The following alignment upgrades for the intersection of SMP and Bogard Road (Figures 15 and 16) were considered at a conceptual planning stage only, but were not carried forward:

- **Realignment of SMP west (and variations).** These alignments would move the intersection about 300 feet west and realign SMP between Cottonwood Creek and the Alcantra National Guard Armory to improve the angle of intersection between SMP and Bogard Road. The alignment upgrades were dismissed because of the length of realignment of SMP required for adequate curve radii and length, residential and commercial property impacts, and impacts to Cottonwood Creek.

- **Realignment of SMP east.** This alignment would move the intersection about 300 feet east and realign SMP between Cottonwood Creek and the Alcantra National Guard Armory to improve the angle of intersection between SMP and Bogard Road. It was dismissed from further consideration because of the length of realignment of SMP required for adequate curve radii and length, residential and commercial property impacts, and impacts to Cottonwood Creek.

- **Realignment of Bogard Road north.** This alignment would move the intersection about 500 feet north and realign Bogard Road for approximately 2,000 feet east and west of SMP to improve the angle of intersection between SMP and Bogard Road. It was dismissed from further consideration because of the impacts to the Alcantra National Guard Armory, residential property impacts north of Bogard Road and west of SMP, and the length of realignment of Bogard Road required for adequate curve radii and length.

- **Bogard Road discontinuous.** This upgrade would move the intersection about 300 feet south of its current location, and introduce a second Bogard Road intersection north of the existing intersection. The realignment of Bogard Road on the east would intersect with SMP near the Alcantra National Guard Armory. This upgrade was dismissed from further consideration because it creates a discontinuous Bogard Road. It also creates operational problems because of an expected high volume of left turns introduced onto SMP from Bogard Road (to accommodate the through movement on Bogard Road across SMP).
Figure 15

Seward Meridian Parkway - Road Improvements

Bogard Road Conceptual Intersection Options
Figure 16

Seward Meridian Road Improvements

Bogard Road Conceptual Intersection Options
SECTION 4

Environmental Consequences

The following discussions of environmental impacts are based on probable or foreseeable changes to the existing environment, including physical, biological, and human elements. The existing environment for the SMP Road Improvements project is discussed at the beginning of each subsection.

4.1 Environmental Categories Without Project-Imposed Consequences

The following environmental impact categories identified in the Federal Highway Administration (FHWA) Technical Advisory T 6640.8A (1987) are not affected by the proposed SMP Road Improvements project and are not discussed in this Environmental Consequences section of the EA.

- **Farmland Impacts.** Coordination with the National Resource Conservation Service (NRCS) found that no lands in the project corridor qualify as prime or unique farmlands. The NRCS has identified soils that meet the criteria for farmlands of local importance within the project corridor; however, none of this land is currently being used for the production of food, feed, fiber, forage, or oilseed, as defined by the NRCS criteria for Farmland of Local Importance (Appendix G).

- **Joint Development.** The SMP Road Improvements project is not being constructed in conjunction with any other project to preserve or enhance an affected community’s social, economic, environmental, and visual values.

- **Air Quality Impacts.** The MSB is in attainment for all air pollutants that are used by the U.S. Environmental Protection Agency (EPA) to evaluate air quality. Although traffic and emissions are expected to increase over time in the project corridor, emissions are expected to remain below the National Ambient Air Quality Standards.

- **Wild and Scenic Rivers.** There are no wild and scenic rivers, nor rivers nominated for their wild or scenic values, within the project corridor, according to information obtained from the National Park Service (2004).

- **Coastal Barriers.** The proposed SMP Road Improvements project area does not include any land that can be characterized as coastal barriers; therefore, coastal barriers are not an issue of concern for this project.

- **Threatened and Endangered Species.** No threatened or endangered species or critical habitat were identified for the project corridor during a review of the National Oceanic and Atmospheric Administration (NOAA) Fisheries and U.S. Fish and Wildlife Service (USFWS) threatened or endangered species lists (USFWS, 2004; NOAA Fisheries,
The study area does not include land designated or proposed as critical habitat under the Endangered Species Act.

4.2 Land Use Impacts

Current land uses within the proposed project corridor are mainly residential interspersed with some commercial and community service land uses. The proposed project lies within several land management jurisdictions. The MSB is the largest land management entity and covers most of the corridor. The State of Alaska and the City of Wasilla have jurisdiction over smaller portions of the corridor. The MSB core area, including the project corridor, has experienced substantial growth and development since 1990. This trend is expected to continue because the MSB is the fastest growing region in Alaska. The high growth rate and ongoing property development have created challenges for the local governments that must manage the impacts of rapid growth. In addition, the road system has not been developed to adequately provide needed system linkages and capacity improvements.

Public lands adjacent to the SMP corridor include lands owned by the MSB and State of Alaska. The MSB owns lands adjacent to the west side of SMP that contain the following public facilities: Cottonwood Public Safety Building and Fire Station #65, Cottonwood Creek Elementary School, Teeland Middle School, and the proposed vocational high school. The State owns the land where the Alcantra National Guard Armory is located north of Bogard Road and west of the proposed northern extension of SMP to Seldon Road. These landowners dictate allowable uses and activities on land for which they are responsible.

A small portion of the proposed project on the south end lies within the eastern boundary of the City of Wasilla. Six single-family residential lots and a commercial property are under the City of Wasilla zoning requirements. Development of land outside the City of Wasilla for the rest of the project corridor is under MSB jurisdiction. MSB Title 17, Zoning, establishes limited zoning and provides for special land use districts with conditional uses. One special land use district, the Ancient Tree Estates Addition No. 1 Subdivision Residential Land Use District, lies in the project corridor (see Figure 17).
Proposed Vocational High School

National Guard Armory

Currently being developed as commercial and residential

Cottonwood Creek Elementary

Public Safety Building/ Fire Station

Currently being developed as residential

Ancient Tree Est Addn #1

Beginning of Project

End of Project

Legend

Land Use:
- Commercial
- Service
- Residential
- Undeveloped
- Under Development

Boundary:
- City of Wasilla
- North Lakes Community Council
- South Lakes Community Council
- Special Use Planning District

Seward Meridian Parkway - Road Improvements

Figure 17

General Land Use
The proposed project is within the area covered by the adopted MSB *Core Area Comprehensive Plan* (MSB, 1997a). It is MSB policy to establish community-based comprehensive plans, which then become chapters in the borough-wide comprehensive plan. The *Core Area Comprehensive Plan* lays out four general goals for guiding future growth and land use. These goals encourage the following attributes:

- Variety of lifestyles and protection of individual rights without endangering public health, safety and welfare
- Formation of a compact center of population served by a water and sewer system where, because of soil conditions, individual waste-disposal systems are no longer functioning adequately to meet public health and safety requirements
- Commercial and industrial development in the core area
- Continued settlement of the cities of Palmer and Wasilla that provides a balanced economy characterized by workplaces, homes, and service

Several project coordination meetings were held with the MSB Planning Director and planning staff. (Meeting notes are provided in Appendix G.) These discussions verified consistency of the proposed project with MSB plans for land use, trails, and transportation. If it is not approved, the project would not prohibit any proposed or future development from proceeding because access for these developments would be served by existing roads or roads built by the developers themselves.

The following management plans influence the management of lands in the project area:

- **City of Wasilla Municipal Code zoning ordinances.** Properties that lie within the zoning jurisdiction of the City of Wasilla in the project area, the residential properties are “R-1” (single family residential) if residential and the commercial properties are “C.” Neither zoning category has square footage limits or restrictions on road upgrades. The zoning ordinances provide for coordination with the MSB *Long Range Transportation Plan* (1997b) and its identified road improvements.
- **MSB *Core Area Comprehensive Plan* (1997a).** This plan identifies upgrades to SMP that include a four-lane facility with a pathway the entire length of the corridor to Seldon Road.
- **MSB *Long-Range Transportation Plan* (1997b).** Updated in 1997, this plan considers the transportation elements of the *Core Area Comprehensive Plan* and identifies SMP as a future road improvement to a four-lane facility. A revised LRTP (MSB, 2005), currently undergoing review in draft format, lists SMP as a base-level project upgrading the road to a four-lane arterial with a two-lane facility from Bogard Road to Seldon Road. DOT&PF commented on the MSB draft LRTP, and asked the MSB to include the SMP improvements as a four-lane road with center left-turn lane from the Parks Highway to Seldon Road. The MSB has incorporated this request into the LRTP for future publication once adopted.
- **MSB *Recreational Trails Plan* (2000).** This plan identifies a proposed trail to be constructed the entire length of SMP from the Parks Highway to Seldon Road.
DOD&PF 2004–2006 Statewide Transportation Improvement Program (STIP) (2003). The STIP identifies the upgrade of SMP to four lanes from the Parks Highway to Bogard Road and the extension of two lanes to Seldon Road. The 2006-2008 STIP (DOD&PF, 2006) describes the SMP Road Improvements Project as upgrading SMP to a four-lane roadway with a center left-turn lane and a pathway from the Parks Highway to Seldon Road, including intersection improvements at the Palmer-Wasilla Highway, Bogard Road, and Seldon Road.

Two large properties are currently being developed adjacent to the proposed project. One is across SMP from the Ancient Tree Subdivision and will be a mix of residential and commercial development. The second is a residential subdivision at the north end of the project on the east side. (See Figure 17.)

No-Build Alternative
Under the No-Build Alternative, residential and commercial development would continue within the corridor and the development patterns would be the same as under the build scenarios, with the exception of the extension from Bogard Road to Seldon Road. Because the extension of the roadway from Bogard Road to Seldon Road would not occur, the adjacent easterly neighborhoods would remain without any direct access to SMP. The No-Build Alternative is not consistent with the MSB Core Area Comprehensive Plan (1997a), the MSB Long-Range Transportation Plan (1997b), the MSB Draft Long-Range Transportation Plan (2005), the MSB Recreational Trails Plan (2000), or the DOD&PF STIP (2006). Under the No-Build Alternative, there would be no upgrade of the road to a four-lane facility, no extension to Seldon Road, and no trail construction from the Parks Highway to Seldon Road.

Build Alternatives
Land use impacts are the same for both build alternatives (the West Offset [preferred] and the East Offset). Development of both commercial and residential properties is occurring at a brisk rate, and the proposed project improvements are not likely to change this trend or induce substantial new growth. The proposed project is also not likely to induce any low-density, energy-intensive development in outlying areas, and no features of the project would result in effects on or revisions to land use policies, goals, or zoning. In addition, there are no planned developments within the corridor that would not proceed without the project.

Either build alternative would play an important role as a major north-south link to the Parks Highway from the Seldon Road area. The availability of this link would allow easier and quicker access from and to the developed and developing neighborhoods, commercial facilities, public and private service providers, residents, commuters, pedestrians, and bicyclists.

Both build alternatives are consistent with local land use, trail, and transportation planning recommendations as described in the MSB Core Area Comprehensive Plan (1997a), the trail recommendations in the MSB Recreational Trails Plan (2000), the MSB Draft Long-Range Transportation Plan (2005), and the DOD&PF 2006–2008 STIP (2006), which recommends
upgrading SMP to a four-lane facility from the Parks Highway to Seldon Road. The DOT&PF 2006-2008 STIP will replace the current 2004-2006 STIP once it is adopted.

### 4.3 Social Impacts

The MSB is the third largest populated area in Alaska. The project corridor is located in this borough, specifically the MSB Core Planning Area. According to the Alaska Department of Labor and Workforce Development (ADOL) (2003), the MSB population more than doubled from 17,816 to 39,683 between 1980 and 1990 and the population grew 57 percent from 1990 through 2001. (Rapid growth and development in the MSB is continuing today.) Table 4 compares populations of Alaska and the MSB and includes racial data. This information was not available at the census tract or block level for the MSB core area.

| TABLE 4
Comparisons of Population Characteristics for Alaska and the Matanuska-Susitna Borough |
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Characteristic</td>
<td>Alaska</td>
</tr>
<tr>
<td>Population</td>
<td></td>
</tr>
<tr>
<td>Total population (2001)</td>
<td>634,892</td>
</tr>
<tr>
<td>Median age</td>
<td>32.4</td>
</tr>
<tr>
<td>Racial Breakdown</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>69.3%</td>
</tr>
<tr>
<td>Native American</td>
<td>15.6%</td>
</tr>
<tr>
<td>Black</td>
<td>3.5%</td>
</tr>
<tr>
<td>Asian</td>
<td>4.0%</td>
</tr>
<tr>
<td>Native Hawaiian and other Pacific Islander</td>
<td>0.5%</td>
</tr>
<tr>
<td>Other</td>
<td>1.6%</td>
</tr>
<tr>
<td>Median Household Income (2003)</td>
<td>$52,391</td>
</tr>
<tr>
<td>Percent below Poverty Level</td>
<td>9.9%</td>
</tr>
</tbody>
</table>

Source: 2000 U.S. Census (U.S. Census Bureau, 2004)

Because data for low-income and minority groups were not available at the census tract or block group level for the MSB core area, data from the National School Lunch Program (Alaska Department of Education and Early Development, 2006) were used to determine low-income characteristics and interpret MSB areawide census data to identify minority information for the project area. The minority population census data for the MSB, shown in Table 4, indicate a lower percentage of minorities within the MSB than statewide. Discussions with the MSB planners and the public, during public meetings, have not identified any minority neighborhoods along the project corridor. Table 5 displays the percentage of students, based on total enrollment for that school year, under either the reduced lunch or free lunch programs for the two schools located within the project corridor.
This table also compares MSB school district and statewide participation in the National School Lunch Program.

**TABLE 5**
Reduced and Free Lunch Program Statistics for the 2004-2005 School Year

<table>
<thead>
<tr>
<th>Entity</th>
<th>Participation in Reduced Lunch Program</th>
<th>Participation in Free Lunch Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cottonwood Creek Elementary School</td>
<td>27 (6.6%)</td>
<td>102 (24.9%)</td>
</tr>
<tr>
<td>Teeland Middle School</td>
<td>51 (8.2%)</td>
<td>133 (21.3%)</td>
</tr>
<tr>
<td>Mat-Su Borough School District</td>
<td>1,027 (7.8%)</td>
<td>3,265 (24.8%)</td>
</tr>
<tr>
<td>State of Alaska</td>
<td>10,533 (10.2%)</td>
<td>28,087 (27.1%)</td>
</tr>
</tbody>
</table>


Children from families with incomes at or below 130 percent of the poverty level are eligible for free meals. Those with incomes between 130 percent and 185 percent of the poverty level are eligible for reduced-price meals. For Alaska, for the period July 1, 2005, through June 30, 2006, 130 percent of the poverty level is $31,447 for a family of four; 185 percent is $44,752 (Alaska Department of Education and Early Development, 2006).

As shown in Table 5, Cottonwood Creek Elementary School has about the same or a slightly lower participation in the free and reduced lunch programs compared to the district. Participation of Teeland Middle School is slightly higher than that of the district for the reduced lunch program, but is much lower than the district for the free lunch program. The participation of both schools is lower than that of the state for both the reduced and free lunch programs. Review of the U.S. Census data, the school district data, and results of interviews conducted as part of the conceptual stage relocation study (Appendix J) indicates an apparent lack of pockets of low-income or minority populations along the SMP corridor.

**Neighborhoods and Community Cohesion**

A small portion of the project corridor on the south end lies within the eastern boundary of the City of Wasilla, which includes the Happy Mountain Estates Subdivision. Residential and commercial development outside the City of Wasilla for the rest of the project corridor is under MSB jurisdiction. The majority of the developed corridor is low-density residential. Some commercial development and other services (schools, fire department, emergency medical service [EMS], and public safety offices) are interspersed along the road from the Parks Highway to Bogard Road. SMP separates the existing east and west neighborhoods along the corridor (Figure 18). Currently little cohesiveness exists between the neighborhoods on the east and west sides of SMP. The high-volume roadway serves as an effective barrier between these neighborhoods.

Along the west side of SMP between the Parks Highway and the Palmer-Wasilla Highway, residences are clustered in the Happy Mountain Estates and Goddard subdivisions. Between the Palmer Wasilla Highway and Bogard Road lie the Meridian Park (a large parcel recently cleared and leveled for development) and the Longbeach #2 and #3 subdivisions.
On the east side of the existing road between the Parks Highway and the Palmer-Wasilla Highway are the Cedar Ridge #1 and #3, Wasilla East, and Cameron subdivisions. From the Palmer-Wasilla Highway to Bogard Road, developments include the Country Field Estates (commercial) and Ancient Tree Estates #1 and Longbeach subdivisions.

From Bogard Road north to Seldon Road, there is no road connection. The new road extension would generally follow the section line. There are no neighborhoods along the west side of the section line because this land is occupied by the Alcantra National Guard Armory, Teeland Middle School, and the site of the future vocational high school south of Teeland Middle School. Along the east side of the section line, developments consist of Darrington Village subdivision and a new subdivision development, Gemstone Estates, at the north end along Seldon Road and Tait Drive. Current access to these subdivisions is from Tait Drive to the east or Seldon Road to the north. Tait Drive is where cut-through traffic currently moves between Seldon Road and Bogard Road (Figure 18).

**Travel Patterns and Accessibility**

The only access control along the existing road is driveway access permits issued by the DOT&PF. From the Parks Highway to Bogard Road, side street and business accesses exist along both sides of the corridor.

SMP is currently experiencing access, egress, and congestion problems during peak travel times when traffic levels are the highest and vehicles wait at intersections. This congestion adversely affects access at the Tesoro gas station, south of the Palmer-Wasilla Highway intersection, the Cottonwood Creek Elementary School, and the Cottonwood Public Safety Building and Fire Station #65. The MSB School District (2004) stated (during a 2004 scoping meeting) that traffic backs up into the parking lot when school lets out and drivers often experience a lengthy wait for access to SMP. Vehicles on Palmdale, Cottonwood, and Birch View streets, south of the Bogard Road intersection, may back up during peak travel periods.

North of Bogard Road, SMP is undeveloped, except for the northernmost portion providing access to Teeland Middle School at Seldon Road. Circuitous travel patterns are occurring north of Bogard Road because of the lack of connection directly to Seldon Road from SMP. Tait Drive is experiencing high traffic counts because drivers cut through this neighborhood to reach destinations to the north and south. Between 1998 and 2004, the number of vehicles per day on Tait Drive jumped from 1,800 to more than 2,500 (Graham, 2003).

According to the MSB School District, an appreciable number of students walk to Teeland Middle School and students are primarily bussed or driven to Cottonwood Creek Elementary School.

The road corridor (SMP) passes over the Cottonwood Creek canoe trail (MSB, 1997a). The 7-mile canoe trail begins at Finger Lakes, passes through Cottonwood Lake and along Cottonwood Creek (crossing SMP), and ends at the shores of Wasilla Lake. SMP currently serves as an access point to the canoe trail.
Seward Meridian Parkway - Road Improvements

Neighborhoods

Beginning of Project

End of Project

Wasilla East

Cedar Ridge

Happy Mountain Estates

Goddard

Meridian Park

Country Field Estates

Ancient Tree Estates

Darrington Village

Gemstone Estates, PH 1

ANC  \MINER\PROJ\ADOT\186778\MAPPING\MXD\REPORT\TEA\FIG18-NEIGHBORHOODS.MXD  05/24/2006  14:25:40

City of Wasilla

Neighborhood Boundaries

Under Development

Commercial

Undeveloped

Service

Residential

0 1,000 2,000 Feet

Figure 18

Neighborhoods
Safety
Public comments about safety concerns received during the scoping period focused on ROW use, school access, canoe trail use (portaging over SMP), and Cottonwood Creek access. Meetings with the MSB and MSB School District identified concerns about student safety and school access points.

Currently, no bike paths, sidewalks, or crosswalks are available for students who walk or ride bicycles to school and travel along or across SMP. The current roadway shoulder conflicts between these shoulder users and vehicular traffic on the roadway results because the shoulder is very narrow and much of the ROW contains steep banks.

The MSB perceives a potential safety issue with people crossing SMP from one side of the road to the other to gain access to Cottonwood Creek. Crossings include portaging canoes and other personal water craft across the roadway.

Concern has been voiced by the MSB School District, Parent Teachers Association, and neighborhood subdivision homeowner associations for the safety of the students who walk to Teeland Middle School. In addition, during peak school hours, the intersection of SMP with Seldon Road is very busy and vehicles on both E. Lakeview Road and SMP experience long delays while awaiting an opportunity to enter Seldon Road.

Community Services
Schools located within the project corridor include Cottonwood Creek Elementary School just north of the Cottonwood Public Safety Building and Teeland Middle School at the intersection of SMP with Seldon Road. In addition, a vocational high school is planned just south of Teeland Middle School.

