

***Shotgun Cove Road
Environmental Assessment
Whittier, Alaska***



***Prepared for
United States Forest Service
Chugach National Forest***

***October 17, 2003
12556-06***



File Code: 1900

Date: October 17, 2003

The City of Whittier seeks to improve the Shotgun Cove Road from the intersection of Eastern Avenue and Blackstone Road in Whittier, Alaska, east 2.59 miles to the end of the existing pioneer road. Enclosed is an Environmental Assessment which discloses the potential effects of construction/reconstruction of the existing road to a two-lane facility with improved alignment, grade and width standards. My preferred alternative at this time is Alternative 3, which would include replacing two bridges at Cove Creek, improving overall access and safety for travelers, and widening the road bed, involving hill cuts, fills and other excavation. Retaining walls, culverts and roadside ditches would also be constructed. Existing access to private structures along the pioneer road would be modified. The action would also include enhancing the City of Whittier's recreational facilities, including the Salmon Run picnic area and the Emerald Cove trailhead and constructing new recreational facilities such as a multipurpose path and a scenic viewpoint.

The road segments are located on private lands and lands owned by the City of Whittier. Since there are no National Forest System lands along the route (although there are National Forest System lands adjacent to the project area, to the south), and the proposed action does not involve implementation of the Chugach National Forest Land and Resource Management Plan of May 2002, this action is not subject to the appeal procedures for National Forest System projects and activities found at 36 CFR 215.1.

Design work is expected to be completed during the spring of 2004, with construction beginning during the summer of 2004.

Construction/reconstruction of the road is planned under a project agreement between the City of Whittier, Chugach Alaska Corporation, USDA Forest Service and Federal Highways Administration. The Forest Service's role is to ensure regulatory performance of the environmental analysis process. Congress appropriated funds for this project in the fiscal years 2001 and 2002 Department of Transportation Appropriations Act within the Public Lands Highway Discretionary Program. Funds appropriated to this program are subject to the limitations and controls, which dictate that funds must be spent on a public road role. All projects constructed with federal funding must comply with federal requirements, including compliance with the National Environmental Policy Act (NEPA). This Environmental Assessment serves that purpose. The Forest Service is serving as the lead federal agency by providing advice to the City of Whittier on the applicability of work performed under contract and by determining eligibility for reimbursement under the provisions of the Public Lands Highway Discretionary Program and federal rules for financial management and acquisitions.

The purpose of this letter is to provide an opportunity to comment on the document prior making my final decision. Written or oral comments will be accepted for 30 days following the



publication of a legal notice in the Anchorage Daily News, expected to be Monday, October 20, 2003.

It is the responsibility of persons providing comments to submit them by the close of the comment period. Persons submitting comments must provide the following information:

name, address and (if possible) telephone number;

title of the document on which comment is being submitted; and,

specific facts or comments along with supporting reasons that you believe the Responsible Official should consider in reaching a decision.

Send written comments to:

Suzanne Cunningham
Hart Crowser, Inc.
2550 Denali Street, Suite 705
Anchorage, AK 99503-2752

And e-mail comments to: Suzanne.cunningham@hartcrowser.com

Copies of the environmental assessment can be obtained from the City of Whittier main office, Forest Supervisor's Office, Chugach National Forest, 3301 C St., Anchorage, Alaska, 99503; and the Glacier Ranger District office, Forest Station Road, Girdwood, Alaska, 99587. The Environmental assessment is also available on the Internet at:

<http://www.fs.fed.us/r10/Chugach/>

For additional information regarding this action and this environmental assessment please call Chuck Frey, Supervisor's Office, Anchorage, at (907) 743-9557. Thank you for your interest in the City of Whittier's project.

Sincerely,

/s/JOE MEADE
Forest Supervisor

Enclosure

Cc: City of Whittier
Chugach Alaska Corporation
Federal Highways Administration, Juneau, Alaska Office

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Hart Crowser, Inc.

CONTENTS

Page

1.0 INTRODUCTION	1
1.1 Overview	1
1.2 Project Area Description	1
1.3 Purpose and Need	3
1.4 Proposed Action	5
1.5 Decisions to be Made	8
1.6 Public Involvement	9
1.6.1 Scoping Process	9
1.6.2 Notification	9
1.6.3 Scoping Meetings	10
1.6.4 Responses to Scoping Notice	11
1.6.5 Public Review of the EA	12
1.7 Planning Record	13
2.0 ALTERNATIVES	13
2.1 Alternatives Development Process	13
2.2 Alternatives Considered but Eliminated from Detailed Study	13
2.2.1 Ferry Service to Private Property and Shotgun Cove	14
2.2.2 Shoreline Road Route	14
2.2.3 Alignment Using Existing Cove Creek Road Switchback	14
2.2.4 Programmatic Economic Development	14
2.3 Alternatives Considered in Detail	15
2.3.1 Items Common to All Alternatives	15
2.3.2 Alternative 1 – No Action	17
2.3.3 Alternative 2 – Paved Road Without Enhancements	17
2.3.4 Alternative 3 – Paved Road with Enhancements	22
2.3.5 Alternative 4 – Gravel Surface Without Enhancements	28
2.3.6 Alternative 5 – Paved Segment 1 with some Enhancements	28
3.0 ENVIRONMENT AND ENVIRONMENTAL EFFECTS OF ALTERNATIVES	29
3.1 Overview	29
3.2 Direct, Indirect, and Cumulative Effects	29
3.3 Physical Environment and Effects of Alternatives	30
3.3.1 Air Quality	30
3.3.2 Geology and Soils Resources	30
3.3.3 Mineral Resources	33
3.3.4 Water Resources	34
3.3.5 Fisheries	42

CONTENTS (Continued)

Page

3.3.6 Wildlife	46
3.3.7 Threatened, Endangered, and Sensitive Plant Species	51
3.3.8 Threatened, Endangered, and Sensitive Wildlife Species	54
3.3.9 Vegetation and Wetlands	59
3.4 Human Environment and Effects of Alternatives	68
3.4.1 Heritage Resources	68
3.4.2 Land Use Plans, Policies, and Regulations	74
3.4.3 Socioeconomics	85
3.4.4 Recreation Resources	92
3.4.5 Scenic Resources	97
3.4.6 Subsistence	105
3.4.7 Transportation	110
3.5 Findings and Disclosures	118
3.5.1 National Forest Management Act	118
3.5.2 Endangered Species Act	119
3.5.3 National Historic Preservation Act	119
3.5.4 Federal Cave Resource Protection Act	119
3.5.5 Alaska National Interest Lands Conservation Act	119
3.5.6 Clean Water Act	120
3.5.7 Clean Air Act	120
3.5.8 Coastal Zone Management Act	120
3.5.9 Executive Order 11988, Floodplain Management	121
3.5.10 Executive Order 11990, Protection of Wetlands	121
3.5.11 Executive Order 12898, Environmental Justice	121
3.5.12 Executive Order 1296, Recreational Fisheries Improvement	121
3.5.13 Essential Fish Habitat	122
4.0 REFERENCES	122

