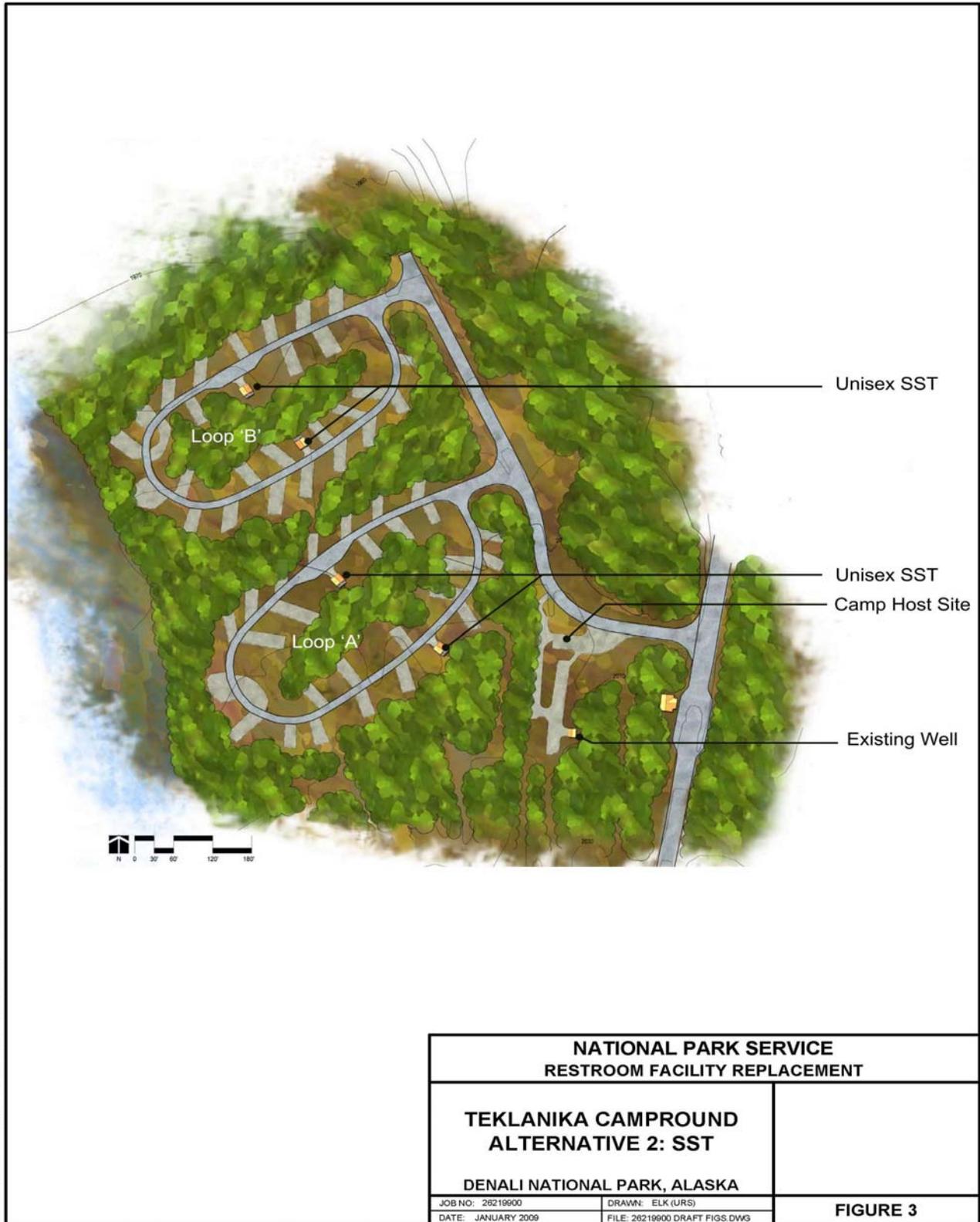
This alternative would involve replacing the existing chemical toilet facilities with two, double vault SSTs per campground loop. For each campground loop, one of the double vault SSTs would be sited in the same area as the existing chemical toilet structure. The remaining double vault SST would be sited on the opposite side of each campground loop so visitors would have two central locations to access restroom facilities within each campground loop (Figure 3). The final locations of the two SST facilities would minimize or avoid disturbance of existing vegetation to the greatest extent possible. Each new SST structure would have an external potable water standpipe or deep wash sink for visitor use. Native plant material would be used to revegetate any areas that may be disturbed by construction. Upon completion of construction, the proposed facilities would be functional throughout the open season of the park road.

**Figure 2. Teklanika Campground Alternative 1: No Action**



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**Figure 3. Teklanika Campground Alternative 2: SST (NPS Preferred Alternative)**



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## **2.3 Teklanika Rest Stop**

There is a no action alternative and two action alternatives being considered for this site. The existing bus shelter and viewing deck would remain in all options. The two action alternatives have a similar number of facilities, but differ in the grouping and configuration of the buildings.

An adaptive use management approach would be utilized to evaluate the efficacy of the replacement toilet facilities at Teklanika Rest Stop. The concept is that a one-to-one replacement would not be necessary to meet visitor needs. Based on observations of visitor use by NPS staff, the decrease in facilities from 33 to 14 toilets would be adequate (Scholten, 2009). Comments were made by NPS staff and bus drivers that a urinal would be needed if the toilets were converted to SSTs. Indicators that NPS staff would use to assess visitor needs would include excessive wait times based on rest stop use studies and notable visitor dissatisfaction results in visitor use surveys.

The adaptive use management concept proposed would evaluate the minimum build out of 14 SSTs to 16 SSTs and one five-place urinal, with the possibility to increase the number of toilets to a one-to-one replacement if the minimum build out does not adequately meet visitor needs.

During the construction of either new rest stop, a temporary rest stop would be set up at the large pullout at Milepost 26 of the park road.

### **2.3.1 Teklanika Rest Stop Alternative 1 – No Action**

There are currently a total of 29 chemical toilets and a five-place urinal at this site. All existing facilities would stay the same. There would be no decrease in number of facilities and no improvements to the current chemical toilets (Figure 4).

### **2.3.2 Teklanika Rest Stop Alternative 2 – SST; Adaptive Use Management**

Alternative 2 includes minimum and maximum build out options (Figure 5). The minimum build out would be implemented first and the adaptive management system would be used to evaluate whether an increase of facilities is necessary. The minimum build out option would include 10 SSTs and four Architectural Barriers Act (ABA) accessible SSTs. The maximum build out option would add an additional 12 SSTs and two ABA accessible SSTs. Both minimum and maximum build out options would include the following:

- five-place flow through style urinal SST;
- janitorial storage unit;
- 12 bus parking spaces;
- four automobile parking spaces; and
- access for pump trucks.

The existing footprint of the deck, shelter, and toilet facilities would be similar to the No Action alternative. However, the planters currently located between the deck and parking area would need to be removed in order for the pump truck to have access to the SSTs for cleaning. Existing structures would be retained but modified to remove the existing chemical toilets and associated plumbing. Active area odor control (fans) would also be a part of Alternative 2. This would involve piping gases from the underground SST vaults to an exit point with odor control structures downwind of the rest stop facilities. Piping would be laid as closely as possible to the existing edge of the parking area in order to minimize or avoid disturbance to existing vegetation. This alternative requires a propane generator to supply power to operate the active odor control for both the minimum and maximum build out.

*Vehicular Circulation:*

Vehicular circulation for Alternative 2 remains largely unchanged from the No Action alternative. Parking for 12 buses and four cars is currently available at the rest stop. Patterns for bus and vehicular circulation would not change. However, the pump truck would need to access multiple SST vault locations for cleaning, instead of a central point for clean-out, as currently exists for the chemical toilets. This poses an increased hazard of raw sewage dripping from the suction hose onto the toilet seat, toilet area and deck used by visitors. It would be necessary for the pump truck to park as close as possible to the new SSTs. Therefore, access for the pump truck would be provided along the entire edge of the deck next to the parking area.

### **2.3.3 Teklanika Rest Stop Alternative 3 – SST ‘Pods’; Adaptive Use Management (NPS Preferred Alternative)**

The minimum and maximum build out option under Alternative 3 mirrors that of Alternative 2, except that all the restroom structures would be new. The minimum build out option would include 12 SSTs and four ABA accessible SSTs. The maximum build out option would add an additional 10 SSTs and two ABA accessible SSTs (Figure 6). Under Alternative 3, the minimum build out would include a structure that contains a storage area, a multi-unit urinal, and four SSTs. However, this alternative would also include three structures, or ‘pods,’ containing four SSTs. The maximum build out would be achieved by adding four more SSTs to the back of the minimum build ‘pods.’ Both minimum and maximum build out options would include the following:

- five-place flow through style urinal SST;
- janitorial storage unit;
- 12 bus parking spaces;
- four automobile parking spaces; and
- access for pump trucks.

The SSTs would be located on the west side of the site and extend north from the existing deck. The voids created by the removal of the chemical toilets would become part of the viewing deck. The minimum build out design would utilize the prevailing winds to vent odor, instead of mechanically venting odor. If the maximum build out occurred, active odor control could be used to vent gases underground to an odor control structure away from the facilities. This alternative requires a propane generator to supply power for active odor control only if the maximum build out is constructed.

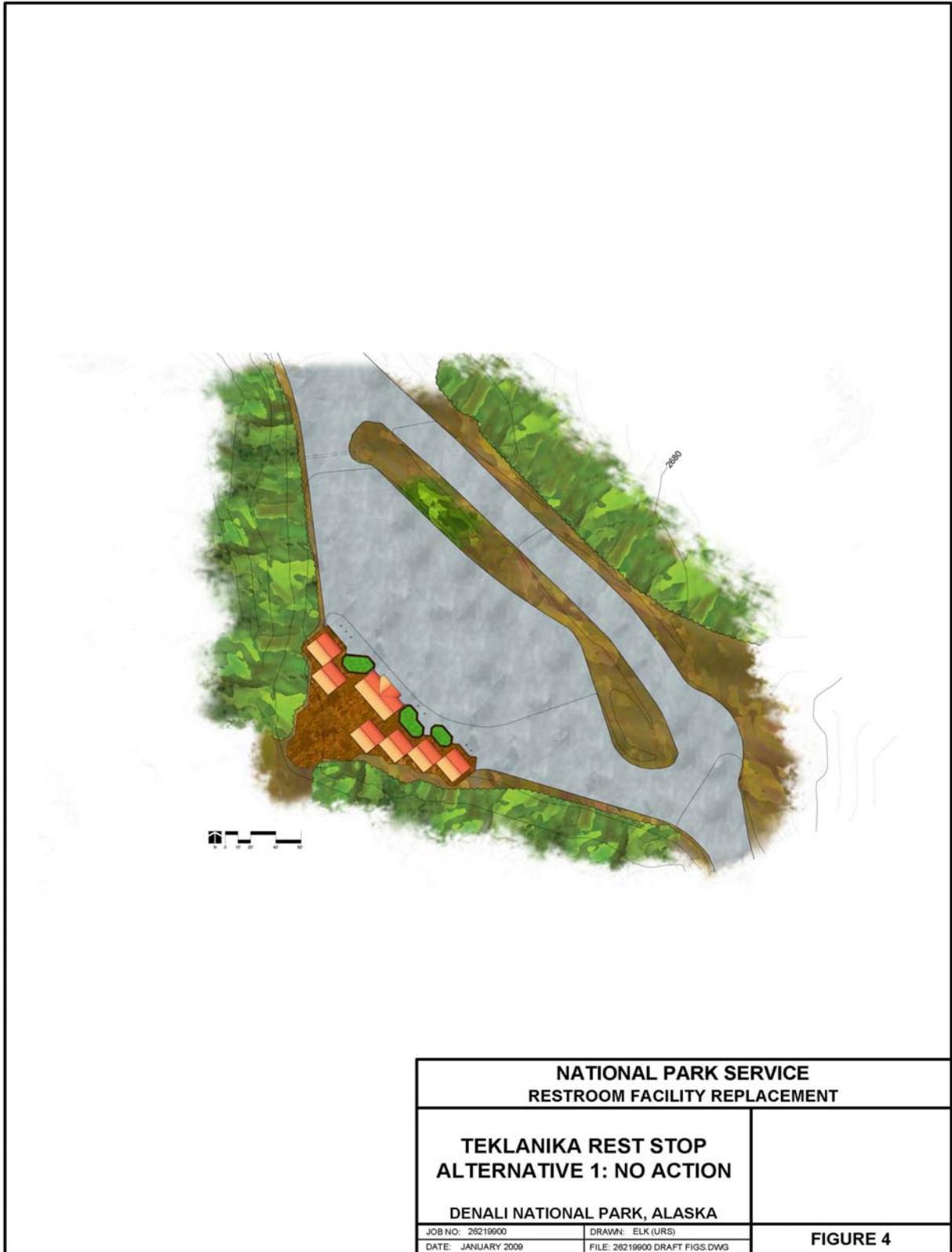
#### *Vehicular Circulation:*

A service entry drive would be located on the west side of the site. A pump truck would be able to access the SSTs without affecting pedestrian circulation. Cleaning operations would take place during times when visitors are on site; however, cleaning operations would not pose contamination hazards to the viewing deck and visitor use areas. The service access would expand the existing parking area slightly to the west in order to provide adequate room for the pump truck to access all of the SSTs. A new access to the parking lot for buses and cars would be provided on the east side of the SSTs. Parking spaces for 12 buses and five cars would be provided. This new layout would alter the existing vegetated island that currently separates the parking area from the road. Areas disturbed during construction would be revegetated.

#### *Pedestrian Circulation:*

The existing deck would be reduced on its east side and the areas previously covered by the deck would be revegetated. Visitors would be able to approach the SSTs via the viewing deck and new boardwalk that accesses the individual toilets. It is intended that visitors would leave and approach the buses along the corridor between the bus parking spaces and the viewing deck. This would ensure that bus drivers could clearly observe pedestrians while entering and leaving the site.

**Figure 4. Teklanika Rest Stop Alternative 1: No Action**



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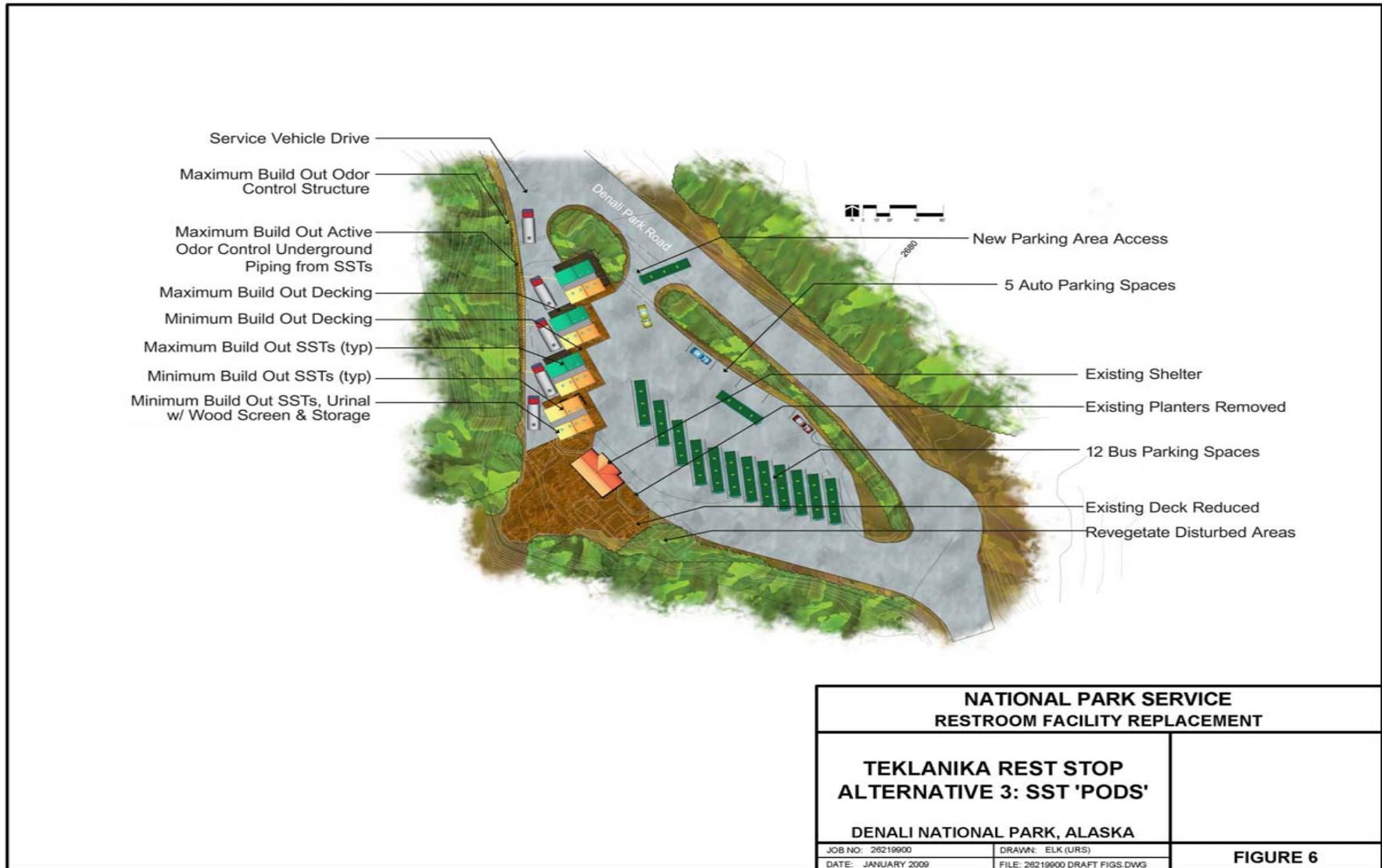
**Figure 5. Teklanika Rest Stop Alternative 2: SST; Adaptive Use Management**

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**Figure 6. Teklanika Rest Stop Alternative 3: SST 'PODS'; Adaptive Use Management (NPS Preferred Alternative)**

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## **2.4 Polychrome Overlook**

There is a no action and two action alternatives being considered for this site. One action alternative would remove visitor facilities from the site, with no plans for replacement. Another action alternative would take an adaptive management approach, removing the visitor facilities from the site and evaluating whether or not restroom facilities should be reconstructed, based upon resource and visitor use indicators.

This area is characterized by steep slopes and unstable ground due to the presence of permafrost. Shallow ice lenses exist at two locations on this site. These ice lenses are currently being shaded by shelters and decking.

### **2.4.1 Polychrome Overlook Alternative 1 – No Action**

There are currently a total of 18 chemical toilets at this site, along with decking and a shade structure. This alternative would keep all existing toilets in tact and no changes would be made to the site (Figure 7).

### **2.4.2 Polychrome Overlook Alternative 2 – No Toilet Facilities**

Alternative 2 would eliminate the existing deck, shelter, and chemical toilet facilities that comprise approximately 3,640 square feet of coverage over the site. This alternative considers the Polychrome Overlook to be a panoramic stop and removes all facilities from the area (Figure 8).

Under this alternative, the existing wood stairway that accesses the trail above Polychrome Overlook would be rebuilt or extended in order to reach the parking area, once the decking is removed.

The NPS would make every effort to reuse any salvageable materials from the Polychrome Overlook. The NPS would renovate one of the restroom buildings for use as a laboratory for the new Front Country Wastewater Treatment Facility (NPS 2008). The concrete foundation pads would be reused as ballast for the SST tanks at the Teklanika Campground or placed under riprap for the Toklat Sheet Pile stabilization project. The other restroom building, shelter, and salvageable decking would be stored at the Toklat Road Camp until an appropriate re-use is determined.

### **2.4.3 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative)**

This alternative would be an adaptive use management alternative that would first remove all facilities from the site, just as describe in Alternative 2, and operate Polychrome Overlook as a panoramic view stop similar to the Stony View overlook for several seasons. The adaptive use management approach proposed would evaluate whether or not the restrooms should be reconstructed based upon resource and visitor use indicators. The indicators would include; sheep migration patterns, traffic flow, visitor satisfaction, social trails, impact to vegetation, evidence of human feces, administrative traffic levels, and operational costs (labor and materials). The standards and indicators would be measured over the next two to five years. The findings from these efforts would guide the park management decision on whether or not a toilet facility is necessary and appropriate for the Polychrome Overlook site.

If it is determined that restrooms should be reconstructed at Polychrome Overlook, the development would consist of eight SSTs, two ABA accessible SSTs, one five-place SST urinal, and a small covered shelter. All new structures would be placed in a staggered line to the west of the ice lens in order to better ensure they are not impacted by subsidence or jacking. To accommodate the required building space, the adjacent bank would be excavated and a retaining wall structure would be constructed to support the steep bank to the north of the rest stop. A 14-foot wide service drive would also provide service personnel adequate space to work and to park necessary maintenance equipment (Figure 9).