The Cottonwood Public Safety Building and Fire Station #65 is the only fire station within or serving the project corridor. There are no piped hydrant systems in the MSB core area. The fire trucks use a water storage tank located at Bogard Road and Trunk Road or pump from local lakes, ponds, or streams. The Cottonwood Public Safety Building is a heavily used community service building that serves as the MSB headquarters for both fire fighting and EMS. Most training for these services is held at other locations.

There are no hospitals within the project area. However, out-patient medical facilities are located just north of the Palmer-Wasilla Highway on the east side. More growth related to health care services is expected near the existing facilities on the east side of SMP.

The MSB does not have a local police unit. Public safety within the project corridor is provided by the Wasilla City Police Department and the Alaska State Troopers. The Division of Alaska State Troopers, Alaska Department of Public Safety, is charged with enforcement of all criminal and traffic laws of the State of Alaska. The department currently has 50 full-time patrol officers in the MSB, and has reported to the MSB that staffing has not increased in proportion to the rapid population growth.

The Wasilla Community Church is located at the corner of SMP and Wickersham Way. The Word of Faith church is located on Bogard Road with property abutting the eastside of SMP. Both churches are within the project corridor.
Recreation
The only area of concentrated recreation within the project limits occurs at Cottonwood Creek. This area currently attracts public use by residents and visitors predominantly during the summer months for fishing, canoeing, bird watching, water conservation interests, and educational purposes. Features present at Cottonwood Creek include a pedestrian bridge over the creek on the west side, a small unimproved vehicle pull-off on the west side of the road, and an unimproved vehicle pull-off on the east side of the road.

Environmental Justice
As discussed previously, information to identify low-income and minority populations, and other social characteristics of residents along the project corridor came from 2000 U.S. Census data, the MSB School District, public meeting attendance records, the MSB planning staff, and interviews conducted by the DOT&PF in developing its conceptual relocation study. The research indicates that there are no low-income or minority populations located adjacent to SMP. Consequently, the provisions of Executive Order (EO) 12898 do not apply to the proposed SMP Road Improvements project. The proposed project has been developed in accordance with the Civil Rights Act of 1964, as amended, and relocation resources are available to all residential and business relocatees without discrimination. From the information compiled, the DOT&PF and FHWA conclude that the proposed project does have the potential to disproportionately affect low-income or minority populations.

No-Build Alternative
The No-Build Alternative would result in no impacts associated with roadway construction, but would result in increased traffic congestion and longer travel times for vehicles. The growth of residential and commercial development would continue adding to the number of vehicles on the road system. Business, service, and residential properties adjacent to SMP from the Palmer-Wasilla Highway to Bogard Road over time would see increasing access and egress problems during peak traffic periods.

Currently, pedestrians and bicyclists must share the narrow road shoulder with traffic or use the ROW in areas where it is passable. Some of the current ROW is shared with all-terrain vehicle (ATV) users, creating conflicts for pedestrians and bicyclists who use the narrow shoulder and ROW.

Adverse impacts to the neighborhood served by Tait Drive are expected to continue and worsen in the future because of the increasing number of cut-through vehicles using this road. Residential development along Tait Drive would continue even without the proposed project.

Build Alternatives
The following impacts are the same for both build alternatives (the West Offset [preferred] and the East Offset).

Neighborhoods and Community Cohesion
The proposed project would not divide or fragment neighborhoods or adversely affect community cohesion. Although relocations would be needed to build either alternative, the
road currently separates the east and west neighborhoods. This separation would remain under either build alternative. Expanding the two-lane road to four-lane would create a more substantial barrier between the east and west side neighborhoods, but the overall effects on cohesiveness would be negligible.

Neighborhoods on the north end of the project (Darrington Village and Gemstone Estates) would benefit from the connectivity provided to the south from the extension of SMP from Bogard Road to Seldon Road. This action would allow easier access to schools, neighborhoods, businesses, and services throughout the corridor through the system linkage of Seldon Road to the Parks Highway. A connection should also reduce the cut-through traffic on Tait Drive, easing access along Tait Drive from adjacent neighborhoods.

Beneficial impacts would be realized through connections to subdivisions north and south of Seldon Road with the extension of SMP to the north. Neighborhoods north of the project limits would have easier access to Bogard Road, Palmer-Wasilla Highway, and Parks Highway from Seldon Road.

The west-side multi-use path, proposed for both build alternatives, would improve access to neighborhoods through improved trail connections from the Parks Highway to Seldon Road. The proposed multi-use path would allow pedestrians and bicyclists the use of a safe nonmotorized paved path connecting Cottonwood Creek Elementary School, Teeland Middle School, and the proposed vocational high school, all of which are located west of SMP. The path would enhance community and neighborhood cohesion in the area by providing crossing opportunities at major cross streets to go from one neighborhood to another.

**Travel Patterns and Accessibility**

Upgrading SMP to four lanes with a center left turn lane and extending it to Seldon Road would benefit local residents by improving traffic flow and providing more efficient access throughout the corridor. It would also provide commuters to Anchorage a direct link to the Parks Highway from Seldon Road.

These improvements would allow some Tait Drive neighborhoods direct access to SMP, reducing the current cut-through traffic. Residents of neighborhoods north of the project corridor and along Seldon Road would be able to access SMP directly from Seldon Road, reducing their travel times with the most direct route to destinations south. Direct routing would also reduce cut-through traffic on Tait Drive. Neighborhoods south of Bogard Road would be able to use SMP for access to Teeland Middle School and the proposed vocational high school without having to use a circuitous route. Further beneficial impacts to Cottonwood Creek Elementary School, Teeland Middle School, and the proposed vocational high school would occur through improved vehicle access and the multi-use path connection.

School officials believe that the addition of the new multi-use separated path may induce more students to walk or bike to school. In addition, the path would provide a connection between Cottonwood Creek Elementary School, Teeland Middle School, and the proposed vocational high school.
The addition of a center left-turn lane from the Parks Highway to Seldon Road would improve roadway access by allowing through traffic to keep moving as other vehicles enter and exit the traffic flow for access to residential and commercial developments. The proposed multi-use, separated path would provide access for recreating and commuting pedestrians and bicyclists to schools, neighborhoods, businesses, and services from the Parks Highway to Seldon Road.

**Safety**

The majority of accidents occurring along the project corridor are rear-end crashes. The introduction of a center left-turn lane would reduce the number of rear-end crashes by allowing left-turning vehicles to exit the roadway.

The rural road design provides a 5-foot separation between the roadway and the 10-foot-wide, multi-use, separated path, offering more protection for the nonmotorist than is available on the existing narrow road shoulder and ROW.

At a minimum, the project is proposing pedestrian crossings at the major intersections of the Palmer Wasilla Highway, Bogard Road, and Seldon Road with SMP. School zones and other pedestrian crossing options would be considered in the final design phase of the proposed project.

The Bogard Road intersection with SMP has a high crash rate (DOWL Engineers, 2005). Improvements to this intersection by upgrading it to a roundabout under the proposed build alternatives would provide safer and more efficient through and turning movement access onto SMP and Bogard Road.

Pedestrians crossing through the Palmer-Wasilla Highway intersection would have to cross a larger span of road, potentially increasing the opportunity for pedestrian and vehicle interactions. Intersection improvements would include crossings and walk signals.

The Seldon Road intersection improvements would provide signalization, with crossings allowing pedestrians and bicyclists safer crossing opportunities. Signalization would also create easier access to Seldon Road for vehicles entering from E. Lakeview Road.

**Community Services**

Access to services would be temporarily affected while the road and driveways are being reconstructed. Access to services would be maintained, but detours, delays, and potential greater emergency response times would occur during construction. These delays and disruptions to the traveling public would cease once construction was complete. When school is in session, buses would experience detours and delays potentially affecting school bus routing and timing. Parents who drive their children to school may have to change their route and timing to arrive and pick up on time. The proposed project is not expected to separate residences from community services, and would enhance nonmotorized access to community services with the inclusion of a separated path along the west side.

The proposed signal pre-emption for the Cottonwood Public Safety Building and Fire Station #65 is expected to decrease response times by providing easier access onto SMP and through the intersection of SMP with the Palmer-Wasilla Highway. The proposed roadway improvements are expected to improve public safety and emergency vehicle response times.
and linkage through additional road capacity and the connection resulting from extension from Bogard Road to Seldon Road.

Recreation
Replacing the Cottonwood Creek culvert with a bridge would benefit recreational users by allowing them access under the bridge from either side of the road. The proposed project would also create a creek channel that would facilitate safe crossing for recreationists beneath the bridge.

The multi-use, separated path would promote recreational use by cyclists, walkers, runners, in-line skaters, and others. In addition, public access to the creek would be improved by adding parking on the west side for four vehicles.

West Offset Alternative
Under this build alternative, the established neighborhood on the west side of SMP would lose a number of residences and neighbors because of relocations changing the character and quality of life for remaining residents. The second row of homes would become road frontage property and would experience greater proximity impacts such as traffic noise. East side neighborhoods would not experience much physical change under the West Offset Alternative because the road would be realigned further from them. However, the character of the neighborhoods would change because of road expansion to a four-lane facility. Abutting property owners would lose the feeling of living adjacent to a rural two-lane road and experience a more urban environment living adjacent to a major four-lane highway. The multi-use pathway along the west side of the corridor would be more convenient and accessible to the neighborhoods located on the west side of the highway than to those on the east side.

East Offset Alternative
Under this build alternative, the established neighborhoods on the east side of the road would lose a number of residences and neighbors because of relocations, changing the character and quality of life for remaining residents. As a result of the larger lot sizes on the east side, the second row of homes would be much farther from the proposed road than they would be under the West Offset Alternative. Although these lots may become road frontage property, the proximity impacts would be less. West side neighborhoods would not experience much physical change under the East Offset Alternative because the road would be realigned farther from them. However, the character of the west side neighborhoods would change because of road expansion to a four-lane facility and the multi-use pathway. The multi-use pathway along the west side of the corridor would be less convenient and accessible to the neighborhoods located on the east side of the highway.

Under the East Offset Alternative, the Wasilla Community Church would be relocated. Relocation of the church could have both adverse and positive effects on the congregation, and would depend on where the church is relocated. Adverse effects may include farther travel distance for some members of the congregation and disruption of activities during actual relocation. Positive effects could be reduced travel distances for some members of the
congregation, better access, and improved facilities. Overall the effect of relocating the church on the adjacent neighborhoods is likely to be minimal.

The East Offset alternative would also result in relocation of the Tesoro gas station and convenience store. Although the relocations would not inconvenience the driving community, they would likely inconvenience locals who walk, bike, or take four-wheelers to this location. The closest alternative convenience store and gas station is located at the Palmer-Wasilla Highway and Trunk Road.

**Mitigation**

To mitigate the adverse effects of the proposed project on neighborhoods, community cohesion, and local businesses, the DOT&PF would continue to work closely with the local government and the affected property owners throughout the detailed design and construction phases of the proposed project. All land acquisition and relocation benefits would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act, as amended. Public notice of detours, alternative access, and delays would be published in advance throughout the construction phase of the project. Access to neighborhoods and businesses and other properties would be maintained during construction. During the design phase, detailed plans to maintain emergency response access would be developed in conjunction with the City of Wasilla police, Alaska State Troopers, and MSB fire department. To minimize construction impacts on schools in the project area, an access and traffic control plan would be developed in conjunction with the MSB School District.

**4.4 Relocation Impacts**

Household (families), church, and business relocations necessary to complete the proposed project are due to the need for additional ROW to construct the project. This additional ROW would allow expansion of the roadway width to four lanes with a center left turn and add a trail located on the west side of the road for either build alternative. A Conceptual Relocation Study was performed by DOT&PF and is provided in Appendix J. The information contained in the Conceptual Relocation Study was obtained from a personal field inspection by DOT&PF ROW personnel, discussions with property owners and lessees, the municipal tax assessor office, newspapers, websites, and the multiple listing services. The relocations are shown in Figures 19, 20, and 22.
No-Build Alternative
The No-Build Alternative would not result in any relocation because the road would not be widened or extended.

Build Alternatives

West Offset Alternative (Preferred)
The West Offset Alternative (preferred) would result in the relocation of 11 single-family households (Table 6). These households include one elderly individual with a physical handicap and one large family living in a house trailer. The estimated market value range for these properties is $37,000 to $220,000. Comparable (decent, safe, and sanitary) housing for sale or rent is available in the local area. Local real estate research revealed 56 houses in the area meeting the aforementioned criteria. Most of these properties meet the lot size and square footage of properties currently owned by families being relocated. The family occupying the house trailer may qualify for last resort housing because of limited comparable replacement housing.

One business would need to be relocated. This business, Image Audio, is operated by the owner and employs 10 people. The property serves as a warehouse, retail space, garage and residence. There are adequate locations nearby (within a 5-mile radius) to which the business could be relocated. The owner was contacted and is willing to relocate and continue his business.

All of these relocatees can be relocated to comparable properties based on current market information.

East Offset Alternative
The East Offset Alternative would result in 10 residential relocations (Table 6). It should be noted that two of the residential relocations are multiple-family rental units, potentially housing 10 families. These relocations could result in moving 10 households, buying the land and structures, and assessing business losses. The estimated market value range for these properties is $25,000 to $405,000. Local real estate and rental market research revealed 56 houses for sale within the market area, for relocating single-family households, and the availability of adequate rental units in the local area, for relocating families from the multi-family rentals.

Five businesses would require relocation for the East Offset Alternative (Figure 19): Wasilla Community Church of God, Bumper to Bumper Auto Repair facility, Tesoro gas station and Subway store, Mat-Valley Credit Union, and Stepping Stone Child Care. Research of the local area indicated 11 potential business properties that were vacant or developed and available for these business relocations. Business properties are becoming increasingly difficult to find in the local area because of the continuing rapid business growth.
Mitigation Measures

All relocations would be conducted in accordance with the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended in 1987. Relocation resources are available to all residential and business relocatees without discrimination. Compliance with the Uniform Act is designed to mitigate the adverse effects of relocation.

TABLE 6
Relocation Types and Numbers

<table>
<thead>
<tr>
<th>Relocation Type</th>
<th>No-Build Alternative</th>
<th>West Offset Alternative (Preferred)</th>
<th>East Offset Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Single family</td>
<td>0</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total relocations</strong></td>
<td><strong>0</strong></td>
<td><strong>12</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
Figure 19

Seward Meridian Parkway - Road Improvements

Relocation Impacts
End of Project

Legend

- East Offset ROW
- West Offset ROW
- East & West Offset ROW
- East Offset Relocation
- West Offset Relocation
- Adjacent Parcels /
  Existing ROW

Seward Meridian Parkway - Road Improvements

Figure 21
Relocation Impacts
4.5 Economic Impacts

The proximity of the MSB to Anchorage is a big reason for continued economic growth in the MSB during the last four decades. Thirty-five percent of earned income for MSB residents stems from out-of-region employment, mostly in Anchorage. The number of jobs in the MSB is growing largely because of an expansion in the retail and service industries, producing about 67 percent of new jobs in the MSB from 1990 to 2001. This growth is nearly four times higher than that for the rest of the state (ADOL, 2003).

During the same period, employment within the MSB grew considerably faster than elsewhere in the state, at a rate of 5.8 percent per year. The service industry represents about one quarter of all wage and salary employment in the MSB, with health care being the fastest growing service industry. Intergovernmental transfers (monies received by the MSB from federal and state governments) support a major share of government employment in the MSB (MSB, 2005). As the MSB economy and population grow however, the locally based jobs (in the MSB) per capita are increasing. The top employers in the MSB are the school district, Mat-Su Regional Medical Center, Carrs/Safeway, Wal-Mart, Matanuska Telephone Association, and Fred Meyer.

Economic information for the MSB was not available at the core area or project area levels. Table 7 compares employment and income data for the MSB and Alaska as a whole.

<table>
<thead>
<tr>
<th>TABLE 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison of Employment and Income for Alaska and the Matanuska-Susitna Borough</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Alaska</th>
<th>Matanuska-Susitna Borough</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labor Force</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor force participation (2001)</td>
<td>71.3%</td>
<td>66.1%</td>
</tr>
<tr>
<td>Percent unemployed (2001)</td>
<td>6.3%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Employment growth 1990-2001</td>
<td>21%</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median household income (1999)</td>
<td>$51,571</td>
<td>$51,221</td>
</tr>
</tbody>
</table>


The main business development within the project corridor lies between the Palmer-Wasilla Highway and Birch View Drive. The area includes a credit union and several out-patient medical service facilities, and more are planned. Additional lots are available in this area for commercial property development, creating an opportunity for future economic growth within the project area. No “business districts” are currently identified within the project corridor; however, several businesses are located adjacent to the existing road: Image Audio, Bumper to Bumper Auto Care, Tesoro gas station and convenience store, Mat-Valley Credit Union, and Stepping Stone Childcare and Preschool.
No-Build Alternative
The region will continue to grow to build out irregardless of the two-lane road limitation. This growth will continue to provide economic opportunities for the housing and business developers and in the resulting construction and business employment. Increased traffic and access issues on the two-lane road may limit business development to some degree, but this type of development is likely to occur with the residential growth in the area. No short-term benefits or adverse effects from construction expenditures and employment would occur under this alternative.

Build Alternatives
The following impacts are common to both build alternatives (West Offset [Preferred] and East Offset).

Beneficial economic impacts on the region (MSB) and the local economy (project corridor area) are considered likely.

Providing a direct link from Seldon Road to the Parks Highway would link more residential neighborhoods to businesses and potential jobs along the project corridor, in the MSB, and in Anchorage. This roadway link could potentially promote residential and commercial growth on undeveloped private lands along the corridor. Increased residential and commercial growth would result in increased tax revenues, public expenditures, and employment opportunities. Long-term beneficial impacts to local businesses would be realized through growth resulting from an increased customer base, better accessibility, and increased revenue.

Construction of the project would provide temporary jobs and use of local businesses for services and supplies, providing benefit to the local economy. Temporary adverse effects on local businesses may result during construction. These impacts are discussed in more detail in Section 4.19, Construction Impacts.

Negative impacts to the local economy as a result of the proposed project are expected include increased mil rates and loss of city (Wasilla) and MSB property taxes from removal of homes and businesses for right-of-way needs. However, these impacts are expected to be minor in the overall economic view for the MSB when compared to the potential taxes, jobs, and revenue from continued residential and business development in the area.

West Offset Alternative
This alternative affects one business located adjacent to the road, Image Audio. The business would be relocated to another location within the MSB, possibly within or near the project corridor area. Construction of the West Offset Alternative would result in the estimated expenditure of $30 million in public funds.

East Offset Alternative
Right-of-way needed for the East Offset Alternative results in nearly double the acquisition costs required for the West Offset Alternative. Because of the higher value of properties to be acquired under the East Offset Alternative, the loss of property tax revenue is greater for
the East Offset Alternative than for the West Offset Alternative. Construction of the East Offset Alternative would result in the estimated expenditure of $37 million in public funds.

The East Offset Alternative would require relocation of the Tesoro gas station and convenience store, Bumper to Bumper Auto Care, and the Mat-Valley Credit Union, which would shift employment and revenue opportunities to other locations within the MSB.

**Mitigation**

No mitigation is anticipated for the construction of this project because the overall project impact would be beneficial to the economic growth and vitality of the area both locally and regionally.

### 4.6 Considerations Relating to Pedestrians and Bicyclists

Currently pedestrians and bicyclists wishing to travel on SMP north or south must use the narrow shoulders or in many areas the ROW embankments. The existing roadway is narrow (30 feet) with narrow 1-foot shoulders that are not adequate for pedestrian or bicycle use from the Parks Highway to Bogard Road. SMP doesn’t currently exist between Bogard Road and Seldon Road, except for a short distance (approximately 900 feet) in front of Teeland Middle School off of Seldon Road. This short segment of road is also narrow (30 feet) with narrow 1-foot shoulders. All schools located adjacent to SMP—Cottonwood Creek Elementary, Teeland Middle School, and the proposed vocational high school—are on the west side of SMP. Only one existing path intersects SMP. It is located on the north side of the Palmer-Wasilla Highway intersection and runs east-west, parallel to the highway.

**No-Build Alternative**

Currently, pedestrians and bicyclists have to share the narrow edge of roadway (1-foot shoulder) with traffic or use the ROW in areas where it is passable. Use of the current ROW is also shared with ATV users, creating conflicts with pedestrians and bicyclists who use the ROW to avoid interactions with vehicles on the narrow shoulder. These risks and conflicts are expected to increase under the No-Build Alternative.