TABLES

1	Summary of Alternatives	16
2	Summary of Wetland Determination, Classifications, and Estimated Acreages	61
3	Summary of Wetland Effects (acres) for Each of the Alternatives	62
4	Population of Prince William Sound Communities, 1990-2000	86
5	Whittier's Current Road Classification and Standards	111
6	Traffic Counts for Whittier in 2001	113

CONTENTS (Continued)

Page

FIGURES

1	Site Vicinity Map	2
2	Shotgun Cove Road Vicinity Map	6
3a	Cove Creek 1 Bridge Looking Upstream	7
3b	Cove Creek 1 Bridge from Pioneer Road	7
4	Shotgun Cove Road – Segment 1	18
5	Shotgun Cove Road – Segment 2a	19
6	Shotgun Cove Road – Segment 2b	20
7	Typical Road Cross Section, Alternative 2	23
8	Typical Road Cross Section, Alternatives 3 and 5	25
9	Proposed Salmon Run Picnic Area Improvements	26
10	Proposed Scenic Viewpoint and Pullout	27
11	Climate Summary for Whittier, Alaska (1971-2000)	35
12	Average Monthly Discharge at Hobo Creek, Alaska (1990-2000)	37
13	Wetland Boundaries and Numbers	63
14	Land Use Status Map	75
15	South to Begich Tower and Glacier from Harbor Triangle	98
16	East-southeast View to East End of Whittier and Cove Creek from Harbor Triangle	99
17	View West Back to Whittier from High Point above Cove Creek	101
18	View North/Northwest Across Passage Canal from High Point above Cove Creek	102
19	View Northeast to Seth Glacier from Meadow in Segment 2	103
20	Wild Food Harvests in Alaska by Area, 1990s	106

APPENDIX A SHOTGUN COVE ROAD PLAN DRAWINGS

APPENDIX B VISUAL SIMULATION

APPENDIX C LIST OF AGENCIES CONTACTED

LIST OF ACRONYMS

AASHTO	American Association of State Highway & Transportation Officials
ACMP	Alaska Coastal Management Program
ADCED	Alaska Department of Community and Economic Development
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
ADIC	Alaska Division of Intergovernmental Coordination
ADLWD	Alaska Department of Labor and Workforce Development
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation & Public Facilities
AHRS	Alaska Heritage Resources Survey
ANILCA	Alaska National Interest Lands Conservation Act
APE	area of potential effect
BE	biological evaluation
BMP	best management practice
CAC	Chugach Alaska Corporation
CFR	Code of Federal Regulations
City	City of Whittier
Corps	U.S. Army Corps of Engineers
DGC	Division of Governmental Coordination
DBH	diameter at breast height
DWI	Driving While Intoxicated
EA	Environmental Assessment
EFH	essential fish habitat
EIS	environmental impact statement
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
Forest Service	USDA Forest Service
FY	fiscal year
GIS	Geographic Information System
HGM	hydrogeomorphic
mph	miles per hour
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
ORV	off-road vehicle
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub-shrub
PWSATP	Prince William Sound Area Transportation Plan
SHPO	State Historic Preservation Office
SWPPP	stormwater pollution prevention plan
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

1.1 Overview

Improvements are planned for Segments 1 and 2 of the Shotgun Cove Road in Whittier, Alaska, under a Project Agreement signed by the City of Whittier (the City), Chugach Alaska Corporation (CAC), USDA Forest Service (Forest Service), and Federal Highway Administration (FHWA). The Forest Service's role is to ensure regulatory performance of the environmental analysis. The FHWA has agreed to provide funding for environmental analysis.

Congress appropriated funds for this project in the fiscal year (FY) 2001 and FY 2002 Department of Transportation Appropriations Act as an "earmark" within the Public Lands Highway Discretionary Program. Funds apportioned to this program are subject to the limitations and controls which dictate that funds must be spent on a public road, and operated by a public organization with the authority to take a public road role. All projects constructed with federal funding must comply with federal requirements, including compliance with the National Environmental Policy Act (NEPA). This Environmental Assessment (EA) serves that purpose.

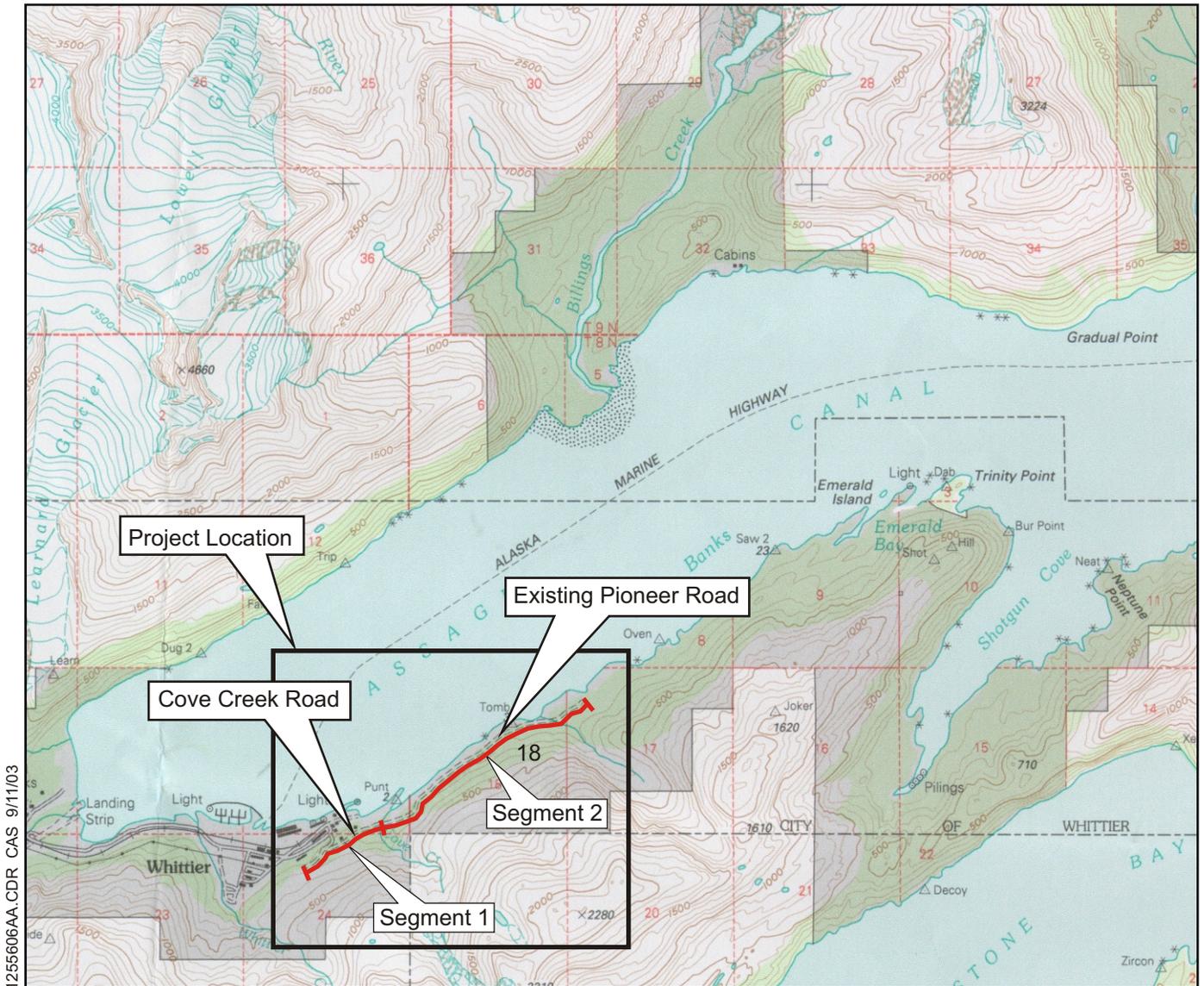
The Forest Service is serving as the lead federal agency by providing advice to the City on the applicability of work performed and by determining eligibility for reimbursement under the provisions of the Public Lands Highway Discretionary Program and federal rules for financial management and acquisitions.