The NPS believes that conventional foundations are currently not working at this location, due to the permafrost within the substrate. A pre-drilled, pile supported foundation would more than likely support the new SST facilities, while lowering the risk of settlement and maintenance. The SSTs, supported on a

pile foundation, would incorporate an insulated air space beneath the building that could accommodate the sanitary waste holding tanks and eliminate the need for the tanks to be directly buried. High-density polyethylene (HDPE) pipe, steel tanks, and flexible fittings would be used to allow for any shifting of the facility's foundation. Geotechnical work preceding the design may or may not find frozen soils beneath the underground tanks; insulation would still be utilized to retard the transference of heat into the adjacent permafrost soils.

The foundation for the shelter would be located directly above or immediately adjacent to the area of the ice lens. Surface structures would be placed away from the areas of known clear ice. If the geotechnical engineers find no ice beneath the proposed location, pile supports for this structure would be considered with adjustments built into the supports for potential settlement concerns.

The retaining wall structure (estimated 10-12 feet high) to support the slopes to the north could be a gabion structure composed of rocks that match the adjacent rock formation.

#### *Vehicular Circulation:*

Eliminating the existing facilities would open up a large space that could be used as parking for four buses. Bus parking would not block the road (see cover photo) and the configuration would allow for two-way vehicle travel. While pumping is taking place, the pump truck could park adjacent to the SST urinal or in the 14 foot wide service drive.

#### *Pedestrian Circulation:*

When exiting buses to use the facilities, visitors would be greeted with a view of the shelter that acts as a gateway to the facilities and the overlook. Users could move from the SSTs to the shelter easily through the plaza space created by 24-inch pavers. The shelter would also serve as refuge from the rain and provide seating for visitors. Boulders would denote a pedestrian crossing point from the rest area facilities to the overlook across the road. This organization of pedestrian flow would improve safety at the site, reducing the possibility of conflicts between vehicles and people.

## **2.5 Toklat Rest Stop**

There is a no action and an action alternative being considered for this site. This site currently has seven double vault SST structures.

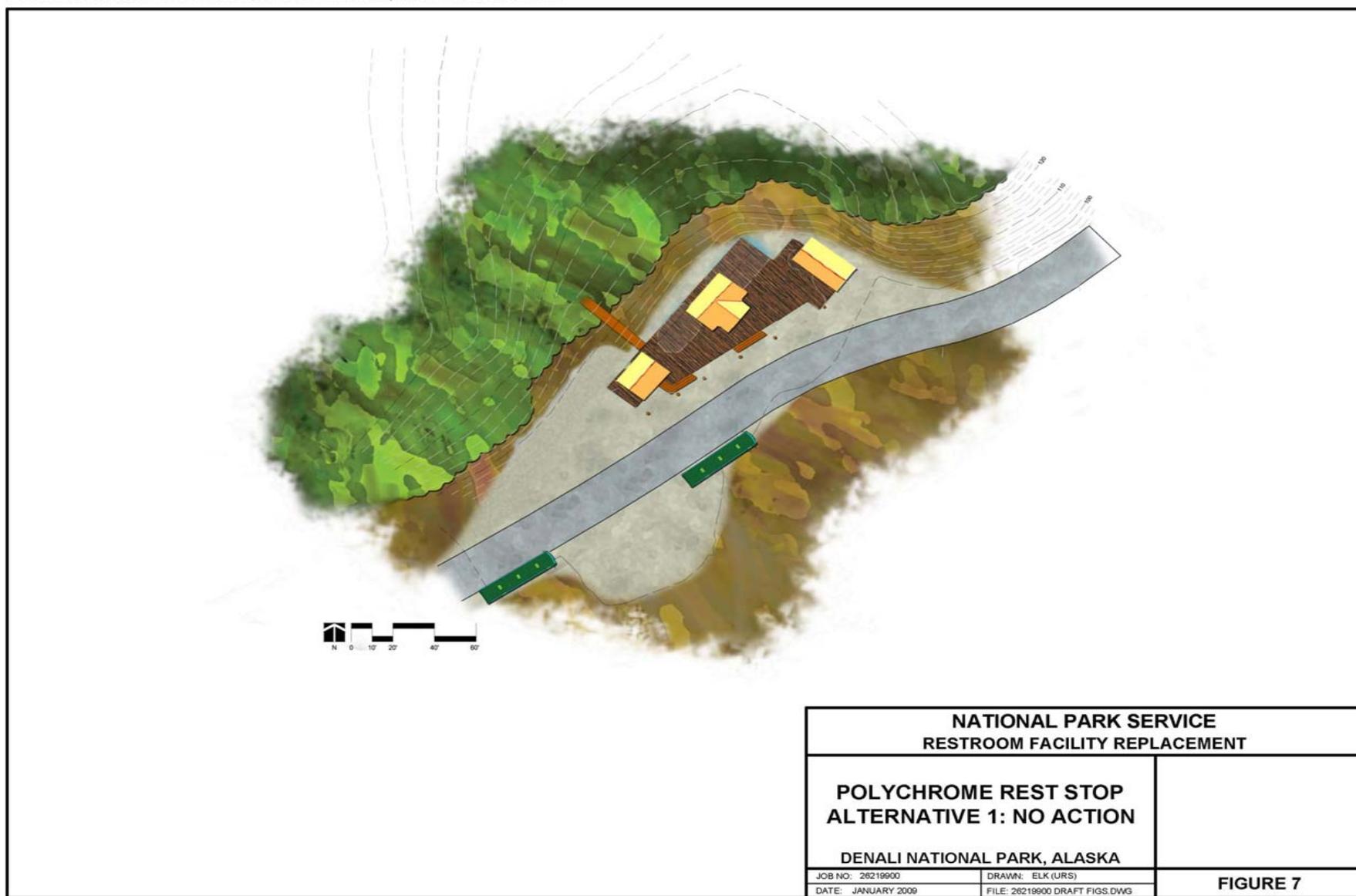
### **2.5.1 Alternative 1 – No Action**

Under this alternative the existing seven double vault SSTs would remain in place (Figure 10). There would be no modifications to the site.

### **2.5.2 Alternative 2 – SST (NPS Preferred Alternative)**

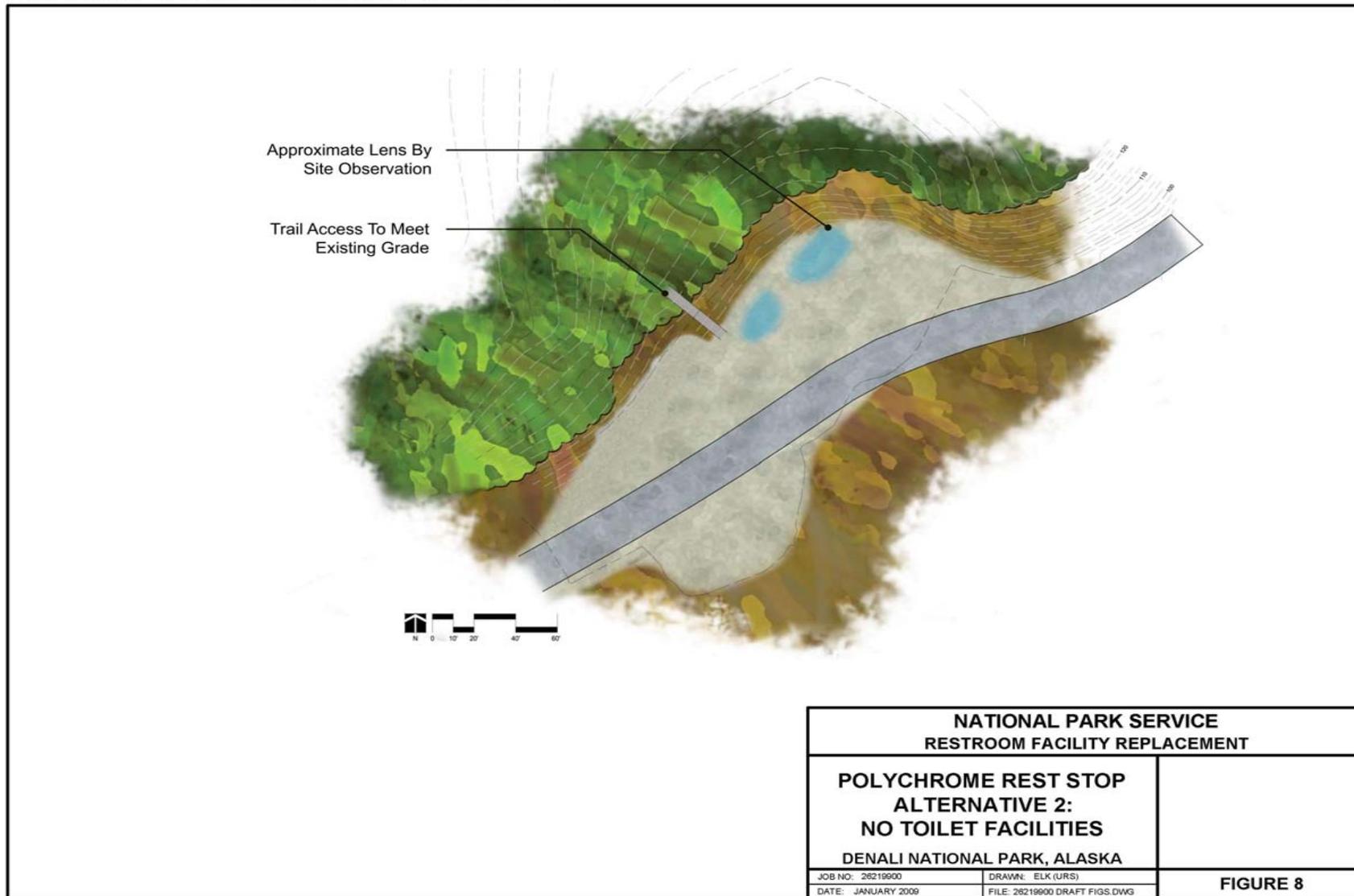
This alternative would provide one five-place SST urinal, placed adjacent to the existing SSTs on site. Vehicular and pedestrian circulation would not be altered at the Toklat Rest Stop (Figure 11).

**Figure 7. Polychrome Overlook Alternative 1: No Action**



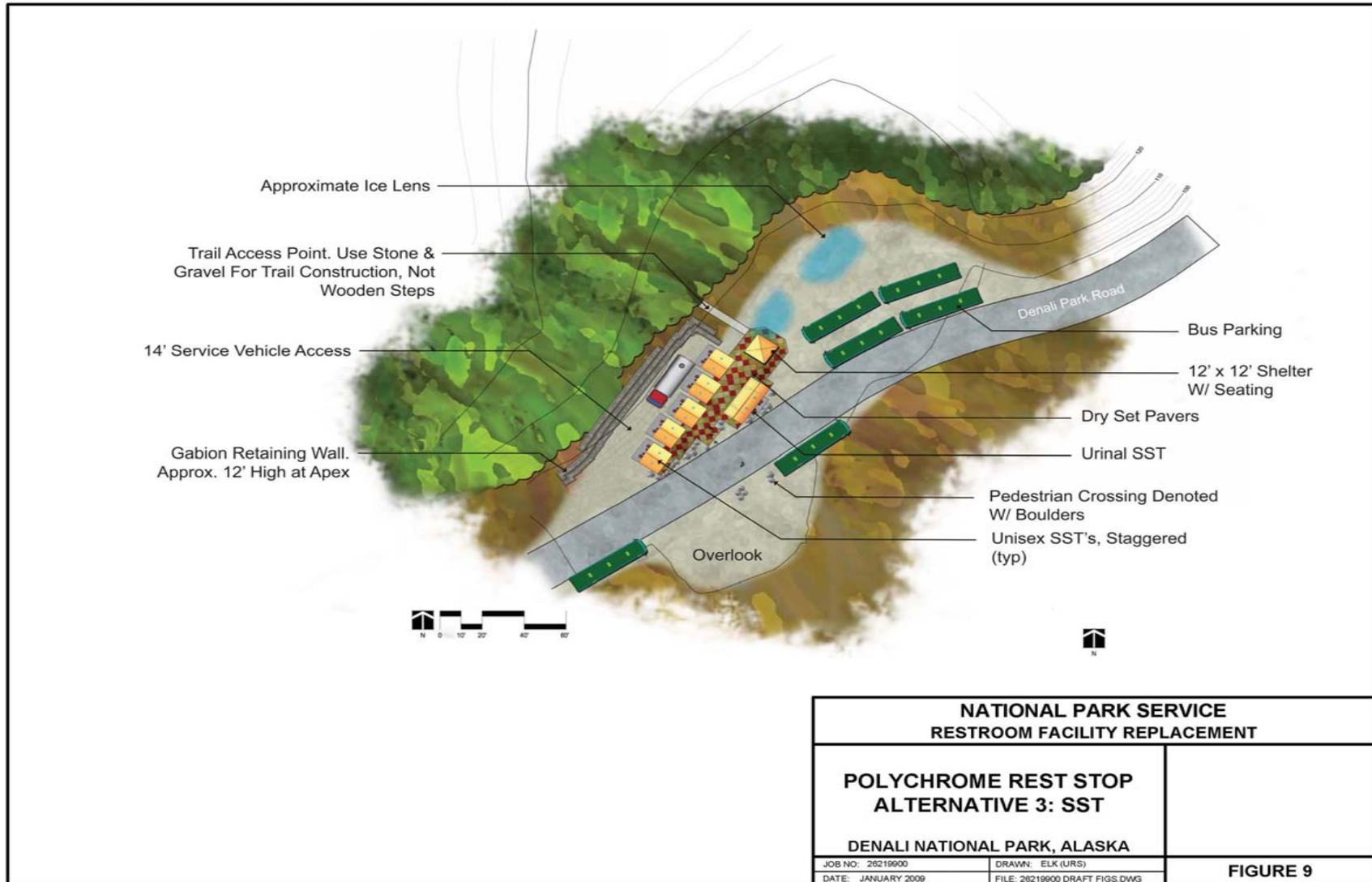
**Figure 8. Polychrome Overlook Alternative 2: No Toilet Facilities**

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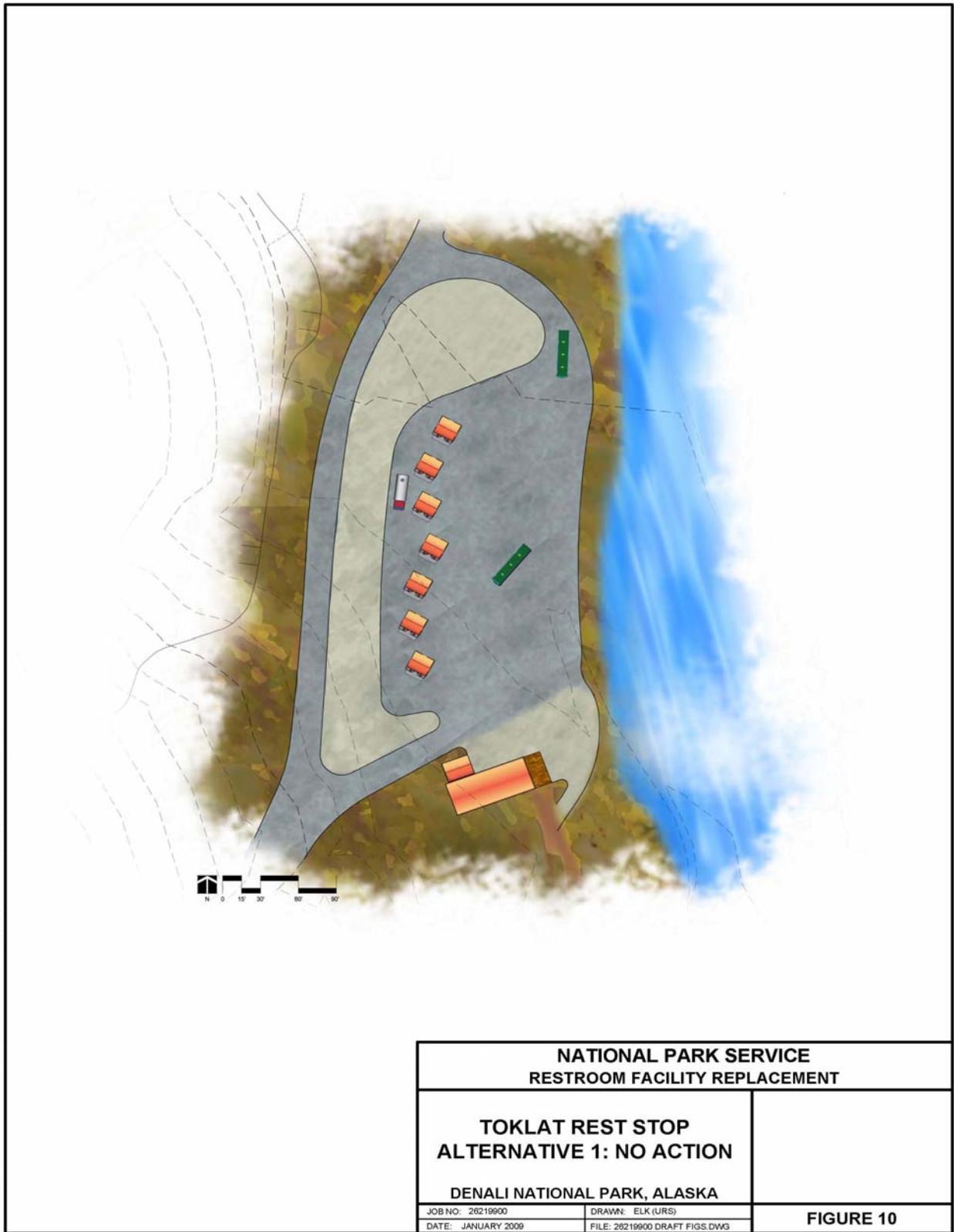


**Figure 9. Polychrome Overlook Alternative 3: SST; Adaptive Use Management (NPS Preferred Alternative)**

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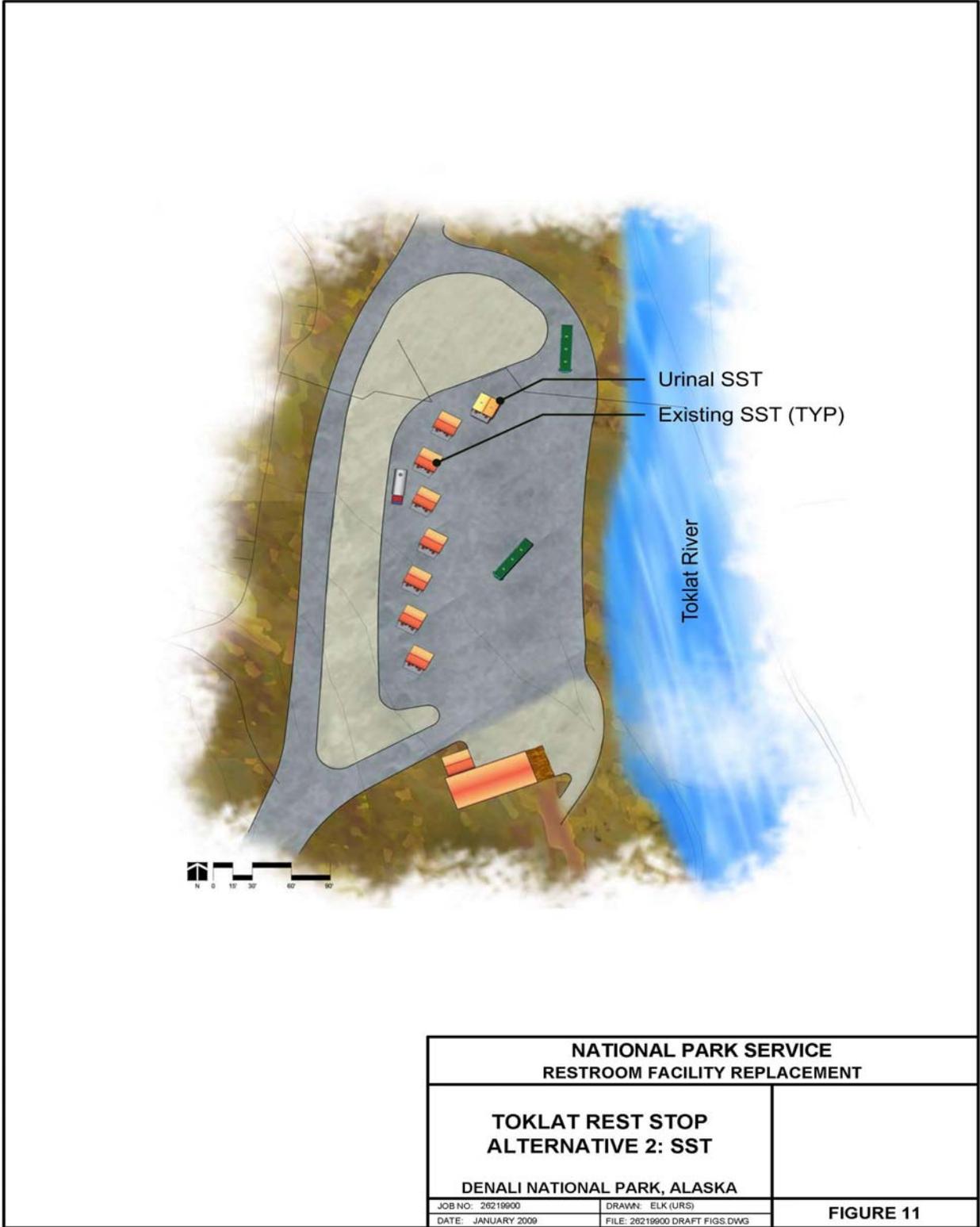


**Figure 10. Toklat Rest Stop Alternative 1: No Action**



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**Figure 11. Toklat Rest Stop Alternative 2: SST (NPS Preferred Alternative)**



## 2.6 Environmentally Preferred Alternative

As stated in Section 2.7 (D) of the NPS DO 12 Handbook, “The environmentally preferred alternative is the alternative that would best promote the national environmental policy expressed in NEPA (§101(b)).” The environmentally preferred alternative is the alternative that not only results in the least damage to the biological and physical environment, but that also best protects, preserves, and enhances historic, cultural, and natural resources.