**Build Alternatives**

Both build alternatives (West Offset [preferred] and East Offset) would provide the same roadway widening and separated shared-use pathway. The proposed project includes widening (four lanes with center turn lane) of the roadway to 78 feet with 8-foot shoulders and the construction of a shared-use, separated path (10 feet wide) from the beginning of the project to Seldon Road, on the west side of SMP. The shared-use pathway facilities would be separated 5 feet from the edge of the new roadway, west of SMP from the Parks Highway to Seldon Road. Pedestrians and bicyclists, including school age children, would benefit from the proposed multi-use, separated path that would provide a link between Cottonwood Creek Elementary, Teeland Middle School, and the planned vocational high school. The path would promote greater use by cyclists, walkers, runners, in-line skaters, and others interested in nonmotorized activities. Providing wider roadway shoulders (8 feet) would accommodate bicycle commuters if they choose to use the shoulder instead of the multi-use path.
In addition, the existing Seldon Road ROW (informal trail) on the south side of the road is widely used by students to connect between neighborhoods and Teeland Middle School. Improved pathway connections between the separated multi-use path on the west side of SMP and the Seldon Road ROW would allow students to travel north-south between schools and other neighborhoods and west on Seldon Road without having to cross either SMP or Seldon Road.

This north-south oriented path would also tie into the intersecting Palmer-Wasilla Highway path, which runs east-west on the north side of the Palmer-Wasilla Highway. This connection would effectively link more developing areas to the path system in the MSB core area.

A parallel path on the east side of SMP was not considered because of the cost of acquiring additional ROW for constructing a second path. Therefore, only a west side path is proposed at this time. The proposed project would not preclude future development of a path or sidewalk on the east side of SMP, however.

Upgrading SMP with a paved multi-use, separated path is consistent with the MSB Recreational Trails Plan (2000). The Core Area Comprehensive Plan (MSB, 1997a) recommends development of a trail system for specific use, such as a multi-use trail that allows pedestrians, bicycles, and horses to share trails, but prohibits motorized vehicles. A trail is specifically identified for SMP. Trails for motorized vehicles and equestrians are not proposed.

Mitigation Measures

Because no paths currently exist parallel to the project corridor other than a narrow roadway shoulder, implementation of either build alternative would provide mitigation through construction of the new roadway with 8-foot shoulders and the west-side multi-use path, which would provide immediate and long-term benefits to current and future users (pedestrians and bicyclists).

4.7 Noise Impacts

A technical noise analysis was conducted for the proposed project and is presented in Appendix D. The noise analysis prepared for the proposed project meets the requirements of the “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (Title 23, Part 772, of the Code of Federal Regulations [CFR]; FHWA, 1992), the FHWA Technical Advisory T6640.8 (1987) guidelines, and the DOT&PF Noise Abatement Policy (1996).

The DOT&PF and FHWA consider a traffic noise impact to occur when predicted traffic noise levels “approach or exceed” noise abatement criteria or substantially exceed existing noise levels (DOT&PF, 1996; FHWA, 1987). The FHWA noise abatement criteria are divided into five land-use activity categories: Categories A, B, C, D, and E. The existing land uses in the project corridor consist of Categories B, C, D, and E. Noise levels are stated in terms of decibels on the A-weighted scale (dBA). Noise levels stated in terms of dBA approximate the response of the human ear by filtering out some of the noise in the low- and high-frequency ranges that the ear does not detect well. The DOT&PF Noise Abatement Policy (1996) defines noise levels within 2 dBA of the noise abatement criteria as
“approaching” the criteria stated above. Category B applies to residences, churches, schools, recreational uses, and similar use areas. The criterion for Category B is 67 dBA; therefore, the Category B noise level of 65dBA or higher would be considered an impact. Commercial and industrial land uses fall under Category C, for which the criterion is 72 dBA; therefore, the Category C noise level of 70 dBA or higher would be considered an impact. There are no criteria for undeveloped lands (Category D) or construction noise (23 CFR 772). The Category E land use, a church, also has an exterior use that is considered a Category B. The DOT&PF defines 10 dBA as a substantial noise increase, regardless of the beginning noise level.

Methodology for Noise Model Verification and Noise Modeling

Noise level measurements and concurrent traffic counts were conducted at the exterior areas of representative noise-sensitive locations within the project area to establish existing conditions and for noise model validation. A total of 11 field measurements were taken at locations designated as Receivers R1 through R11 (Figures 22 to 24) in July 2004. Additional field measurements were also taken at selected locations on April 6, 2005. Receiver R11 was field-measured for background noise only because SMP does not currently extend to this location. Noise measurement locations were chosen based on the ability of sites to represent the noise-sensitive areas and land use categories of concern within the project limits.

Traffic counts, broken down into vehicle classes, were recorded concurrently with noise measurements whenever possible to facilitate model verification. Field measurement procedures complied with American National Standards Institute (ANSI) S1.13-1971 (R1976) “Methods for the Measurement of Sound Pressure Levels” and the FHWA Sound Procedures for Measuring Highway Noise (1981a).

Existing peak-hour noise levels in the project area were determined by modeling the traffic noise levels using the FHWA Traffic Noise Model (TNM 2.5). This traffic noise model uses data on traffic volumes, vehicle classification, speed, vehicle noise emission levels, and highway and surrounding terrain geometry to predict traffic-generated noise levels at chosen receivers. These modeled noise levels were compared with measured noise levels to calibrate the model for estimating future conditions.

Locations of the field measurement sites are shown in Figures 22 to 24 and listed below:

- Site R1, near a residence on the west side of SMP, just south of Whispering Woods Drive
- Site R2, at a church east of SMP, north of Wickersham Way
- Site R3, near a residence at the northwest corner of the intersection of SMP and Naomi Drive
- Site R4, at the outdoor activity area of a residence east of SMP, between Tamarak Drive and Naomi Drive to the west
- Site R5, near a residence west of SMP, just south of Tamarak Drive
- Site R6, near a residence east of SMP, approximately ¼ mile north of Ruth Drive
• Site R7, at an empty residential lot west of SMP at the end of South Willow Lane, representing the residential properties to the south of the lot
• Site R8, near a school west of the intersection of SMP and East Meridian Lane
• Site R9, near a residence at the northeast corner of the intersection of SMP and Birchview Drive
• Site R10, near a residence northeast of the intersection of SMP and Cottonwood Drive
• Site R11, near a residence east of the proposed SMP extension, just north of Tambert Drive
Figure 24

Seward Meridian Parkway - Road Improvements

Noise Study Receiver Locations

Legend
- Noise Receivers
- Parcel Lines

Legend

0 150 300 600 Feet

Seward Meridian Parkway - Road Improvements

Noise Study Receiver Locations

Figure 24
The exact three-dimensional coordinates of the monitoring sites were determined by using existing topographic data. The results of the noise level measurements and traffic counts at all 11 monitoring locations are included in Attachment C of Appendix D, Onsite Noise Level Measurement Data.

A step in the modeling called noise model validation evaluates the noise levels measured in the field and those calculated by the noise model in a calibration process. This model evaluation determines whether the field measurements are consistent with modeled measurements and whether adjustment factors need to be used. The noise levels predicted by the noise model at Sites R5 through R9 are within the expected \( \pm 3 \text{ dBA} \) of the noise levels measured (see Table 8); therefore, the model was used without adjustment to accurately calculate traffic noise exposure at these receivers. However, more significant differences between the measured and predicted noise levels were observed at Receivers R1 through R4 and at Receiver R10 (see Table 8). These discrepancies are due to site-specific factors that cause the model to underpredict traffic noise levels. As a result, adjustment factors were applied within the noise model at these receivers to accurately predict traffic noise exposure in these areas (see Appendix D, Section 5).
### Table 8
Comparison of Measured and Predicted Traffic Noise Levels

<table>
<thead>
<tr>
<th>Receiver Location</th>
<th>Date Collected</th>
<th>Measured Traffic Noise Level</th>
<th>Predicted Traffic Noise Level</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>7/2004</td>
<td>64.0</td>
<td>56.1</td>
<td>-7.9</td>
</tr>
<tr>
<td></td>
<td>4/2005</td>
<td>66.0</td>
<td>60.7</td>
<td>-5.3</td>
</tr>
<tr>
<td>R2</td>
<td>7/2004</td>
<td>56.6</td>
<td>50.5</td>
<td>-6.1</td>
</tr>
<tr>
<td></td>
<td>4/2005</td>
<td>61.4</td>
<td>56.9</td>
<td>-4.5</td>
</tr>
<tr>
<td>R3</td>
<td>7/2004</td>
<td>55.3</td>
<td>48.4</td>
<td>-6.9</td>
</tr>
<tr>
<td></td>
<td>4/2005</td>
<td>59.7</td>
<td>53.2</td>
<td>-6.5</td>
</tr>
<tr>
<td>R4</td>
<td>7/2004</td>
<td>53.3</td>
<td>44.6</td>
<td>-8.7</td>
</tr>
<tr>
<td></td>
<td>4/2005</td>
<td>57.5</td>
<td>52.1</td>
<td>-5.4</td>
</tr>
<tr>
<td>R5</td>
<td>7/2004</td>
<td>60.4</td>
<td>60.3</td>
<td>-0.1</td>
</tr>
<tr>
<td>R6</td>
<td>7/2004</td>
<td>51.7</td>
<td>51.5</td>
<td>-0.2</td>
</tr>
<tr>
<td>R7</td>
<td>7/2004</td>
<td>48.3</td>
<td>46.1</td>
<td>-2.2</td>
</tr>
<tr>
<td>R8</td>
<td>7/2004</td>
<td>49.6</td>
<td>49.0</td>
<td>-0.6</td>
</tr>
<tr>
<td>R9</td>
<td>7/2004</td>
<td>62.4</td>
<td>60.0</td>
<td>-2.4</td>
</tr>
<tr>
<td>R10</td>
<td>7/2004</td>
<td>58.6</td>
<td>54.8</td>
<td>-3.8</td>
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<td></td>
<td>4/2005</td>
<td>60.8</td>
<td>54.1</td>
<td>-6.7</td>
</tr>
<tr>
<td>R11</td>
<td>7/2004</td>
<td>54.0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: All results in A-weighted decibels, dBA.

See Appendix D for additional information about measured and predicted noise levels.

N/A = Not applicable.
Source: CH2M HILL

**Modeled Existing Noise Exposure**

A total of 37 receivers were used for predicting peak-hour traffic noise levels for all identified noise-sensitive locations within the project area. Receivers R1 through R11 correspond with the original field-monitored sites.

The 26 additional receivers added to the model represent the remaining residential and commercial uses in the vicinity of the project and are described below.

- Receiver R12 is near a residence in the southeast quadrant of SMP and Wickersham Way.
- Receiver R13 is near a residence west of SMP and Receiver R1 (added for analysis of the West Offset Alternative).
- Receiver R14 is near a residence east of Receiver R15 and SMP (added for analysis of the East Offset Alternative).
• Receiver R15 is a single-family home located north of Whispering Woods Drive and west of SMP, representing three homes between Whispering Woods and Naomi drives.

• Receiver R16 is near a residence west of the first-row lots and SMP, north of Whispering Woods Drive (added for analysis of the West Offset Alternative).

• Receiver R17 is near a residence west of the first-row lots and SMP, south of Naomi Drive (added for analysis of the West Offset Alternative).

• Receiver R18 is near a residence west of Receiver R3 and SMP, north of Naomi Drive (added for analysis of the West Offset Alternative).

• Receiver R19 is near a residence west of Receiver R5 and SMP (added for analysis of the West Offset Alternative).

• Receiver R20 is near a residence west of Receiver R5 and SMP (added for analysis of the West Offset Alternative).

• Receiver R21 is at the single-family residence located north of Tamarak Drive and west of SMP.

• Receiver R22 represents commercial uses located north of Tamarak Drive and west of SMP.

• Receiver R23 is near a residence east of SMP, south of the property represented by Receiver R6.

• Receiver R24 is near a residence west of the first-row lots and SMP, east of Willow Lane (added for analysis of the West Offset Alternative).

• Receiver R25 is near a residence west of Receiver R7 and SMP, at the end of Willow Lane (added for analysis of the West Offset Alternative).

• Receiver R26 is at the Credit Union building setback located east of SMP, across from Receiver R8 located at the school.

• Receiver R27 is near a residence east of SMP, south of Birch View Drive (added for analysis of the East Offset Alternative).

• Receiver R28 is near a residence east of SMP, south of Cottonwood Way (added for analysis of the East Offset Alternative).

• Receiver R29 is near a residence east of SMP, south of Spruce Top Circle (added for analysis of the East Offset Alternative).

• Receiver R30 is near a residence east of SMP, north of the property represented by Receiver R10.

• Receiver R31 is near a residence east of SMP, south of Palmdale Drive (added for analysis of the East Offset Alternative).

• Receiver R32 is near a residence east of SMP, west of Creekview Drive (added for analysis of the East Offset Alternative).
• Receiver R33 is at the day care center located in the southeast corner of the SMP and Bogard Road intersection.

• Receiver R34 is near a residence east of SMP, near the end of Creekview Drive (added for analysis of the East Offset Alternative).

• Receiver R35 is near a residence east of SMP, south of Receiver R11.

• Receiver R36 is near a residence east of Receiver R11 and SMP, south of Tambert Drive (added for analysis of the East Offset Alternative).

• Receiver R37 is at the eastern edge of the baseball fields within the school yard located south of Seldon Road.

All receivers were analyzed for existing conditions. Figures 22 to 24 depict all noise receiver locations.

To calculate existing peak-hour noise levels, existing (2005) traffic data provided by DOWL Engineers were used (Attachment B of Appendix D). Vehicle composition in terms of percentages of automobiles, medium trucks, and heavy trucks were also obtained from DOWL Engineers. Modeled existing peak-hour noise levels for the selected receiver locations are summarized in Table 9. FHWA and DOT&PF criteria are shown for comparison.

Table 9 data show that existing noise levels exceed or approach the noise abatement criteria at two locations: R1 and R12, representing residential areas near the south end of the project area. The remaining 35 receivers currently experience noise levels below the noise abatement criteria.

### TABLE 9
Modeled Existing (2005) Peak-Hour Noise Levels

<table>
<thead>
<tr>
<th>Receiver</th>
<th>West or East of Seward Meridian Parkway</th>
<th>Location Description</th>
<th>FHWA/DOT&amp;PF Criterion</th>
<th>Existing Noise Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>68</td>
</tr>
<tr>
<td>R2</td>
<td>east</td>
<td>near church</td>
<td>65</td>
<td>62</td>
</tr>
<tr>
<td>R3</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>R4</td>
<td>east</td>
<td>front yard of residence</td>
<td>65</td>
<td>57</td>
</tr>
<tr>
<td>R5</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>64</td>
</tr>
<tr>
<td>R6</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>56</td>
</tr>
<tr>
<td>R7</td>
<td>west</td>
<td>empty lot</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>R8</td>
<td>west</td>
<td>north of school</td>
<td>65</td>
<td>50</td>
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<tr>
<td>R9</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>61</td>
</tr>
<tr>
<td>R10</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>59</td>
</tr>
<tr>
<td>Receiver</td>
<td>West or East of Seward Meridian Parkway</td>
<td>Location Description</td>
<td>FHWA/DOT&amp;PF Criterion</td>
<td>Existing Noise Level</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------</td>
<td>----------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>R11</td>
<td>east</td>
<td>near residence end of Tambert Dr.</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>R12</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>67</td>
</tr>
<tr>
<td>R13</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>R14</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>57</td>
</tr>
<tr>
<td>R15</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td>R16</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>R17</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>R18</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>R19</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>R20</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>R21</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>R22</td>
<td>west</td>
<td>commercial uses</td>
<td>70</td>
<td>62</td>
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<tr>
<td>R23</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>61</td>
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<tr>
<td>R24</td>
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<td>near residence</td>
<td>65</td>
<td>49</td>
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<tr>
<td>R25</td>
<td>west</td>
<td>near residence</td>
<td>65</td>
<td>52</td>
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<tr>
<td>R26</td>
<td>east</td>
<td>commercial uses</td>
<td>70</td>
<td>61</td>
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<tr>
<td>R27</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>49</td>
</tr>
<tr>
<td>R28</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>47</td>
</tr>
<tr>
<td>R29</td>
<td>east</td>
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<td>65</td>
<td>54</td>
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<tr>
<td>R30</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>59</td>
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<tr>
<td>R31</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>49</td>
</tr>
<tr>
<td>R32</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>R33</td>
<td>east</td>
<td>day care center</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td>R34</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>48</td>
</tr>
<tr>
<td>R35</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>54</td>
</tr>
</tbody>
</table>
### TABLE 9
Modeled Existing (2005) Peak-Hour Noise Levels

<table>
<thead>
<tr>
<th>Receiver</th>
<th>West or East of Seward Meridian Parkway</th>
<th>Location Description</th>
<th>FHWA/DOT&amp;PF Criterion</th>
<th>Existing Noise Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>R36</td>
<td>east</td>
<td>near residence</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>R37</td>
<td>west</td>
<td>school sports grounds</td>
<td>65</td>
<td>54</td>
</tr>
</tbody>
</table>

**Notes:**
1. All results in A-weighted decibels.
2. A noise level in **bold** indicates the receiver location approaches or exceeds the noise abatement criteria.
3. “N/A” indicates that results for these receivers along the proposed SMP extension between Bogard Road and Seldon Road are not applicable. Because of minimal existing traffic volumes adjacent to the receivers, the traffic noise model does not provide reliable results of the existing noise conditions.
4. Although Receiver R7 is located in an undeveloped area, it represents the developed residential properties south of it.
5. The existing noise level at Receiver R11 was determined from a field measurement.
6. Existing noise levels at Receivers R35 through R37 are assumed to be the same as that measured at R11.

Source: CH2M HILL

### Traffic Noise Impacts

Table 10 summarizes the modeled levels of peak-hour traffic noise associated with the No-Build Alternative and build alternatives for the design year 2028. (See Appendix D for additional detail about the traffic noise modeling.) The existing peak-hour conditions for traffic noise levels and impact criteria are shown for comparison. All receivers were analyzed for future conditions.