1.2 Project Area Description

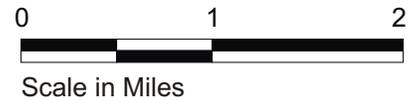
Whittier, a community of 170 year-round inhabitants, was established during World War II as a military port. The Alaska Railroad Corporation operates a facility in Whittier, delivering cargo from the deepwater port of Whittier to Anchorage. The Alaska State Ferry system also has an operation in Whittier, with service to Valdez and from Cordova. A small marina is located in Whittier, as well.

The project area lies immediately east of Whittier, on the south side of Passage Canal (Figure 1). The elevation of the project area ranges between sea level and approximately 300 feet. The project area lies along a fiord (Passage Canal), a deep marine channel flanked by steep-sided valley walls. The project area extends from the intersection of Eastern Avenue and Blackstone Road in Whittier, to a point along Passage Canal approximately 2.6 miles to the east. The existing road is classified as a "local road" by the Whittier Transportation

Figure 1 - Site Vicinity Map



Note: Base map prepared from the USGS 1:63,350 quadrangle Seward (D-5), Alaska.



Plan (ASCG 2001). The road begins at Eastern Avenue as Blackstone Road, and passes by the north side of the Buckner Building. From the northern end of the Buckner Building, Cove Creek Road branches off from Blackstone Road, and heads east out of town. Cove Creek Road ends at the Salmon Run picnic area, located on Cove Creek (locally known as Salmon Run). (Note that Cove Creek is actually two separate creeks, referred to as Cove Creek 1 and Cove Creek 2 in this document.)

A single lane “pioneer road” begins at Cove Creek 2 and ends at the Emerald Cove trailhead. This portion of road is classified as “unimproved” by the Whittier Transportation Plan. It is currently accessible only by high-clearance, all-wheel drive vehicles. Notably, CAC, under an agreement with the City of Whittier and the Forest Service, maintains a gate across the road where it enters the west side of Section 18 (Figure 1), their land.

Due to the history of development and geography of the project area, the project was divided into two logical segments. The portion between Eastern Avenue and Cove Creek 2 is referred to in this document as “Segment 1.” The pioneer road is referred to in this document as “Segment 2.”

Most of the land in the project area is privately owned. The road segments are located on private lands and lands owned by the City of Whittier. There are no National Forest System lands along the route (although there are National Forest System lands adjacent to the project area, to the south), nor does the proposed action involve implementation of the Chugach National Forest Land and Resource Management Plan of May 2002.

A more detailed description of the project area is provided within each section of Chapter 3, Environment and Environmental Effects of Alternatives.

1.3 Purpose and Need

The purpose of this project is threefold: to improve the safety and efficiency of the Whittier road system; to provide new and/or enhance existing recreational opportunities in and around Whittier; and to assist in the economic development of the community.

Shotgun Cove Road does not currently meet American Association of State Highway & Transportation Officials (AASHTO) guidelines for passenger car roads. Existing road conditions do not meet current safety guidelines, particularly at the crossings of Cove Creek 1 and Cove Creek 2. These bridges are in disrepair and are unsafe for vehicle traffic. A recent engineering inspection indicated that the bridges at these locations should be replaced as

soon as possible (ASCG 2001). Because the existing road provides access to several recreational areas used by the public, making sure it meets current safety standards is imperative. There is a need to improve the Shotgun Cove Road to provide reliable and safe year-round access to private and City-owned land.

Whittier was originally developed as a World War II supply port. Therefore, most of Whittier's uplands are devoted to industrial docks and a rail yard. Today, with the development of the Anton Anderson Memorial Tunnel, and with the upcoming Whittier cruise ship dock now under construction, a significantly increasing visitor population is finding itself in daily conflict with industrial activities in Whittier. This, in conjunction with the planned State of Alaska "fast ferry" service and the high demand for small boat moorage, makes the safety of the roads in and around Whittier even more of a concern. This project would provide a road that meets these standards for safety and service to both the residents of Whittier and tourists visiting the area. In addition, in 2000, CAC gated the road at their property due to concerns for safety, illegal dumping, and land squatting. Currently, emergency service personnel must possess a key and stop to unlock the gate to access lands beyond, creating potentially dangerous delays. Through construction/reconstruction of Shotgun Cove Road to meet current design standards, many of these safety concerns can be eliminated.

The City of Whittier is the gateway to western Prince William Sound and some of the most spectacular scenery in the world. However, aside from offering access to the waters of Prince William Sound, the City currently offers few quality outdoor recreation opportunities within its boundaries. There is a need to provide more and enhanced land-and sea-based opportunities for recreation, both for visitors and residents. The City of Whittier currently is home to three undeveloped sites dedicated for parkland; a picnic area (Salmon Run) with several picnic tables, four flip-lid fire grates, a viewing platform, and a stairway that provides access to the beach; three hiking trails; premier backcountry opportunities; and Harbor Triangle with a covered pavilion with several picnic tables which is located near Whittier's small boat harbor.

The small boat harbor currently provides the focus for most of the marine-based recreational opportunities available to residents and visitors/tourists in the Prince William Sound area. As such, unsafe situations can and do occur between motor-operated boats and sea kayakers. While Prince William Sound offers excellent sea kayaking opportunities, the only launch site for kayaks in the area is the small boat harbor in Whittier. The time needed to paddle out of Passage Canal limits the amount of sea kayaking that can be done out of Whittier, particularly on day trips to some of the more sheltered and secluded areas of Passage Canal.

Additionally, weather often plays a role in the ability of smaller boats to get out into the Sound. Without some sort of recreational infrastructure, Whittier offers few alternatives for residents and visitors to gain access and enjoy some of the beautiful land-oriented outdoor activities. Unfortunately current access to some of the City's primary land-based recreational facilities is limited by the current road's steep grades (up to 20 percent) and need for all-wheel-drive, high-clearance vehicles (sports utility vehicles or trucks) to drive it. By improving road access, residents and visitors would have access to the existing Salmon Run and Emerald Cove picnic areas, various trailheads, and Prince William Sound for water activities. An outlet for visitors to spend their time in Whittier enjoying recreational activities in a scenic setting along the Shotgun Cove Road is needed.