### *NEPA §101 Goal Statements:*

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our national heritage, and maintain wherever possible, an environment which supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (42 USC 4321-4347).

The No Action Alternative, Alternative 1 for all sites evaluated, does not support the goals set forth in NEPA §101. This alternative represents worsening conditions regarding water quality, compliance with state regulations, visitor use, and sustainability of operations. Alternative 1 would not address the water quality issues identified in the COBC; the wastewater treatment facility would continue to be overloaded by large quantities of chemical laden wastewater, in violation of state regulations for wastewater treatment discharge. This alternative would also not address sustainability of operations and visitor use issues in the park, as the obsolete toilet systems are no longer able to be efficiently maintained. Functioning toilet facilities are needed to manage human waste to address human health and safety, as well as environmental quality.

The Environmentally Preferred Alternative is the proposed action. The proposed action consists of:

- Teklanika Campground Alternative 2 – SST.
- Teklanika Rest Stop Alternative 3 – SST “Pods”; Adaptive Use Management.
- Polychrome Overlook Alternative 3 – SST; Adaptive Use Management.
- Toklat Rest Stop Alternative 2.

This combination of alternatives realizes the six goals expressed in NEPA §101 by addressing the water quality, compliance with state regulations, visitor use issues, and sustainability of operations. Replacing the chemical toilets with SSTs will remove the chemical laden wastewater from the Riley Creek Wastewater Treatment Facility. The SSTs will efficiently and effectively serve visitor needs and be easier to operate and maintain. The adaptive use management approaches proposed for the Teklanika Rest Stop and the Polychrome Overlook would provide a minimum level of facilities, with careful monitoring to ensure that visitor needs would be adequately addressed, as well as environmental quality.

## **2.7 Mitigation and Monitoring**

Mitigation measures are specific actions that would reduce impacts, protect park resources, and protect visitors. The following mitigation measures would be implemented by the proposed action alternative and are assumed in the analysis of impacts.

### **2.7.1 Cultural Resources**

Project excavations would be monitored by cultural resource staff. If previously unknown cultural resources were located during construction, the project would be stopped in the discovery area until cultural resource staff could determine the significance of the finding and recommend appropriate courses of action.

### **2.7.2 Floodplain Management**

New facilities would be located in the same area as the existing facilities at the Toklat Rest Stop. Best Management Practices (BMPs) would be used during construction and installation to minimize impacts to the floodplain and preserve the floodplain values.

### **2.7.3 Natural Sound**

All noise-producing project equipment and vehicles using internal combustion engines would be equipped with hospital grade mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors) would be equipped with shrouds and noise control features that are readily available for that type of equipment. The use of noise-producing signals, including horns, whistles, electronic alarms, and sirens and bells, would be for safety warning purposes only.

### **2.7.4 Recreation and Visitor Use**

Construction phasing and timing would be coordinated with the park bus systems and low visitor use times to minimize traffic delays on the park road and use of the Teklanika Campground. Temporary restroom facilities (e.g., portable toilets) would be sited in existing parking areas for visitor use during construction periods.

### **2.7.5 Soils and Vegetation**

Backslopes and fill slopes would be covered with conserved topsoil from earlier excavation. Disturbed sites within the project area would be replanted with native vegetation, following the Interior Alaska Revegetation Plan (U.S. Geological Survey [USGS] 1994). Measures to prevent invasive plant colonization would include: pressure washing construction equipment and vehicles prior to entering the park, any gravel or fill required would either come from a weed-free materials site (as verified by a park vegetation technician) or would be heated to kill any plant material or seeds, and continuation of the park’s existing exotic plant eradication program.

### **2.7.6 Visual Quality**

To the greatest extent practicable, impacts to visual resources from construction and operational activities would be minimized. This would be accomplished through means such as locating new or reconstructed facilities within existing footprints, using building materials and colors that are compatible with the natural landscape, and screening the entrances of certain restroom facilities. The visual impact of construction could be minimized by operating during low visitor use periods (e.g., evening hours).

### **2.7.7 Water Resources**

BMPs would be used to reduce water runoff and avoid water quality impacts during construction and demolition of facilities at each site. BMPs would include using clean fill materials, using minimum

clearing distances, use of silt fences and sediment basins to reduce erosion during construction, dust abatement practices, and use of roadside culverts to maintain natural drainage and surface water flow patterns.

### **2.7.8 Wetlands**

BMPs, such as the use of silt fences, would be used to protect adjacent wetlands.

### **2.7.9 Wildlife and Habitat**

Under the Migratory Bird Treaty Act (MBTA) (16 USC 703), it is illegal to “take” migratory birds, their eggs, feathers, or nests. In order to avoid violations of the MBTA, bird habitat (vegetation) would not be removed during the nesting season, April through July 15. After completing all the nesting vegetation removal required for the project, there would be no seasonal restriction for construction activities, even during subsequent nesting seasons. If an active nest were encountered at any time, it would be protected from destruction. “Active” is indicated by intact eggs, live chicks, or presence of an adult on the nest. Eggs, chicks, or adults of wild birds would not be destroyed (Zelenak 2005).

## **2.8 Description of Alternatives and Actions Considered but Eliminated from Detailed Study**

### Teklanika Campground:

One alternative for this site was considered but eliminated from further review and analysis.

#### *Alternative A*

This alternative involved replacing the two existing chemical toilet buildings, which contain four toilets each, with water-based comfort stations. In this alternative, one comfort station would be provided for each campground loop. The comfort stations would be in the same location as the existing chemical toilet structures, helping to reduce impacts to the site as much as possible

Due to groundwater conditions at the site, a raised-mound absorption field would be required. The absorption field would be located at the northeast corner of Campground B loop where an abandoned roadbed is located. The project scope would include the stockpiling of native plant material for use in revegetating any areas disturbed during construction.

Basis for Rejection: The large amount of ground disturbance resulting from construction of the absorption field, along with the high cost of installation and operation were the basis for rejection of this alternative. This alternative also did not address visitor needs during the shoulder season when the water-based system would not be able to operate due to freezing temperatures.

### Teklanika Rest Stop:

There were three alternatives for this site that were considered, but not carried forward due to various circumstances detailed below.

#### *Alternative A*

This alternative would involve the construction of new multi-unit “clustered” SSTs (29 toilets) and a single five-place urinal SST. All of the SSTs would be ABA accessible. The SSTs would be in staggered clusters of three and four units. The clusters would be oriented with the entrances facing the west and southwest, towards the viewing area deck, making the rear of the SSTs face the parking area. This would make the SST clean-outs accessible to service vehicles and prevent the need for clean-out lines to be dragged across any decking. Wood screens 6 to 8 feet high provided at the rear of the SSTs clusters would block views to the clean-outs. Boulders would be located adjacent to the wood screens, creating vertical visual separation from the parking area, and would also tie the rear of the structures visually into the site.

The SST stacks would be piped together underground and vented to a common release point that would filter odors from the released gases. The pipes would exit at an in-ground structure filled with wood chips. This would effectively filter odors from the SSTs. This design would also eliminate the tall vertical stacks that are normally located at the rear of the SSTs. These tall vertical stacks can typically be unsightly when SSTs are clustered together.

Parking for 11-12 buses would be possible with this alternative. Space for parking other NPS vehicles is also available along the northeast edge of the vehicular circulation area. Three different configurations of the clustered SST concept were considered.

Basis for Rejection: The aesthetics of this alternative, regardless of the three configurations considered, were not preferred. The large number of buildings would impose dominant lines in the landscape.

### ***Alternative B***

Under this alternative, the Teklanika Rest Stop chemical toilets would be converted to a water-based system. The existing buildings and plumbing would be re-used in this conversion. Facilities would include 29 restrooms and a five-place urinal. An approximately 6-foot high wood screen would be added outside the urinal to block views.

The drain field for the water-based system would be located in the parking lot and along portions of the park road. Portable toilets would need to be utilized during the shoulder seasons, as the water-based system may not be functional during periods of freezing temperatures.

This alternative would require drilling a well and providing a structure to house a generator to service the new water-based system. In order to meet Class B well requirements, the well site would need to be 200 feet from the septic system. The current alternative does not show the well meeting these specifications, and only provides non-potable water to the rest stop.

Under this alternative, vehicular and pedestrian circulation on site would remain unchanged.

Basis for Rejection: This alternative was rejected due to the substantial ground disturbance for well and drain field development, coupled with the high cost of installation and operation. This alternative also did not address visitor needs during shoulder season when the water-based system would not be able to operate due to freezing temperatures.

### ***Alternative C***

This alternative would involve the replacement of the existing buildings and plumbing system with new conventional water-based comfort stations. Supplemental SSTs would be used during shoulder seasons. These seasonal-use SSTs would include a five-place urinal SST and four SSTs. The summer use water-based comfort stations would include 12 women's and one family toilet, as well as four men's toilets and four urinals.

The drain field for the water-based system would be located in the parking lot and along portions of the park road.

This alternative would require drilling a well and providing a structure to house a generator to service the new water-based system. In order to meet Class B well requirements, the well site would need to be located 200 feet from the septic system. The current alternative does not show the well meeting these specifications, and only provides non-potable water to the rest stop.

SSTs have traditional vertical stacks that exhaust gas upwards. Piping the gases underground to an odor control structure is not considered in this alternative.

The comfort stations would be sited within the footprint of the existing deck. This design would reduce the amount of overall decking and provide the opportunity for revegetating areas that have previously been covered by hardscape (such as decking). This design would also incorporate planting beds adjacent

to the comfort stations. This would soften the view of the facilities from the parking area. Wood bollards and/or boulders could also be provided for separation of vehicular and pedestrian circulation.

Under this alternative, vehicular and pedestrian circulation on site would remain unchanged.

Basis for Rejection: The substantial ground disturbance involved with construction of this proposed facility, as well as the high cost of installation and operation, were the basis for rejection of this alternative.

#### Polychrome Overlook:

Three alternatives were considered for this site, but were not carried forward due to the reasons listed below.

#### ***Alternative A***

This alternative would eliminate the existing deck, shelter, and chemical toilet facilities that comprise approximately 3,640 square feet of coverage over the site. The design would include four SSTs, which would be constructed at grade away from the ice lens that exists on site. No ramps would be required for ABA accessibility. A service road would be located behind the SSTs.

A 12 by 12 foot wood shelter with seating and wind protection would be provided near the new SSTs. The SSTs and shelter would sit in an approximately 1,200 square foot space created by 24-inch square pavers. Boulders would be placed around and among the space, providing seating while also separating vehicular and pedestrian circulation.

The existing wood stairway that accesses the scenic trail above Polychrome Overlook would be rebuilt or extended to compensate for removing the decking.

Basis for Rejection: It was determined that providing a small number of toilets, fewer than would practicably service a bus load of visitors, would have a greater negative impact on visitors and natural resources than providing no facilities. Long wait times for facilities could cause visitors to venture out on to the tundra, damaging the resource.

#### ***Alternative B***

Under this alternative, the existing 18 chemical toilets would be replaced with 10 SSTs and two five-place urinal SSTs. The existing deck, shelter, and toilet facilities would be removed from the site. The new SSTs would be sited in two clusters of three staggered units. Both clusters would be situated off of the existing ice lens and have a minimum of 10 feet behind them to allow access for service vehicles. The SSTs would be constructed at grade and require no ramps for ABA accessibility.

A 6 by 12 foot shelter with seating would be provided directly adjacent to the SSTs. Boulders would be used to define the space, provide seating opportunities, and separate vehicular and pedestrian circulation on site. The shelter would be located adjacent to the stairway that accesses the scenic trail above Polychrome Overlook. The steps would be rebuilt in order to achieve grade once the raised decking was removed from the site. The steps and shelter would be linked together by 24-inch square pavers. This would create an approximately 650 square foot space, separate from the SSTs and aligned with the overlook on the opposite side of the road.

Basis for Rejection: This alternative configured the new structures too close to the ice lens that exists at the site. There was concern that the latent heat from the sewage in the vaults would melt the ice lens, thereby causing a slump and/or differential settlement, potentially destabilizing the construction in front of the ice lens.

#### ***Alternative C***

This alternative called for the replacement of the existing 18 chemical toilets with an equal number of SSTs, including one urinal. This design would place the SSTs off of the ice lens. The SSTs would be

constructed at grade, eliminating the need for ABA accessible ramps or steps. A minimum 10-foot wide lane would be provided behind the SSTs for service vehicle access.

Two 6 by 12 foot waiting shelters with seating would be provided adjacent to the SSTs. The SSTs and shelters would be tied together with approximately 1,300 square feet of 24-inch square pavers. Boulders would be placed between the pedestrian space and the vehicular traffic.

The existing wood stairway that accesses the scenic trail above Polychrome Overlook would be rebuilt or extended to compensate for removing the decking.

**Basis for Rejection:** This alternative configured the new structures too close to the ice lens that exists at the site. There was concern that the latent heat from the sewage in the vaults would melt the ice lens, thereby causing a slump and/or differential settlement, potentially destabilizing the construction in front of the ice lens. In addition, the number of structures proposed under this alternative would limit parking and created safety concerns due to possible pedestrian/traffic conflicts.

#### Toklat Rest Stop:

One alternative for this site was considered, but eliminated from further review and analysis.

#### ***Alternative A***

This alternative design included three new SSTs, including two five-place SST urinals, to compensate for the loss of the toilets at Polychrome Overlook if the Polychrome Alternative 2 – No Toilet Facilities were to be selected. The new SSTs would be sited among the existing SSTs already at the Toklat Rest Stop. While there would be less room for bus circulation with this design, bus circulation and parking would not be negatively affected.

**Basis for Rejection:** This alternative was considered but rejected because there was concern that this alternative added additional cost with no substantial additional benefit. The Toklat facilities were used for two years when the Eielson Visitor Center and related toilet facilities were not operational. During this time the Toklat Rest Stop facilities were adequate to meet visitor demands at the time.

**Table 2-1. Summary of Alternatives**

	<b>Description</b>	<b>Attributes</b>	<b>Newly Disturbed Area</b>
<b>Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop</b> Alternative 1 – No Action	No new action. Existing facilities would remain at Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop.	No new development or disturbed areas. Non-compliance with ADEC wastewater discharge regulations.	None
<b>Teklanika Campground</b> Alternative 2 – SST (NPS Preferred Alternative)	Replace the existing chemical toilet facilities (two buildings with four chemical toilets each) with an equivalent number of unisex SSTs. For each campground loop, one of the double vault SST would be sited in the same area as the existing chemical toilet structure. A second double vault SST would be located on the opposite side of the campground loops.	Minimal site disturbance for toilet buildings, in previously impacted areas. Elimination of chemicals from waste stream. Utility systems not required. Shoulder season facilities would not be required.	None
<b>Teklanika Rest Stop</b> Alternative 2 – SST; Adaptive Use Management	Replace existing chemical toilets with unisex SSTs. Minimum facilities: 10 SSTs and four ABA accessible SSTs, one five-place urinal, and a storage space. Maximum facilities 22 SSTs, six ABA accessible SSTs, one five-place urinal, and a storage space.	Minimal site disturbance. Decking around toilets would be replaced with materials that would not adsorb odors from sewage spills during pumping operations. Elimination of chemicals from waste stream. Requires mechanical odor control system with propane generator for both build out alternatives. Shoulder season facilities would not be required.	Minimum less than 0.1 acre; maximum approximately 0.1 acre
<b>Teklanika Rest Stop</b> Alternative 3 – SST “Pods”; Adaptive Use Management (NPS Preferred Alternative)	Replace existing chemical toilets with grouped buildings of unisex SSTs, extending decking to the north and east. Service access would be developed within existing site footprint. Parking would be reconfigured. Minimum facilities: 12 SSTs and four ABA accessible SSTs, one five-place urinal, and a storage space. Maximum facilities 22 SSTs, six ABA accessible SSTs, and one five-place urinal. The maximum build out would be achieved by adding SSTs to the back of the minimum build out’s ‘pods.’	Decking would be extended to the north and east, within the previously disturbed site. Salvageable decking may be re-used. Elimination of chemicals from waste stream. Requires mechanical odor control system with propane generator for the maximum facility alternative. Shoulder season facilities would not be required.	Minimum less than 0.1 acre; maximum approximately 0.1 acre

**Table 2-1. Summary of Alternatives (Continued)**

	<b>Description</b>	<b>Attributes</b>	<b>Newly Disturbed Area</b>
<b>Polychrome Overlook</b> Alternative 2 – No Toilet Facilities	Manage area as panoramic viewpoint and not as a restroom stop. Remove all facilities, except for stairway to access the trail; stairway would be reconstructed or extended to accommodate removal of the deck structure.	Facilities would be removed from the ice lens.  Reduced facility footprint would increase available area for bus parking and enhance vehicle movement on the park road.	None
<b>Polychrome Overlook</b> Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative)	Minimum Facilities: Same as Alternative 2.  Maximum Facilities: Construct eight unisex SSTs, two ABA accessible SSTs, and one five-place urinal SST. Construct a small covered shelter and a retaining wall to support the steep bank to the north of the rest stop.  All new structures would be located west of the ice lens.	Minimum Facilities: Same as Alternative 2.  Maximum Facilities: Facilities would be located off of the ice lens, reducing maintenance.  Elimination of chemicals from waste stream.  Utility systems not required.  Shoulder season facilities would not be required.  Enhanced vehicular circulation.	Minimum Facilities: None  Maximum Facilities: 0.1 acre
<b>Toklat Rest Stop</b> Alternative 2 (NPS Preferred Alternative)	Construct one five-place SST urinal, in previously disturbed site.	Minimal site disturbance.  Consolidation of toilet facilities in previously disturbed site.  Elimination of chemicals from waste stream.  Utility systems not required.  Shoulder season facilities would not be required.	None

**Table 2-2. Summary of Alternative Impacts**

<b>Impact Issue</b>	<b>Teklanika Campground Alternative 1 – No Action</b>	<b>Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative)</b>
<b>Natural Sound</b>	No direct or indirect impacts.	No permanent increase in noise levels and no new noise sources. Noise levels would be temporarily increased during construction/demolition. Overall negligible impact.
<b>Recreation and Visitor Use</b>	Minor to moderate, due to inadequate service as obsolete facilities fall into disrepair.	Moderate beneficial impacts, resulting from improved visitor amenities at the campground.
<b>Soils</b>	Negligible impacts, due to continued topographic maintenance.	Negligible direct impacts due to soil disturbance; negligible to minor beneficial reduction in localized compaction/erosion
<b>Vegetation</b>	No direct or indirect impacts.	Negligible impact. With use of previously developed sites, the loss of vegetation would be very low, largely during the construction phase.
<b>Visual Quality</b>	No direct or indirect impacts	Negligible impact. Temporary minor impacts during construction/demolition.
<b>Water Resources</b>	Moderate direct impacts to water quality due to continued discharge of chemical laden water to Riley Creek Wastewater Treatment Facility.	Negligible direct/indirect to surface water runoff patterns; beneficial impacts due to reduction in chemical discharges.
<b>Wildlife and Habitat</b>	No direct or indirect impacts.	No loss of habitat. Low intensity, temporary disturbance or displacement of wildlife resulting in negligible impacts to wildlife.