### TABLE 10
Predicted Peak-Hour Noise Levels

<table>
<thead>
<tr>
<th>Receiver Location</th>
<th>Impact Threshold</th>
<th>Existing (2005)</th>
<th>No Build (2028)</th>
<th>West Offset Alternative</th>
<th>Change from Existing</th>
<th>East Offset Alternative</th>
<th>Change from Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>65</td>
<td>68</td>
<td>72</td>
<td>removal</td>
<td>N/A</td>
<td>69</td>
<td>+1</td>
</tr>
<tr>
<td>R2</td>
<td>65</td>
<td>62</td>
<td>66</td>
<td>67</td>
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<td>removal</td>
<td>N/A</td>
</tr>
<tr>
<td>R3</td>
<td>65</td>
<td>60</td>
<td>63</td>
<td>67</td>
<td>+7</td>
<td>61</td>
<td>+1</td>
</tr>
<tr>
<td>R4</td>
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<td>57</td>
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<td>+7</td>
</tr>
<tr>
<td>R5</td>
<td>65</td>
<td>64</td>
<td>68</td>
<td>removal</td>
<td>N/A</td>
<td>65</td>
<td>+1</td>
</tr>
<tr>
<td>R6</td>
<td>65</td>
<td>56</td>
<td>60</td>
<td>59</td>
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</tr>
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<td>59</td>
<td>61</td>
<td>+6</td>
<td>61</td>
<td>+6</td>
</tr>
<tr>
<td>Receiver Location</td>
<td>Impact Threshold</td>
<td>Existing (2005)</td>
<td>No Build (2028)</td>
<td>West Offset Alternative</td>
<td>Change from Existing</td>
<td>East Offset Alternative</td>
<td>Change from Existing</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>R8</td>
<td>65</td>
<td>50</td>
<td>54</td>
<td>55</td>
<td>+5</td>
<td>54</td>
<td>+4</td>
</tr>
<tr>
<td>R9</td>
<td>65</td>
<td>61</td>
<td>64</td>
<td>65</td>
<td>+4 removal</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R10</td>
<td>65</td>
<td>59</td>
<td>63</td>
<td>65</td>
<td>+6 removal</td>
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</tr>
<tr>
<td>R11</td>
<td>65</td>
<td>54</td>
<td>54</td>
<td>60</td>
<td>+6 removal</td>
<td>N/A</td>
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</tr>
<tr>
<td>R12</td>
<td>65</td>
<td>67</td>
<td>72</td>
<td>73</td>
<td>+6 removal</td>
<td>N/A</td>
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</tr>
<tr>
<td>R13</td>
<td>65</td>
<td>50</td>
<td>54</td>
<td>54</td>
<td>+4</td>
<td>52</td>
<td>+2</td>
</tr>
<tr>
<td>R14</td>
<td>65</td>
<td>57</td>
<td>61</td>
<td>60</td>
<td>+3</td>
<td>61</td>
<td>+4</td>
</tr>
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<td>R15</td>
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<td>66</td>
<td>66</td>
<td>removal</td>
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<tr>
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<td>61</td>
<td>+6</td>
<td>57</td>
<td>+2</td>
</tr>
<tr>
<td>R17</td>
<td>65</td>
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<td>58</td>
<td>61</td>
<td>+7</td>
<td>55</td>
<td>+1</td>
</tr>
<tr>
<td>R18</td>
<td>65</td>
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<td>58</td>
<td>61</td>
<td>+7</td>
<td>56</td>
<td>+2</td>
</tr>
<tr>
<td>R19</td>
<td>65</td>
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<td>63</td>
<td>65</td>
<td>+5</td>
<td>60</td>
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<tr>
<td>R20</td>
<td>65</td>
<td>55</td>
<td>59</td>
<td>61</td>
<td>+6</td>
<td>56</td>
<td>+1</td>
</tr>
<tr>
<td>R21</td>
<td>65</td>
<td>60</td>
<td>63</td>
<td>63</td>
<td>removal</td>
<td>N/A</td>
<td>61</td>
</tr>
<tr>
<td>R22</td>
<td>70</td>
<td>62</td>
<td>65</td>
<td>65</td>
<td>removal</td>
<td>N/A</td>
<td>64</td>
</tr>
<tr>
<td>R23</td>
<td>65</td>
<td>61</td>
<td>65</td>
<td>62</td>
<td>+1 removal</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R24</td>
<td>65</td>
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<td>53</td>
<td>58</td>
<td>+9</td>
<td>56</td>
<td>+7</td>
</tr>
<tr>
<td>R25</td>
<td>65</td>
<td>52</td>
<td>56</td>
<td>59</td>
<td>+7</td>
<td>57</td>
<td>+5</td>
</tr>
<tr>
<td>R26</td>
<td>70</td>
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<td>64</td>
<td>65</td>
<td>+4 removal</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R27</td>
<td>65</td>
<td>49</td>
<td>53</td>
<td>53</td>
<td>+4</td>
<td>54</td>
<td>+5</td>
</tr>
<tr>
<td>R28</td>
<td>65</td>
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<td>51</td>
<td>54</td>
<td>+7</td>
<td>55</td>
<td>+8</td>
</tr>
<tr>
<td>R29</td>
<td>65</td>
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<td>58</td>
<td>60</td>
<td>+6</td>
<td>60</td>
<td>+6</td>
</tr>
<tr>
<td>R30</td>
<td>65</td>
<td>59</td>
<td>63</td>
<td>65</td>
<td>+6 removal</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R31</td>
<td>65</td>
<td>49</td>
<td>52</td>
<td>53</td>
<td>+4</td>
<td>53</td>
<td>+4</td>
</tr>
<tr>
<td>R32</td>
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<td>53</td>
<td>53</td>
<td>+3</td>
<td>52</td>
<td>+2</td>
</tr>
<tr>
<td>R33</td>
<td>65</td>
<td>63</td>
<td>66</td>
<td>66</td>
<td>+3 removal</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R34</td>
<td>65</td>
<td>48</td>
<td>52</td>
<td>52</td>
<td>+4</td>
<td>50</td>
<td>+2</td>
</tr>
<tr>
<td>R35</td>
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<td>54</td>
<td>60</td>
<td>+6</td>
<td>63</td>
<td>+9</td>
</tr>
</tbody>
</table>
### TABLE 10
Predicted Peak-Hour Noise Levels

<table>
<thead>
<tr>
<th>Receiver Location</th>
<th>Impact Threshold</th>
<th>Existing (2005)</th>
<th>No Build (2028)</th>
<th>Build (2028)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>West Offset Alternative</td>
</tr>
<tr>
<td>R36</td>
<td>65</td>
<td>54</td>
<td>54</td>
<td>57</td>
</tr>
<tr>
<td>R37</td>
<td>65</td>
<td>54</td>
<td>54</td>
<td>58</td>
</tr>
</tbody>
</table>

Notes:
1. All results in A-weighted decibels.
2. A noise level in **bold** indicates the receiver location approaches or exceeds the noise abatement criteria.
3. The existing noise level at R11 was determined from a field measurement. The no-build level would be at least the existing noise level, but would likely increase from development expected to occur without the project.
4. The noise levels for the existing and no-build conditions at Receivers R35 through R37 are assumed to be the same as for R11.
5. "Removal" indicates that property acquisition would occur at the location of the receiver as part of the SMP Road Improvements project.
6. N/A = Not applicable
Source: CH2M HILL 2005

### Design Year Impacts
Existing noise levels for peak-hour traffic approach or exceed FHWA and DOT&PF noise abatement criteria at the exterior of two homes located at the south end of the project area (Receivers R1 and R12). The modeled noise levels show that future increases above existing noise levels would be up to approximately 5 dBA under the No-Build Alternative, between 1 dBA and 9 dBA for the West Offset Alternative (preferred), and up to 9 dBA for the East Offset Alternative. These increases in noise are below the DOT&PF substantial increase threshold of 10 dBA or more.

It should be noted that residences and businesses that would be removed to construct either of the build alternatives are not listed in the build alternative analysis because they would no longer exist. Therefore, they would not be impacted by traffic noise.

**No-Build Alternative**
Under the No-Build Alternative, design-year (2028) noise impacts are predicted to occur at the residences identified by Receivers R1, R5, R12, R15, and R23 and the church designated as R2.

Under the No-Build Alternative conditions, more residences would be affected adversely by noise in the design year (2028) than if either build alternative were constructed. This impact would result because all houses would remain adjacent to SMP and noise levels will increase through time from normal traffic growth.
Build Alternatives

The build alternatives would affect fewer homes because they would shift the roadway toward one side of the existing alignment, removing residences and businesses mostly from one-side of the road.

West Offset Alternative (Preferred)

Under the West Offset Alternative, design-year (2028) noise impacts to the east of SMP are predicted to occur at the residence (R12), the church (R2), three residences (R9, R10, R30) located just south of Cottonwood Creek, and the day-care facility (R33) at SMP and Bogard Road. On the west side north of Naomi Drive, residences (R3 and R19) would be impacted by noise in the design year.

East Offset Alternative

Under the East Offset Alternative, design-year (2028) noise impacts are predicted to occur at four residences (R1, R5, and R15, which represents two homes north of Whispering Woods Drive).

Mitigation Measures

Mitigation measures (noise abatement measures) evaluated for this project included traffic management measures, roadway design measures, and construction of noise barriers. Noise abatement measures are considered when the predicted (design year) noise levels approach or exceed the FHWA/DOT&PF noise abatement criteria. Therefore, noise abatement will be considered for any residential location where predicted peak-hour noise levels equal or exceed 65 dBA. Potential measures for abatement of traffic noise that may be considered for the proposed project include the following:

- Construction of noise barriers between the roadway(s) and residential locations where future peak-hour noise levels exceed the noise abatement criteria
- Realignment of the roadway(s)
- Implementation of traffic management measures (reduced speed limits and limitations or restrictions on truck traffic)
- Acquisition of “buffer zones” between the highway and affected properties

Because of the limited ROW along the project corridor, the construction of noise barriers would be the most effective mitigation measure. Under the DOT&PF Noise Abatement Policy (1996), noise barriers are not constructed for commercial and industrial land uses. Therefore, mitigation measures were evaluated for residential areas only where noise impacts have been identified.

Under the DOT&PF Noise Abatement Policy, noise measures were evaluated by using two criteria: feasibility and reasonableness. Feasibility deals primarily with engineering considerations such as topography, access requirements for driveways and ramps, the presence of local cross streets, and other noise sources in the area. Each measure is expected to provide a reduction of at least 5 dBA to be considered feasible. If a measure appears feasible, the criterion for reasonableness is then evaluated. Reasonableness is composed of several factors, which include the amount of noise reduction provided, number of people
protected, cost of abatement, opinions of affected residents, magnitude of future traffic noise levels, difference between future and existing noise levels, and comparison of the difference between future traffic noise levels for the build and no-build alternatives. A mitigation measure is considered cost-effective if it costs $25,000 or less per benefited residence. A benefited residence is any residence that receives a reduction in noise levels of 5 dBA or more.

A cost reasonableness and feasibility analysis was used to determine whether noise barriers would be recommended. None of the barriers evaluated under either build alternative meet the DOT&PF cost reasonableness criterion of $25,000; therefore, none are considered reasonable to construct (see Appendix D).

On the basis of the above discussion, no abatement measures are proposed for the project. This recommendation is based on preliminary engineering studies conducted to date and the existing DOT&PF Noise Policy. The recommendation will be reevaluated during the final design of the facility to ensure its validity.

4.8 Water Quality Impacts

The project area lies in the Cottonwood Watershed and is drained by Cottonwood Creek. This stream, which runs perpendicular to SMP and passes through a 108-inch culvert crossing just south of Bogard Road, is characterized by low flow. Cottonwood Creek begins at Cornelius Lake and is fed by springs between the Little Susitna drainage and the Wasilla Creek drainage. The creek flows through several lakes, for a distance of 33 river miles, before it drains into the mud flats of Knik Arm. The portion of Cottonwood Creek that flows through the project area carries water in a westward direction between Mud Lake and Wasilla Lake (Figure 1).

Cottonwood Creek acts as receiving water for untreated wastes that naturally drain from the surrounding lands. Other receiving waters in the project area are Mud and Wasilla lakes and wetlands (discussed below in the Wetlands Impacts section of this report). No principal or sole-source aquifers or wellhead protection areas exist within the project area. Properties within the project area are served by private wells.

Cottonwood Creek is valued by the community and visitors as a source of aesthetic beauty, recreation, wildlife habitat, and fishing. The creek is used by salmon and trout. Currently users of an established 7-mile canoe trail must portage canoes over SMP because a culvert prevents passage on the stream.

Because this waterway is located in an area of the MSB undergoing urbanization, it is increasingly affected by urban runoff, septic systems, and land development within its riparian zone. Storm water from urbanized landscapes can be detrimental to receiving water because pollutants often are carried along with rainwater into storm drains. Urban runoff is usually very high in suspended sediment and nutrients and exhibits high biological and chemical oxygen demand (from decomposing organic materials that consume oxygen). The high concentrations of nutrients found in storm water can stimulate aquatic plant life growth and deplete dissolved oxygen (Perry and Vanderklein, 1996).
Water quality is regulated by the EPA, under Sections 401, 402, and 404 of the Clean Water Act and the Alaska Department of Environmental Conservation (ADEC), under Title 18, Chapter 70, of the *Alaska Administrative Code*, Water Quality Standards.

Cottonwood Creek is currently listed as an impaired water body under Section 303(d) of the Clean Water Act for the non-attainment of the residue water quality standard for foam and debris (ADEC, 2003). No pollution controls have been implemented, and no total maximum daily loads (TMDLs) have been established for the creek. No other waters in the project area are listed as impaired under 303(d).

The ADEC began to monitor the creek after numerous complaints in 1998, 2000, 2001, and 2002. Citizens reported noticing large accumulations of foam. The cause of foam and debris is still under study; however, it is suspected to be a result of organic matter released from decaying algae or other organic matter (Davis, 2004). Foam can also be caused by surfactants or detergents from urban stormwater runoff.

The Aquatic Restoration and Research Institute monitored Cottonwood Creek at many sites, including a site underneath the SMP crossing (referred to as Site 3). Foam was identified at this site during 83 percent of monitoring dates. Results of water quality monitoring also indicate that water temperatures are elevated and do not meet state water quality standards during summer months. Cottonwood Creek experiences summer algae blooms, which are generally associated with increased nutrient loading from nitrogen and phosphorus. Sources of such nutrients include lawn fertilizers and septic systems (Davis, 2004).

**No-Build Alternative**

Under the No-Build Alternative, there would be no increase to impervious surfaces with the associated potential to increase pollutant discharge into Cottonwood Creek and degrade current water quality. The absence of improvements to the culvert or access points at Cottonwood Creek would result in bank erosion continuing at a rate that is higher than would occur with the proposed road improvements.

**Build Alternatives**

Water quality impacts are the same for both build alternatives (West Offset [preferred] and East Offset). Road improvements would almost double the paved surface area, resulting in reduced infiltration and greater quantity of road surface runoff from rain. The additional runoff from the increased paved area for a 2-year, 6-hour storm event is estimated to be 11,605 cubic feet, or 86,812 gallons. Pollutants from additional road surface and traffic that could reach Cottonwood Creek might include gas and oil leaks from cars, road salts and other deicing agents, and particulates from vehicle emissions.

For the drainage areas that outfall to Cottonwood Creek, the total roadway runoff, including concentrated and sheet flow, is calculated to increase from 1.8 to 1.9 cubic feet per second, totaling approximately 1,209 cubic feet, or 9,044 gallons, for a 2-year, 6-hour storm event. This runoff would be channeled through vegetated swales, existing wetlands, or both for natural sediment removal before it is discharged into the creek. (The existing drainage condition uses the wetlands.)
Because the existing drainage ditches and many of the existing slopes are not currently vegetated, the current runoff is often sediment-laden and erodes surfaces. The following components of the proposed road improvements are expected to decrease the amount of sediment contained in runoff and control erosion: increased amount of paved surface area, revegetated side slopes and drainage ditches, and the use of walls on the southwest side of the Palmer-Wasilla Highway intersection and the west sides of the Cottonwood Creek Bridge approach areas. The use of walls reduces the size of the fill slopes, resulting in smaller areas of potential erosive surface. In addition, replacement of the Cottonwood Creek culvert with a new bridge and improved parking and creek access are designed to decrease human activities that increase bank erosion and would reduce sediment in runoff.

The proposed improvements are not expected to affect water quality in wells along the project corridor.

Mitigation Measures

Impacts from the proposed project would be minimized by incorporating low-impact development techniques, such as vegetated swales and drainage ditches that allow for infiltration and reduction of runoff. Vegetated swales and ditches allow pollutants to attenuate and settle out while storm water slowly infiltrates through the grass and soil.

Best management practices (BMPs) for mitigation of long-term impacts on water quality associated with increased paved surfaces aim to retain or restore the hydrologic functioning of the landscape, as well as to control stormwater flow and remove pollutants. The following are examples of BMPs that would be integrated during project development to mitigate the effects of roadway improvements:

- Revegetation of disturbed soils
- Grassy filter strips along roads
- Vegetated swales
- Ditched stormwater drainage
- Road and ditch maintenance
4.9 Permits

The federal permitting requirements for the SMP Road Improvements project will include a U.S. Army Corps of Engineers (USACE) 404 permit and a 401 water quality certification from the Alaska Department of Natural Resources (ADNR). These permits are required by Sections 401 and 404 of the Clean Water Act, which regulate water quality and the dredging and placement of fill in waters of the United States. The EPA also regulates discharges to waters of the United States through its National Pollutant Discharge Elimination System (NPDES) permit process that addresses both point and non-point source pollution. The proposed project would require an NPDES General Permit for Discharges from Construction Activities to waters of the United States.

State permitting requirements are found in the Alaska Statutes (AS) and include AS 46 for governing activities in the coastal zone, AS Title 41 for activities in anadromous fish streams, and AS 38 for activity on state lands. Additional guidance is found in the Alaska Administrative Code governing illicit discharge of wastes and disposal of materials such as oil, waste, cooling waters, and fill into streams and onto land. In addition, the DOT&PF requires permits for placement, modification, or encroachment across state highway or state-maintained highway ROWs.

The following discusses permits and authorizations required for the proposed project under either build alternative:

- USACE Section 404 permit for the wetland fill impacts (20,500 cubic yards of fill) from the proposed project. Onsite review of the wetlands and potential impacts to them from the project was conducted with the USACE representative in July 2005. The Section 404 permit application is in progress, and a draft Section 404 permit application is included in Appendix I.

- EPA Section 401 of the Clean Water Act requires 401 Water Quality Certification from the State of Alaska. This certification is administered in Alaska by ADEC and is required for completing the USACE Section 404 permit process.

- EPA NPDES General Permit for Construction Activities in Alaska. The contractor would be required to comply with the NPDES general permit. Compliance would include preparing a Storm Water Pollution Prevention Plan (SWPPP) before construction.

- Title 41, Fish Habitat Permit, for construction activities below ordinary high water, required from the ADNR Office of Habitat Management and Protection (OHMP) for the proposed replacement of the existing culvert crossing with a bridge at Cottonwood Creek. The Title 41 permit application would be finalized during final design of the project. A draft of the Title 41 permit application is included in Appendix I.

- Land Use Permit, required from ADNR for work below the ordinary high water line at Cottonwood Creek. The Land Use Permit would be obtained during final design of the project.
• Temporary Water Use/Water Rights permit, the contractor would need this permit if water from Cottonwood Creek is to be used during construction of the road. This permit would be obtained by the contractor for water withdrawal from Cottonwood Creek.

• An MSB Flood Hazard permit is required for placement of fill within a mapped flood zone. Preliminary analysis has shown that no increase in base flood elevation is expected from construction of the proposed roadway improvements. The flood hazard permit application would be finalized during the final design of the project.

• Coastal Consistency Review, coordinated with the ADNR Office of Project Management and Permitting and the MSB Coastal Coordinator. Preliminary discussions with the MSB Coastal Coordinator confirmed that a portion of the project, at the Cottonwood Creek location, is within the MSB Coastal Zone boundaries. A draft of the Coastal Project Questionnaire is included in Appendix I.

4.10 Wetland Impacts

Wetlands as defined by EO 11990, “Protection of Wetlands,” and the USACE exist within the project corridor. EO 11990 requires that project proponents use avoidance, minimization, and restoration when considering impacts to wetlands.

Wetland delineations were performed on May 17, 2004; June 22, 2004; and September 4, 2004, in accordance with the guidelines set forth in the 1987 USACE Wetlands Delineation Manual (1987). Appendix A contains the wetland analysis report, and Appendix B provides the USACE approved Jurisdictional Determination received by the DOT&PF.

The wetland analysis report identified palustrine and lacustrine wetland habitats within the project corridor. The following project area wetlands were delineated:

• The wetland complex where Cottonwood Creek intersects SMP between Mud Lake and Wasilla Lake, consisting of wetlands on the east (Wetland A, see Figure 25) and west sides of SMP (Wetland B, see Figure 25)

• A palustrine wetland south of Cottonwood Creek adjacent to the east side of SMP just south of Cottonwood Way (Wetland C, Figure 25)

• Wetlands south of the Palmer-Wasilla Highway that discharge to Cottonwood Creek south of Lake Wasilla, approximately 1.25 miles west of SMP (Wetlands D and Wetland E on the west and east sides of SMP, respectively; see Figure 26)
Figure 26

Seward Meridian Parkway - Road Improvements

Affected Wetlands

Legend
- Edge of Pavement
- Retaining Wall
- Cut Slope Limit
- Fill Slope Limit
- Wetland Complex extends beyond project boundary

West Offset (Preferred) Alternative
Wetlands A and B are part of the same Cottonwood Creek wetland complex, which is bisected by SMP where it crosses Cottonwood Creek. This wetland complex contains both lacustrine and palustrine wetlands. Hydraulic connectivity is maintained by a large culvert under the road. This complex also has the highest functional values because of its association and location within the Cottonwood Creek drainage (between Mud Lake and Wasilla Lake). Cottonwood Creek is a known anadromous fish stream and contains extensive wildlife habitat. The accessibility of Cottonwood Creek from SMP also makes this wetland complex important for recreational, educational, and scientific values.

The Cottonwood Way wetland, Wetland C, is a palustrine wetland and does not connect to any other water bodies or wetlands. Wetlands C does not provide fish habitat and does not import or export organic matter because it does not have an inlet or outlet.

The Palmer–Wasilla Highway wetland complex (Wetlands D and E) is part of a palustrine wetland complex bisected by SMP that has been affected by past and continuing development in the area. Hydraulic connectivity between Wetlands D and E is maintained by a culvert under SMP. Wetlands D and E are also associated with a small man-made drainage channel. They do not provide habitat for fish because of unsuitable water quality and flow regime (intermittent flow based on rainfall and spring thaw). Much of the historical stream channel and wetlands west of SMP (including Wetland D) has been modified by development and human activity, both upstream and downstream, including filling on parcels and ditching for storm water drainage along the Palmer-Wasilla Highway. However, these wetlands are considered to be functioning at a capacity that supports ecosystem connectivity and promotes hydrologic stability.