Economic development is also of great need in Whittier. Today, virtually all of the 170 residents of Whittier live in the same apartment building. Stores and restaurants are very limited and highly seasonal, and there is almost no buildable land on which to develop single-family housing. By providing drivable access to private and City-owned land, opportunities for building single- and multi-family housing could develop. Additionally, much of Whittier's summer economy depends on tourism services. In addition to the area providing exceptional power and sail boating opportunities, Whittier is surrounded by unmatched opportunities for ecotourism activities including hiking, kayaking, camping, and bird watching. A more developed, safer road system would both provide independent visitors access to Chugach National Forest lands and provide kayak and other adventure tour operators with expanded access to the area.

1.4 Proposed Action

The City of Whittier seeks to make road improvements from the intersection of Eastern Avenue and Blackstone Road in Whittier to the end of the existing pioneer road. The new road, Shotgun Cove Road, would actually include existing portions of Blackstone Road and Cove Creek Road (Segment 1), and the pioneer road (Segment 2). The project would include replacing the two bridges at Cove Creek and improving access and safety for travelers (Figures 3A and 3B). Specifically proposed is construction/reconstruction of an existing 2.59-mile road (Segments 1 and 2) to a two-lane facility with improved alignment, grade, and width standards, and initiating related preliminary engineering studies and analysis for these segments. The segments are shown on Figure 2.

The proposed action would widen the road bed, involving hill cuts, fills, and other excavation. Retaining walls, culverts, and roadside ditches would also be constructed. Rock bolting and other geotechnical measures would be needed to stabilize portions of road cuts. Existing access to private structures along the

Figure 2 - Shotgun Cove Road Vicinity Map

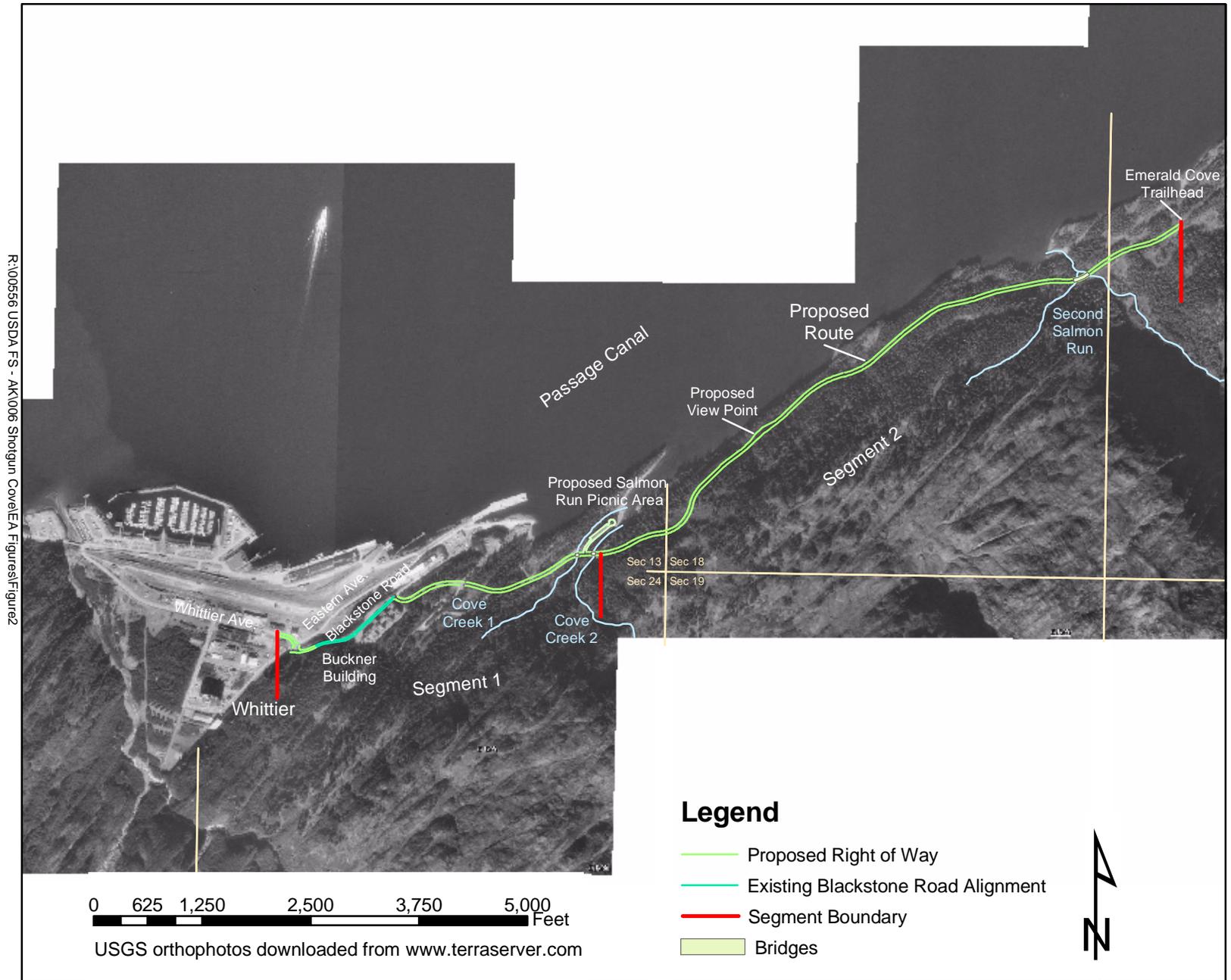


Figure 3A - Cove Creek 2 Bridge Looking Upstream



Figure 3B - Cove Creek 2 Bridge from Pioneer Road



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pioneer road would be modified. The action would create a paved or gravel surface that would meet AASHTO guidelines for a minor rural collector. The action would also include enhancement of some recreational facilities, including the Salmon Run picnic area and the Emerald Cove trailhead. New recreational facilities would be created, such as a multipurpose path and scenic viewpoints. Additionally, a utility corridor sufficiently wide for electrical and fiber optic lines would be included in the road design.

Notably, an additional segment, Segment 3, was discussed as part of the 1984 preliminary road design. If built, it would link Whittier to City-owned and privately owned lands on and near Shotgun Cove. Construction of Segment 3, which currently is speculative in nature, is not considered a reasonably foreseeable action under the Council of Environmental Quality (CEQ) regulations (40 CFR 1508.7) and therefore, potential cumulative effects associated with the construction of Segment 3 are not considered in this document. A separate environmental document would analyze the effects of that action when specific plans are proposed and scheduled.

Design work for the project is expected to be complete during the spring of 2004 with construction beginning during the summer of 2004.

1.5 Decisions to be Made

The Forest Service will evaluate the proposed action and alternatives. The Forest Supervisor will consult with the City and cooperating agencies in reaching a decision that is in accordance with the purpose and need for this project. The decision will:

1. Evaluate and make a finding that the selected alternative is in the public interest and meets a public need;
2. Evaluate and make a finding that the selected alternative is feasible and practicable;
3. Establish the conditions for implementation of the selected alternative that best meets applicable and relevant law and policy; and
4. Find that the selected alternative is appropriate for the expenditure of federal funds, subject to the legislative and policy constraints of the individual authorizations and appropriations applicable.