**Table 2-2 (Continued). Summary of Alternative Impacts**

<b>Impact Issue</b>	<b>Teklanika Rest Stop Alternative 1 – No Action</b>	<b>Teklanika Rest Stop Alternative 2 – SST; Adaptive Use Management</b>	<b>Teklanika Rest Stop Alternative 3 – SST ‘Pods’; Adaptive Use Management (NPS Preferred Alternative)</b>
<b>Natural Sound</b>	No direct or indirect impacts.	Minor permanent increase in noise levels due to new noise source – generator. Noise levels would be temporarily increased during construction/demolition. Overall minor impact.	Minor permanent increase in noise levels due to new noise source – generator. Noise levels would be temporarily increased during construction/demolition. Overall minor impact.
<b>Recreation and Visitor Use</b>	Minor to moderate, due to inadequate service as obsolete facilities fall into disrepair.	Moderate impacts, resulting from improved visitor amenities at the rest stop.	Moderate impacts, resulting from improved visitor amenities at the rest stop.
<b>Soils</b>	Negligible, due to continued topographic maintenance.	Minor direct/indirect to foundation soils and slope stability.	Minor direct/indirect to foundation soils and slope stability.
<b>Vegetation</b>	No direct or indirect impacts.	Minor impacts; low intensity and long-term in duration, with up to 0.1 acre of vegetation removal.	Minor impacts; low intensity and long-term in duration, with up to 0.1 acre of vegetation removal.
<b>Visual Quality</b>	No direct or indirect impacts.	Negligible impact. Temporary minor impacts during construction/demolition.	Negligible impact. Temporary minor impacts during construction/demolition.
<b>Water Resources</b>	Moderate direct impacts to water quality due to continued discharge of chemical laden water to Riley Creek Wastewater Treatment Facility.	Negligible direct/indirect to surface water runoff patterns; beneficial impacts due to reduction in chemical discharges.	Negligible direct/indirect to surface water runoff patterns; beneficial impacts due to reduction in chemical discharges.
<b>Wildlife and Habitat</b>	No direct or indirect impacts.	Less than 0.1 acre of habitat loss adjacent to developed site. Low intensity, temporary disturbance or displacement of wildlife resulting in minor impacts to wildlife.	Less than 0.1 acre of habitat loss adjacent to developed site. Low intensity, temporary disturbance or displacement of wildlife resulting in minor impacts to wildlife.

**Table 2-2 (Continued). Summary of Alternative Impacts**

<b>Impact Issue</b>	<b>Polychrome Overlook Alternative 1 – No Action</b>	<b>Polychrome Overlook Alternative 2 – No Toilet Facilities</b>	<b>Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative)</b>
<b>Natural Sound</b>	No direct or indirect impacts.	No permanent increase in noise levels and no new noise sources. Noise levels would be temporarily increased during demolition. Overall negligible impact.	No permanent increase in noise levels and no new noise sources. Noise levels would be temporarily increased during construction/demolition. Overall negligible impact.
<b>Recreation and Visitor Use</b>	Minor to moderate, due to inadequate service as obsolete facilities fall into disrepair.	Moderate impacts, due to potential for an increase in social trails and improper disposal of human waste.	Moderate impacts, resulting from improved visitor amenities at the rest stop if maximum facilities constructed.
<b>Soils</b>	Minor to moderate, due to continued ground shifting and slope instability issues.	Minor to moderate due to continued ground shifting and slope instability; beneficial reduced permafrost impacts to structures.	Minor to moderate, due to continued ground shifting and slope instability issues.
<b>Vegetation</b>	No direct or indirect impacts.	Negligible impact. The loss of vegetation would be very low, and temporary, largely during the removal of facilities phase.	Minor impacts; low intensity and long-term in duration, with up to 0.1 acre of vegetation removal if maximum facilities are constructed.
<b>Visual Quality</b>	No direct or indirect impacts.	Minor beneficial impact. Temporary impacts during demolition. In the long-term, the site would be restored to a more natural state.	Negligible impact. Temporary minor impacts during construction/demolition.
<b>Water Resources</b>	Moderate direct impacts to water quality due to continued discharge of chemical laden water to Riley Creek Wastewater Treatment Facility.	Negligible to minor direct/indirect due to continued active layer alterations; beneficial impacts due to reduction in chemical discharges.	Negligible to minor direct/indirect due to continued active layer alterations; beneficial impacts due to reduction in chemical discharges.
<b>Wildlife and Habitat</b>	No direct or indirect impacts.	Temporary, low intensity disturbance or displacement of wildlife resulting in a negligible contribution to cumulative impacts. Potential to decrease impacts to Dall sheep from human presence.	Low intensity loss or degradation of up to 0.1 acre of common habitat and temporary, low intensity disturbance or displacement of wildlife resulting in a minor contribution to cumulative impacts if maximum facilities are constructed.

**Table 2-2 (Continued). Summary of Alternative Impacts**

Impact Issue	Toklat Rest Stop Alternative 1 – No Action	Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative)
<b>Natural Sound</b>	No direct or indirect impacts.	No permanent increase in noise levels and no new noise sources. Noise levels would be temporarily increased during construction/demolition. Overall negligible impact.
<b>Recreation and Visitor Use</b>	No direct impacts; indirect impacts could include increased use of Toklat Rest Stop facilities, as other facilities fall into disrepair.	Minor impacts, resulting from improved visitor amenities at the rest stop.
<b>Soils</b>	Negligible, due to continued topographic maintenance; beneficial cumulative impacts from future erosion control projects.	Negligible direct/indirect to soil disturbance; beneficial cumulative impacts from future erosion control projects.
<b>Vegetation</b>	No direct or indirect impacts.	No direct or indirect impacts.
<b>Visual Quality</b>	No direct or indirect impacts.	Negligible impact. Temporary minor impacts during construction.
<b>Water Resources</b>	No direct or indirect impacts.	Negligible direct/indirect to surface water runoff.
<b>Wildlife and Habitat</b>	No direct or indirect impacts.	Temporary, low intensity disturbance or displacement of wildlife resulting in a negligible contribution to cumulative impacts.

## 3.0 AFFECTED ENVIRONMENT

### 3.1 Project Area

Denali National Park and Preserve encompasses 9,419 square miles in central Alaska. The main entrance to the park is at mile post (MP) 238.0 of the George Parks Highway, approximately 240 miles north of Anchorage and 12 miles south of Healy. Mt. McKinley, at an elevation of 20,320 feet, is the focal point of the park. The project includes the area in the vicinity of Toklat Rest Stop, Polychrome Overlook, Teklanika Rest Stop, and Teklanika Campground (Figure 1).

### 3.2 Natural Sound

In accord with NPS Management Policies 2006 (NPS 2006) and DO 47-Sound Preservation and Noise Management (NPS 2000), an important part of the NPS mission is to preserve natural soundscapes associated with national park units. A soundscape refers to the total acoustic environment of an area. Both natural and human sounds may be desirable and appropriate in a soundscape, depending on the purposes and values of the park. Season, animals, vegetation, climatic conditions, topography, and proximity to water all influence the production and propagation of sounds. The NPS has developed an inventory and monitoring program that identifies “acoustic zones” within national parks. Acoustic zones are areas of similar vegetation, land cover, topography, elevation, and climate that typically contain similar animals, physical processes, and other sources of natural sounds.

The NPS has identified three acoustic zones within the park: alpine, sub-alpine, and scrub/forest zones (NPS 2006). The Teklanika Campground, Teklanika Rest Stop, and Toklat Rest Stop are located within the scrub/forest zone and the Polychrome Overlook is located within the subalpine zone. The following text is the NPS description of these zones:

Scrub/forest zone:

*“This zone is consists of spruce on the north side of the Alaska Range and a mixture of deciduous and coniferous trees on the south side. Willow, birch, aspen, and alder also grow to heights that play a large role in attenuating sounds. The natural soundscape is less dominated by wind in this zone due to the presence of trees and tall shrubs that block and reduce wind speed. Compared to the other two zones, animal sounds are more frequently audible. A greater diversity of birds, insects, and mammals occupy this scrub/forest zone than the other two acoustical zones. With the exception of aircraft sounds, audible sounds are usually generated by nearby sources rather than carried from distances. Red squirrel chatter replaces the sub-alpine zone’s arctic ground squirrel whistles, and woodland birds such as thrushes and warblers replace tundra bird species. Streams have turned into rivers in this zone, which then dominate the acoustics in the riparian and surrounding areas. Human-generated sounds originate from developed areas of the frontcountry and from travel corridors near roads and railways. Aircraft are often heard overhead throughout this zone. Again, the distinction between the natural soundscapes of the acoustical zones becomes blurred during the winter months when flowing water sounds have either stopped or are muffled by snow cover and animal sounds are reduced in diversity and number.”*

Subalpine acoustic zone:

*“The sub-alpine acoustical zone in Denali is vegetated by low plants. Though the natural soundscape is dominated by wind, during non-winter months, flowing water and a diversity of birds, insects and mammals are often audible. The relative absence of sheer cliffs of rock and ice reduce reflection and echoes in this zone. Low vegetation absorbs sound propagation but is offset by open spaces that allow long distance travel from distant sound sources. Flowing water is developing into larger streams and having a*

*greater influence on the nearby soundscape. In addition to natural sounds, human-generated noise is more diverse and widespread than in the alpine zone. Jet, propeller and helicopter aircraft are often audible, as well as road and rail traffic near transportation corridors. Human voices are audible near backpacking routes and other travel and recreation corridors. Other than the higher diversity of human-generated sounds, during the winter the soundscape in this zone becomes similar to the alpine zone.”*

Existing noise sources near each of the project site consists of vehicles and buses on the park road, heavy equipment noise during road maintenance activities, human-generated noise from utilization of the toilet facilities and surrounding facilities (trails, campgrounds, overlooks, etc.), aircraft overflights, water noise from nearby rivers and streams, wildlife sounds, and wind. Existing noise sources at the Toklat Rest Stop also includes noise from use of the maintenance area, Toklat bookstore, and staff residences.

### **3.3 Recreation and Visitor Use**

A trip along park road via shuttle or tour bus is the most common means for summer visitors of all abilities to experience the park’s resources. Approximately 400,000 people visit the park annually, primarily during the months of June, July, and August (NPS 2005b). Of these visitors, an estimated 280,000 visitors embark upon a shuttle bus trip or tour beyond the Savage River checkpoint for travel into the park interior (NPS 2004). Most of the remaining visitors stay in the frontcountry and explore this area of the park via the Savage River Shuttle bus, tour bus, private car, bicycle, or on foot. The nexus between the character of the park road and the surrounding landscape is essential to the visitor experience.

The Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop are used extensively by park visitors traveling via buses. The Teklanika Campground is used by overnight visitors that access the area by bus or private vehicle. Tour bus clients are the predominant users of the rest stop facilities. Shuttle bus passengers may also use the rest stops, but their destinations are typically the campgrounds or backcountry areas. The facilities in the project area not only provide for the comfort and convenience of park visitors, they also provide resource protection by containing and managing large quantities of human waste in the park.

The rest stops and the campground in the project area offer opportunities for viewing scenery, vegetation, and wildlife in a Roaded Natural Setting. Hiking trails are located above the Polychrome Overlook; wildlife and wildflower viewing are popular activities along these trails. Long stretches between the developed nodes are consistent with the Semi-Primitive Motorized setting classification.

### **3.4 Soils and Vegetation**

#### **3.4.1 Soils and Permafrost**

The project sites are located in the northern foothills of the Alaska Range. Numerous glacial advances have occurred in the river valleys near the sites, leaving behind extensive deposits of outwash and glaciofluvial material (Shannon & Wilson 1993). Discontinuous permafrost occurs locally in this region, varying with elevation and soil types (NPS 2003a). Permafrost is defined as subsurface and surface soils that sustain a temperature regime below 32 degrees Fahrenheit for two years or more. Vegetative mats and shallow subsurface soils provide an insulation buffer from extreme seasonal temperature variations; their removal can cause the permafrost layer to warm and recede. Thermokarst features develop when permafrost is repeatedly thawed and shrinks, causing uneven ground subsidence events. Available soil and permafrost data for the individual project sites are summarized in the following paragraphs.

Soil borings drilled at the Teklanika Rest Stop along a high stream terrace of the Teklanika River indicate the presence of glacial till composed mostly of clayey gravel to depths of 10 to 15 feet. This unit overlies alluvium and glacial outwash consisting of sandy gravel with cobbles to depths of at least 40 feet. Fill consisting of sandy gravel occupies the uppermost 3 to 8 feet of the soil column in developed areas of the

rest stop, while surficial layers of peat and organic silt may occur in undisturbed areas. The Teklanika Campground is located on a lower lying stream terrace deposit about 1.3 miles north of the rest stop. Recent test pits dug at the campground encountered mostly sand and gravel fill to a depth of about 4 feet below ground surface (bgs) (URS 2008). Native soils below the fill are likely similar to those encountered in the rest stop borings. Permafrost was not encountered in borings or test pits advanced in the Teklanika area (Shannon & Wilson 1993; URS 2008).

The Polychrome Overlook is constructed in a narrow cut-and-fill site along a steep south-dipping slope at Polychrome Pass. Soil borings drilled at this site encountered surficial deposits consisting primarily of silty gravel and sand with minor silt layers, overlying weathered and fractured bedrock. The top of bedrock ranges from 8 to more than 30 feet below grade. Bedrock also outcrops at the surface at the west and east ends of the cut bank. Permafrost lies beneath most of the Polychrome Overlook site beginning at depths ranging from 1 to 19 feet, with some areas of discontinuous thawed zones present. A 2- to 11-foot thick, massive clear ice lens is present in a narrow zone along the toe of the cut bank near the contact between surficial deposits and bedrock at depths ranging from 7 to 30 feet (Dowl 1987a, 1987b). A small slump or landslide occurred on the downslope (fill) side of the park road near the east end of the Polychrome Overlook in 2002-2003, with related minor shearing of the ground surface and decking at the overlook in fall 2002 that may have created a subsurface path for water seepage to the slump. The slump likely occurred within weak clay and carbonaceous strata within the rhyolite tuff bedrock, with movements triggered by rainfall events, possible melting of permafrost zones, and loading by temporary backfill and bus traffic. Recommended slump repair included excavation to stable bedrock, installation of a drain system, and backfill with granular material (U.S. Federal Highway Administration [USFHA] 2003).

The Toklat Rest Stop is located along a stream terrace deposit along the west side of the Toklat River, and at the north end of an active alluvial fan. A sheetpile wall along the Toklat River bluff protects the rest stop area from soil erosion. Although subsurface soil information is unavailable for the Toklat Rest Stop, borings and test pits advanced in the Toklat Camp area, located several hundred feet north of the rest stop and along the same stream terrace, encountered mostly gravel and sand deposits with minor silt and peat lenses to depths of 18 feet. Permafrost was encountered beneath surficial peat layers at the Toklat Camp during construction in the 1980s, but was not present in later borings drilled in 2001 in disturbed areas of the site (Hart Crowser 2001; NPS 1986b, 1997b).

### 3.4.2 Vegetation

The park is comprised of a mosaic of tundra, forest, shrubland, and open meadow. The project area is within the Alaska Range Transition ecoregion, which is a more narrowly defined subset of the general Boreal ecoregion (Nowacki et al. 2001).

The proposed project is in an ecoregion consisting mostly of mixed needleleaf/deciduous forest of white spruce (*Picea glauca*), black spruce (*P. mariana*), and white spruce-black spruce hybrids (*P. glauca* X *mariana*) mixed with paper birch (*Betula papyrifera*) and small amounts of aspen (*Populus tremuloides*), and balsam poplar (*Populus balsamifera*). White spruce, birch, and aspen typically occupy areas of well-drained soil on ridges, while black spruce is usually found in areas with poor drainage underlain by shallow permafrost. White spruce-black spruce hybrids are usually found in wetter, poorly drained areas. Common shrubs in forest communities include high-bush cranberry (*Viburnum edule*), prickly rose (*Rosa acicularis*), and mountain and Sitka alders (*Alnus viridis crispa* and *A. v. sinuata*) in dryer areas, and diamondleaf willow (*Salix planifolia* spp. *pulchra*) in wetter areas. The subalpine zone is a mosaic of open spruce woodlands and shrub tundra in wetter locales. Common shrub include several species of willow (*Salix* spp.), dwarf birch (*B. nana*), bog blueberry (*Vaccinium uliginosum*), bog cranberry (*Vaccinium oxycoccus*), Labrador tea (*Ledum* spp.), and various sedges (*Carex* spp.) in wetter locales. Ground cover typically consists of lichens and mosses, including true mosses (*Polytrichum* spp.) in dryer areas and peat mosses (*Sphagnum* spp.) in wetter areas. Shrub tundra grades into dwarf shrub

communities at higher elevations and exposed areas. These communities are dominated by mountain avens (*Dryas* spp.), crowberry (*Empetrum nigrum*), Labrador tea, low-bush cranberry, bearberry (*Arctostaphylos uva-ursi* or *A. alpina*), net vine and Arctic willow (*Salix reticulatae*, *S. arctica*), grasses, and forbs (Nowacki et al. 2001; Viereck et al. 1992; NPS 1997a; NPS 2004; NPS 2005a).

No threatened or endangered plants are known to occur in the park. However, one plant species, the pink dandelion (*Taraxacum carneocoloratum*), is considered a federal species of concern (former Candidate 2 species) and is found on alpine slopes and other coarse, well-drained substrates (NPS 2005c).

### **3.5 Visual Quality**

The visual landscape along the park road transitions with each mile. After leaving the main entrance area where bustling activity is centered on the railroad depot, Visitor Center Complex, and headquarters area, natural taiga, and tundra vegetation as well as scenic vistas of the Alaska Range begin to dominate the park road viewpoints. The park road bisects the natural landscape, but the linear form of the road is buffered by surrounding vegetation. Road signs and related items are kept to a minimum and natural features dominate the view.

The landscape in the vicinity of the proposed project areas is dominated by natural features such as: open spruce forest, river and floodplain, vegetated hillsides, and distant views of the Alaska Range. Existing facilities in the campground largely employ colors and building materials that mimic the natural environment. The Teklanika and Toklat rest stops have large, unvegetated parking areas, sufficient to accommodate more than six buses at one time.

### **3.6 Water Resources**

#### **3.6.1 Surface Water Hydrology**

Topography in the Denali Park region of Alaska is dominated by the massive Alaska Range located south of the park road. Surface drainage from the Alaska Range generally flows northerly across the park road corridor in large glacially fed rivers. The major rivers closest to the sites, the Toklat and Teklanika rivers, are wide braided streams laden with gravelly outwash. The typical hydrological pattern consists of highest flows either during the period of greatest snowmelt in late June and early July, or during individual rain events (NPS 2004).

The 1000-foot wide Teklanika River flows northerly along the west side of the Teklanika Campground and Rest Stop. The campground comfort stations are located about 300 to 400 feet east of the river, and the rest stop is located immediately adjacent to the east edge of the river on a high stream terrace. A tributary stream to the Teklanika River extends along the northeast side of the campground flowing northwesterly, and joins the Teklanika River about ¼ mile northwest of the campground. Surface water drainage across the campground is generally to the north towards the tributary stream for most of the site, except for the west edge of the campground where drainage is westerly towards the main Teklanika River. Surface water runoff at the Teklanika Rest Stop mostly flows north towards a surface drain at the north end of the parking area, where a culvert carries discharge west to the Teklanika River. Runoff along the west edge of this facility flows west towards the Teklanika River. Small lakes and ponds also dot the landscape in the vicinity of the Teklanika facilities (NPS 1994; Shannon & Wilson 1993). An atypical ice flow intrusion into Teklanika Campground in 2008 caused irreversible damage to the lower loop facility, which currently remains closed. During the winter of 2007, ice backup was observed in areas up to 3 feet thick.

Polychrome Pass divides the East Fork Toklat River watershed to the east from that of the main Toklat River to the west. Surface water runoff from the hills north of the Polychrome Overlook generally drains south and east towards the park road, then down a steep slope south of the road (NPS 1988, USFHA 2003). The closest downgradient water body to this site is an east-flowing tributary to the East Fork Toklat River, which is located about ½ mile to the southeast.

The Toklat Rest Stop is located approximately 150 to 200 feet west of the ¼- to ½-mile-wide, north-flowing Toklat River. A sheetpile wall along the river bluff protects the rest stop area from river erosion. Surface water runoff from the hills west of the rest stop drains east and northeast towards the Toklat River (NPS 2004, 2005c). Intermittent surface water flows easterly across the active alluvial fan south of the site and drains into the Toklat River (NPS 1997b).

### **3.6.2 Groundwater Hydrology**

Information concerning subsurface hydrology is limited within the park boundaries. In areas underlain by shallow permafrost, suprapermafrost groundwater may occur seasonally in the active layer. In areas with no permafrost, groundwater may occur in gravelly glaciofluvial deposits. Groundwater occurrence and runoff water infiltration can increase during warmer periods concurrent with changes in depth of permanently frozen soils.