Specific functions and values of the wetlands within the project corridor are discussed in the Wetland Analysis Technical Memorandum (Appendix A).

**No-Build Alternative**

The No-Build Alternative could result in some impacts to wetland habitat at the Cottonwood Creek location from increased use of the creek banks for parking and four wheeling. If uncontrolled recreational access to Cottonwood Creek continues, additional impacts such as erosion, sediment deposition, and reduced nutrient absorption could also occur.

**Build Alternatives**

The wetland impacts of the build alternatives (West Offset [preferred] and East Offset) have been assessed within the proposed project corridor. The wetlands affected and the potential acres of impact as a result of construction for each alternative are shown in Table 11. The following impacts are common to both build alternatives.

The proposed project would provide a bridge to replace the culvert at Cottonwood Creek. This action would allow rehabilitation of the creek channel under the bridge, re-establishing a more natural stream with bed and banks. The proposed project would also provide continued recreational access to Cottonwood Creek. Cottonwood Creek on the west side of SMP, south of the bridge and creek, was determined to be the most practical location for vehicle and pedestrian access.
The current culvert crossing under SMP, south of the Palmer-Wasilla Highway, would be replaced, maintaining the hydrologic connection between the bisected wetland complex there (Wetlands D and E).

The amount of wetlands affected would not substantially affect the overall availability of wetlands on a regional scale, nor would the project substantially affect the functionality of the remaining wetlands within the project corridor or the Cottonwood Watershed.
TABLE 11
Wetland Impact Areas for Build Alternatives

<table>
<thead>
<tr>
<th>Wetland Affected</th>
<th>Wetland Type</th>
<th>West Offset Alternative without walls</th>
<th>East Offset Alternative without walls</th>
<th>West Offset Alternative with walls</th>
<th>East Offset Alternative with walls</th>
<th>West Offset Alternative Creek Access</th>
<th>East Offset Alternative Creek Access</th>
<th>West Offset Alternative Temporary</th>
<th>East Offset Alternative Temporary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cottonwood Creek wetland complex (Wetlands A and B)</td>
<td>Palustrine</td>
<td>0.47</td>
<td>0.4</td>
<td>0.18</td>
<td>0.06</td>
<td>0.56</td>
<td>0.30</td>
<td>0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>Cottonwood Creek wetland complex (Wetlands A and B)</td>
<td>Lacustrine</td>
<td>0.05</td>
<td>0.19</td>
<td>0</td>
<td>0.05</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.02</td>
</tr>
<tr>
<td>Cottonwood Way wetland (Wetland C)</td>
<td>Palustrine</td>
<td>0</td>
<td>0.1</td>
<td>0</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Palmer–Wasilla Highway wetland complex (Wetlands D and E)</td>
<td>Palustrine</td>
<td>0.57</td>
<td>0.09</td>
<td>0.25</td>
<td>0.06</td>
<td>0</td>
<td>0</td>
<td>0.06</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total wetland impacts</strong></td>
<td></td>
<td><strong>1.09</strong></td>
<td><strong>0.78</strong></td>
<td><strong>0.43</strong></td>
<td><strong>0.27</strong></td>
<td><strong>0.56</strong></td>
<td><strong>0.30</strong></td>
<td><strong>0.13</strong></td>
<td><strong>0.06</strong></td>
</tr>
</tbody>
</table>

Note: Build alternatives without walls are provided to show the amount of wetlands that would be saved with the use of retaining walls. Final design and construction would incorporate retaining walls.
West Offset Alternative (Preferred)
The West Offset Alternative (preferred) would permanently affect Wetlands A, B, D, and E. This alternative would affect 1.09 acres of wetland area, consisting of 1.0 acre of palustrine wetlands and 0.09 acre of lacustrine wetlands. Creek access improvements would include an access to the west of SMP adjacent to the south side of Cottonwood Creek. A 500-foot-long access road would lead to parking for four vehicles. Access improvements at Cottonwood Creek would affect approximately 0.56 acre of palustrine wetlands under the West Offset Alternative. The total wetland area affected, including creek access, would be 1.65 acres.

East Offset Alternative
The East Offset Alternative would permanently affect Wetlands A, B, C, and E. This alternative would affect 0.78 acre of wetland area, consisting of 0.59 acre of palustrine wetlands and 0.19 acre of lacustrine wetlands. Creek access improvements at Cottonwood Creek would affect approximately 0.30 acre of palustrine wetlands under the East Offset Alternative. The total wetland area affected, including creek access, would be 1.08 acres.

Although less total acreage would be affected by the East Offset Alternative than the West Offset Alternative, the ROW needed for road widening and utility replacement is substantially more expensive under the East Offset Alternative than for the West Offset Alternative. The estimated ROW and utility cost is $15 million for the East Offset Alternative, nearly double the $8 million for the West Offset Alternative. Total construction cost, including design and construction administration, is approximately $35 million for the East Offset Alternative, compared with $28 million for the West Offset Alternative.

Mitigation Measures

Avoidance
Wetlands impacts are unavoidable because north-south SMP runs perpendicular to wetland complexes that are east-west in orientation. Therefore, it is not possible to locate a route that does not affect wetlands at the Cottonwood Creek crossing. The design for the proposed project includes retaining walls to avoid some placement of fill in wetlands along the proposed construction route (see Table 11).

Minimization
To minimize impacts to wetlands, the proposed bridge would span Cottonwood Creek; no piers would be placed in the water. To contain the fills on the west side of the bridge and minimize the footprint in wetlands (Wetland B), retaining walls would be incorporated in the bridge and fill design for the proposed project. The retaining walls on the west side of SMP would extend approximately 300 feet north and south of the proposed bridge over Cottonwood Creek. A wall would also be placed on the west side of SMP, south of the Palmer-Wasilla Highway and across from the gas station, extending north from Spruce Street for approximately 80 feet. The amount of wetland area affected that would be reduced with the use of retaining walls is 0.65 acre under the West Offset Alternative and 0.52 acre under the East Offset Alternative.

The temporary impacts to wetlands from construction adjacent to these walls would be mitigated by reshaping the ground and revegetating the wetland area after wall construction
is complete. Temporary wetland impacts would be 0.13 acre for the West Offset Alternative and 0.06 acre for the East Offset alternative (see Table 11).

Impacts to wetlands during construction would also be minimized by staking the wetland boundaries before construction to mark areas that should be avoided, fueling equipment a distance of at least 100 feet from wetlands, and implementing BMPs as soon as practicable during construction to control erosion and sedimentation into wetlands and other waters of the United States.

Compensatory Mitigation

To compensate for the loss of wetland values, the proposed project would include reconstruction of the creek channel under the bridge to restore habitat and improve fish passage, which is currently hindered by the culvert crossing and vertical beams placed in the culvert to keep it from collapsing. The new channel would also facilitate recreational crossing beneath the highway. The details of the reconstructed stream channel and bridge crossing would be coordinated with the ADNR, Alaska Department of Fish and Game (ADF&G), and the MSB during the final design phase of the project.

4.10.1 Only Practicable Alternative Finding

Wetlands as defined by EO 11990 occur in the project area and would be affected by the proposed project. The EO further requires that there be “no practicable alternative” to the proposed action and that all practicable measures to minimize and avoid wetlands be incorporated into the project. There are no practicable alternatives to the proposed project because the existing SMP is oriented north-south and the areas wetlands are oriented east-west.

The West Offset Alternative (preferred) is considered the only practicable alternative because of the ROW and utility relocation issues and costs associated with the East Offset Alternative. As discussed above, the estimated ROW and utility cost are higher for the East Offset Alternative ($15 million) than for the West Offset Alternative ($8 million). Although slightly less wetland is affected by the East Offset Alternative than by the West Offset Alternative, the East Offset Alternative requires nearly twice as much investment in ROW and utility relocation, making it the least practicable build alternative.

As described in the mitigation subsection above, all practicable measures to minimize harm to wetlands have been incorporated into or committed to for the project. These measures include bridging Cottonwood Creek where it is bisected by SMP, incorporating retaining walls into the design to minimize the width of facilities at Cottonwood Creek, maintaining the existing hydrologic connection between Wetlands D and E, staking of wetland boundaries that are not to be disturbed by construction activities before construction, fueling construction vehicles 100 feet or more from wetlands and other waters of the United States, revegetating disturbed soils and slopes as quickly as possible, and restricting in-water work to times established by the permitting agencies. In addition, the DOT&PF would reconstruct the stream channel below the proposed bridge to provide a more natural stream system. The new channel (bed and banks) would be approximately 30 feet wide and 200 feet long. The channel would improve fish passage and facilitate recreational access and travel beneath the bridge to compensate for wetland values lost as a result of the proposed project. The detailed
design of the new stream channel would be developed in consultation with the ADNR, ADF&G, National Marine Fisheries Service (NMFS), and MSB during the design phase of the proposed project.

Access to Cottonwood Creek would be provided by an access road and limited parking to the west of SMP, south of the bridge crossing. Creek access to the west is the most practical location because it provides flatter grades (maximum of 5 percent, compared with 8 to 15 percent for other potential access locations) with a smaller overall footprint, does not affect any residences, and does not require an independent pathway that is compliant with the Americans with Disabilities Act (ADA) or intermediate landings for pedestrian accessibility. Eliminating the creek access altogether would not be consistent with state and local land use plans for the project area, which require maintaining access and the existing recreational function of Cottonwood Creek (ADNR, 1985; MSB, 2000).

Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

4.11 Water Body Modification

The proposed project modifies Cottonwood Creek, a low-flow stream crossed by SMP; no other water bodies would be modified. A culvert currently carries Cottonwood Creek under the existing roadway. Cottonwood Creek provides several values to the community, acting as a source of aesthetic beauty, recreation, wildlife habitat, and fishing. Recreationists use SMP as a means of access to the creek for viewing wildlife, fishing, and canoeing. The creek is part of an established canoe trail. Because the culvert prevents passage under the road, canoe and kayak users must portage their personal watercraft over the road.

The proposed water body modifications consist of removing the culvert and surrounding fill, reconstructing the stream channel, and constructing a clear-span bridge to carry the roadway over Cottonwood Creek. The proposed culvert replacement with a bridge has been coordinated with the U.S. Coast Guard, ADNR-OHMP, ADF&G, EPA, and USFWS through agency meetings and written correspondence. All have expressed the desire to replace the culvert and fill with a bridge.

No-Build Alternative

The No-Build Alternative would not result in any water body modifications.

Build Alternatives

Water body modification impacts are similar for both build alternatives (West Offset [preferred] and East Offset).

Cottonwood Creek would be positively affected by constructing the bridge. Removal of the existing roadway fill and culvert would allow the creek channel of Cottonwood Creek to be reconstructed to a more natural system. The hydrology regime for the creek would be maintained to ensure upstream areas are not dewatered. The flood elevation would also be
maintained to avoid altering the 100-year floodplain. These actions would benefit the water body by providing a more natural stream setting and hydraulics regime under the bridge.

**Mitigation Measures**

Mitigation would be provided in the bridge design, specifically the space under the bridge to reconstruct the creek channel to a more natural system, while maintaining the upstream flood elevation and stream hydraulics.

**4.12 Wildlife and Fisheries Impacts**

The project corridor, including the Cottonwood Creek crossing area, is inhabited by large and small terrestrial, avian, and aquatic species. Transportation, residential, and business developments have modified the terrestrial and aquatic wildlife habitat within and adjacent to the project corridor. The Cottonwood Creek area is prime habitat suitable for nesting and foraging by birds, including bald eagles; foraging by small and large mammals, such as moose; and spawning and migration by anadromous and resident fish. Other habitat areas along the project corridor are utilized mostly by terrestrial birds and mammals. This analysis discusses the primary target species, based on their use of the project area: bald eagles, moose, and coho and sockeye salmon.

Database research revealed no eagle nest locations on record with the USFWS (2004) within the project corridor. In addition, an aerial survey conducted by the DOT&PF and USFWS on April 20, 2005, did not identify any eagle nests in the project area.

Moose have been seen regularly along SMP near Bogard Road (Vardeman, 2005). Discussions with resource agencies and residents at public meetings revealed that moose are distributed throughout the project corridor. The current Cottonwood Creek culvert in place at SMP does not allow for terrestrial animal passage, forcing moose and other animals to cross SMP, rather than travel along the creek shoreline. Wildlife cross roads when unable to follow a stream shoreline such as in the area where Cottonwood Creek passes through the culvert at the SMP road crossing. DOT&PF accident data do not reveal a high rate of moose-vehicle interactions anywhere within the project corridor.

The span of Cottonwood Creek between Mud Lake and Wasilla Lake is important for fish migration and spawning habitat. The creek supports both anadromous (sockeye and coho salmon) and resident (rainbow trout and Dolly Varden) fish species. The ADF&G and ADNR *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (Johnson and Weiss, 2006) identifies Cottonwood Creek as an anadromous fish stream. Therefore, Cottonwood Creek is afforded special protection under AS 41.05.870, which provides for the protection of fish and game in connection with construction or work in the beds of specified water bodies. According to the ADNR (LaCroix, 2004), the Cottonwood Creek culvert has obvious implications for fish passage, particularly for fish in juvenile stages. The culvert is known to impede adult fish access to upstream spawning habitat under a variety of flow conditions because of channelization.

According to the ADNR, development within the Cottonwood Creek drainage has reduced the numbers and diversity of resident wildlife in the vicinity of the proposed project, but Cottonwood Creek continues to serve as an important movement and migration corridor for
many species of both fish and wildlife. A large tract of land located along the west side of SMP, adjacent to Cottonwood creek south of the culvert crossing, has recently been cleared in preparation for development.

**No-Build Alternative**

Under the No-Build Alternative, there would be no change to the current stream crossing at Cottonwood Creek. The culvert would remain in place and fish and wildlife passage conditions would remain unchanged. Impacts to wildlife populations in and near Cottonwood Creek could occur because moose and other animals following the creek would likely cross over the road. An increase in animal mortality could also occur as the volume of vehicles using the road corridor rises, potentially affecting wildlife populations.

**Build Alternatives**

Wildlife and fisheries impacts are the same for both build alternatives (West Offset [preferred] and East Offset).

Replacement of the culvert at Cottonwood Creek with a bridge would benefit wildlife and fish habitat. Improvements would include construction of a bridge with a span large enough to provide streambank areas on either side of the channel. The proposed clear-span bridge crossing would create an opening 18.5 feet high by 40 feet wide for a distance of 90 feet in length. This bridge would create a passage large enough for use by mammals as large as moose. The ADF&G recommends an optimum bridge height of 18 feet and minimum height of 13 feet for moose under crossings, with an openness ratio greater than that for elk (4.9). The openness ratio for the proposed bridge is calculated at 8.2. The bridge would allow the reconstruction of the creek channel under the bridge, which would improve fish passage.

The construction of the proposed four-lane road, with center left turn lane, and multi-use path would improve wildlife visibility for motorists, but would also be a greater obstacle for wildlife to cross. Regardless, wildlife mortality is not expected to increase substantially over existing levels as a result of project construction.

**Mitigation Measures**

Mitigation for road improvements would be provided by the replacement of the existing culvert with a clear-span bridge to allow wildlife passage and to improve fish passage and habitat. A more natural stream channel with banks on either side would be constructed under the bridge. The upstream elevation of Cottonwood Creek would be maintained.

Clearing or disturbance of natural vegetation adjacent to Cottonwood Creek and between Bogard Road and Seldon Road would be prohibited from April 15 to July 15 to avoid impacts to nesting birds. Because of existing development, clearing in all other areas of the project is expected to be minimal. Therefore, the potential for effecting nesting habitat is minimal in these areas, and no restrictions on clearing are proposed. Examples of disturbance include the use of plastic, fill, or other materials or activities that prevent nesting of birds. In-water work in Cottonwood Creek would either be restricted to May 15 to July 15 or would be isolated from the flowing waters of the creek, as determined by permitting agencies. An ADNR-OHMP Title 41 permit would be obtained and complied with to further
minimize effects to fish and fisheries habitat. Final design of the new Cottonwood Creek channel would be developed with appropriate resource agencies that have jurisdiction.

4.12.1 Essential Fish Habitat
The Essential Fish Habitat (EFH) within the study area is Cottonwood Creek, which is a cataloged anadromous fish stream (247-50-10300) (Johnson and Weiss, 2006) that runs under the existing SMP approximately 1.75 miles north of the Parks Highway. The EFH assessment conducted for the proposed project (Appendix C) notes that the fish species of concern in this stream are coho salmon and sockeye salmon. The creek and its associated wetlands are considered coho rearing habitat, and some spawning activities may take place in this area. The creek within the area of the road is not identified as critical habitat for coho or sockeye salmon spawning activities (Namtvedt, 2005); however, the creek in this area is a migratory route to upstream spawning areas and adult salmon are present in summer and fall during migration.

Habitat changes that could affect EFH are channel and shoreline modifications that would lower water levels in the upstream backwater slough and increase channel velocity where the creek intersects the roadway. Construction activities and stormwater discharge could also contribute to degradation of water quality in Cottonwood Creek. At the existing stream crossing, the shoreline is a mud organic substrate and the channel is shallow with unconsolidated cobble-gravel substrate.

The DOT&PF, in accordance with 50 CFR 600.920(c), has been designated as representative of the FHWA in the EFH consultation process. Consultation included review of the EFH Assessment by the NMFS. The NMFS subsequently concurred with the EFH assessment and proposed conservation measures (see NMFS e-mail, Appendix C).

No-Build Alternative
No change in the existing culvert conditions would occur under this alternative. Consequently, fish passage problems that may currently exist under certain water conditions would continue.

Build Alternatives
The EFH impacts are the same for both build alternatives (West Offset [preferred] and East Offset).

The FHWA and DOT&PF have determined that the proposed project may adversely affect EFH. However, the adverse effects would be temporary and minor in nature. Incorporation of the proposed conservation measures into the project would result in a net beneficial effect to EFH.

Long-term impacts of the proposed improvements on EFH would be positive. The proposed clear-span bridge would improve fish passage by increasing the width of the stream channel, which is now constricted by the existing culvert, and restoring the creek to a more natural flow regime. The improvements also may provide some incidental spawning areas after construction because of gravels that are exposed, creating a more natural gravel bed and bank system in place of the existing fill surrounding the culvert. The water level of the backwater slough would not substantially change as a result of the culvert removal.
Mitigation Measures (Conservation Measures)

As described in the EFH assessment (Appendix C), the following conservation measures have been incorporated into the project design to avoid and minimize the potential adverse effects on the EFH:

- The proposed bridge and stream channel would be designed to minimize dewatering of the upstream backwater slough.

- The bottom elevation of bridge girders would be approximately 15 feet or more above the water where Cottonwood Creek is crossed, allowing natural light under the bridge.

- Erosion and sedimentation control measures (such as, silt fence, straw bales, and erosion matting) would be implemented during construction to minimize water quality impacts to Cottonwood Creek and adjacent wetlands.

- Natural substrate would be restored (after culvert removal) and the current flow regime would be maintained or improved through project construction. These improvements would be incorporated into the final design, ensuring adequate fish migration, spawning, and rearing. The ultimate design of the new creek channel would be developed in consultation with the NMFS.

- Construction activities in the stream channel would be scheduled during the typical work window of May 15 to July 15 to avoid the migration period, or the in-water work area would be isolated from the flowing waters of Cottonwood Creek.

- DOT&PF contract provisions would require the contractor to develop and implement a SWPPP and a Hazardous Material Control Plan (HMCP) to effectively control sedimentation and erosion throughout the project.

- All disturbed ground adjacent to Cottonwood Creek would be revegetated with native species as soon as possible.

- Fuel would be stored a minimum of 100-feet from any wetland or water body and be placed in secondary containment capable of retaining 110 percent storage capacity plus 12 inches of freeboard.

- No vehicles or equipment would be fueled or serviced within 100 feet of wetlands or Cottonwood Creek with the exception of low-mobility equipment used for pile driving, drilled shaft construction, or other bridge construction. The HMCP would provide a detailed process for fueling this equipment within 100 feet of wetlands or Cottonwood Creek. Fueling and service vehicles would be equipped with adequate materials (such as sorbent pads and booms) to immediately contain and commence cleanup of spilled fuels and other petroleum products.

- If work areas require dewatering, all waste water would be treated and discharged in a manner that allows sediments in the wastewater adequate time to filter or settle before the wastewater is discharged into Cottonwood Creek.