1.6 Public Involvement

The NEPA and associated Forest Service implementing regulations were used to guide the process, substance, and format for the Shotgun Cove Road EA. NEPA and the Forest Service procedures require that public participation be a key part of the planning process for environmental documents. The following discussion summarizes the public involvement process conducted in support of the EA, which, to date, has included defining the scope of the EA and circulating the EA for public and agency review.

1.6.1 Scoping Process

Scoping for the Shotgun Cove Road EA followed the process outlined in the CEQ regulations for implementing NEPA (40 CFR 1501.7). As the lead agency, the Forest Service and its contractor invited the participation of affected federal, state, and local agencies; Alaskan Native entities (Tribes and Native corporations); and any other interested persons by providing notice that the EA was being prepared. Based on the public input (and the results of their own internal scoping process), the Forest Service and other participating agencies determined the scope and the significant issues to be analyzed in depth. The conduct and results of the scoping process are documented in detail in a separate scoping report (Hart Crowser 2003a) prepared as part of the planning record for this project.

1.6.2 Notification

Notice of the EA and scoping process was distributed to potentially interested parties during November 2002 through several means. Public notification outlets included display advertisements and public notices in the *Anchorage Daily News* (November 2, 4, 7, and 8) and the *Turnagain Times* (November 5). The *Anchorage Daily News* is the official newspaper of record for the City of Anchorage. The *Turnagain Times* serves primarily Whittier and the communities along Turnagain Arm of Cook Inlet. Printed notices were posted at local community meeting places and distributed by direct mail to the agencies and organizations on the scoping mailing list and to all the current boxholders in Whittier. City of Whittier staff also posted printed copies of the public notice at key locations in Whittier at which local residents typically gather. These include locations in Begich Towers, which is the building housing the City offices, several retail commercial establishments, and most of the residents of Whittier. The public notice and display ad identified the parties participating in the proposed project and their respective roles, described the nature and general location of the proposed action, and invited any interested parties to submit comments on the scope of the EA. The notices explained that interested parties could submit

comments in person at two public meetings, or in writing by December 6, 2002. Informal consultations with agencies continued via e-mail and telephone throughout 2003 until August.

The contractor team also contacted agencies directly for input. The personnel and agencies contacted in this way, along with those contacted with the scoping announcement, are shown in Exhibit B of the Scoping Report (Hart Crowser 2003a); this document is available from the Planning Record at the Chugach National Forest Supervisor's Office.

The proposed action was listed on the Chugach National Forest schedule of proposed actions, on April 15, 2003. This was mailed to approximately 300 people and posted on the Chugach National Forest Web site.

1.6.3 Scoping Meetings

The EA contractor team sponsored public meetings in two locations to enable interested parties to express opinions, ask questions, and address issues relevant to the scope of the proposed action. The timing for the meetings was scheduled to include afternoon hours—to facilitate participation by agency staff—as well as evening hours. The format of the meetings was designed to (1) explain the proposed actions to be addressed in the engineering and environmental studies; (2) explain the roles of the agencies participating in the project; (3) inform the public about existing resource conditions and issues on the project area; and (4) update the public on the status of the studies and expected timeline for additional study and decisions. A slide presentation was prepared along with handouts of the presentation and maps and photos of the Shotgun Cove Road project area. After the presentation, time was given for both a group question and answer period and individual questions and comments from attendees. Comments were submitted both orally and on comment forms during the course of the public meetings.

The first meeting was held in Whittier at the City Council Chambers on November 19, 2002. The meeting was attended by five local residents and interested parties. The second meeting was held in Anchorage on November 20, 2002, at the Z.J. Loussac Library. This meeting was better attended, with approximately 16 people in attendance. Input from the meeting was recorded for the official scoping record, and consisted of 38 specific comments from nine individuals.

1.6.4 Responses to Scoping Notice

In addition to the comments received at the public meetings, four sets of comments were submitted in response to the scoping notice. The scoping submittals included letters (by e-mail) from the Alaska Division of Governmental Coordination (now the Office of Habitat Management and Permitting, Department of Natural Resources) and the Cascade Wildlife Project, and a facsimile message and a telephone call from separate individuals. These submittals provided a total of 17 individual comments.

1.6.4.1 Summary of Scoping Input

The contractor team identified a total of 55 distinct individual comments among the combined written submittals and public meeting input. Fourteen of the comments were classified as comments on the general scope of the EA, and involved the nature of the proposed action to be addressed in the EA. Most of these comments expressed the opinion that the scope of the EA should include the full concept of a road to Shotgun Cove, rather than just the first two segments identified as the proposed action to be addressed in this EA.

Five comments addressed concerns about fish and wildlife resources that the sources felt should be included in the EA. Five comments on physical features or resources generally overlapped with some of the comments oriented to fish and wildlife resources, as they typically addressed stream crossings. Six comments related to the expected costs of the project, either for construction or long-term maintenance, or to the prospects for project funding. Seven comments involved recreation/tourism activities, economic development prospects, or other aspects of the human environment. The largest group (18 comments) included input classified as general comments or process considerations, as they did not contain specific statements concerning the proposed action, alternatives, resource issues, or information requirements.

1.6.4.2 Definition of EA Scope

The agencies participating in the planning and evaluation of the proposed project collectively determined the appropriate scope of the EA, pursuant to Project Agreement entered into by the Forest Service, FHWA, CAC, and the City. The scope determination was based upon the environmental review requirements of the respective agencies, parameters adopted for recent infrastructure improvement projects in the general area, and review of the specific comments submitted in response to the scoping notice for this project.

1.6.4.3 Scope of Proposed Action

Several of the parties that submitted comments expressed concern or uncertainty regarding the scope of the proposed action to be addressed in the EA. Specifically, some of this comment material posed questions concerning the intended future extension of the proposed road beyond Segments 1 and 2 to a terminal point at Shotgun Cove, and the extent to which the impacts of such a road would be covered in the environmental analysis. In response to these comments, the Forest Service and the contractor team have ensured that the description of the proposed action presented in the EA clearly identifies the proposed road improvements in Segments 1 and 2 and their relationship to potential future actions.

1.6.4.4 EA Impact Issues

The project agency participants determined the environmental resource/impact issues to be addressed in the EA based upon their respective areas of jurisdiction and expertise, the issues addressed in environmental documents for recent infrastructure improvement projects in the general area, and review of the comments that referenced specific resource concerns or environmental impact issues. The resource topics presented as headings in Chapter 3 were selected for evaluation based on consideration of the comments and the agencies' internal scoping discussions. Evaluation criteria used to evaluate the effects of alternatives on each resource area were developed based on the project participants' knowledge of similar projects, the area, and general resource issues. Notably, scoping comments on resource issues (mostly fish and wildlife), while general in nature, were encompassed in the evaluation criteria developed by the EA resource specialists.

1.6.5 Public Review of the EA

Public and agency review of the EA is another important component of the public involvement effort. Notification of the EA review will follow a process similar to that described for EA scoping, as discussed above. The contractor team will prepare a notice that indicates the EA is available for review, explain how comments should be submitted, and identify the closing date for receipt of review comments. Notices will be published in the same newspapers, posted at key locations in Whittier, and mailed to all entries on the project mailing list.