Groundwater was encountered in test pits at the Teklanika Campground in June 2008 at depths of 3 to 4 feet (URS 2008). At the Teklanika Rest Stop there was a water seep located at the interface of the gravel fill with the undisturbed silty soils where a geotextile fabric had been installed. Groundwater was not encountered; however, in deeper borings drilled at the rest stop to maximum depths of 42 feet in August 1993. Groundwater in this area may be controlled by water level fluctuations in the Teklanika River; lakes and ponds on top of the terrace are likely perched on fine-grained deposits and do not substantially influence groundwater (Shannon & Wilson 1993). Where present beneath the rest stop, groundwater is expected to flow towards the northwest, generally following the direction of topography and water flow in the Teklanika River. Groundwater flow in the vicinity of the campground is expected to be generally towards the north towards the tributary stream. If groundwater at these two sites is in hydraulic continuity with the Teklanika River; however, flow reversals may occur in a direction away from the river during periods of high water in the river.

Groundwater was not encountered in most of the 13 geotechnical borings drilled at the Polychrome Overlook to depths of about 30 feet. Perched groundwater is present in a limited area near the toe of the cut bank beneath the western half of the facility, beginning at depths of 13 to 14 feet. The groundwater occurs in a 6- to 10-foot thick aquifer composed of silty sand and gravel, which overlies permafrost or bedrock (Dowl 1987a). Intermittent groundwater was encountered at a similar depth beneath the slump zone at this site following rain events in 2003 (USFHA 2003).

Although subsurface information is unavailable for the Toklat Rest Stop, borings and test pits advanced in the Toklat Camp area, located several hundred feet north of the rest stop and along the same stream terrace, encountered groundwater at depths of about 2 to 6 feet (Hart Crowser 2001). Groundwater flow direction at the road camp is north-northeasterly, generally following surficial topography towards the Toklat River. Groundwater at the rest stop is expected to flow in a similar direction towards the river.

### **3.6.3 Water Quality**

#### Water Quality

Surface water and groundwater in the park are generally considered pristine and, with the exceptions noted below, have not been adversely affected by development. Some of the creeks and rivers run turbid during storms or days of heavy snowmelt (NPS 2004).

The Riley Creek Wastewater Lagoon located near the park entrance, which receives pumped domestic wastewater from chemical toilets at the Teklanika and Polychrome Overlook sites, discharges inadequately treated effluent to groundwater via a percolation basin. Chemical tests of groundwater downgradient from the lagoon indicate the presence of nitrate well above background and ADEC wastewater treatment levels (ADEC 2006, HDR Alaska 2005).

A fuel release from underground storage tanks at the Toklat Camp was discovered during tank removal in 2000, which impacted subsurface soils and groundwater in the area. This site, however, has not affected the Toklat Rest Stop, which is located upgradient of the fuel release (Hart Crowser 2001).

Fuel releases from underground and above ground storage tank piping have impacted subsurface soils and groundwater in the C-camp maintenance and residential areas, the park headquarters' residential area, and in the vicinity of the front country power house (Hart Crowser 2000 to 2007).

### **3.7 Wildlife and Habitat**

#### **3.7.1 Mammals**

The mosaic of tundra, forest, shrubland, wetland, and open meadow vegetation types found throughout the park and adjacent to the project area, provide optimal habitat for several large mammal species. These species include moose (*Alces alces*), caribou (*Rangifer tarandus granti*), brown bear (*Ursus arctos*), black bear (*Ursus americanus*), Dall sheep (*Ovis dalli*), and gray wolf (*Canis lupus*). Some of these species can be observed in the landscape surrounding the project area, others may be observed crossing the park road where it bisects wildlife movement or migration corridors.

Smaller mammals potentially found near the project area include red fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), ermine (*Mustela erminea*), Arctic ground squirrel (*Spermophilus parryii*), lynx (*Lynx canadensis*), coyote (*Canis latrans*), wolverine (*Gulo gulo*), and red squirrel (*Tamiasciurus hudsonicus*) (NPS 2005a). Red fox are common and very visible along the park road; whereas, snowshoe hares and red squirrels are commonly found in forested areas. Other mammal species in the vicinity may include shrews (*Sorex* spp.), several species of voles, and lemmings.

Currently there are no mammal species listed under the jurisdiction of the ESA or State of Alaska Species of Special Concern (ADFG 2007).

#### **3.7.2 Birds**

The park hosts a wide variety of resident and migratory bird species that utilize a diversity of habitats. Formal bird surveys have not been conducted within the proposed project area; subsequently, the bird list for this section represents each species' likelihood of occurrence based on professional judgment (McIntyre 2007) and park information resources (NPS 2007). A primary wildlife concern regarding the proposed road improvement project is potential impacts to nesting birds. Therefore, birds have been organized by each species' likelihood to nest (rated as: likely, potentially, or not likely) in habitats found directly adjacent to the project area (refer to Appendix B).

Although currently no ESA-listed bird species occur in the park, several Alaska Species of Special Concern reside in or migrate through the park. Species listed as Alaska Species of Concern include the olive-sided flycatcher (*Contopus cooperi*), American peregrine falcon (*Falco peregrinus anatum*), northern goshawk (*Accipiter gentilis*), gray-cheeked thrush (*Catharus minimus*), and blackpoll warbler (*Dendroica striata*) (ADFG 2007). These species can be found in their associated suitable habitats throughout the park, although few data exist on population abundance or distribution (NPS 2005a). The rusty blackbird (*Euphagus carolinus*) is also found in the park, and despite being identified as a species of conservation priority in Alaska by Boreal Partners in Flight, no management specific to this species has been initiated (Hannah 2004, ADFG 2007).

Habitat usage by the above listed species of special concern includes forested, riparian, and wetland areas. The olive-sided flycatcher, American peregrine falcon, and blackpoll warbler occur along riparian habitats, although their occurrence in these areas is considered either uncommon or rare during breeding. The northern goshawk and the gray-cheeked thrush occur in forested areas, but only the gray-cheeked thrush is considered common. All of these species may occur in the project areas as they lie at the edge of the forest, and along a riparian corridor in two cases. The rusty blackbird is known to occur in pond or wetland areas. The habitat range of this species should not intersect with the project areas (NPS 2007).

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 Introduction

This section provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Section 1.6.1, Issues Selected for Detailed Analysis.

### 4.2 Methodology

#### 4.2.1 Impact Criteria

The direct, indirect, and cumulative impacts are described for each issue (impact topic) that was selected for detailed analysis (see Section 1.6.1). The impacts for each issue are based on the intensity (magnitude), duration, and context (extent) of the impact. Summary impact levels (negligible, minor, moderate, or major) are given for each issue. Definitions are provided below.

##### Intensity

- Low: A change in a resource condition is perceptible, but it does not noticeably alter the resource's function in the park's ecosystem, cultural context, or visitor experience.
- Medium: A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is detectable.
- High: A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is clearly and consistently observable.

##### Duration

- Temporary: Impacts would last only a single visitor season or for the duration of discreet activity, such as construction of a trail (generally less than two years).
- Long-term: Impacts would extend from several years up to the life of the plan.
- Permanent: Impacts are a permanent change in the resource that would last beyond the life of the plan even if the actions that caused the impacts were to cease.

##### Context

- Common: The affected resource is not identified in enabling legislation and is not rare either within or outside the park. The portion of the resource affected does not fill a unique role within the park or its region of the park.
- Important: The affected resource is identified by enabling legislation or is rare either within or outside the park. The portion of the resource affected does not fill a unique role within the park or its region of the park.
- Unique: The affected resource is identified by enabling legislation and the portion of the resource affected uniquely fills a role within the park or its region of the park.

##### Overall Summary Impact Levels

Summaries about the overall impacts on the resource synthesize information about context, intensity, and duration, which are weighed against each other to produce a final assessment. While each summary reflects a judgment call about the relative importance of the various factors involved, the following descriptors provide a general guide for how summaries are reached.

Negligible:	Impacts are generally extremely low in intensity (often they cannot be measured or observed), are temporary, and do not affect unique resources.
Minor:	Impacts tend to be low intensity or of short duration, although common resources may have more intense, longer-term impacts.
Moderate:	Impacts can be of any intensity or duration, although common resources are affected by higher intensity, longer impacts while unique resources are affected by medium or low intensity, shorter-duration impacts.
Major:	Impacts are generally medium or high intensity, long-term or permanent in duration, and affect important or unique resources.

### Impairment

Impairment of a park resource(s) occurs when a resource would no longer fulfill the specific purposes identified in the park's establishing legislation (or proclamation) or its role in maintaining the natural or cultural integrity of the park, as described in the park's GMP, foundation document, or other significant guiding plan.

#### **4.2.2 Cumulative Impacts**

Cumulative impacts are the additive or interactive effects that would result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions (RFFAs) regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Interactive impacts may be either *countervailing* – where the net cumulative impact is less than the sum of the individual impacts or *synergistic* – where the net cumulative impact is greater than the sum of the individual impacts. Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the impacts of projects that have occurred in the past, are currently occurring, or are proposed in the future within the park road corridor. In the past, cumulative impacts on resources in the road corridor area have been dominated by the development of visitor facilities.

The road corridor and its associated developments between the Savage River Bridge near MP 14.0 and Toklat Rest Area make up the nearby area of development. There are several relevant past actions and projects that have occurred in the vicinity of the proposed project sites. There are also many ongoing actions, facilities, and services in the project vicinity. Related projects and impacts are examined in the cumulative impacts analysis in this section.

Past and ongoing actions in the area include upgrades and rehabilitation to existing roads, facilities, trails, and campgrounds and use of those facilities, especially vehicular use on the park road.

RFFAs are those actions that are likely or reasonably certain to occur, and although they may be uncertain, they are not purely speculative. Typically, they are based on documents such as existing plans, permit applications, or announcements. The park has plans in the near future to implement the following projects that were either identified in the DCP/EIS or elsewhere, including:

- Rehabilitate Teklanika Campground facilities.
- Rehabilitate Teklanika Campground Water System.
- Import and Place Riprap to Implement Toklat Sheetpile EA Mitigation Measures.
- Increase Height of Protective Sheetpile, Toklat River.
- Place Riprap to Protect Toklat Facilities and Failing Sheetpile.
- Protect Toklat Bridge and Causeway from Erosion Damage.

- Process Gravel at Toklat for Upcoming Federal Highway Administration (FHWA) Projects.

No projects are presently planned in the vicinity of Teklanika Rest Stop and Polychrome Overlook.

### **4.3 ANALYSIS OF IMPACTS**

#### **4.3.1 Natural Sound**

##### **4.3.1.1 Cumulative Impacts (Natural Sound)**

Cumulative impacts to the soundscape from past, present, and RFFAs primarily consist of increasing human use in the park. An increase in human use results in an increase in human-generated noise, thereby altering the natural soundscape. Under each of the alternatives, the natural soundscape would be altered temporarily during construction and/or demolition, but would return to existing levels once the project is completed. For all sites, there would not be a permanent change to the natural soundscape or introduction of new noise sources, as facilities currently exist.

There are several relevant past actions and projects that have occurred, as well as ongoing actions, facilities, and services in the project vicinity that have contributed to the overall natural sounds environment. Noise levels were temporarily increased during construction of roads, facilities, trails, and campgrounds. Some projects have resulted in a permanent change to the natural soundscape in the immediately vicinity of the particular project due to increased human activity, including the development of the Teklanika and Savage River campgrounds, Toklat Rest Stop, and other scenic vistas and visitor facilities along the road corridor. The noise from vehicle use on the park road, especially buses and heavy maintenance equipment, is intermittent all along the road all summer long, generally excepting at night.

RFFAs that could occur within the Teklanika Campground area that would temporarily alter the soundscape during construction include rehabilitation of the Teklanika Campground facilities and the water system. RFFAs that could occur near the Toklat Rest Stop that would temporarily alter the soundscape include importing and placing riprap, gravel processing near Toklat Road Camp, increasing height of the protective sheetpile, and protecting Toklat Bridge and causeway from erosion damage.

It is expected that the park would continue to experience increased human use, thereby introducing increased traffic and human noise into the soundscape. The impacts of past and present actions on soundscapes are considered moderate but temporary during the construction period, and moderate and permanent for areas of increased human use.

##### **4.3.1.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Natural Sound)**

Under the No Action Alternative for all sites, use and maintenance of the facilities would continue under current conditions so there would be no additional noise sources. The existing noise sources identified in Section 3.2 would continue. Therefore, the overall natural soundscape would not change.

Existing noise sources near each of the project site consists of vehicles and buses on the park road, heavy equipment noise during road maintenance activities, human-generated noise from utilization of the toilet facilities and surrounding facilities (trails, campgrounds, overlooks, etc.), aircraft overflights, water noise from nearby rivers and streams, wildlife sounds, and wind. Existing noise sources at the Toklat Rest Stop also includes noise from use of the adjacent maintenance area, bookstore, and staff residences.

#### Conclusion

Implementation of the No Action Alternatives would result in no direct or indirect impacts to natural soundscapes. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and

preserve. Because no new noise sources are associated with any of the No Action Alternatives, there would be no contribution to cumulative impacts to natural soundscapes in the park.

#### **4.3.1.3 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative) (Natural Sound)**

Construction activities associated with this alternative would result in a temporary increase in the ambient noise level resulting from the operation of construction equipment.

The increase in noise level would be primarily experienced close to the noise source, but some noise may be audible at greater distances, depending on the propagation characteristics in the area. The magnitude of the noise effects would depend on the type of construction activity, noise level generated by various pieces of construction equipment, duration of the construction phase, and the distance between the noise source and receiver. Decibel A-weighted (dBA) indicates the sound level weighted for human hearing. Sound levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source (USEPA 1971). The noisiest activity is the use of an excavator (CAT 315) during demolition of the old chemical toilet buildings.

Sensitive receptors that would potentially be temporarily impacted by the construction activities include wildlife. There would not be a permanent increase in noise levels associated with the project or change to the natural soundscape, as the campground and restroom facilities currently exist. Noise levels would be temporarily increased when the SSTs are pumped, but the pumping would occur on a regular schedule and would be temporary in nature. Furthermore, the existing soundscape in the area is comprised of various natural and human-generated noises, such as heavy equipment during road and campground maintenance and vehicles and buses utilizing the campground and restroom facilities; so these activities would not introduce a novel noise source to the existing natural soundscape.

#### **Conclusion**

Impacts to the natural soundscape under this alternative would be low in intensity, temporary in duration during construction, and common in context. Overall, impacts to the natural soundscape under this alternative would be negligible. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve. There would not be a permanent change to the natural soundscape or introduction of new noise sources; therefore, there would be no contribution to cumulative impacts to soundscapes.

#### **4.3.1.4 Teklanika Rest Stop Alternative 2 – SST and Alternative 3 – SST ‘Pods’ (NPS Preferred Alternative); Adaptive Use Management (Natural Sound)**

The discussion of natural soundscape and noise levels associated with construction activities for Teklanika Campground alternative is also applicable to this alternative. Construction for Alternatives 2 and 3 for this site is expected to be completed over a six-month period (May to September). Construction work would occur between 7:00 a.m. and 9:00 p.m. seven days a week. The noisiest activity is the use of a loader (CAT 966).

Sensitive receptors that would potentially be temporarily impacted by the construction activities include wildlife. The Teklanika Rest Stop would be closed to visitors during construction. A temporary rest stop would be established at MP 26 with portable toilets. A permanent increase in background noise level would occur due to a new noise source, a propane generator to operate the SST fans, if the adaptive use management full build-out were implemented. Noise levels would be temporarily increased when the SSTs are pumped, but the pumping would occur on a regular schedule and would be temporary in nature. Existing soundscape in the area is comprised of various natural and human-generated noises, such as heavy equipment for road maintenance activities and buses parking so that passengers can use the restroom facilities.

## Conclusion

Impacts to the natural soundscape under this alternative would be low in intensity, both temporary and permanent in duration, and common in context. Overall, impacts to the natural soundscape under this alternative would be minor. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve. There would be a permanent change to the natural soundscape with the introduction of a new noise source – a generator. There would be minor contribution to cumulative impacts to soundscapes.

### **4.3.1.5 Polychrome Overlook Alternative 2 – No Toilet Facilities (Natural Sound)**

The discussion of natural soundscape and noise levels associated with construction activities for Teklanika Campground alternative is also applicable to this alternative. Demolition associated with removal of the facilities is expected to be completed over a seven-week period during the daytime. Hauling of all equipment and materials would be after bus traffic hours and there would be minimal staging. Any staging of equipment would be at the Toklat Road Camp. The noisiest activity would be the use of a tractor trailer rig.

Sensitive receptors that would potentially be temporarily impacted by the demolition include visitors utilizing the overlook and wildlife. However, demolition would occur over a short-time period, so the soundscape would only be temporarily altered. The removal of the facilities would result in a decrease in noise associated with restroom users and restroom maintenance, but visitors would still stop for the overlook, so noise from the buses and traffic would continue.

## Conclusion

Impacts to the natural soundscape under this alternative would be low in intensity, temporary in duration during construction, and common in context. Overall, impacts to the natural soundscape under this alternative would be negligible. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve. There would not be a permanent change to the natural soundscape or introduction of new noise sources; therefore, there would be no contribution to cumulative impacts to soundscapes. Moreover, the removal of the facilities would result in decreased noise from restroom users.

### **4.3.1.6 Polychrome Overlook Alternative 3 – SST (NPS Preferred Alternative); Adaptive Use Management (Natural Sound)**

The discussion of natural soundscape and noise levels associated with construction activities for Teklanika Campground alternative is also applicable to this alternative. If construction associated with full build out of this area is pursued, it is expected to be completed over a seven-month period (May to September). Construction would take place throughout the week and after bus traffic hours in the early summer months to avoid impacting the visitors or bus traffic. Once the summer nights get shorter, construction would take place during daylight hours. The staging area would be at the Toklat Road Camp. The noisiest activity would be the use of the excavator (CAT 315) during installation of the retaining wall.

During construction, it is expected that visitors would not stop to use the overlook or facilities, so users during that period would not be impacted. Wildlife would be temporarily impacted during construction. There is no permanent increase in noise levels associated with the project or change to the natural soundscape, as the restroom facilities currently exist. Noise levels would be temporarily increased when the SSTs are pumped, but the pumping would occur on a regular schedule and would be temporary in nature. Furthermore, the existing soundscape in the area is comprised of various natural and human-generated noises, such as heavy equipment during road maintenance and vehicles and buses utilizing the

restroom facilities; so these activities would not introduce a novel noise source to the existing natural soundscape.

#### Conclusion

Impacts to the natural soundscape under this alternative would be low in intensity, temporary in duration during construction, and common in context. Overall, impacts to the natural soundscape under this alternative would be minor. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve. There would not be a permanent change to the natural soundscape or introduction of new noise sources; therefore, there would be no contribution to cumulative impacts to natural soundscapes.

#### **4.3.1.7 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Natural Sound)**

The discussion of natural soundscape and noise levels associated with construction activities for Teklanika Campground alternative is also applicable to this alternative. Construction for this alternative is expected to be completed over a four to six -week period in either late May or early September. Construction work would occur between 7:00 a.m. and 7:00 p.m. on seven days per week, except the hauling of equipment which would occur after bus traffic hours. The noisiest activity is the use of an excavator (CAT 315).

Sensitive receptors that would potentially be temporarily impacted by the construction activities include visitors utilizing the rest stop and bookstore, staff residences, and wildlife. However, construction would not occur on weekends, when the majority of users are in the park. There is no permanent increase in noise levels associated with the project or change to the natural soundscape, as the restroom facilities currently exist. Noise levels would be temporarily increased when the SSTs are pumped, but the pumping would occur on a regular schedule and would be temporary in nature. Furthermore, the existing soundscape in the area is comprised of various natural and human-generated noises, such as heavy equipment during road maintenance, vehicles and buses utilizing the restroom and bookstore, and staff residences; so these activities would not introduce a novel noise source to the existing natural soundscape.

#### Conclusion

Impacts to the natural soundscape under this alternative would be low in intensity, temporary in duration during construction, and common in context. Overall, impacts to the natural soundscape under this alternative would be negligible. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve. There would not be a permanent change to the natural soundscape or introduction of new noise sources; therefore, there would be no contribution to cumulative impacts to soundscapes.

### **4.3.2 Recreation and Visitor Use**

#### **4.3.2.1 Cumulative Impacts (Recreation and Visitor Use)**

Cumulative impacts to recreation and visitor use have increased as a result of past and present actions taken within the park. Past actions have included development of the Teklanika and Savage River campgrounds, Toklat Rest Stop, and other scenic vistas and visitor facilities along the road corridor. Annual use of the park road by visitors and others is the main way that recreation and visitor use of the park is achieved and supported, but is also an action that creates impacts on the recreational experience of many visitors. New or upgraded visitor facilities along the park road would have impacts on visitor use by creating amenities that may improve visitor experience. New trails, in addition to the maintenance of existing trails, coupled with road resurfacing projects to improve transportation corridors for summer visitation would also positively impact recreation opportunities and visitor use.

RFFAs that could contribute to cumulative impacts to recreation and visitor use include the rehabilitation of campground facilities and the water system at Teklanika Campground. This campground is heavily used, as it is the furthest that recreational vehicles are allowed to travel on the park road and camp overnight without special permits. Proposed improvements to this campground through upgrades of the potable water system, installation of food storage lockers and site brushing along trails would all contribute to positive impacts to recreation and visitor use at this location.