- An ADNR-OHMP Title 41 permit for work below the ordinary high water line in Cottonwood Creek would be obtained and complied with.
• The construction plan for culvert removal and bridge construction would be submitted to the NMFS for comment before construction.

• A permanent vegetated swale would be constructed to treat stormwater runoff before it discharges into Cottonwood Creek.

4.13 Floodplain Impacts

Cottonwood Creek is a regulated floodway and it is located approximately 1,200 feet south of Bogard Road on SMP. The creek is currently conveyed under SMP in a 108-inch-diameter pipe culvert. This reach of Cottonwood Creek connects Mud Lake to Wasilla Lake, carrying stream flow westward. The width of ordinary high water at Cottonwood Creek is approximately 26 feet, and the current culvert at that location is only 9 feet in diameter (Albert and Weiss, 2004).

To preserve and protect the natural and beneficial values that floodplains serve, EO 11988 requires that projects are designed or modified to “minimize potential harm to or within a floodplain” before any building or land modifications are made. This EO also requires that floodplain evaluations are included in any statement prepared under 102(2)(C) of the National Environmental Policy Act (NEPA).

The Federal Emergency Management Agency prepared a Flood Insurance Rate Map (1985) for the Matanuska-Susitna Borough that includes Cottonwood Creek and its undercrossing at SMP (Figure 27). This map indicates the 100-year flood zone of Cottonwood Creek within the project area; however, the map also states that base flood elevations and flood hazard factors have not been determined for Cottonwood Creek because the creek is located within an unnumbered “A” Zone. An A Zone identifies a special flood hazard area for which no base flood elevations have been provided. The MSB Code of Ordinance requires that where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments that contain at least 50 lots or 5 acres, whichever is less. These data were generated for this project and are contained in the DOT&PF Hydrologic and Hydraulic Report for the Cottonwood Creek Crossing (2005).

No-Build Alternative

The No-Build Alternative could result in adverse impacts to the natural and beneficial values of the floodplain because of the restriction on flow created by the current culvert condition. Under this alternative there is greater potential for the occurrence of backwater flooding from high-flow events, affecting the ability of the floodplain to store storm water during heavy rainfall events and act as a buffer for increasing urban runoff as the region continues to develop.
Build Alternatives

Floodplain impacts are similar for both build alternatives (West Offset [preferred] and East Offset). The proposed project would not raise the 100-year flood elevation or substantially alter the existing hydraulic characteristics of Cottonwood Creek upstream from the bridge location. This project is consistent with the MSB Ordinance 87-52 and establishes the base flood elevation (100 year) at this location of Cottonwood Creek at 323.69 feet.

Flooding risks in Cottonwood Creek would not increase because replacing the existing 108-inch culvert with a clear-span bridge in the floodplain would improve the floodway capacity of the creek at the road crossing. Further, the invert elevation of the existing culvert would be used as the upper channel elevation for the new creek channel design to maintain the backwater area and its base water-surface elevation. The proposed bridge is a 40-foot-
long structure with vertical abutments adjacent to the creek bank on both sides. Walls are also planned along the west side of the roadway to minimize wetland impacts.

Development would not be induced within the floodplain of Cottonwood Creek because new access would not be created to undeveloped areas within the vicinity of the creek.

The proposed project would comply with EO 11988 by removing the culvert and fill and replacing it with a bridge structure that allowed the stream and floodplain to function with a more natural flow regime during flood events. The base flood elevation would not be raised.

**Mitigation Measures**

An adequately sized bridge would minimize backwater effects that now result from the in-place culvert by allowing unrestricted flow of the creek within its floodplain. The recommended bridge design standard for preservation of natural floodplain functions is 1.2 times the ordinary high water plus 2 feet. The proposed bridge provides a much greater opening (40 feet wide by 21 feet high) and would allow for proper floodplain function. It would also provide a stream channel design with bed and banks (floodplain area) under the bridge.

**4.14 Coastal Zone Impacts**

The SMP corridor includes a single body of water, Cottonwood Creek, which is part of the MSB Coastal District. Cottonwood Creek is protected under the Alaska Coastal Management Program and the MSB Coastal Management Plan (1984) as part of a coastal drainage system because of its anadromous fisheries. The coastal zone boundary is defined by the MSB Coastal Management Plan, which provides that “proposed uses and activities within 75 feet of the ordinary high water line of rivers, streams, and lakes that require local, State, or federal authorization must be reviewed to protect water quality and fish and wildlife habitat” (MSB, 1984).

**No-Build Alternative**

Under the No-Build Alternative, no construction-related activities would occur within the coastal zone. SMP would not be widened or extended and the current culvert crossing at Cottonwood Creek would not be upgraded to a bridge. The current condition of the culvert could result in the continued impediment to migratory fish passage under certain low water conditions.

**Build Alternatives**

Coastal zone impacts would be the same for both build alternatives (West Offset [preferred] and East Offset).

The proposed project would increase SMP to four lanes at the point where the road crosses Cottonwood Creek. A clear-span bridge would be constructed across the creek to replace the existing culvert and reestablish a stream channel underneath the new bridge structure. The bridge addition would be a positive impact to the stream channel and fish passage within the coastal zone. However, temporary impacts during construction from increased turbidity and
sedimentation would occur during removal of the existing roadway fill and the installation of the bridge abutments and retaining walls. Long-term effects would include additional stormwater runoff to Cottonwood Creek from the increase in low-permeability surface area (asphalt pavement). Although low-permeability surface area would increase, the rural roadway design would incorporate drainage swales and revegetation of slopes and ditches to provide natural filtration for storm water as it drains toward the creek. The proposed project appears to be consistent with the Matanuska-Susitna Borough Coastal Zone Management Program Enforceable and Administrative Policies (1984), and the project is being coordinated on a routine basis with the MSB to ensure compliance with its requirements.

Mitigation Measures
To minimize adverse impacts to Cottonwood Creek from development projects, all development in the project area is required to be coordinated with the ADNR and the MSB Coastal Coordinator. During coordination of preliminary design for the proposed project with Susan Lee (MSB Coastal Coordinator), she stated that the replacement of the culvert and fill with a bridge spanning the creek would be a positive impact to Cottonwood Creek and would be considered consistent with MSB Coastal Zone policies. ADNR has expressed the same view—that the replacement of the culvert with a bridge is a positive benefit to Cottonwood Creek—at several meetings.

Replacing the culvert with a bridge would allow reconstruction of the creek channel under the bridge and unrestricted flow of the creek within its floodplain. It may also facilitate some terrestrial wildlife movement through the creek corridor under the bridge and improve both migratory and resident fish passage. BMPs such as silt fences, coffer dams, and pump discharge sediment retention ponds would be used to reduce turbidity and sediment discharge to the stream during construction activities.

The MSB Coastal Management Plan provides that “public access to natural and cultural features shall be preserved and maintained, and where appropriate, increased.” Access and parking improvements in the southwest corner of the bridge area would provide a single point of access, reducing the impacts that are presently occurring from the current unrestricted access.

Although coordination with the MSB and ADNR has occurred routinely throughout the project activities, a formal coastal consistency review will be conducted and a consistency determination finalized during the permit acquisition phase of the proposed project.

4.15 Historic and Archaeological Preservation
A cultural resources survey, to identify archaeological and cultural resources, was completed for the project area in June 2004 and supplemented in June 2005. The results of the original survey and supplement are available in Appendix F.

The Area of Potential Effect (APE) for the SMP Road Improvements project includes the entire proposed construction footprint. This area generally extends about 100 feet on each side of the centerline of the existing SMP between the Parks Highway and Seldon Road. The survey width was increased in areas of higher archeological potential or where the exact location of the proposed project centerline for the undeveloped portion of SMP between
Bogard Road and Seldon Road was not known. The APE includes the intersections of SMP with Palmer-Wasilla Highway, Bogard Road, and Seldon Road. At the intersection of SMP and Bogard Road, the APE incorporates the area for the proposed roundabout and the road connections; a small parking area and short access road on the west side of SMP, south of Cottonwood Creek; and areas needed for additional lanes and a bike path along the Palmer-Wasilla Highway, both east and west of its intersection with SMP (Figure 28).

An archaeological survey for the proposed reconstruction and extension of SMP revealed no prehistoric or older historic sites within the APE. Much of the 200-foot-wide survey area has been disturbed by recent construction. Although several modern features and artifacts have been encountered in the survey area, none are eligible for the National Register of Historic Places because they are not old enough or of historical significance. Their presence does demonstrate past use of the area, but the sites containing these features are not potential sources of important information. More detailed information on the archaeological survey can be found in Appendix F.

A Section 106 Consultation Initiation process was prepared by the FHWA and sent to the State Historic Preservation Officer (SHPO) and recognized tribes in the project area. No comments were received. The FHWA subsequently prepared and sent “No Historic Properties Affected” letters to the SHPO and recognized tribes in the project area. A letter of concurrence was received from SHPO in May 2006 and is included in Appendix H.
Area of potential effect Sub Area A
100 feet to either side of centerline

Area of potential effect Sub Area B, Seward Meridian Parkway/Bogard Rd intersection

Area of potential effect Sub Area C, Seward Meridian Parkway/Palmer Wasilla Hwy intersection

Legend

Construction Sub Areas

Sub Area A
Sub Area B
Sub Area C
Cultural and Historical Sites

Figure 28 Area of Potential Effect (APE) and Approximate Locations of Archaeological Sites

Seward Meridian Parkway - Road Improvements
4.16 Hazardous Waste Sites

A Phase I Environmental Site Investigation was performed for the SMP Road Improvements project and is included in Appendix E. This investigation included searches of the EPA National Priorities List and Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) databases, National Response Center Query, and ADEC Contaminated Sites database and the Leaking Underground Storage Tank (LUST) database. Research also included personal interviews or telephone contacts with the ADEC, MSB Division of Public Works, and property owners or managers. The investigation revealed that there are no known hazardous waste sites within or near the project corridor. However, the onsite survey identified several sites of concern for encountering unknown contamination during construction. These sites include a gas station and convenience store, an auto repair facility, the Alcantra National Guard Armory, and a private property (shop).

The gas station and convenience store location contains underground storage tanks for fuels. The underground storage system for the business currently meets EPA requirements for secondary containment and leak monitoring; however, customers do accidentally spill fuel and oil onto the concrete parking surface while refueling or adding other vehicle fluids. Cleanup materials are on hand for use by customers and employees, and spills are usually minor.

The auto repair facility works with oils, greases, fuels, and cleaning solvents in performing auto repair. The potential for contamination in or adjacent to the building is possible but unlikely because of self cleanup of spills.

The Alcantra National Guard Armory performed remediation and closure of a heating oil site (1994) and a leaking vehicle site (2000). National Guard vehicles are operated on the site. Although minimized by regular maintenance, the potential for leaks still exists.

The private property (shop) is of concern for potential soil contamination because of drums, containers, waste, and equipment that are stored outside the building.

No-Build Alternative

Under the No-Build Alternative, no construction-related activities would occur that would result in the discovery of unknown hazardous waste sites.

Build Alternatives

West Offset Alternative (Preferred)

Construction of the West Offset Alternative (preferred), which shifts the roadway to the west within a 200-foot-wide corridor, is not expected to result in the discovery of unknown hazardous waste sites. The Alcantra National Guard Armory vehicle maintenance and storage area is located approximately 900 feet from the new roadway. A new 1,000-foot access road from SMP would be built to the northwest side of the vehicle maintenance and storage area. The probability of encountering contamination while building the access is low. Project construction activities, including construction vehicle use and maintenance, would create potential for inadvertent leaks and spills of fuel and other hazardous materials.
East Offset Alternative

The East Offset Alternative would require relocation of the gas station and convenience store and the auto repair facility and removal of the shop on the private property. The potential for encountering soil contamination during construction would be low because the station is relatively new and is equipped with leak-detection devices, current industry-standard underground storage tanks, and delivery controls. The station also keeps cleanup materials and disposal containers on site for small spill cleanup. The auto repair facility also maintains materials to clean up minor spills. There is potential for encountering contamination at the aforementioned private property during construction because of the drums, containers, and equipment scattered on the ground there. Project construction activities, including construction vehicle use and maintenance, would create potential for inadvertent leaks and spills of fuel and other hazardous materials.

Mitigation Measures

The contractor would prepare an HMCP before commencing construction activities for the proposed project. If contamination were encountered unexpectedly during construction activities, the ADEC would be notified and the site would be handled in accordance with an ADEC-approved Corrective Action Plan.

Detailed BMPs and housekeeping recommendations would be outlined in the contractor’s SWPPP and HMCP. A key prevention technique is regular maintenance of equipment and vehicles. The contractor would be required to practice proper hazardous material storage and handling. In addition, the contractor would be familiar with emergency procedures such as spill response and documentation requirements. Individuals responsible for implementing and enforcing the plans requirements would be identified before work began.

All work conducted as part of the proposed project would follow DOT&PF emergency response procedures, including measures taken during the event of an unexpected hazardous materials spill. The response procedures require that work stop immediately and the site be secured to prevent unauthorized access. In addition, the appropriate regulatory authorities must be notified immediately. Phone numbers of the National Response Center and 911 emergency services would be made accessible at work sites.

4.17 Visual Impacts

A visual assessment of the proposed project evaluated the visual effect of the project on users and residents along SMP. This visual assessment used the FHWA Visual Impact Assessment for Highway Projects methodology (1984).

The existing visual setting is vegetated rolling to flat terrain with a farscape to the north of the Talkeetna Mountains and the Knik Arm lowlands and the Chugach Mountains to the south. The existing SMP, a rural two lane road, is a north-south linear feature within this landscape from the Parks Highway to Bogard Road. The road is bracketed by mostly residential development with a visual buffer of deciduous trees and shrubs between some residences and the road from the Parks Highway to the Palmer-Wasilla Highway.
From the Palmer-Wasilla Highway north, SMP is bracketed on the east by some business development and bare ground to Birch View Drive. Farther north, it is bracketed by mostly residential development to Bogard Road, with deciduous vegetation between the road and residences. On the west side, SMP is bracketed by public service buildings and a developing residential and commercial area with scattered vegetation to Bogard Road.

The area north of Bogard Road (location of proposed extension to Seldon Road) is mostly undeveloped land, with deciduous trees and shrubs covering much of the proposed road route. Exceptions are a small residential area east of the section line, a new residential development directly north of that development (tree and shrub vegetation has been removed), and the Alcantra National Guard Armory buildings and the Teeland Middle school buildings on the west side.

**No-Build Alternative**

The No-Build Alternative would not cause changes to the existing visual environment along SMP. Changes to the existing visual environment are occurring and will continue to occur because of residential and light-commercial development along the road. Because of development along this road, especially in the segment from Palmer-Wasilla Highway to Bogard Road, many parcels are being or have been cleared of all vegetation. This practice may continue as residential and commercial development continues because of the rapid growth occurring in the area.

**Build Alternatives**

The following impacts would be similar for both build alternatives (West Offset [preferred] and East Offset).

The proposed widening of SMP, including the multi-use path, would make this north-south linear road feature appear slightly wider and more open on the landscape. Viewscapes and farscapes going north or south would not change much from what is now seen from the road. Views of the road would change at several locations from the removal of buffer vegetation and residences that currently exist between the residences and the road.

The Cottonwood Creek crossing would present a different view of the crossing to those using the Cottonwood Creek area for recreation (such as canoeing and fishing) because of the bridge structure replacing the culvert and fill.

The extension of SMP from Bogard Road to Seldon Road would create an opening in the existing vegetation the width of the new road. The new viewscape for drivers going south would be a much larger vista because the viewer would be traveling at a higher elevation and because of the removal of the vegetation for the new four-lane road and multi-use path. Once the viewer reaches Bogard Road, the viewscape would be similar to that for the existing road from there to the Parks Highway. In contrast, the view for users of the improved road going north would be different because the extension would result in an opening in the existing vegetation, creating a corridor effect to Seldon Road.
West Offset Alternative (Preferred)
The preferred alternative is offset to the west side of the existing centerline from the Parks Highway to Seldon Road, affecting deciduous trees and shrubs adjacent to the road through removal for widening and removal of some residences. The widening of the road would make the road visible to some west-side residences that are currently buffered by the first row of residences on the west side and the existing vegetation. The extension of the road from Bogard Road to Seldon Road would result in removal of trees and shrubs to construct the new road, making it visible to the portions of the Alcantra National Guard Armory, Teeland Middle School, and the proposed vocational high school.

East Offset Alternative
This alternative would remove the vegetative buffer between some houses and the new road, making the road visible to some east-side residences between the Parks Highway and Bogard Road. The extension of the road from Bogard Road to Seldon Road would result in removal of trees to construct the new road, making the road visible to some east-side residences.

Mitigation Measures
Visual mitigation for the proposed project may include the following:

- Revegetation of all disturbed ground through seeding of native grasses. This activity will return the disturbed ground to a vegetated state and provide some nonlinear features along a linear road.

- Planting of appropriate riparian vegetation at the bridge location. The planting will help to break up the linear features, the road and bridge, with strategically placed vegetation appropriate for the stream environment.

Use of native plant materials is proposed when revegetating to increase success rates, provide blending with the natural viewscape, and discourage the spread of invasive species.

4.18 Energy
The current and anticipated future rates of development will ensure increasing energy use in the project corridor, regardless of whether the proposed project is built. The greater vehicle use that accompanies development is raising consumption of fuels, oils, and other energy-related products. Energy for commercial and residential development within the project corridor is being supplied by existing gas and electric lines. Coordination with utility companies found no major upgrades planned or needed for continued development in the project corridor.

No-Build Alternative
Under the No-Build Alternative, energy use would still rise because of increased traffic demand and congestion in the corridor. The secondary impacts of increased commercial and residential development also will consume energy through power and fuel use, as well as through additional vehicle operations in the corridor.
**Build Alternatives**

Energy impacts are the same for both build alternatives (West Offset [preferred] and East Offset). Energy consumption for road construction would occur until construction of the proposed project is complete. After the road is widened from two to four lanes with a center left-turn lane, energy used in the project corridor for operating purposes that include lighting, road maintenance, and vehicle use would increase through the design year. Better access from the Parks Highway to Seldon Road would likely increase traffic along Seldon Road as more area residents see the benefit of direct access to the Parks Highway. Additional energy would be required for the properties surrounding the Seldon Road and Bogard Road intersections, which are gradually being developed as commercial properties. In general, energy requirements would be greater for either build alternative than for the No-Build Alternative.

**Mitigation Measures**

Mitigation would be accomplished through an overall reduction of vehicles miles traveled by users, which would offset the energy use from construction and operation of the proposed project. Improving the linkage from Seldon Road to the Parks Highway would enhance north-south travel and connectivity for regional and local users, reducing energy used.

Several construction mitigation measures would be implemented to save energy. The contractor would produce a traffic control plan to address operational traffic delays and detours during construction. This plan would be designed to limit delays and provide detours that make efficient use of time, thereby saving energy. Batch plants, material, and aggregate sources should be located as close to the construction site as possible to reduce haul distance and energy consumption.

### 4.19 Construction Impacts

Construction activities for the proposed project would temporarily disturb day-to-day activities of the general population and potentially fish and wildlife use within the project corridor. Both build alternatives would require land clearing, topsoil excavation, fill for new lanes and fills, and roadway paving. The fill and culvert at Cottonwood Creek would be excavated and removed in phases to allow bridge construction. The bridge would be constructed one half at a time. During construction of the west half, traffic would remain on the existing roadway, and during construction of the east half, traffic would be moved to the newly constructed west half of the bridge. Bridge abutment construction may require dewatering during construction. Construction adjoining riparian areas and wetlands may also encounter shallow groundwater and require dewatering. Anticipated construction impacts include potential effects on air quality, water quality, noise, and traffic.

**The following construction impacts are common to both build alternatives.**

#### 4.19.1 Air Quality

Air quality impacts related to construction stem from increased dust, vehicle emissions of construction equipment, and emissions from operation of a portable asphalt batch plant. Airborne dust could be generated from construction activities of heavy equipment, hauling...
of earthen materials in uncovered trucks, and vehicles tracking mud and dirt onto the public streets, where the materials could become airborne when driven on.

Heavy trucks and construction equipment powered by gasoline and diesel engines would generate carbon monoxide (CO) and oxides of nitrogen (NOx) in exhaust emissions. Carbon monoxide emissions from idling privately owned vehicles could increase if construction causes delays in traffic movement. These emissions would be temporary and limited to the immediate vicinity of the delayed traffic.