The public and agencies may comment on the EA in multiple forms, including letters, comment forms, e-mails, facsimile transmissions, and telephone calls. The EA contractor will record and analyze these review comments. Comments on the EA will be assigned to appropriate members of the project team for

consideration and development of responses. Should revisions to the EA content be deemed necessary, the revised document will be submitted for additional public and agency review.

1.7 Planning Record

All memos and documentation involved in the decision-making process in this EA will be collected and indexed. An electronic database will be created to allow ease in looking up references. The Forest Service will be the custodian of these materials and the database. The planning record includes documentation of public involvement and project activities, Forest Service guidance regarding the project, and forest Geographic Information System (GIS) data. The planning record is located at the Forest Supervisor's Office in Anchorage, Alaska.

2.0 ALTERNATIVES

This section describes how alternatives were developed, which alternatives were rejected from consideration and why, and details of the alternatives that were retained for analysis.

2.1 Alternatives Development Process

The alternatives described below were designed to meet the purpose and need for the project (as described in Chapter 1), while emphasizing different resource values or levels of accessibility and amenities. The study team developed the alternatives in the context of regional transportation and economic issues, comments received during scoping, and natural resource data compiled from the Forest Service and other agencies.

Descriptions of the alternatives considered and eliminated from detailed study are presented in this section. All of the alternatives considered, including the no action alternative and those eliminated from detailed consideration, were evaluated in terms of how well they would meet the project purpose and need, their impact on the physical and human environments, the cost involved in construction and maintenance, and their consistency with existing plans and policies.

2.2 Alternatives Considered but Eliminated from Detailed Study

To examine alternatives to the proposed action, in light of potential effects from land-disturbing activities, several alternatives were briefly examined.

2.2.1 Ferry Service to Private Property and Shotgun Cove

An alternative that could provide for economic development of the greater Whittier area would be to provide a ferry service connecting the City of Whittier with the privately owned land along the shore. Such a service could use the existing ferry terminal in Whittier, and could be fashioned after the ferry service on Lake Chelan in central Washington State (privately run, making stops at several locations along the lakeshore). This alternative was eliminated from detailed study because it would not meet the purpose and need of the project; namely, for the Shotgun Cove Road to meet current safety standards. Additionally, the presence of cliffs would make access to private property difficult, and would not greatly facilitate development of those lands, especially properties that are not located on the shore. In addition, there is no existing road network present along Passage Canal in the area under consideration. The ferry service could not operate without some minimal road system.

2.2.2 Shoreline Road Route

A route following the coastline was examined as an alternative to following Segment 2, the pioneer access road. This alternative was rejected from consideration because cliffs along much of the shore would hinder construction and the cost would be needlessly high. In addition, construction along this route would have extensive impacts on the environmentally sensitive shoreline area and the road would be highly visible to marine traffic in the Passage Canal.

2.2.3 Alignment Using Existing Cove Creek Road Switchback

Another route was examined briefly that would use the existing Cove Creek Road between the Buckner Building and Cove Creek 2 as Segment 1. This route makes a sharp right turn, followed by a sharp left turn at the Horsetail Falls trailhead. This alternative would minimize filling of wetlands, avoiding a wetland between the Buckner Building and Cove Creek 2. However, this route did not meet the stated desire of the City of Whittier to eliminate the switchback, thus allowing for greater speed and improved safety. It was therefore dropped from detailed consideration.

2.2.4 Programmatic Economic Development

As an alternative to road building, the study team considered options to diversify the economy of Whittier through other means. Options considered included establishing incentives for relocation of business and industry to Whittier, and encouraging development of infrastructure and housing. However, this approach was rejected because the scope of such an effort would be well

beyond the mandate of the funding source of this project, the FHWA, and it would not meet the purpose of the project, which is to provide a road that meets current passenger car standards for safety and service to the residents of Whittier and tourists to the area.

2.3 Alternatives Considered in Detail

This section describes the five alternatives that were considered for detailed analysis. These alternatives present a range of possibilities with different costs and different environmental and economic effects. The range of alternatives presents different approaches to meeting the purpose and need, with each alternative having different emphasis. The alternatives emphasize different resource issues identified in the scoping process and by resource specialists. Some alternatives emphasize cost savings, while others emphasize resource protection. The alternatives also present an amount of latitude in meeting the purpose and need; for example, two alternatives may both meet the need of enhancing recreational opportunities, but one may allow for much greater potential than the other. The range allows for a reasoned choice for a preferred alternative that balances often competing priorities. Table 1 gives short summaries of each alternative.

Note: In this document, locations along the proposed right of way are taken from the 2003 Shotgun Cove Road Plan Drawings (Appendix A), with the convention of "Station X+YY." The term "X" is the distance from the start of project in increments of 100 feet, while the term "YY" is the remaining distance in feet. There are two main design components, the reconfiguration of the Whittier Avenue/Eastern Avenue intersection, and reconstruction of Segments 1 and 2. In the preliminary design, station numbering begins with "10+00." For example, Station 14+50 is 450 feet from the beginning of the design component.

2.3.1 Items Common to All Alternatives

Within the purpose and need, design standards have been set forth as a requirement of all action alternatives. Notably, due to constraints of topography, the final design may include some deviations from these standards; however, the deviations would be limited in extent. The project is to be designed in accordance with the AASHTO Policy on Geometric Design of Highways and Streets. These guidelines include the following parameters: alignment, grade, lane width, drainage structures, and road surfacing. The road is to be designed as a minor rural collector, with a design speed of 35 miles per hour (mph), and 24 feet of roadway. The road surface would be required to be a rigid subgrade, suitable for paving, although actual surfacing may vary.

Table 1 - Summary of Alternatives

	Summary of Alternatives	Total Area Disturbed (acres)	Estimated Cost
Alternative 1 (No Action)	Blackstone Road, Cove Creek Road, and pioneer road and trail access remain as they are currently. Bridges not replaced, no recreational enhancements.	0	\$0
Alternative 2 (Paved Road Without Enhancements)	Intersection of Whittier Ave and Eastern Avenue improved; Cove Creek Road re-aligned and upgraded to paved minor rural collector. Bridges at Cove Creek replaced (west tributary bridge replaced with a culvert). No recreational enhancements.	16	\$6,383,000
Alternative 3 (Paved Road With Enhancements, Including Multiuse Path)	Intersection of Whittier Ave and Eastern Avenue improved; Cove Creek Road re-aligned and upgraded to paved minor rural collector. Bridges at Cove Creek replaced (west tributary bridge replaced with a culvert). Multipurpose path 8 feet wide included on north side of roadway (Passage Canal side). Salmon Run picnic area upgraded; Passage Canal viewpoint and pullout constructed.	19	\$8,083,000
Alternative 4 (Gravel Surface Without Enhancements)	Same as Alternative 2, except roadway surfaced with crushed rock. No recreational enhancements.	16	\$5,366,000
Alternative 5 (Paved Segment 1 With Some Improvements)	Same as Alternative 3, except that improvements extend only to Cove Creek. Salmon Run picnic area upgraded.	5	\$2,382,000

Under all alternatives, maintenance would be the responsibility of the City of Whittier. It is assumed that standards of maintenance typical for a minor rural collector road in Alaska would be followed. An important issue specific to the project area is the heavy snowfall accumulation. It has not been decided, at the time of writing this document, whether the road would be plowed throughout the winter along its full length. Should the road be plowed, snow storage would be an issue. Snow storage would be addressed somewhat differently by the various alternatives, and is discussed in Section 3.3.4.3, Water Resources Effects of Alternatives.