Erosion mitigation projects along the Toklat River, gravel processing near the Toklat Road Camp, and repairs to the park road near the Toklat Rest Stop would also contribute to cumulative impacts to recreation and visitor use. These projects would eliminate hazards to visitors, supply gravel for road maintenance projects, visually blend the western river bank protection into the river and promote a more natural visual aesthetic at the site. Road resurfacing and repair would improve visitor safety by providing better vehicular control through improved traction and fewer potholes.

Mitigation measures would be employed during the construction phase of these projects to minimize any short-term, localized negative impacts to campground or rest stop visitors. Construction activities could occur early in the season when very few buses are operating to minimize impacts to park visitors and shuttle buses.

#### **4.3.2.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Recreation and Visitor Use)**

Under the No Action Alternative, there would be no changes in structures, facilities, roads, or trails associated with the four project sites. The level of visitation to the park is expected to continue at the present rate. Estimates show that shuttle bus use and park road traffic is nearing capacity.

With no changes to facilities, there would be no direct impacts on recreation and visitor use. However, indirect effects to visitors would continue, through inadequate service at these sites during the shoulder season, when portable toilets must be brought into the park. Visitor experience could be negatively impacted due to the limited number and locations of toilets as the obsolete chemical toilet facilities fall into disrepair, as replacement parts are no longer available.

#### Conclusion

Impacts on recreation and visitor use under this alternative at the Teklanika Campground, Teklanika Rest Stop, and Polychrome Overlook sites would be low to medium in intensity, temporary to long-term in duration, and important in context. No direct impacts to recreation and visitor use would be anticipated at Toklat Rest Stop due to implementation of Alternative 1; however, indirect impacts could include increased use of the facilities in this area as other facilities fall into disrepair. The overall impact to recreation and visitor use would be moderate to major if there is no corrective action taken to replace obsolete toilet facilities. The No Action Alternative would have a moderate contribution to cumulative effects on recreation and visitor use. Existing impacts would continue, and could eventually increase in intensity as park visitation continues to rise and obsolete facilities fall into disrepair.

The level of impact on recreation and visitor use from this alternative could result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.2.3 Teklanika Campground Alternative 2 - SST (NPS Preferred Alternative) (Recreation and Visitor Use)**

At Teklanika Campground under Alternative 2, existing chemical toilet facilities would be replaced with two double-vault SSTs per campground loop, instead of the single existing chemical toilet structure per loop. This would provide visitors two central locations to access restroom facilities per campground loop. These facilities would be functional throughout the open season of the park road.

## Conclusion

Impacts on recreation and visitor use at the Teklanika Campground from Alternative 2 would be long-term, of medium intensity, and important in context. There would be temporary, localized, low intensity impacts generated during the construction phase through increased levels of dust and noise. The overall impact to recreation and visitor use would be moderate, but beneficial, resulting from the addition of improved amenities at the campground for visitors. The implementation of Alternative 2 at Teklanika Campground would have a negligible contribution to cumulative impacts on visitor use and recreation due to the long-term beneficial impacts expected from the operations of the upgraded facilities. The level of impact on recreation and visitor use from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

### **4.3.2.4 Teklanika Rest Stop Alternative 2 – SST and Alternative 3 – SST “Pods” (NPS Preferred Alternative); Adaptive Use Management (Recreation and Visitor Use)**

Under the Teklanika Rest Stop Alternatives 2 and 3, existing chemical toilet facilities would be replaced with SSTs; however, the alternatives would be configured differently within the developed area of the rest stop. Additional facilities would be available that meet ABA design standards, enhancing the recreation experience for visitors with disabilities. Odor control would also be part of these alternatives, which would contribute to the beneficial long-term direct and indirect impacts to recreation and visitor use.

Due to the configuration of the SST locations in Alternative 2, there could be an increased potential for drippings to fall from the suction hose onto the toilet seat, toilet floor, and deck used by visitors during pumping operations, which would create a localized, temporary negative impact on visitor experience. Alternative 3 better addresses operability issues and decreases the potential for negative impacts due to pumping operations.

During the construction phase of the project, there would be localized, temporary impacts to visitor use and recreation opportunities through increased levels of dust and noise. Mitigation measures would be employed to minimize any short-term, localized negative impacts to visitors to the rest stop. The Teklanika Rest Stop would be closed and a temporary rest stop would be established during construction. When the facilities are operational, they would provide long-term beneficial impacts through improved amenities at the rest stop for visitors.

## Conclusion

Impacts to recreation and visitor use would be long-term, of medium intensity and important context. The overall impact to recreation and visitor use would be moderate, and would be considered beneficial, due to the improved visitor facilities at the site. The implementation of Alternative 2 or 3 at the Teklanika Rest Stop would have a negligible contribution to cumulative impact on visitor use and recreation due to the long-term beneficial impacts expected from the operations of the upgraded facilities. The level of impact on recreation and visitor use from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

### **4.3.2.5 Polychrome Overlook Alternative 2 – No Toilet Facilities (Recreation and Visitor Use)**

At the Polychrome Overlook under Alternative 2, the removal of the 18 existing chemical toilets could create a long-term impact to visitors riding the shuttle buses. The beneficial impacts would be enhanced visitor viewing experience due to increase of wildlife sightings, unobstructed panoramic view, and improved traffic flow. The negative impacts would be that the lack of toilet facilities may force visitors to venture onto the fragile habitats located beyond the disturbed areas to relieve themselves, creating social trails.

During the demolition, there would be localized, temporary impacts to visitor use and recreation opportunities through increased levels of dust and noise. Mitigation measures would be employed to minimize any short-term, localized negative impacts to visitors to the rest stop. Construction activities could occur early in the season when very few buses are operating to minimize impacts to park visitors and shuttle buses.

#### Conclusion

Impacts to recreation and visitor use would be long-term, of medium intensity, and important context. The impacts of demolition would generally be temporary and localized. Impacts on recreation and visitor use at the Polychrome Overlook from Alternative 2 would be moderate. The implementation of this alternative would have a minor contribution to cumulative impact on visitor use and recreation due to the potential for an increase in social trails and improper human waste disposal. The level of impact on recreation and visitor use from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.2.6 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Recreation and Visitor Use)**

This alternative would also initially remove toilet facilities from the Polychrome Overlook. The adaptive management approach would evaluate whether or not a rest stop should be reconstructed based on resource and visitor use indicators, including such factors as Dall sheep migration, traffic flow, visitor satisfaction, and social trails. The indicators would be monitored and measured over the next two to five years.

If it was determined that a new rest stop would be needed at the Polychrome Overlook, the Park would construct SSTs and a small covered shelter. The steep bank on the northwest side of the rest stop would be excavated and a retaining wall might be necessary to provide room for the toilet structures. The proposed configuration of facilities under this alternative would open up a large space that could be used as parking for four buses, which would help to alleviate current traffic congestion that occurs in the area. The proposed organization of pedestrian flow at the overlook would improve safety at the site, reducing the possibility of conflicts between vehicles and people.

#### Conclusion

If it is decided that the rest stop facilities would be replaced at Polychrome Overlook under Alternative 3, impacts to recreation and visitor use would be moderate and beneficial. Impacts to recreation and visitor use would be long-term, of medium intensity, and important context. During the construction phase of the project, there would be localized, temporary impacts to visitor use and recreation opportunities through increased levels of dust and noise. Mitigation measures would be employed to minimize any short-term, localized negative impacts to visitors to the overlook. Construction activities could occur during night time hours when very few buses are operating to minimize impacts to park visitors and shuttle buses.

The implementation of Alternative 3 at the Polychrome Overlook would have a negligible contribution to cumulative impact on visitor use and recreation due to the long-term impacts expected from the operations of the upgraded facilities. The level of impact on recreation and visitor use from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.2.7 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Recreation and Visitor Use)**

Under Alternative 2 at the Toklat Rest Stop, one five-place SST urinal would be added to the existing SSTs already on site. During the construction phase of the project, there would be localized, temporary

impacts to recreation and visitor use through increased levels of dust and noise. Construction activities would occur either early in June or early September during low visitation to minimize impacts to visitors.

### Conclusion

Impacts to recreation and visitor use would be long-term, of low intensity, and important context. During the construction phase of the project, there would be localized, temporary impacts to visitor use and recreation opportunities through increased levels of dust and noise. Mitigation measures would be employed to minimize any short-term, localized negative impacts to visitors to the rest stop. The overall impacts to recreation and visitor use would be minor and beneficial. The implementation of Alternative 2 at the Toklat Rest Stop would have a negligible contribution to cumulative impact on visitor use and recreation due to the long-term impacts expected from the operations of the upgraded facilities. The level of impact on recreation and visitor use from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

## **4.3.3 Soils and Vegetation**

### **4.3.3.1 Soils**

#### **4.3.3.1.1 Cumulative Impacts (Soils)**

Past and present actions that have impacted soils and permafrost at these sites include initial park road, campground, and rest stop construction; ongoing routine maintenance and traffic use; maintenance/repair of ice lens and slope stability effects on structures, pavement, and the park road at the Polychrome Overlook; and construction of erosion control structures adjacent to Toklat Rest Stop. Impacts have included truck and heavy equipment travel on unpaved roads, which may have resulted in erosion of surface soils and accelerated or uneven compaction of shallow subsurface soils; alterations to permafrost, where present, as a result of vegetation and insulative mat losses; slope stability problems at Polychrome Pass due to rainfall, traffic loading, and possible permafrost melting; and reduction in soil erosion along the Toklat River bluff, and changes to natural erosion and sedimentation patterns in the river.

RFFAs that could contribute to cumulative impacts include routine maintenance activities; ongoing, and in some cases, increasing waste management actions/frequencies; rehabilitation of Teklanika Campground facilities and water system; deck and parking area maintenance activities due to ice lens degradation at Polychrome Overlook; potential park road repair at Polychrome Overlook should landslide events occur in the future; planned erosion control projects near the Toklat Rest Stop for riprap placement and sheetpile improvements; and processing of gravel from the 70-mile Toklat pit for park road maintenance.

#### **4.3.3.1.2 Teklanika Campground, Teklanika Rest Stop, and Toklat Rest Stop Alternative 1 – No Action (Soils)**

Under the No Action Alternative for these three sites, no new impacts to soils and permafrost would occur under current conditions, as existing ground conditions would not be altered. Continued maintenance of existing facilities would occur, and pump trucks would continue to access these sites during peak use seasons.

## Conclusion

Impacts on soils and permafrost from the No Action Alternative at Teklanika Campground, Teklanika Rest Stop, and Toklat Rest Stop are expected to be negligible. Existing disturbed areas, slopes, and topographical characteristics would be maintained, but unaltered. Ongoing permafrost impacts would continue to occur where permafrost is present.

The level of impact on soils and permafrost would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park and preserve. The No Action Alternative would have a negligible contribution to cumulative impacts on soils at these three sites.

### **4.3.3.1.3 Polychrome Overlook Alternative 1 – No Action (Soils)**

Under the No Action Alternative for Polychrome Overlook, impacts to soils and permafrost would continue to occur. Substantial heaving and settling from the underlying ice lens and discontinuous permafrost have caused damage to the structure that would need to be continually maintained. Additionally, landslides and slumping have occurred at this site, causing road damage, surficial shearing, and deck slumping; these effects may occur again in the future due to the continued presence of steep slopes and traffic loading.

## Conclusion

Adverse impacts from ground shifting and slope instability would likely continue throughout the life of the current deck placement, and are expected to be low to medium in intensity, temporary to long-term in duration, and common in context. Impacts on soils and permafrost from the No Action Alternative at Polychrome Overlook would be minor to moderate overall. Ongoing impacts from permafrost and slope stability processes could continue to occur, and structures could be impacted by a lack of action in the long-term.

The level of impact on geological processes would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park and preserve. The No Action Alternative would have a minor to moderate contribution to cumulative impacts on soils at the Polychrome Overlook.

### **4.3.3.1.4 Teklanika Campground, Alternative 2 – SST (NPS Preferred Alternative) (Soils)**

Under Alternative 2, the Teklanika Campground toilets would be replaced with SSTs in the vicinity of the existing structures. No shallow subsurface permafrost-bearing zones were observed in soil borings installed in the vicinity. As all upgrades are proposed within previously disturbed soils, impacts to soils at this site during construction would be low in intensity, temporary in duration, and common in context. Reduced travel by pump trucks through the campground under this alternative would reduce localized compaction and erosion of soils, and result in a negligible to minor beneficial impact under this alternative.

## Conclusion

Implementation of Alternative 2 at the Teklanika Campground would result in negligible direct impacts to soils, and negligible to minor indirect beneficial impacts through reduction in pump truck traffic. Benefits of reduced maintenance and pumping intervals and ongoing rest stop repairs would outweigh temporary adverse impacts to soils. Impacts would be low to medium in intensity, temporary to long-term in duration, and common in context; effects could vary depending on seasonal and climate trends. Alternative 2 would have a negligible contribution to cumulative impacts to soils at the Teklanika Campground. The level of impact on soils would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park.

#### **4.3.3.1.5 Teklanika Rest Stop, Alternative 2 – SST; Adaptive Use Management (Soils)**

Under Alternative 2, the Teklanika Rest Stop additions to the current footprint of the site would include ventilation piping and/or air scrubbing systems along the west perimeter of the turnout under both build out scenarios, and an increase in foundation and deck size at the north end of the deck under the maximum build out to accommodate additional SSTs. Proposed additional soil disturbance areas under both build outs would be limited to approximately 0.1 acre. No subsurface permafrost-bearing zones were observed in soil borings installed in the vicinity. While the increased tank sizes would require foundation modifications, existing shallow subsurface soils already consist of man-made fill, so no previously undisturbed subsurface soils would be altered. A minor amount of previously undisturbed surface soils would be altered along the west edge of the site and north end of the deck, where the proposed alternative extends along the top of a west-facing slope. Expansion in this area may require introduction of fill on previously undisturbed ground, which may impact slope stability conditions. Impacts to soils are expected to be low in intensity, temporary in duration, and common in context.

##### Conclusion

Depending on seasonal and climate trends, impacts to soils and slope stability would be low to medium in intensity, temporary to long-term in duration, and common in context. Direct and indirect impacts under Alternative 2 are expected to be minor overall. Alternative 2 would have a minor contribution to cumulative impacts to soils at the Teklanika Rest Stop. The level of impact on soils would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park and preserve.

#### **4.3.3.1.6 Teklanika Rest Stop, Alternative 3 – SST “Pods”; Adaptive Use Management (NPS Preferred Alternative) (Soils)**

Under Alternative 3 minimum build out option, passive ventilation would be utilized and no air scrubbing components would be installed. Under Alternative 3 maximum build out option, both ventilation piping and scrubbing equipment would be required. Ventilation piping would be installed along the west boundary of the turnout. Proposed additional soil disturbances would be limited to approximately 0.1 acre under both the minimum and maximum build out scenarios. A small amount of existing disturbed area at the south end of the existing deck would be revegetated under this alternative.

The architect's design narrative recommends an additional geotechnical investigation be conducted under this alternative to drill four additional borings underneath the proposed SST locations. No permafrost was encountered in previous borings installed elsewhere at this site. With the exception of the west edge of the site, existing shallow subsurface soils already consist of man-made fill, so no previously undisturbed subsurface soils would be altered. A minor amount of previously undisturbed surface soils would be altered along the west edge of the site and north end of the deck where the proposed alternative extends along the top of a slope that dips west towards the Teklanika River. The addition of piping, fill, and heavy vehicular loads along the west edge of the site could cause alterations in the upslope stability adjacent to the piping placement. Given that additional geotechnical investigation would provide recommendations to reduce slope stability impacts, adverse impacts to soils are expected to be low in intensity, temporary in duration, and common in context.

##### Conclusion

Impacts to soils and slope stability would be similar to Alternative 2 for Teklanika Rest Stop.

#### **4.3.3.1.7 Polychrome Overlook, Alternative 2 – No Toilet Facilities (Soils)**

Under Alternative 2, all toilet facilities, decking, and support structures would be removed from Polychrome Overlook, with the exception of an extended trailhead to meet existing grade. The site would be used as a scenic viewpoint, which would add approximately 3,640 square feet to the parking area. Removal of all structures would cause surficial exposure of the previous footprint, which would likely be

modified by grading and addition of gravel base to accommodate future vehicle and pedestrian traffic. Permafrost and ice lens alterations would be expected to continue, which may increase grade maintenance frequency in this portion of the turnout, but maintenance of the existing structures from ice lens effects would be eliminated. Vehicular traffic and parking times may be reduced at the site, which would reduce loading on potentially unstable slopes along the downslope side of the park road. Adverse impacts to geologic processes would be low to medium in intensity, temporary in duration, and common in context, but would be outweighed by the beneficial effects of reduced impacts to structures and slope stability concerns.

#### Conclusion

Depending on seasonal and climate trends, impacts to soils and slope stability would be low to medium in intensity, temporary to long-term in duration, and common in context. Implementation of Alternative 2 at Polychrome Overlook could result in minor to moderate, direct or indirect impacts on geologic processes. Ongoing impacts from permafrost and slope instability processes would likely continue to occur, but would be balanced by the beneficial effects of reduced impacts to structures and slopes. Alternative 2 would have a minor to moderate contribution to cumulative impacts to soils at the Polychrome Overlook. The level of impact on geological processes would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park and preserve.

#### **4.3.3.1.8 Polychrome Overlook, Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Soils)**

Under Alternative 3 at Polychrome Overlook, existing facilities would be replaced with SSTs and a small covered shelter if the full build out is implemented. Currently, approximately 0.2 acre of area is cleared for the site. Under Alternative 3, an additional 0.1 acre is proposed for improvements, increasing the overall footprint of the site to an estimated 0.3 acre. New improvements would be installed to the southwest of the delineated ice lens, to reduce heaving and subsidence of the new structures. A retaining wall would be installed under this alternative to support the upslope soils northwest of the proposed expansion. Natural permafrost and ice lens alterations would likely continue to impact the northeast end of the proposed structures and the newly cleared parking area in the northeast half of the site, which may increase grade maintenance frequency in this portion of the turnout. Traffic loading may continue to impact potentially unstable slopes along the downslope side of the park road at the east end of this site. While the proposed expansion would cause a relatively minor amount of new soil disturbance, potential continued ground shifting and slope instability in the east portion of the site represent adverse impacts that would be low to medium in intensity, temporary to long-term in duration, and common in context.

#### Conclusion

Depending on seasonal and climate trends, impacts to soils and slope stability would be low to medium in intensity, temporary to long-term in duration, and common in context. Under Alternative 3, minor to moderate impacts from permafrost and slope stability processes would likely continue to occur at the Polychrome Overlook, but would be of less intensity than under the No Action Alternative. Alternative 3 would likely have a minor to moderate contribution to cumulative impacts to soils, permafrost, and slopes at Polychrome Overlook. The level of impact on geological processes would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park and preserve.

#### **4.3.3.1.9 Toklat Rest Stop, Alternative 2 – SST (NPS Preferred Alternative) (Soils)**

Under Action Alternative 2, one five-place urinal would be added to the current SST arrangement. Alterations are proposed entirely within the existing disturbed area, and foundation/support for the new building would likely not be installed below the current fill depths. Permafrost may be present but there has been no evidence of permafrost within disturbed areas of the Toklat Rest Stop. Adverse impacts to

soils and permafrost would be low to medium in intensity, temporary to long-term in duration, and common in context.

#### Conclusion

Depending on seasonal and climate trends, impacts to soils and slope stability would be low to medium in intensity, temporary to long-term in duration, and common in context. Implementation of Alternative 2 at Toklat Rest Stop would result in negligible direct or indirect impacts on geologic processes. Ongoing negligible to minor impacts from routine maintenance and beneficial impacts from erosion control would continue to occur. The contribution of Alternative 2 to cumulative impacts on soils and permafrost is expected to be negligible. The level of impact on geological processes would not result in any impairment of park resources fulfilling specific purposes identified in the park's enabling legislation, or that are essential to the cultural integrity of the park.

### **4.3.3.2 Vegetation**

#### **4.3.3.2.1 Cumulative Impacts (Vegetation)**

Past actions that have impacted common vegetation at these sites include construction and maintenance of the rest stops, campgrounds, roads, and trails. Higher levels of human presence and activity have and would continue to have impacts to vegetation in and around developed sites. Impacts to vegetation related to these activities include creation of social trails and trampling of vegetation, placement of fill in vegetated areas, potential introduction of invasive species, channelization of runoff from impervious surfaces, and subsequent erosion of soils. The impacts of past and present actions on vegetation are long-term and would likely persist for more than two years.