**Mitigation Measures.** Air quality impacts would be minimized during construction through the use of contract specifications requiring the application of water for dust control, regular street sweeping, and/or stabilized construction entrances/exits, and paving of temporary driving lanes and detours. Construction equipment, including an asphalt batch plant, would be required to meet all applicable emissions regulations. It is likely that a commercial supplier of asphalt concrete pavement would be utilized. Commercial batch plants must be permitted by the ADEC and comply with state air quality standards.

### 4.19.2 Water Quality

Potential water quality impacts from construction are likely to result during the removal of the culvert, construction of the bridge at Cottonwood Creek, and stormwater discharge from areas of ground disturbance within the project. Construction would expose large areas of erodible surface (cuts and fills, lane additions) to storm events from which runoff would discharge into the roadside ditch system that flows to Cottonwood Creek. Secondary to the potential sediment in storm water is sediment-laden construction water from dust abatement and water used for compaction flowing to the creek. There is also potential for accidental spills or leaks of oil or fuel from construction equipment that could contaminate drainage water going to the creek. Where groundwater is encountered during construction, dewatering may be required. Dewatering may also be required for the bridge abutment construction. Therefore, potential construction impacts on the water quality of Cottonwood Creek include sedimentation, turbidity, and contaminant releases from spills.

**Mitigation Measures.** Construction of SMP improvements would follow all DOT&PF requirements and guidelines for pollution, erosion, and sediment control. Water quality impacts from construction activities would be minimized and mitigated by the implementation of site-specific BMPs. General construction BMPs recommended for water quality include the following:

- Minimize amount of disturbed soil when possible
- Stabilize and revegetate construction areas as quickly as possible when construction is completed
- Stabilize stream banks when working on bridges and culverts
- Use silt fences, dikes, swales, or other sedimentation control BMPs to intercept polluted storm water
- If necessary, divert stormwater flow or use storm inlet protection
• Provide sedimentation basins and traps for temporary stormwater storage and settling solids
• Treat all dewatering discharges before they flow into receiving waters and wetlands
• Use temporary seeding, erosion control blankets, mulch, or other such measures to minimize erosion of slopes and other disturbed areas
• Preserve natural vegetation where possible for filtration and infiltration purposes

The DOT&PF would prepare an Erosion and Sediment Control Plan during the design phase of the project. The contractor would also be required to develop and implement an SWPPP in accordance with the EPA NPDES General Permit for Construction Activities. An ADNR Temporary Water Use Permit would be required to draw water from Cottonwood Creek for construction use. Any water withdrawal would be permitted by ADNR-OHMP and Division of Mining, Land and Water. The pump uptake would be properly screened to prevent entrapment of fish.

Disposal sites for unusable material are required to be stabilized to prevent runoff and erosion. The contractor would be required to obtain all necessary permits and clearances for disposal sites as they are developed. Disposal sites would be located away from streams and their associated riparian areas and wetlands. The contractor would also be required to obtain all necessary permits and clearances for material site development if material is obtained from a new source. Because of the number of locally available commercial sources of gravel material, it is anticipated that borrow for this project would come from an existing pit.

Operation of construction equipment would be conducted with care for minimizing soil disturbance. Construction equipment would not be allowed outside designated construction limits in sensitive areas such as wetlands and habitat for wildlife and fisheries.

If contamination is encountered unexpectedly during construction, work in the contaminated area would be halted and the ADEC would be contacted immediately. Contaminated material would be handled and disposed of according to an ADEC-approved Corrective Action Plan. The contract specifications would require that the contractor develop and implement an HMCP through the construction phase of the project.

4.19.3 Noise

Noise levels would temporarily increase during construction activities because of increased truck traffic and heavy equipment operation on area roadways. These noise increases would be of short duration and would generally occur during daytime hours. The contract specifications would require the contractor to comply with all local noise control rules, regulations, and ordinances.

Mitigation Measures. The following procedures would minimize noise impacts:

• Whenever possible, limit operation of heavy equipment and other noisy procedures to nonsleeping hours
• Provide advance notice of construction activities to local residents and businesses
• Locate equipment and vehicle staging areas as far from residential areas as possible
• Maintain effective mufflers on all equipment
• Limit unnecessary idling of equipment

4.19.4 Traffic
Construction activities would have temporary impacts on access, traffic and traffic patterns, and public services that would include delays and detours.

Some temporary economic losses to local businesses may occur during the construction phases because of limited access. However, these effects would be short term.

**Mitigation Measures.** Advance notice of construction activities, including delays, detours, and temporary access changes, would be provided to local residents and businesses. The contractor would develop a traffic control plan to minimize delays, provide appropriate detours, maintain roadway safety, and maintain adequate access. Access would be maintained to all businesses and residences during construction activities, with every effort made to mitigate potential impacts to businesses through the use of temporary signing or detouring to allow consumers alternative access routes.

Schools providing bus service within the SMP corridor would be notified in advance of any temporary road closures that may affect their routes. Facilities that provide emergency services would also be notified in advance of any temporary road closures or detours.

4.20 The Relationship Between Local Short-term Uses of Man’s Environment and the Maintenance and Enhancement of Long-term Productivity

It is important to examine the potential for each project to result in short- and long-term impacts on the community. The proposed project must be justified by its benefits versus the short-term impacts to the environment during construction and the long-term impacts from increased stormwater runoff, traffic, noise, and other environmental elements. As with any construction and development project, tradeoffs between impacts on the natural and manmade environment and the benefits realized from the proposed project would occur. The two build alternatives for the SMP Road Improvements project have impacts that are common to transportation projects, including ROW acquisition, economic changes, increased noise from increased traffic flow, changes in the landscapes visual characteristics, loss of natural environment such as riparian and wetland areas, and all other impacts described in this EA.

All impacts associated with this project are not anticipated to outweigh the substantial short and long-term benefits that would result from the increased lanes, pedestrian and bicycle facilities, and intersection and Cottonwood Creek crossing improvements. The proposed improvements are vital to meet future traffic projections. SMP has become an important north-south transportation corridor within the MSB. In recent years, traffic volumes have been steadily increasing. The congestion and traffic back-up during morning and evening peak periods, including traffic generated from Anchorage commuters, create delays for local
drivers. The purpose of the proposed improvements is to address future capacity demand and help facilitate better north-south movement through the MSB core area.

The short-term impacts and use of resources for the proposed project are consistent with the maintenance and enhancement of long-term sustainability and quality of life for MSB residents and visitors. The proposed project would enhance the long-term productivity and viability of the community, and would both directly and indirectly provide long-term economic benefits.

4.21 Any Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action

No-Build Alternative
Under the No-Build Alternative, no activities associated with construction would occur within the project corridor. Therefore, no irreversible or irretrievable commitments to resources would be required.

Build Alternatives
The SMP Road Improvements project would require the commitment and use of a wide range of environmental, physical, human, and financial resources to complete.

Land would be required for additional lanes to SMP and extending the corridor to Seldon Road. Additional land would also be needed for the Bogard Road intersection improvements. The landscape has been modified along the first 2 miles of road corridor, and a power line trail exists along the proposed extension from Bogard Road to Seldon Road. Therefore, no pristine natural environment would be irreversibly modified. The land area covered by the additional paved surface is considered an irreversible commitment as long as it is used as a transportation facility. If a more important need arises for this land, the land could conceivably be converted to another use.

Large amounts of raw materials, labor hours, and energy would be needed to complete the proposed road improvements. Raw materials such as gravel for road base material and aggregate surface course material would be required in fairly large quantities—approximately 37,000 cubic yards of imported material. Borrow and excavation quantities would be approximately 200,000 cubic yards and 340,000 cubic yards, respectively. None of the materials required for construction are considered to be in scarce supply, which indicates that their use for this project would not adversely affect future availability of these resources. Labor and energy resources expended for this project are considered to be irretrievable. Additional labor and energy would be required after construction to maintain the quality and condition of the built facility.

Construction of the proposed project would require the expenditure of federal and state funding, neither of which is retrievable. The total cost to construct the project is expected to be $28 million for the West Offset Alternative and $35 million for the East Offset Alternative. Operation and maintenance of the road would also require irretrievable funding.
In general, maintenance for rural roadways costs approximately $4,500 per lane mile per year, for a total of approximately $47,000 annually (including center turn lane).

**Mitigation Measures**

The proposed project would require the irretrievable commitment of resources, which would result in numerous benefits to residents and visitors of the MSB. Benefits from these improvements include reduced traffic congestion, improved traffic flow, better local and regional access, economic benefits, and improved public safety. In addition, the pedestrian pathway would offer residents the opportunities for walking and biking, and school children would benefit from a trail connection to school grounds and facilities. A new bridge over Cottonwood Creek would include turnout parking, providing better recreational access to the creek. These benefits are anticipated to substantially outweigh the commitments of resources required to complete the proposed SMP improvements.

**4.22 Secondary Impacts (Indirect Impacts)**

Secondary or indirect impacts are those impacts caused by the proposed project that occur later in time or are farther removed in distance, but still reasonably foreseeable. These impacts may include induced growth, changes in pattern of land use, growth rate, effects on air, water quality, and other natural systems.

**No-Build Alternative**

The No-Build Alternative could result in indirect impacts to fish migration at Cottonwood Creek, increases in pollution loading from residential and commercial development, without adequate drainage and stormwater treatment features to remove pollutants before they are discharged to the creek.

**Build Alternatives**

The indirect impacts are the same for both build alternatives (West Offset [preferred] and East Offset). The indirect impacts from the proposed project would occur in the Cottonwood Creek area and the area north of Bogard Road where SMP would be extended. At Cottonwood Creek the potential indirect impacts involve potential degradation of stream water quality from stormwater runoff and sedimentation of wetlands from stormwater runoff. The area north of Bogard Road may see some induced development on parcels that are not currently developed on the east side of the road extension. This induced development would be minimal, however, because most adjoining properties are developed or are currently being developed. The land on the west side of the road extension is owned by the State of Alaska or MSB, and the only proposed development is the vocational high school on the MSB property just south of Teeland Middle School.

**4.23 Cumulative Impacts**

Cumulative impacts are the impacts on the environment resulting from the incremental impact of the proposed project when added to other past, present, and reasonably foreseeable future actions, regardless of who (federal, state, borough, city, or private entities) undertakes
such actions. These impacts can result from individually minor but collectively significant actions taking place over a period of time and can lead to considerable changes in the environment. For the purposes of this analysis, cumulative impacts will focus on water quality, fish habitat, wetlands, and land use conversion in the Cottonwood Creek drainage. The MSB encompasses more than 24,000 square miles and is nearly the size of West Virginia. To perform an effective analysis of cumulative impacts, geographic and temporal boundaries were identified below to reasonably describe past, present, and foreseeable future actions.

Geographic Boundaries

The Cottonwood Creek drainage, its associated wetlands, and fish and wildlife habitat are the primary natural features within the project corridor that could be affected by cumulative impacts. As such, this drainage is the primary feature encompassed by the geographic boundaries for the cumulative analysis.

Temporal Boundaries

The temporal boundaries begin with the development of land (farming) in the project area during the 1930s (Matanuska Colony Project) and culminate in the road system and adjacent residential and commercial development existing today (past to present impacts). This temporal boundary also includes, to the extent possible, the reasonably foreseeable future actions to the design year of 2028 (20 years).

Relevant Past, Present, and Future Actions

Early development in the area was related to the Matanuska Colony Project, mostly farm development during the 1930s. Residential development was slow until the 1950s and mostly centered close to Wasilla and Palmer. In the late 1970s and early 1980s, residential development started to boom.

The SMP was constructed in 1982 as a two-lane facility. This road was constructed to encourage development in the area and connect three primary east-west roadways in the MSB core area: the Parks Highway, Palmer-Wasilla Highway, and Bogard Road. Since 1982, the growth rates have increased substantially for residential and commercial development along the SMP and the core area, resulting in the existing condition. Currently, farms and undeveloped land are being converted to residential and some commercial development in the project corridor and the core area. During the past 20 years, no upgrades to SMP have occurred, except minor intersection improvements at the crossing roadways (Palmer-Wasilla Highway and Bogard Road) and the construction of the Parks Highway Interchange (2005). Seldon Road was extended as another major east-west facility north of Bogard Road in 1995.

Cumulative impacts for this analysis also encompass impacts that may arise in conjunction with other events, decisions, and actions taken by the DOT&PF, MSB, City of Wasilla and private developers that may influence the characteristics of the area. The expected cumulative impacts from the proposed project and other actions result primarily from serving commuters and improving access for local use as well as improving the overall transportation system in the core area of the MSB. Impacts to natural resources result from both public and private development.
Major public projects included in this analysis are projects in the DOT&PF 2006-2008 STIP (2006), MSB public projects, and private development projects identified in Table 12.

**TABLE 12**
Reasonably Foreseeable Future Actions of Related Projects within the Geographic Boundary Established for the Cumulative Impacts Analysis

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Location</th>
<th>Project Proponent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seward Meridian Road Improvements Project (2006-2008)</td>
<td>SMP</td>
<td>DOT&amp;PF</td>
</tr>
<tr>
<td>Career Center/Vocational High School (2006)</td>
<td>SMP</td>
<td>MSB</td>
</tr>
<tr>
<td>Gemstone Estates development south of Seldon Road – cleared for residential development (2005-2007)</td>
<td>Seldon Road</td>
<td>Private developer</td>
</tr>
<tr>
<td>Meridian Park development south of Cottonwood Creek and west of SMP – cleared for residential and commercial development (2005-2007)</td>
<td>SMP</td>
<td>Private developer</td>
</tr>
</tbody>
</table>

**No-Build Alternative**
The rate of development that the MSB is experiencing is expected to continue at the current pace under the No-Build Alternative. Therefore, cumulative effects from residential and commercial development would likely continue for some time into the future until build-out is achieved. Continued degradation of water quality and loss of wetlands is likely to continue in the foreseeable future.

**Build Alternatives**
Cumulative impacts generally are similar for both build alternatives (West Offset [preferred] and East Offset). Differences are explained in the subsections below.

**Water Quality**
The water resources located within the project area have already been affected by past actions, such as clearing forested areas and the development of these areas for residential, commercial, and transportation uses. Most of this development has contributed to cumulative increases in impervious surfaces, household and yard chemical usage, and concentrated human activities, which has resulted in increased runoff, increased surface water pollution, decreased infiltration, and loss of stream buffers. The proposed action, when combined with other projects in the area, would contribute to cumulative impacts on water quality and hydrology, from increases in impervious surface and additional runoff.

**Wetlands**
Wetlands have been filled, bisected, and isolated by subdivision and commercial development in the area. This development has had a negative effect on wetlands because of sedimentation and loss of wetland habitat. The proposed project is one of several transportation projects occurring in response to population growth and development in the area. The proposed project would add an incremental loss to a small area of wetlands.
(0.18 acre for the West Offset Alternative and 0.11 acre for the East Offset Alternative) at the Cottonwood Creek crossing, an isolated wetland south of Cottonwood Way (zero acre, West Offset; 0.1 acre, East Offset), and a small portion of the wetland complex south of the Palmer-Wasilla Highway (0.25 acre, West Offset; 0.06 acre, East Offset). The proposed project would also rehabilitate the creek under the bridge when it replaces the culvert and fill. This work would add a stream channel with bed and banks, plus a wetland/riparian area adjacent to the new stream channel. This modification would replace a small portion of the wetlands impacted (0.1 acre), but an overall net reduction in wetlands would still result from the proposed project.

**Fish Habitat**

Previous residential and commercial development, along with transportation improvements, have directly affected fish habitat within the Cottonwood Creek drainage. This development is expected to continue into the foreseeable future. The initial construction of SMP placed roadway fill into Cottonwood Creek and placed the creek in a culvert through the fill. The proposed project would remove the fill and culvert, and replace it with a bridge. This action would have a positive benefit to fish passage and migration because the current culvert hinders fish migration during low-flow conditions. This positive action (bridge replacement) and other management actions being implemented by the ADNR, DOT&PF, and MSB to promote compliance with environmental requirements for land use and fish management would limit the cumulative impacts to fish resources.

**Mitigation Measures**

Wetland cumulative impacts mitigation are being addressed through the stream restoration of Cottonwood Creek under the proposed Cottonwood Creek bridge. Water quality cumulative impacts would be mitigated through the incorporation of vegetated drainage swales, ditches, and sediment detention facilities in the design for storm water drainage treatment before discharge to Cottonwood Creek. Fish habitat, water quality and wetland cumulative impacts mitigation also would entail continued coordination between the DOT&PF, MSB, state and federal agencies, and other project developers in the area to develop resource protection strategies during the current high-growth period. The MSB, DOT&PF, and state and federal agencies currently work together to identify development strategies to minimize potential impacts, including cumulative impacts, of projects in the corridor. In addition, the MSB has identified current and potential future private land developers in the project corridor and is working with them to implement feasible and reasonable local controls to protect the natural resources of the Cottonwood Creek drainage.
SECTION 5
Comments and Coordination

5.1 Scoping

Mailing lists were developed for the public and the agencies. The public mailing list included approximately 1,500 names and addresses for properties within and adjacent to the project corridor. The agency list was developed to include the MSB, the Army National Guard, and state and federal agencies. See Appendix G, the scoping plan, for the complete list of agency names.

Meetings were announced through public notices in The Frontiersman (local paper in the Wasilla area) on January 9 and 20, 2004, and the Anchorage Daily News on January 14 and 20, 2004, in Anchorage. Postcards were mailed to all parties on the public and agency mailing list on January 16, 2004. Public Service Announcements were sent to 10 radio stations in Anchorage and the MSB on January 14, 2004.

Two formal meetings were held, one for the agencies and one for the public.

An agency scoping meeting was conducted on January 21, 2004. The following agencies attended the meeting: ADNR-OHMP, EPA, and MSB. Comments were received at the meeting and through the mail or e-mail from the following agencies: ADNR-OHMP, EPA, ADEC, USFWS, and MSB. Their comments are briefly summarized below.

Comments Related to Natural Resources:

- Concerned about the bridge design for crossing Cottonwood Creek as it relates to effects on fisheries, water bodies, and animal movement
- Would like wildlife crossing evaluated as part of the project
- Make reasonable efforts to maintain wildlife habitat
- Avoid impacts to wetlands where possible

Comments Related to Planning:

- Future development southwest of the intersection of SMP and Palmer-Wasilla Highway is expected to affect access and needs to be evaluated.
- Residential areas in Wasilla are experiencing record growth, which is one need for this project.
- A new vocational education high school is being planned for the north end of SMP, which will increase traffic in the project area and require access off the new section of road.
- The sight distance at the intersection of Bogard Road needs to be improved.
• The public safety related to the operation of snowmachines and ATVs in areas designated for pedestrians and bicyclists should be evaluated.

• Trails should connect to the schools.

• Local residents use the land near the foot bridge for fishing and recreation; it has become a customary access point and access needs to be maintained.

A public scoping meeting was conducted on January 22, 2004. A total of 21 written and verbal public comments were received. The following is a brief summary of these comments:

• Create a four-lane road
• Provide a median in the road
• Provide turn lanes
• Add traffic signals
• Include pedestrian and bicycle paths
• Allow for proper drainage
• Avoid encroachment on property and harmful effects on property values
• Avoid affecting water wells located near the ROW
• Complete the project quickly

In conclusion, it appears that after the first public scoping meeting, the plan to improve the road is strongly supported, with the public still having concerns about their personal property issues.

5.2 Project Website

A project website at the address www.sewardmeridian.com was designed and initiated. It began operating on January 23, 2004. The project e-mail address for comments and questions is the e-mail link on the website.

This website is updated periodically as new project information becomes available. It was also used as a medium for announcing the alternatives public meeting, which was held on November 3, 2004. Public comments from this meeting can also be submitted through the website.

5.3 Stakeholder Meetings

Separate stakeholder meetings were held with the MSB School District and the principals from both Teeland Middle School and Cottonwood Creek Elementary School on October 1, 2004; the Army National Guard on October 8, 2004; and the MSB on October 14, 2004. The main concerns expressed during these meetings are discussed below, and summarized in
Tables 13 and 14 (Section 5.6). See also Appendix G for meeting notes and more detailed public comments and responses in the Public Comment Record.

The school district and principals were concerned about access issues, pedestrian crossing safety, pathways, and lighting (both traffic caution lighting and pathway lighting).

The Army National Guard was concerned about access to its training and maintenance facilities. The Guard would like two separate access points. It was noted that access to the maintenance facility needs to accommodate large trucks and their turning movements.

The MSB was concerned about the ability of the facility to provide service through the design year; access issues for the schools, subdivisions, and businesses; and intersection design at crossings of the Palmer-Wasilla Highway, Bogard Road, and Seldon Road.