2.3.2 Alternative 1 – No Action

Under this alternative, Segments 1 and 2 (Shotgun Cove Road) would be left in their current state. The road would not be improved, and the CAC gate would remain in place at the boundary of Section 18 (Station 43+10). The bridges at Cove Creek 1 and 2 would not be replaced; current levels of maintenance would continue but the structures would not be enhanced. Existing recreational facilities would not be enhanced. Segment 2 would remain an unimproved road, inaccessible to passenger cars.

2.3.3 Alternative 2 – Paved Road Without Enhancements

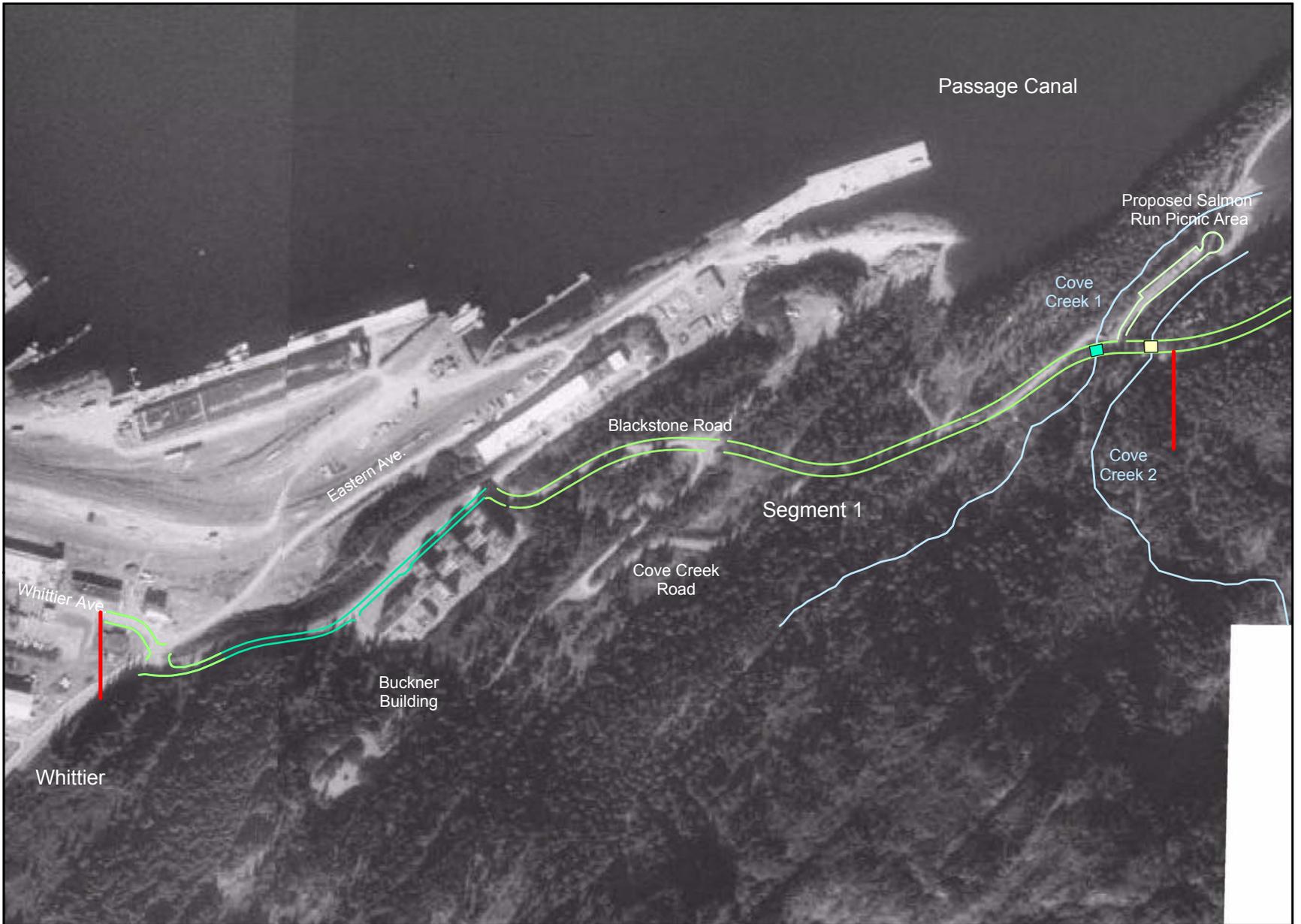
This alternative increases the safety and efficiency of a portion of the Whittier road system and meets the need for economic development, through improved access to public and private lands. Recreation opportunities would be modestly enhanced through improved access to existing facilities, and potential new, private facilities. Construction under this alternative would cost considerably less than Alternative 3 (see Table 1).

This alternative would involve significantly changing the alignment of the existing road and acquiring right of way for a new road corridor in specific locations. The road would be approximately 2.6 miles long, beginning at the intersection of Blackstone Road and Eastern Avenue, and would generally follow the alignment as designed by Ted Forsi & Associates in 1984 (Figures 4, 5, and 6); namely, the road route would follow Blackstone Road to the intersection with Cove Creek Road, and then leave the existing road at Station 41+00 of the 1984 design (Station 10+00 in current preliminary design). The intersection of Whittier and Eastern Avenue would be changed so that Whittier Avenue meets Eastern at a right angle, and is directly opposite Blackstone Road.

The route under this alternative would cut off a major switchback at the top of the hill east of the Buckner Building. Between Station 19+00 and 22+00, the alignment would require an extensive fill, up to 30 feet in height. The existing