RFFAs that could contribute to cumulative impacts to vegetation include rehabilitation of Teklanika Campground facilities and water system, erosion mitigation along the Toklat River, placement of sheetpile and riprap along the Toklat River adjacent to Toklat Rest Stop, modification of existing sheetpile near Toklat Rest Stop, bridge repairs at the Toklat bridges, gravel processing for FHWA projects at the Toklat gravel pad, and other facility modifications, construction, and road and trail construction and maintenance. These activities would result in similar impacts to vegetation, as discussed for past and present actions.

#### **4.3.3.2.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Vegetation)**

Under the No Action Alternative, no new disturbance of vegetation would occur. Therefore, no direct or indirect impacts on vegetation would result.

#### Conclusion

Implementation of the No Action Alternative would not result in direct or indirect impacts to vegetation. No additional impacts to vegetation would occur. Existing disturbance to vegetation in the larger park developed area would continue over the long-term, especially due to road, trail, and facility maintenance, as well as ongoing human presence, but the overall integrity of vegetation in the park would remain. Because no impacts to vegetation would occur, this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation, or that are essential to the natural or cultural integrity of the park.

#### **4.3.3.2.3 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative) (Vegetation)**

Under Alternative 2 at Teklanika Campground, some common vegetation could be lost or damaged by placing additional structures at opposite sides of each loop. Impacts to the native vegetation would be avoided or minimized to the extent possible, as previously developed sites would be used to the greatest extent possible. The build out area for this work would impact less than 0.1 acre of vegetation. Native plant material would be used to revegetate any areas that may be disturbed by construction.

## Conclusion

Alternative 2 could result in low intensity, temporary direct and indirect impacts to common vegetation in the project area. Previously impacted sites would be used to the greatest extent possible for the SST locations, minimizing the impacts to vegetation. Therefore, direct and indirect impacts on vegetation would be negligible.

Alternative 2 would potentially have a minor contribution to the overall cumulative impacts on vegetation in the park. The overall integrity of vegetation in the park would remain. The level of impact on vegetation from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

### **4.3.3.2.4 Teklanika Rest Stop Alternative 2 – SST; Adaptive Use Management (Vegetation)**

Under Alternative 2 at the Teklanika Rest Stop, the minimum build out would result in disturbance less than 0.1 acre for the odor control system. The maximum build out would affect approximately 0.1 acre for the additional buildings, odor control system, and expansion of the existing parking area to the west. Most of the disturbed area would be within the same footprint as the existing toilet facilities; therefore, affect on vegetation would be minimized. Other actions would include removal of planters near the building.

## Conclusion

Disturbance of up to 0.1 acre of ground would result in direct and indirect impacts to common vegetation in the project area. The intensity of the impacts would be low and duration would be long-term. Therefore, direct or indirect impacts on vegetation would be minor.

Alternative 2 would potentially have a minor contribution to the overall cumulative impacts on vegetation in the park. The overall integrity of vegetation in the park would remain. The level of impact on vegetation from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

### **4.3.3.2.5 Teklanika Rest Stop Alternative 3 – SST “Pods”; Adaptive Use Management (NPS Preferred Alternative) (Vegetation)**

Under Alternative 3 at the Teklanika Rest Stop, proposed additional ground disturbances would be limited to approximately 0.1 acre under both the minimum and maximum build out scenarios. Other actions would include the addition of new entry drives, a space for the pump truck to access the SSTs, and reduced decking. Impacts on vegetation due to these actions would include: direct loss of regionally common vegetation, direct loss of native plant cover, and reduction in function such as biomass production.

## Conclusions

The impacts to vegetation from implementation of Teklanika Rest Stop Alternative 3 would be approximately the same as for Teklanika Rest Stop Alternative 2.

### **4.3.3.2.6 Polychrome Overlook Alternative 2 – No Toilet Facilities (Vegetation)**

Under Alternative 2 at Polychrome Overlook, existing toilet facilities and decking would be removed entirely. Revegetation of the site could occur, where soils are able to support vegetation. The stairway that leads to the scenic trail would be extended to reach the parking area after removal of the deck. Use of the scenic trail, and associated trampling of vegetation, may be reduced with the shortened length of stay at the site because of lack of toilet facilities.

### Conclusion

Because of the small amount of disturbed ground associated with this alternative, intensity of impacts to common vegetation would be low and the duration would be temporary. Overall, direct and indirect impacts to vegetation would be negligible.

Alternative 2 would potentially have a minor contribution to the overall cumulative impacts on vegetation in the park. The overall integrity of vegetation in the park would remain. The level of impacts to vegetation under this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.3.2.7 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Vegetation)**

Under Alternative 3 at Polychrome Overlook, existing chemical toilet facilities would be replaced with SSTs and a small covered shelter, if the full build out is pursued. A retaining wall would also be constructed. New structures would be placed west of the ice lens to prevent subsidence. These actions would result in a total ground disturbance of approximately 0.1 acre. During the removal phase of this alternative, use of the scenic trail, and associated trampling of vegetation, may be reduced with the shortened length of stay at the site because of lack of toilet facilities.

### Conclusion

Disturbance of up to 0.1 acre of ground would result in direct and indirect impacts to common vegetation in the project area. The intensity of the impacts would be low and duration would be long-term. Impacts on vegetation due to these actions would include: direct loss of regionally common vegetation, direct loss of native plant cover, potential introduction of invasive species, and reduction in function such as biomass production. Direct and indirect impacts on vegetation from this alternative at Polychrome Overlook would be minor.

Alternative 3 would potentially have a minor contribution to the overall cumulative impacts on vegetation in the park. The overall integrity of vegetation in the park would remain. The level of impacts to vegetation under this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.3.2.8 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Vegetation)**

Under Alternative 2 at Toklat Rest Stop, one five-place SST urinal would be placed adjacent to the existing SSTs already present. No undisturbed ground would be cleared of vegetation under this alternative.

### Conclusion

Because no additional undisturbed ground would be affected under this alternative, additional impacts to common vegetation in the project area would not occur. With no direct and indirect impact on the common vegetation in the project area, there would be no contribution to the overall cumulative impacts on vegetation in the park. Existing disturbance to vegetation in the larger park developed area would continue over the long-term, especially due to road, trail, and facility maintenance, as well as ongoing human presence, but the overall integrity of vegetation in the park would remain. This alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.4 Visual Quality**

##### **4.3.4.1 Cumulative Impacts (Visual Quality)**

Cumulative impacts to visual quality have grown as a result of past and present actions that have altered the natural environment, landscapes, and viewpoints within the park. Several past projects have shaped the landscape to accommodate the needs of visitors and staff, including upgrades to visitor facilities and the existing road system. The park facilities and roads have typically been designed to mimic the features of the natural landscape, incorporating natural colors and textures, and landscaping with native materials. Past and present actions have contributed minor, but persistent impacts to the visual resources within the park.

RFFAs in the vicinity that would have a minor but persistent contribution to cumulative impacts on visual resources include: rehabilitation to the Teklanika Campground facilities and water system, placement of riprap at several areas near the Toklat Rest Stop, and protection of the Toklat Bridge from erosion damage.

##### **4.3.4.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Visual Quality)**

If the No Action Alternative were implemented, existing landscapes and viewpoints would not be altered. The current facilities at each of the sites would continue operation with no alteration of facilities or expansion of current footprint. There would be no direct or indirect impact to visual resources as a result of the No Action Alternative.

##### Conclusion

With no direct or indirect impacts to visual resources, the No Action Alternative would not contribute to cumulative impacts on visual resources. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve.

##### **4.3.4.3 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative) (Visual Quality)**

Two double vault SSTs would replace each of the existing chemical toilets, thus there would be two structures per campground loop. One of these structures would be sited at the same location as the existing facility and the other structure would be located on the opposite side of the campground loop. Visual impacts would be minimal in this area, as this site is currently an operational campground and is previously disturbed. Disturbance of vegetation would be kept to a minimum during the construction of these SSTs. Native plant material would be used to revegetate any disturbed areas, in order to blend with the natural surroundings. The new structures would be designed to mimic features from the natural surroundings and blend with the existing built environment.

##### Conclusion

Alternative 2 for Teklanika Campground would generate temporary, low intensity impacts to common visual resources (generally previously developed sites) during the construction phase. While an additional structure would be located in the campground, its design would be in character with the built environment of the campground. The overall impact to visual resources would be negligible. Teklanika Campground Alternative 2 would have a negligible contribution to cumulative impacts on visual resources in the area. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

#### **4.3.4.4 Teklanika Rest Stop Alternative 2 – SST and Alternative 3 – SST ‘Pods’ (NPS Preferred Alternative); Adaptive Use Management (Visual Quality)**

Both action alternatives for Teklanika Rest Stop site have the same number of facilities planned. Alternative 2, however, would include the removal of the planters that separate the toilet facilities from the parking lot to facilitate access for the pump trucks to the new SST structures. The pump trucks would need to pull up as close to the structures as possible for cleaning to minimize the potential hazard of raw sewage dripping from the suction hose onto the deck used by visitors.

Under Alternative 3, the toilet structures, or ‘pods’, would be situated on the edge of the viewing deck and would not require the removal of planters for the pump trucks to access the structures for cleaning. However, the existing parking area would need to be expanded slightly to provide room for the pump truck to access all toilets. In addition, a new point of access would be provided for buses and cars to the east of the pods. This new layout would require the alteration of the current vegetated island that separates the parking area from the road. The layout of the pods under this alternative would result in the reduction of the existing viewing deck on the east side of the structures. This disturbed area would be revegetated.

##### Conclusion

Impacts to visual resources from implementation of Alternatives 2 or 3 for Teklanika Rest Stop would be similar to Alternative 2 for Teklanika Campground.

#### **4.3.4.5 Polychrome Overlook Alternative 2 – No Toilet Facilities (Visual Quality)**

Alternative 2 would remove existing structures from the site, including toilet facilities, bus shelter, and deck. The visual character of the site would change from a developed site to a more natural state.

##### Conclusion

Implementation of Alternative 2 at Polychrome Overlook would have a minor beneficial impact to visual resources near Polychrome Overlook, as the site would be restored to a more natural state if facilities were to be removed from the site. The overall impact to visual resources would be minor. Implementation of this alternative would decrease the cumulative impact to visual resources in the area. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

#### **4.3.4.6 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Visual Quality)**

If facility construction is pursued under Polychrome Overlook Alternative 3, design elements would be incorporated that blend with the natural aesthetics of the area. The changes made under this alternative would result in an overall minor impact to visual resources. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park and preserve.

##### Conclusion

If the facility replacement is pursued under Alternative 3 for Polychrome Overlook, impacts to visual resources would be similar to Alternative 2 for Teklanika Campground.

#### **4.3.4.7 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Visual Quality)**

A five-place urinal SST would be added to the existing SSTs at Toklat Rest Stop. The addition of a single facility to the existing built environment would have a minor impact to visual resources. The structure would be designed to mimic the existing built environment, as well as landscape features from the natural environment.

##### Conclusion

Impacts to visual resources from implementation of Alternative 2 for Toklat Rest Stop would be similar to Alternative 2 for Teklanika Campground.

### **4.3.5 Water Resources**

#### **4.3.5.1 Cumulative Impacts (Water Resources)**

Past and present actions that have impacted water resources at the campground and rest stops include initial alteration of topography and runoff patterns during construction, and ongoing topographic maintenance; ice flow intrusions from the Teklanika River; extraction of groundwater at the Teklanika Campground well; possible increases in active layer or perched groundwater zone thicknesses in areas of clearing and permafrost degradation (Polychrome Overlook and possibly Toklat Rest Stop); slope stability problems southeast of the park road at Polychrome Overlook due to rainfall, traffic loading, and possible permafrost melting; installation of a drain system at Polychrome Overlook during repair of the landslide zone to reduce the effects of groundwater seepage into the area; development of river erosion control structures adjacent to Toklat Rest Stop, which reduced erosion impacts to the site.

RFFAs that may affect water resources include continued maintenance of existing surface topography; a planned water system upgrade at the Teklanika Campground, which is expected to result in improved water quality for public drinking water use; potential future slope stability problems at Polychrome Overlook from rainfall events and groundwater seepage; planned river erosion projects near the Toklat Rest Stop for riprap placement and sheetpile improvements; and the planned upgrade of the Front Country Wastewater Treatment Facility, which is expected to result in groundwater quality improvements regardless of which toilet alternatives are selected under this project.

Beneficial impacts from future water supply and wastewater system improvements are expected to be medium in intensity, long-term to permanent in duration, and common in context. The level of beneficial impact on water resources (due to RFFAs) would result in improvement of park resources. Beneficial impacts from the future Teklanika well replacement, improved Toklat River erosion control, and the wastewater system upgrade are expected to be medium in intensity, long-term to permanent in duration, common in context.

Adverse impacts from topographic changes and possible increase in groundwater occurrence due to permafrost degradation could vary depending on seasonal and climate trends, ranging from low to medium in intensity, temporary to long-term in duration, common in context. The overall summary rating for cumulative effects to water resources is moderate to major, with a beneficial impact.

#### **4.3.5.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Water Resources)**

Under the No Action Alternative, no new impacts to water resources would occur under current conditions, as existing topography, surface water bodies, and groundwater would not be altered at the campground and rest stops. At Teklanika Campground, ice flow intrusions may continue to occur due to natural processes. At Polychrome Overlook, rainfall events and groundwater conditions may continue to impact slope stability conditions. At Toklat Rest Stop, erosion control structures would continue to prevent degradation of site soils.

Groundwater at the Front Country Wastewater Treatment Facility would be expected to continue to degrade if no improvements were made to toilet systems at the campground and rest stops; large quantities of chemical laden water would continue to be deposited in the Riley Creek Wastewater Treatment Facility. However, the planned upgrade of this facility (discussed under Cumulative Impacts as an RFFA) is expected to improve groundwater conditions.

## Conclusion

Implementation of the No Action Alternative would result in the continued impacts to water resources. Existing surface water runoff patterns would be maintained, but unaltered. Ongoing river ice flow and erosion processes, permafrost degradation and active layer growth, and groundwater impacts to slope stability would continue to occur. Large quantities of chemically treated waste would continue to be deposited in the wastewater treatment facility. These impacts are expected to be low to medium in intensity, temporary to long-term in duration, and common in context.

There would be no direct or indirect effects to water quality from implementation of Alternative 1 at Toklat Rest Stop. Other sites would have minor to moderate direct impacts, due to continued use of chemicals in wastewater. Contributions of the No Action Alternative to cumulative impacts to water resources at the Teklanika Campground and Teklanika Rest Stop are expected to be minor. At the Polychrome Overlook, contributions of the No Action Alternative to cumulative impacts to water resources may be minor, and slightly greater in intensity than that of Alternative 2 (removal). If the No Action Alternative were implemented, there would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

### **4.3.5.3 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative) (Water Resources)**

Under Alternative 2 for Teklanika Campground, the addition of new structures and associated localized surface contouring could have negligible to minor effects on the current surface and shallow subsurface water flow characteristics in the campground vicinity. Ongoing topographic maintenance and river ice flow processes would continue to occur. There would be no chemically treated wastewater generated at this site.

## Conclusion

Direct and indirect impacts to water resources are expected to be low in intensity, temporary to long-term in duration, common in context, and negligible overall. The contribution of Alternative 2 to cumulative impacts on water resources is expected to be negligible. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

### **4.3.5.4 Teklanika Rest Stop Alternative 2 – SST and Alternative 3 – SST “Pods” (NPS Preferred Alternative); Adaptive Use Management (Water Resources)**

Under Alternatives 2 and 3, the Teklanika Rest Stop surface water runoff patterns and groundwater conditions would remain essentially the same as existing conditions under both build out scenarios, with the exception of the west edge of the site, where the possible addition of piping and fill could cause minor alterations to drainage patterns at the top of the west-facing slope. There would be no chemically treated wastewater generated at these sites.

## Conclusion

Impacts to water resources are expected to be low in intensity, of potentially long-term duration, and common in context. Direct and indirect impacts are expected to be negligible to minor overall. The contribution of Alternative 2 or 3 to cumulative impacts on water resources is expected to be negligible to minor. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

### **4.3.5.5 Polychrome Overlook Alternative 2 – No Toilet Facilities (Water Resources)**

Under Alternative 2, all toilet structures, decking, and support structures would be removed from Polychrome Overlook, with the exception of an extended trailhead to meet existing grade. Removal of all

structures and re-grading may cause localized alterations to surface drainage patterns. Permafrost and ice lens alterations would be expected to continue, resulting in a possible localized increase in active layer or perched groundwater occurrence. There would be no chemically treated wastewater generated at this site.

#### Conclusion

These impacts to water resources are expected to be low in intensity, potentially of long-term duration, and common in context. Direct and indirect impacts are expected to be negligible to minor overall. The contribution of Alternative 2 to cumulative impacts on water resources is expected to be negligible to minor. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

#### **4.3.5.6 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Water Resources)**

Under Alternative 3, if construction activities are pursued, existing facilities would be replaced with multiple SSTs, a small covered shelter, and a gabion wall, increasing the total cleared area at the rest stop by 0.1 acre. New improvements would be installed southwest of the delineated ice lens and current structures, resulting in possible localized alteration of drainage patterns. Permafrost and ice lens alterations would be expected to continue, resulting in a possible localized increase in active layer or perched groundwater occurrence. There would be no chemically treated wastewater generated at this site.

#### Conclusion

These impacts to water resources are expected to be low to medium in intensity, potentially of long-term duration, and common in context. Direct and indirect impacts under this alternative are expected to be negligible to minor overall. The contribution of Alternative 3 to cumulative impacts on water resources is expected to be negligible to minor. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

#### **4.3.5.7 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Water Resources)**

Under Action Alternative 2, one five-place urinal would be added to the current SST arrangement. Alterations are proposed entirely within the existing disturbed area. Groundwater conditions are unknown at this site. Groundwater is expected to be shallow based on Toklat Camp conditions to the north.

#### Conclusion

Adverse impacts to surface water (through localized surface contouring) and groundwater would be low in intensity, and of temporary to long-term duration. Direct and indirect impacts to water resources under this alternative are expected to be negligible overall. The contribution of Alternative 2 to cumulative impacts on water resources is expected to be negligible. There would be no impairment of park resources fulfilling specific purposes identified in the park enabling legislation, or that are essential to the natural and cultural integrity of the park.

### **4.3.6 Wildlife and Habitat**

#### **4.3.6.1 Cumulative Impacts (Wildlife and Habitat)**

Past and present actions that have impacted wildlife at these sites include construction and maintenance of the rest stops, campgrounds, roads, decking, and trails. Construction and maintenance typically create low intensity, temporary impacts on wildlife until work is completed. Increasing levels of human presence and activity at the four project areas have also affected, and continue to affect, wildlife as a permanent, but low intensity impact. Wildlife impacts associated with these activities have included disturbance or displacement of individual birds and mammals by human presence and construction noise, and the loss or

degradation of habitat as a result of development and maintenance of facilities and land use changes. Wildlife potentially affected by past and present actions includes, but is not limited to, bird and mammal species listed in Section 3.7 and Appendix B.

RFFAs at or near the project areas that could contribute to cumulative impacts to wildlife and habitat include rehabilitation of Teklanika Campground facilities and water system, placement of sheetpile and riprap along the Toklat River adjacent to Toklat Rest Stop, modification of existing sheetpile near Toklat Rest Stop, bridge repairs at the Toklat bridges, gravel processing for FHWA projects at the Toklat gravel pad, and other facility modifications, construction, and road and trail construction and maintenance. These activities would result in similar impacts to wildlife, as discussed for past and present actions.

#### **4.3.6.2 Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook, and Toklat Rest Stop Alternative 1 – No Action (Wildlife and Habitat)**

Under the No Action Alternative, no undisturbed habitat would be affected and no increase or decrease in park traffic or land use would occur.

##### Conclusion

Implementation of the No Action Alternative would not result in direct or indirect impacts to wildlife or habitat. Existing disturbance to wildlife in the area would continue over the long-term, especially due to road, trail, and facility maintenance, as well as ongoing human presence, but the overall integrity of wildlife in the park would remain. This alternative would not impact wildlife and would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.6.3 Teklanika Campground Alternative 2 – SST (NPS Preferred Alternative) (Wildlife and Habitat)**

Impacts on wildlife due to implementation of Alternative 2 would include low intensity, temporary disturbance or displacement of individual animals, including birds and mammals discussed in Section 3.7 and Appendix B. Temporary noise impacts associated with construction would increase disturbance or displacement of birds and mammals in the vicinity of the campground.

##### Conclusion

Since no undisturbed habitat would be lost or degraded under this alternative, direct and indirect impacts to wildlife or wildlife habitats would be negligible. New impacts to wildlife would occur in the form of disturbance, but the intensity of these impacts would be low and highly localized. This would be in addition to existing disturbance to wildlife in the area, which would continue as a permanent, low intensity impact, especially due to road and trail maintenance, as well as ongoing human presence, but the overall integrity of wildlife in the park would remain. Alternative 2 would have a negligible contribution to cumulative impacts on wildlife and habitat in the park. The level of impact on wildlife from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.6.4 Teklanika Rest Stop Alternative 2 – SST and Alternative 3 – SST “Pods” (NPS Preferred Alternative); Adaptive Use Management (Wildlife and Habitat)**

Teklanika Rest Stop Alternatives 2 and 3 would disturb a maximum of 0.1 acre of land outside of the existing footprint, including placement of odor control piping. Impacts on wildlife due to these actions would include low intensity, temporary disturbance or displacement of individual animals, including birds and mammals discussed in Section 3.7 and Appendix B.