### 5.4 Public Involvement Meetings

#### 5.4.1 Public Involvement Meeting, November 2004

A public meeting was held on November 3, 2004, to address the alternatives being moved forward as part of the NEPA process. Two build alternatives and one no-build alternative were presented. The two build alternatives were the Rural Roadway Alternative (four lane with center turn lane and separated pathway) and the Urban Roadway Alternative (four lane with center turn lane, attached pathway, and curb and gutter). The No-Build Alternative is to not upgrade the road.

Comments received at the public meeting and during the 30-day comment period are summarized below.

**Verbal Comments:**

- Concerns that part or all of private properties would be affected
- Concern that the cumulative time the entire roadway is under construction (phasing) would adversely affect residents
- Concern about impact on private wells
- Support for road improvements and extension
- Support for urban cross section because of less impact outside the ROW
- Support for widening to the west so that private property is bought out
- Support for signalized intersections instead of roundabout design

**Written Public Comments:**

- Concern about the roundabout proposed at the Bogard Road intersection, specifically (1) the ability of trucks to negotiate corners, including use of a radius sufficient for long doubles, and (2) use of a configuration that that could be confusing and less safe for the school children walking and biking than a signal. It was suggested that a bike path bridge be provided or that the path go around the roundabout.
• Support for the roundabout plan because it is consistent with overall maintenance of the character of the neighborhood and for its more limited destruction of the current residential area adjacent to the intersection
• Support for retaining walls rather than cut slopes
• Concern about noise increase and whether noise barriers are being proposed
• Support for the roadway and the extension, including the shared-use path
• Support for the speed limit increase to 45 miles per hour
• Concern about property impacts on the west
• Concern about access issues for residents of Palmdale Drive with either alternative
• Concern about either intersection option at Bogard Road because of ROW acquisition
• Suggestion that a tunnel connect to the path under SMP for schools and at Seldon Road
• Concern that Lakeview Road would be used as a cut-off road
• Support for design and building with associated maintenance budget increase
• Support for a motorized trail for ATVs and snowmachines
• Concern about the ability to expand the Cottonwood Public Safety Building and Fire Station adjacent to SMP

5.4.2 Public Informational Meeting, March 2005

A public informational meeting was held on March 9, 2005, to provide project information, present changes to the build alternatives, and gain public input on the alternatives under consideration for the SMP Road Improvements project. Two build alternatives—the West Offset Alternative and East Offset Alternative, both with rural roadway designs—and the No-Build Alternative (no road upgrades) were presented.

Comments received during the open-house style meeting and during the 30-day comment period that followed the meeting are summarized below.

Verbal comments:
• Growth, change, and resulting need for project is more understood
• Support minimization of ROW acquisition
• Concern for value and safety of a center turn lane
• Concern for pedestrian and bike safety, especially around schools
• Support for pathway on one or both sides of the road
• Public has heard different growth rates and questioned traffic numbers
• Support access to Cottonwood Creek
• ROW questions
• Driveway access and what would it look like
• Suggestion that emergency vehicles have pre-emption of signal light capability

**Written public comments:**

• Residents favor roundabouts; some suggestion for a bigger roundabout to accommodate trucks
• Support heard for both east and west offset alignments; costs should decide
• Support for a quick schedule to lessen impact on residents from construction activities
• Expression of appreciation for the meetings; would like more
• Support for ROW expansion to 200 feet; questioned expansion to 200 feet; concern about buying additional ROW and impact to individual property owners
• Requests for more information on ROW width, lane configuration, and alignment for new section, Bogard to Seldon roads
• Request for retaining wall; sound barrier at Naomi Drive
• Concern for planning around Cottonwood Creek; concern about wildlife crossings
• Access concerns at schools; consider tunnels or bridges for children to cross roads
• Concerns for other access issues; Wickersham, Spruce, Tamarak
• Concern with grade problems
• Concern with development occurring behind Sears and alignment with Parks Highway frontage road

Of the 38 public comments received as a result of the meeting and comment period, most support the improvements. The overwhelming concern was how much ROW would be necessary. More positive comments were received at this meeting for the roundabout. Noise issues, pedestrian and bicycle access, and roadway access were frequent comment topics. The timing of the meeting in the project schedule provided good input on the alternatives.
5.4.3 Public Informational Meeting, June 2005

An additional public informational meeting was held on June 1, 2005, to provide project information to date and gain additional public input on alternatives under consideration for the SMP Road Improvements project. Comments similar to those received during the public meeting held in March 2005 focused on noise impacts and barriers, pedestrian and bike safety, and path support for one or both sides of the roadway. The public showed support for a fast project schedule to determine future property owner planning. In addition, the following comments were expressed:

- Note that public was glad to hear the state make a recommendation for alignment alternatives
- Support for the minimization of ROW acquisition through the use of retaining walls
- Support for the roundabout
- Support for public vote on expansion of ROW to 200 feet
- Request for information on buying land in excess of the ROW needs
- Request for some unpaved trails
- Request to consider access to Ancient Tree Estates and Stepping Stone Day Care

Most comments received were in support of the road improvements. Trails were strongly supported in the public meeting and in written comments. The public showed support for a fast project schedule, especially considering the areawide construction projects taking place. In general, the public supports a design that has minimal impact on residential properties and provides a safer roadway.

5.5 Agency Meeting

An agency informational meeting was held on April 14, 2005. The detailed meeting notes and attendees list is contained in Appendix G. The meeting is summarized below.

The East Offset and West Offset alternatives were described, and handouts about the alternatives were given to the attendees. The major discussion issues related to ROW width (200 feet), offset from centerline, utility easements, wetland impacts, drainage issues, fish and wildlife issues, fencing, and creek access. Also discussed were the results of the previous public involvement activities and issues raised during that process. (See public involvement summaries in Section 5.4.) A project schedule was presented, including an explanation of current status of the NEPA process.

The agencies accepted the five-lane cross section and agreed that the multi-use trail was needed. The following concerns were cited after the presentation:

- Identify the bridge and the creek access as high priorities. Representatives of several agencies stated these measures could be used as mitigation for some impacts to wetlands and wildlife.
• Restrict clearing to time periods that would not affect migratory bird nesting/brooding activities.
• Limit the access to Cottonwood Creek to one location (southwest side) and place barriers (large boulders or bollards) to discourage access from the other corners.
• Maintain spawning and rearing habitat, including the areas under the bridge.
• Limit in-stream or wetland construction activities to occur outside of spawning/migratory timeframes.
• Address drainage from the new highway so that it removes sediment before entering the creek. Consider the use of drainage swales in the roadside ditch system.
• Note concern about running drinking water line to properties as mitigation for property impacts.
• Note a preference for a bridge to replace the culvert at Cottonwood Creek.

5.6 Summary

Comments received during the scoping and public involvement process to date are mostly in support of the proposed improvements. The overwhelming concern is how much ROW acquisition would be needed and if the process would consist of buying out a residence or severely affected property. There appear to be more negative than positive comments on the roundabout because of concerns for pedestrians, bikes, and truck turning radius. Pathways were strongly supported at the public meeting and in the written comments. Noise impacts and barriers and the safety of pedestrians, bicyclists, and access roads also were frequent comment topics. Because of the multi-year construction phasing on the Parks Highway, public comments expressed desire to speed up the design and construction process. The public does not want to experience a construction zone long-term. An overall quantifiable tally of support for the Urban Roadway Alternative or Rural Roadway Alternative is not possible to calculate; the general impression is that the public supports whichever design has less impact on residential properties and provides a safer roadway for all users.

Tables 13 and 14 present the main concerns expressed by agencies and the public, respectively, during scoping meetings and through mail, e-mail, and comment forms during the public comment periods.
<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
<th>Discussion Reference*</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries, water bodies, wildlife</td>
<td>Concerned about the bridge design for crossing Cottonwood Creek as it relates to effects on fisheries, water bodies, and animal movement. Make reasonable efforts to maintain wildlife habitat. Bridge and creek access can be used as mitigation for some impacts to wetlands and wildlife. Restrict clearing to time periods that would not affect migratory bird nesting/brooding activities.</td>
<td>Section 4.11 – Water Body Modification Section 4.12 – Wildlife and Fisheries Impacts</td>
<td>Timing restrictions would be implemented during construction to minimize effects on nesting birds and migratory fish.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Avoid impacts to wetlands where possible.</td>
<td>Section 4.10 – Wetland Impacts Appendix A – Wetland Analysis</td>
<td></td>
</tr>
<tr>
<td>Recreation</td>
<td>Local residents use the land near the foot bridge for fishing and recreation; it has become a customary access point and this access needs to be maintained. Make sure access under the bridge is available from side to side. Limit access to Cottonwood Creek to one location and place barriers to encourage access from other corners. Look at another use for the small bridge (such as a viewing platform).</td>
<td>Section 4.3 – Social Impacts Section 3.1 – Build Alternatives Figure 5 – West Offset Alternative Figure 7 – Cottonwood Creek Access and Bridge Crossing Typical Profiles</td>
<td>Access to Cottonwood Creek would be enhanced with a parking area and path west of SMP. The parking area would accommodate parking for four passenger vehicles. The small bridge would need to be removed for construction of the new Cottonwood Creek bridge crossing. The new bridge crossing would allow access under the bridge from side to side from the vehicle parking area.</td>
</tr>
</tbody>
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### TABLE 13
Agency Issues and Responses by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
<th>Discussion Reference§/Response</th>
</tr>
</thead>
</table>
| Residential, business, and school access | A new vocational education high school is being planned for the north end of SMP and will increase traffic in the project area and require access off the new section of road. MSB would like dual access similar to Teeland Middle School. Control the access along the route, especially at subdivision access points. Future development southwest of the Palmer-Wasilla Highway and SMP intersection is expected to affect access and needs to be evaluated. Concern about access issues in business park area south of Bogard Road, west of SMP. | Preliminary Engineering Report  
Section 3.1 – Build Alternatives  
Section 4.3 – Social Impacts  
Access would be maintained for all residences, businesses, and schools along the corridor. Some access locations may change because of design parameters.  
The roadway design addresses many of the grade issues for both SMP and connecting streets. |
| Bicycle/ pedestrian paths       | Public safety related to the operation of snowmachines and ATVs in the areas designated for pedestrians and bicyclists should be evaluated. Trails should connect to schools.                                                                 | Section 4.3 – Social Impacts  
Section 4.5 – Considerations Relating to Pedestrians and Bicyclists  
A paved, separated path is planned for the west side. Improved trail connections would allow pedestrians and bicyclists a safe nonmotorized mode of transportation and would connect Cottonwood Creek Elementary, the proposed vocational high school, and Teeland Middle School, all located west of SMP. |
| Need for project                 | Residential areas in Wasilla are experiencing record growth. Accommodating that growth is one need for the project.                                                                                                                                          | Section 2 – Purpose of and Need for Action                                                                                                  |
| Safety                            | The sight distance at the intersection of Bogard Road needs to be improved.  
There is a safety issue with people crossing SMP from one side of the road to the other to access Cottonwood Creek, including portaging canoes across the roadway.  
Look at turning lane distance approaching SMP and Seldon Road intersection.                                                                                      | Section 3.1 – Build Alternatives  
Figure 5 – West Offset Alternative  
Figure 7 – Cottonwood Creek Access and Bridge Crossing Typical Profiles  
Section 4.3 – Social Impacts  
Creek access improvements would include access west of SMP and south of the creek with parking for four passenger vehicles. |
### TABLE 13
Agency Issues and Responses by Category

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<th>Discussion Referencea/Response</th>
</tr>
</thead>
</table>
| Roundabout     | Bogard Road as a four-lane facility; this was not included in the traffic forecast and may be beyond this project design life. Allow for expansion to a four-lane road. | Section 3.1 – Build Alternatives  
A traffic and safety analysis was performed for the project corridor and provided traffic projections through the facility design life of 2028. Traffic is projected to grow at a rate of 4 percent during the next 25 years. |

a Identifies location where topic is discussed. Unless otherwise indicated, the location refers to this report.

### TABLE 14
Public Issues and Responses by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
<th>Discussion Referencea/Response</th>
</tr>
</thead>
</table>
| Road design, drainage     | Provide a median in the road; provide turn lanes; add traffic signals. Allow for proper drainage. Fix grade/sight distance problems. Question need for five lanes. | Preliminary Engineering Report  
Section 3.1 – Build Alternatives  
Section 4.8 – Water Quality Impacts  
A center turn lane is proposed to allow individuals turning left to enter a zone out of lane traffic, allowing turns during breaks in oncoming traffic without being in an active traffic lane. The roadway design addresses many of the grade issues for both SMP and connecting streets. Vegetated swales would be incorporated into the project to treat stormwater runoff. A Traffic and Safety Analysis was completed for the project. Based on current growth rate and development trends, capacity needs to be increased to accommodate traffic through the design year of 2028. |
### TABLE 14
Public Issues and Responses by Category

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<thead>
<tr>
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<th>Issue</th>
<th>Discussion Reference/Response</th>
</tr>
</thead>
</table>
| Property impacts                      | Avoid encroachment on private property and harmful effects on property values.  
                                         | Avoid affecting water wells near ROW.                                                                                   | Section 3.1 – Build Alternatives                                                                                   |
|                                       | Concern about ability to expand Cottonwood Public Safety Building and Fire Station adjacent to SMP. | Section 4.3 – Social Impacts                                                                                           |
|                                       | Section 4.4 – Relocation Impacts.                                                                                       | Section 4.4 – Relocation Impacts.                                                                                     |
|                                       | The DOT&PF is evaluating the implications of including a waterline in the project. However, FHWA would only participate in funding the waterline if it were cost-effective in comparison to acquiring property. At this time, the analysis does not show the waterline to be reasonable. | The DOT&PF is evaluating the implications of including a waterline in the project. However, FHWA would only participate in funding the waterline if it were cost-effective in comparison to acquiring property. At this time, the analysis does not show the waterline to be reasonable. |
|                                       | A portion of the MSB property would be acquired for ROW to improve SMP. Access improvements would be coordinated with the DOT&PF. | A portion of the MSB property would be acquired for ROW to improve SMP. Access improvements would be coordinated with the DOT&PF. |
| Recreation                            | Maintain access to Cottonwood Creek.                                                                                   | Section 4.3 – Social Impacts                                                                                           |
|                                       | Request for unpaved trails.                                                                                           |                                                                                                                        |
| Residential, business, and school access | Concern about access issues for Palmdale Drive, Wickersham Way, Spruce Drive, Tamarak Drive, Ruth Drive, Ancient Tree Estates, and Stepping Stone Day Care. | Appendix G – Public and Agency Comments (and responses)                                                                 |
|                                       | Concern about what driveway access will look like.                                                                     | Access would be maintained for all residences, businesses, and schools along the corridor. Some access locations may change because of design parameters. |
|                                       | Suggest that emergency vehicles have pre-emption signal light capability.                                               | School zones and at-grade, grade-separated, and mid-block crossings would be considered in final design of the project. At-grade pedestrian crossings would be provided at nearby signalized intersections. |
|                                       | Concern about development behind Sears and alignment with Parks Highway frontage road.                                | A proposed signal pre-emption for the Cottonwood Public Safety Building and Fire Station is expected to decrease response times and provide easier access through intersections. |
|                                       | Concern that Lakeview Road would be used as a cut-through road.                                                        | The development behind Sears and the alignment of the Parks Highway frontage road are not in the scope of this project. |
## TABLE 14
Public Issues and Responses by Category

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</table>
| Noise                   | Concern about noise increase and whether noise barriers are being proposed. Request for retaining walls and sound barrier at Naomi Drive. | Section 4.7 – Noise Impacts  
A noise barrier analysis was conducted for the project. Refer to the Noise Analysis in Appendix D. |
| ROW acquisition         | Concern about either intersection option at Bogard Road because of ROW acquisition. Minimize ROW impacts. Question need for 200-foot ROW. | Section 4.4 – Relocation Impacts  
The cost and impacts for ROW acquisition for the 165-foot ROW were analyzed and compared to those for the 200-foot ROW. Given that many of the property acquisitions on fully developed properties may be full acquisitions, it is practical to acquire sufficient ROW for future needs (such as extending or improving utilities, adding a path to the east, providing snow storage or turn pockets at intersections, and landscaping). If ROW is not acquired at this opportunity, the cost of ROW will rise as property values increase and continuing development will make future acquisitions more difficult. |
| Bicycle/pedestrian paths| Include pedestrian and bicycle paths. Suggest that a tunnel connect to a path under SMP for schools and at Seldon Road. Would like to see a motorized trail for ATVs and snowmachines. | Section 4.3 – Social Impacts  
Section 4.6 – Considerations Relating to Pedestrians and Bicyclists  
Schools zones and at-grade, grade-separated, and mid-block crossings would be considered in the final design of the project.  
No unpaved paths are included as part of the proposed project. |
| Project timeline        | Complete the proposed project quickly. Concern that the cumulative time the entire roadway would be under construction (phasing) would adversely affect residents. | Section 4.19 – Construction Impacts  
Construction is expected to begin in 2008. |
| Safety                  | Concern about use of a configuration (roundabout) that could be confusing and less safe for school children. Concern for the safety of pedestrians on a five-lane road. | Section 3.1 – Build Alternatives  
Section 4.3 – Social Impacts  
Pedestrian crosswalks would be provided in the roundabout.  
A paved, separated pedestrian/bicycle path is planned for the entire length of the corridor. |
### TABLE 14
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<th>Category</th>
<th>Issue</th>
<th>Discussion Reference(^a)/Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection design, roundabout</td>
<td>Concern for ability of trucks (long doubles) to negotiate radius in roundabout design. Prefer roundabout because it is consistent with neighborhood character and provides less impact to property owners.</td>
<td>Section 3.1 – Build Alternatives The roundabout is designed to lower approach speeds and provide more flexibility for approaching skew angles at Bogard Road and SMP. The roundabout radius would be large enough to accommodate trucks with trailers.</td>
</tr>
</tbody>
</table>

\(^a\) Identifies location where topic is discussed. Unless otherwise indicated, the location refers to this report.
SECTION 6
List of Preparers

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Michael Yarborough/Cultural Resource Consultants, Archeological Survey Consultant
Judy Griffin/Word Wrangling, Editor
J.B. Hardwick/CH2M HILL, Graphic Artist
## Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADEC</td>
<td>Alaska Department of Environmental Conservation</td>
</tr>
<tr>
<td>ADF&amp;G</td>
<td>Alaska Department of Fish and Game</td>
</tr>
<tr>
<td>ADNR</td>
<td>Alaska Department of Natural Resources</td>
</tr>
<tr>
<td>ADOL</td>
<td>Alaska Department of Labor and Workforce Development</td>
</tr>
<tr>
<td>APE</td>
<td>Area of Potential Effect</td>
</tr>
<tr>
<td>AS</td>
<td><em>Alaska Statutes</em></td>
</tr>
<tr>
<td>ATV</td>
<td>all-terrain vehicle</td>
</tr>
<tr>
<td>BMP</td>
<td>best management practice</td>
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<tr>
<td>CFR</td>
<td><em>Code of Federal Regulations</em></td>
</tr>
<tr>
<td>dBA</td>
<td>decibels on the A-weighted scale</td>
</tr>
<tr>
<td>DOT&amp;PF</td>
<td>Alaska Department of Transportation and Public</td>
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<tr>
<td>EA</td>
<td>environmental assessment</td>
</tr>
<tr>
<td>EFH</td>
<td>Essential Fish Habitat</td>
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<tr>
<td>EMS</td>
<td>emergency medical service</td>
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<tr>
<td>EO</td>
<td>Executive Order</td>
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<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>FHWA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>HMCP</td>
<td>Hazardous Material Control Plan</td>
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<tr>
<td>LOS</td>
<td>level of service</td>
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<tr>
<td>LRTP</td>
<td>Long-Range Transportation Plan</td>
</tr>
<tr>
<td>MSB</td>
<td>Matanuska-Susitna Borough</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
</tr>
<tr>
<td>NRCS</td>
<td>National Resource Conservation Service</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>OHMP</td>
<td>Office of Habitat Management and Protection</td>
</tr>
<tr>
<td>ROW</td>
<td>right-of-way</td>
</tr>
<tr>
<td>SHPO</td>
<td>State Historic Preservation Officer</td>
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<tr>
<td>SMP</td>
<td>Seward Meridian Parkway</td>
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<tr>
<td>STIP</td>
<td>Statewide Transportation Improvement Program</td>
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<tr>
<td>SWPPP</td>
<td>Storm Water Pollution Prevention Plan</td>
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<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
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</tbody>
</table>
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