##### Conclusion

Development of land outside of the existing footprint of the rest stop would result in a permanent and low-intensity reduction of common wildlife habitat. Temporary noise impacts associated with construction would increase disturbance or displacement of birds and mammals in the vicinity of the rest stop. Alternatives 2 and 3 would have a minor contribution to cumulative impacts on wildlife and habitat because of the small amount of habitat affected and the low intensity of disturbance of wildlife. This would be in addition to existing disturbance to wildlife in the area, which would continue as a low intensity, permanent impact, especially due to road and facility maintenance, as well as ongoing human presence, but the overall integrity of wildlife in the park would remain. The level of impact on wildlife from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.6.5 Polychrome Overlook Alternative 2 – No Toilet Facilities (Wildlife and Habitat)**

Under Alternative 2 at the Polychrome Overlook, existing toilet facilities and decking would be removed entirely. The stairway that leads to the scenic trail would be extended to reach the parking area after removal of the deck. Removal of facilities could reduce human activity at the site, reducing localized impacts to wildlife

##### Conclusion

Impacts to wildlife due to implementation of Alternative 2 would include temporary, low intensity disturbance or displacement of individual animals, including birds discussed in Section 3.7 and Appendix B. Temporary noise impacts associated with removal of facilities and construction of the stairs would increase disturbance or displacement of birds and mammals in the vicinity of the rest stop. It should be noted, however, that the removal of toilet facilities and decking may decrease the impacts on wildlife in this area in the long-term. An ongoing study by NPS staff shows that this area is commonly used by migrating Dall sheep (NPS 2008). The decrease in facilities at this site would decrease human congestion, which could decrease the negative impacts of human presence on Dall sheep. (see 4.3.6.5)

Impacts to wildlife would occur in the form of disturbance, but the intensity of these impacts would be temporary, low, and highly localized. These would be in addition to existing disturbance to wildlife in the area, which would continue as a low intensity, permanent impact, especially due to road and trail maintenance, as well as ongoing human presence, but the overall integrity of wildlife in the park would remain. Alternative 2 would have a negligible contribution to cumulative impacts on wildlife and habitat. The level of impact on wildlife from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.6.6 Polychrome Overlook Alternative 3 – SST; Adaptive Use Management (NPS Preferred Alternative) (Wildlife and Habitat)**

Under Alternative 3 at the Polychrome Overlook, a total of 0.1 acre of previously undisturbed habitat would be impacted if facility construction is pursued.

##### Conclusion

Impacts on wildlife due to these actions would include low intensity loss or degradation of common habitat and temporary, low intensity disturbance or displacement of individual animals, including birds and mammals discussed in Section 3.7 and Appendix B. Temporary noise impacts associated with removal of facilities and construction of new facilities would increase disturbance or displacement of birds and mammals in the vicinity of the rest stop.

Direct and indirect impacts associated with Alternative 3 would have a minor contribution to cumulative impacts on wildlife and habitat because of the permanent, but low intensity disturbance of wildlife and degradation of habitat. This would be in addition to existing disturbance to wildlife in the area, which

would continue as a permanent, low intensity impact, especially due to road and trail maintenance, as well as ongoing human presence, but the overall integrity of wildlife in the park would remain. The level of impact on wildlife from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

#### **4.3.6.7 Toklat Rest Stop Alternative 2 – SST (NPS Preferred Alternative) (Wildlife and Habitat)**

Under Alternative 2 at the Toklat Rest Stop, one five-place SST urinal would be placed adjacent to the existing SSTs already present. There would be no loss or degradation of wildlife habitat in the area.

##### Conclusion

Impacts on wildlife due to implementation of Alternative 2 would include temporary, low intensity disturbance or displacement of individual animals, including birds and mammals discussed in Section 3.7 and Appendix B. Temporary noise impacts associated with construction of the new SST would increase disturbance or displacement of birds and mammals in the vicinity of the rest stop. Thus, Alternative 2 would have a negligible contribution to cumulative impacts on wildlife and habitat. These temporary, localized impacts would be in addition to existing disturbance to wildlife in the area, which would continue as a permanent, low intensity impact, especially due to road maintenance and erosion control, as well as ongoing human presence. The overall integrity of wildlife in the park would remain. The level of impact on wildlife from this alternative would not result in impairment of those park resources that fulfill the specific purposes identified in the enabling legislation or that are essential to the natural or cultural integrity of the park.

## **5.0 CONSULTATION AND COORDINATION**

### **5.1 Agency Consultation and Coordination**

The NPS is the lead agency in the development of this EA.

There was no public scoping in the development of this document. NPS policies do not require public scoping during draft document preparation below the EIS level.

This EA will be available for public review and comment for a minimum of 30 days.

Following the public review period, all the public comments will be considered.

A final decision by the NPS Alaska Regional Director may come in the form of a FONSI, which would take into account any new information and public comment, and select an alternative to implement. If a FONSI is approved, it would be sent to those individuals and organizations that commented during the public review period, and it would be available on the park's web site (<http://www.nps.gov/dena>) and the NPS park planning web site (<http://parkplanning.nps.gov/>).

The NPS has determined that there are no Threatened and Endangered Species expected in the project area; therefore §7 consultation with the USFWS is not required.

The Assessment of Affect, signed by the Park Superintendent on January 5, 2009, determined that there would be no effects to cultural resources. Thus, consultation with the State Historic Preservation Office per §106 of the National Historic Preservation Act and implementing regulations is not required.

### **5.2 List of Preparers**

This EA was developed under an NPS contract by URS Group, Inc. of Anchorage, Alaska. The NPS holds final responsibility for all content.

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**APPENDIX A**  
**ANILCA §810 SUBSISTENCE**  
**SUMMARY EVALUATION AND FINDINGS**

**I. INTRODUCTION**

This section was prepared to comply with Title VIII, §810 of the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. It summarizes the evaluation of potential restrictions to subsistence activities that could result from proposed chemical toilet conversion projects at the Teklanika Campground, Teklanika Rest Stop, Polychrome Overlook and Toklat Rest located between mileposts 26 and 55 along the Denali Park Road in Denali National Park and Preserve.

**II. THE EVALUATION PROCESS**

Section (§) 810(a) of ANILCA states:

"In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands . . . the head of the federal agency . . . over such lands . . . shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency -

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to §805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA created new units and additions to existing units of the National Park System in Alaska. Denali National Park and Preserve was created by ANILCA §202(3)(a):

"The park additions and preserve shall be managed for the following purposes, among others: To protect and interpret the entire mountain massif, and additional scenic mountain peaks and formations; and to protect habitat for, and populations of, fish and wildlife, including, but not limited to, brown/grizzly bears, moose, caribou, Dall sheep, wolves, swans and other waterfowl; and to provide continued opportunities, including reasonable access, for mountain climbing, mountaineering, and other wilderness recreational activities."

Title I of ANILCA established national parks for the following purposes:

". . . to preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered arctic tundra, boreal forest, and coastal rainforest ecosystems to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities including but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands and on free-flowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems.

". . . consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded by or pursuant to this Act, to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so."

The potential for significant restriction must be evaluated for the proposed action's effect upon ". . . subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use. . . ." (§810(a))

### **III. PROPOSED ACTION ON FEDERAL LANDS**

Alternatives 1, 2 and 3 are described in detail in the environmental assessment. Customary and traditional subsistence use on NPS lands will continue as authorized by federal law under all alternatives. Federal regulations implement a subsistence priority for rural residents of Alaska under Title VIII of ANILCA.

The NPS proposes to replace chemical toilets at three sites along the Denali Park Road with SSTs (sweet-smelling toilets) at three locations along the Denali Park Road, with an adaptive management option to place additional SSTs at a fourth location. The sites are in the former Mount McKinley National Park wherein subsistence activities are not allowed.

### **IV. AFFECTED ENVIRONMENT**

Subsistence uses within Denali National Park and Preserve are permitted in accordance with Titles II and VIII of ANILCA. Sec. 202(3)(a) of ANILCA authorizes subsistence uses, where traditional, in the northwestern and southwestern preserves of Denali National Preserve. Lands within former Mount McKinley National Park are closed to subsistence uses.

A regional population of approximately 300 eligible local rural residents qualifies for subsistence use of park resources. Resident zone communities for Denali National Park and Preserve are Cantwell, Minchumina, Nikolai, and Telida. By virtue of their residence, local rural residents of these communities are eligible to pursue subsistence activities in the new park additions. Local rural residents who do not live in the designated resident zone communities, but who have customarily and traditionally engaged in subsistence activities within the park additions, may continue to do so pursuant to a subsistence permit issued by the Park Superintendent in accordance with state law and regulations.

The NPS realizes that Denali National Park and Preserve may be especially important to certain communities and households in the area for subsistence purposes. The resident zone communities of Minchumina (population 22) and Telida (population 11) use park and preserve lands for trapping and occasional moose hunting along area rivers. Nikolai (population 122) is a growing community and has used park resources in the past. Cantwell (population 147) is the largest resident zone community for Denali National Park and

Preserve, and local residents hunt moose and caribou, trap, and harvest firewood and other subsistence resources in the new park area.

The main subsistence species, by edible weight, are moose, caribou, furbearers, and fish. Varieties of subsistence fish include coho, king, pink, and sockeye salmon. Burbot, dolly varden, grayling, lake trout, northern pike, rainbow trout, and whitefish are also among the variety of fish used by local people. Beaver, coyote, land otter, weasel, lynx, marten, mink, muskrat, red fox, wolf, and wolverine are important furbearer resources. Rock and willow ptarmigan, grouse, ducks, and geese complete the park/preserve subsistence small game list.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in any given year many vary considerably from previous years because of such factors as weather, migration patterns, and natural population cycles. However, the pattern is assumed to be generally applicable to harvests in recent years with variations of reasonable magnitude.

## **V. SUBSISTENCE USES AND NEEDS EVALUATION**

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources that could be impacted.

The evaluation criteria are:

- the potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers; (b) redistribution of subsistence resources; or (c) habitat losses;
- the affect the action might have on subsistence fishing or hunting access; and
- the potential to increase fishing or hunting competition for subsistence resources.

The potential to reduce populations:

Rehabilitation of the park road would have a long-term but minor impact on wildlife habitat and populations.

The alternatives would not adversely affect the distribution or migration patterns of subsistence resources. Therefore, no change in the availability of subsistence resources is anticipated as a result of the implementation of this proposed action.

Restriction of Access:

All rights of access for subsistence harvests on NPS lands are granted by §811 of ANILCA. Denali National Park and Preserve is managed according to legislative mandates, NPS management policies and the park's General Management Plan. No actions under the alternatives described in the environmental assessment should affect the access of subsistence users to natural resources in the park and preserve.

Increase in Competition:

The alternatives should not produce any increase in competition for resources to subsistence users.

If, and when, it is necessary to restrict taking, subsistence uses are the priority consumptive users on public lands of Alaska and will be given preference on such lands over other consumptive uses (ANILCA, §802(2)).

Continued implementation of provisions of ANILCA should mitigate any increased competition, however significant, from resource users other than subsistence users. Therefore, the proposed action would not adversely affect resource competition.

## **VI. AVAILABILITY OF OTHER LANDS**

Choosing a different alternative would not decrease the impacts to park resources for subsistence. The preferred alternative is consistent with the mandates of ANILCA, including Title VIII, and the NPS Organic Act.

## **VII. ALTERNATIVES CONSIDERED**

The alternatives considered for this project were limited to the lands along the park road between milepost 26 and milepost 55 along the Denali Park Road. The alternatives are: 1) continue the existing conditions (No Action) which includes use of chemical toilets at the Teklanika Campground, Teklanika Rest Stop and Polychrome Overlook. This alternative is presented as a baseline for resource impacts but is considered impractical to continue because of a Consent Order with the Alaska Department of Conservation that requires Denali National Park to remove chemical toilet waste from its treatment plant waste stream; 2) replacing the chemical toilets at the two Teklanika sites with SSTs, including reuse of the existing structures at the Teklanika Rest Stop, removing all toilets from the Polychrome Overlook, and placing a new 5-place men's urinal at the Toklat Rest Stop; and 3) the preferred alternative would be to do the same projects at the Teklanika Campground and at the Toklat Rest Stop as in Alternative 2, but to replace the chemical toilets at the Teklanika Rest Stop with SSTs in a new alignment and not reuse the existing structures, and to remove chemical toilets at Polychrome, but to monitor the visitor experience and resource impacts at both Teklanika Rest Stop and at Polychrome to see if additional toilets need to be added in the future.

## **VIII. FINDINGS**

This analysis concludes that the preferred alternative would not result in a significant restriction of subsistence uses.

## APPENDIX B BIRDS FOUND IN THE GENERAL PROJECT AREA

**Table 1. Birds that are found in the general project area vicinity and are likely to nest near the project area.\***

Common Name	Scientific Name	Resident or Migrant Species <sup>†</sup>
Ruffed grouse	<i>Bonasa umbellus</i>	Resident
Willow ptarmigan	<i>Lagopus lagopus</i>	Resident
Great-horned owl	<i>Bubo virginianus</i>	Resident
Northern hawk owl	<i>Surnia ulula</i>	Resident
Boreal owl	<i>Aegolius funereus</i>	Resident
American three-toed woodpecker	<i>Picoides dorsalis</i>	Resident
Gray jay	<i>Perisoreus canadensis</i>	Resident
Black-capped chickadee	<i>Poecile atricapillus</i>	Resident
Boreal chickadee	<i>Poecile hudsonica</i>	Resident
Pine grosbeak	<i>Pinicola enucleator</i>	Resident
White-winged crossbill	<i>Loxia leucoptera</i>	Resident
Common redpoll	<i>Carduelis flammea</i>	Resident
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Migrant
American Kestrel	<i>Falco sparverius</i>	Migrant
Merlin	<i>Falco columbarius</i>	Migrant
Northern flicker	<i>Colaptes auratus</i>	Migrant
<b>Olive-sided flycatcher</b>	<b><i>Contopus cooperi</i></b>	<b>Migrant</b>
Alder flycatcher	<i>Empidonax alnorum</i>	Migrant
Hammond's flycatcher	<i>Empidonax hammondii</i>	Migrant
<b>Gray-cheeked thrush</b>	<b><i>Catharus minimus</i></b>	<b>Migrant</b>
Swainson's thrush	<i>Catharus ustulatus</i>	Migrant
Hermit thrush	<i>Catharus guttatus</i>	Migrant
American robin	<i>Turdus migratorius</i>	Migrant
Varied thrush	<i>Ixoreus naevius</i>	Migrant
Ruby-crowned kinglet	<i>Regulus calendula</i>	Migrant
Orange-crowned warbler	<i>Vermivora celata</i>	Migrant
Yellow-rumped warbler	<i>Dendroica coronata</i>	Migrant
Wilson's warbler	<i>Wilsonia pusilla</i>	Migrant
American tree sparrow	<i>Spizella arborea</i>	Migrant
Savannah sparrow	<i>Passerculus sandwichensis</i>	Migrant
Fox sparrow	<i>Passerella iliaca</i>	Migrant
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	Migrant
Dark-eyed junco	<i>Junco hyemalis</i>	Migrant

Source: Modified version of list provided by Carol McIntyre, wildlife biologist, Denali National Park and Preserve (2007), and (NPS 2007). **Bold** text indicates a species of special concern

\* Formal bird surveys have not been completed for the proposed project area; therefore, nesting potentials are based on professional experience and opinion (McIntyre 2007)

† Resident species over-winter regularly in the park; migrant species generally leave their breeding range during the non-breeding season.

**Table 2. Birds that are found in the general vicinity and *potentially* nest near the project area.\***

<b>Common Name</b>	<b>Scientific Name</b>	<b>Resident or Migrant Species*</b>
Spruce grouse	<i>Falcapennis canadensis</i>	Resident
<b>Northern goshawk</b>	<b><i>Accipiter gentilis</i></b>	<b>Resident</b>
Downy woodpecker	<i>Picoides pubescens</i>	Resident
Hairy woodpecker	<i>Picoides villosus</i>	Resident
Black-backed woodpecker	<i>Picoides arcticus</i>	Resident
Northern shrike	<i>Lanius excubitor</i>	Resident
Black-billed magpie	<i>Pica hudsonia</i>	Resident
American dipper	<i>Cinclus mexicanus</i>	Resident
Northern harrier	<i>Circus cyaneus</i>	Migrant
Red-tailed hawk	<i>Buteo jamaicensis</i>	Migrant
Solitary sandpiper	<i>Tringa solitaria</i>	Migrant
Lesser yellowlegs	<i>Tringa flavipes</i>	Migrant
Wilson's snipe	<i>Gallinago delicata</i>	Migrant
Short-eared owl	<i>Asio flammeus</i>	Migrant
Western wood-pewee	<i>Contopus sordidulus</i>	Migrant
Violet-green swallow	<i>Tachycineta thalassina</i>	Migrant
Arctic warbler	<i>Phylloscopus borealis</i>	Migrant
Bohemian waxwing	<i>Bombycilla garrulous</i>	Migrant
Yellow warbler	<i>Dendroica petechia</i>	Migrant
<b>Blackpoll warbler</b>	<b><i>Dendroica striata</i></b>	<b>Migrant</b>
Northern waterthrush	<i>Seiurus noveboracensis</i>	Migrant
Lincoln's sparrow	<i>Melospiza lincolnii</i>	Migrant
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	Migrant
Pine siskin	<i>Carduelis pinus</i>	Migrant

Source: Modified version of list provided by Carol McIntyre, wildlife biologist, Denali National Park and Preserve (2007), and (NPS 2007). **Bold** text indicates a species of special concern

\* Formal bird surveys have not been completed for the proposed project area; therefore, nesting potentials are based on professional experience and opinion (McIntyre 2007). The project area nesting potential for many species in this table is unknown, so they were given a *potential* rating.

† Resident species over-winter regularly in the park; migrant species generally leave their breeding range during the non-breeding season.

**Table 3. Birds that are found in the general project area vicinity, but are not likely to nest near the project area.\***

<b>Common Name</b>	<b>Scientific Name</b>	<b>Resident or Migrant Species*</b>
Rock ptarmigan	<i>Lagopus muta</i>	Resident
White-tailed ptarmigan	<i>Lagopus leucura</i>	Resident
Gyrfalcon	<i>Falco rusticolus</i>	Resident
Great gray owl	<i>Strix nebulosa</i>	Resident
Common raven	<i>Corvus corax</i>	Resident
Rough-legged hawk	<i>Buteo lagopus</i>	Migrant
Golden eagle	<i>Aquila chrysaetos</i>	Migrant
<b>American peregrine falcon</b>	<b><i>Falco peregrinus anatum</i></b>	<b>Migrant</b>
Spotted sandpiper	<i>Actitis macularius</i>	Migrant
Wandering tattler	<i>Tringa incana</i>	Migrant
Least sandpiper	<i>Calidris minutilla</i>	Migrant
Mew gull	<i>Larus canus</i>	Migrant
Belted kingfisher	<i>Ceryle alcyon</i>	Migrant
Bank swallow	<i>Riparia riparia</i>	Migrant
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	Migrant
<b>Rusty blackbird</b>	<b><i>Euphagus carolinus</i></b>	<b>Migrant</b>

Source: Modified version of list provided by Carol McIntyre, wildlife biologist, Denali National Park and Preserve (2007), and (NPS 2007). **Bold** text indicates a species of special concern

\* Formal bird surveys have not been completed for the proposed project area; therefore, nesting potentials are based on professional experience and opinion (McIntyre 2007)

† Resident species over-winter regularly in the park; migrant species generally leave their breeding range during the non-breeding season.

**APPENDIX C**  
**COST ESTIMATES FOR ALL ALTERNATIVES (in \$1000s)**

Alternative Descriptions	Initial Cost	Annual Cost	Life Cycle Cost
No Action – All Locations	0	335	4,938
Preferred – Teklanika Campground Alternative 2	400-600	12	570-770
Preferred – Teklanika Rest Stop Alternative 3	1,000-2,000	54	1,800-2,800
Preferred – Polychrome Overlook Alternative 3	500-1,500	28	905-1,905
Preferred – Toklat Rest Stop Alternative 2	100-200	3	137-237
<b>Total – All NPS Preferred Alternatives</b>	<b>2,000-4,300</b>	<b>97</b>	<b>3,412-5,712</b>
Non-Preferred – Teklanika Rest Stop	1,500-2,500	80	2,700-3,700
Non-Preferred – Polychrome Overlook	50-100	0	50-100