Figure 4 - Shotgun Cove Road, Segment 1

R:\005556 USDA FS - AK\006 Shotgun Cove\EA Figures\Figure4

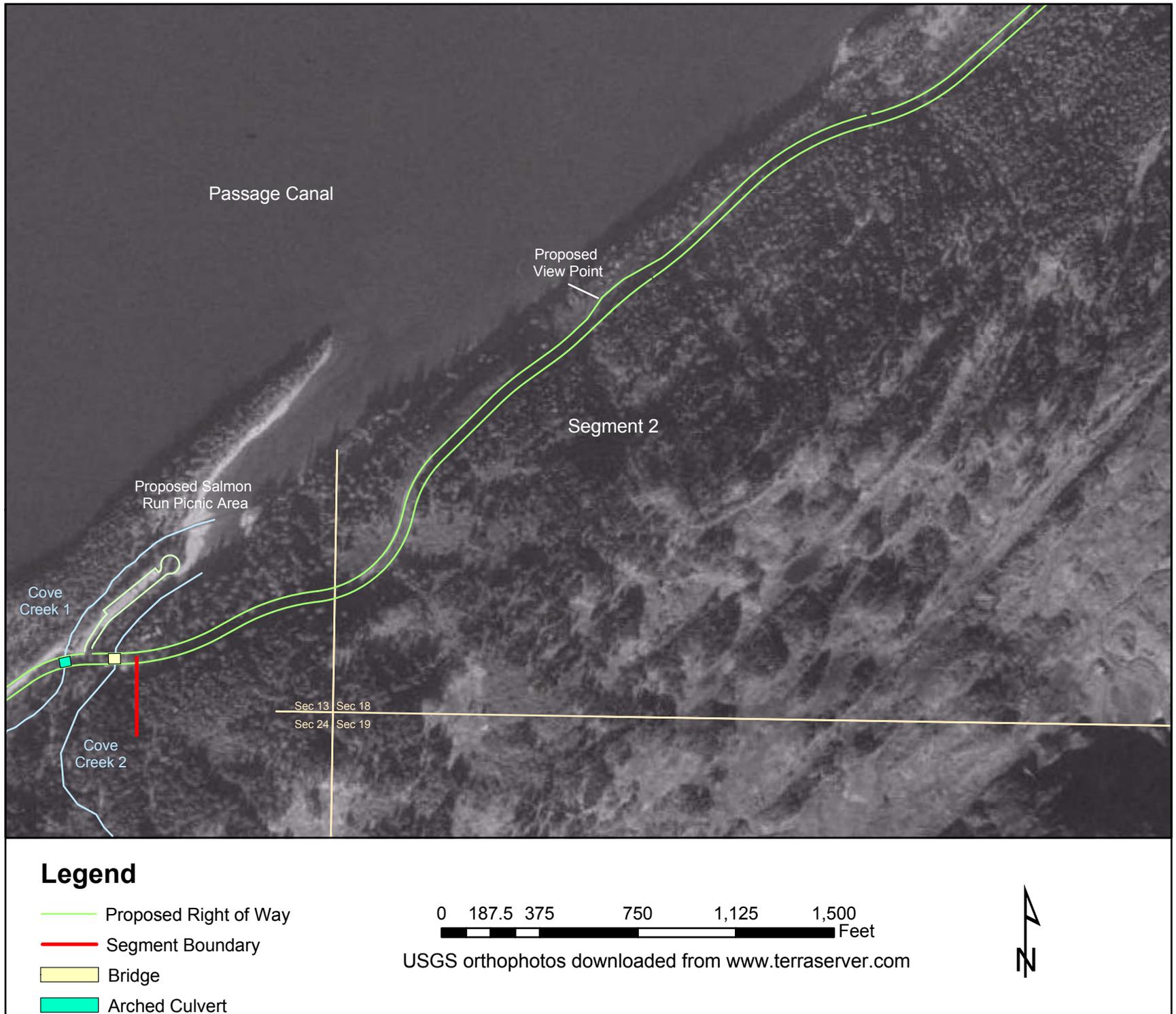


Legend

- Proposed Right of Way
- Existing Blackstone Road Alignment selection
- Segment Boundary
- Bridge
- Arched Culvert



Figure 5 - Shotgun Cove Road, Western Portion of Segment 2



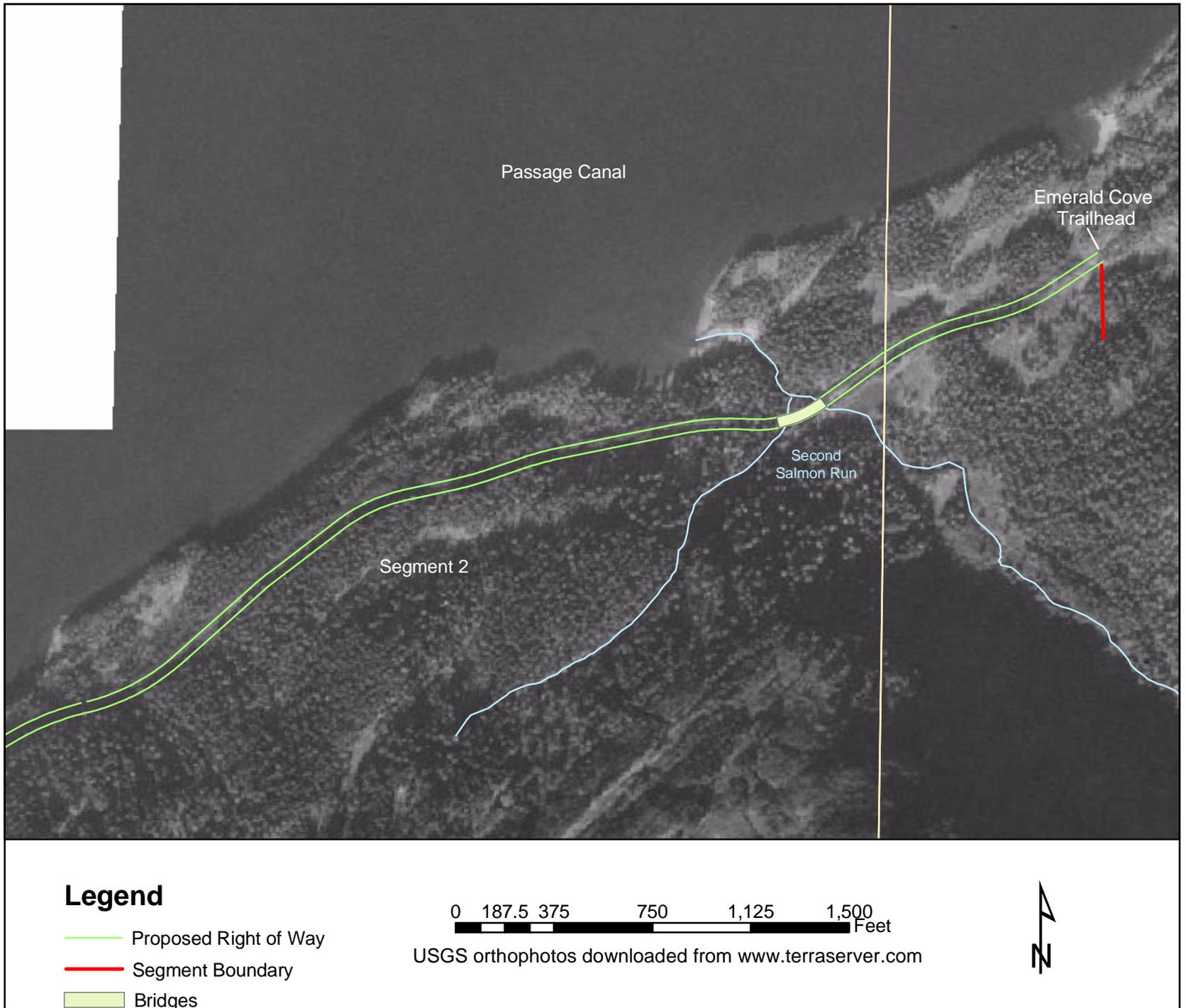
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Figure 6 - Shotgun Cove Road, Eastern Portion of Segment 2



section of Cove Creek Road along the switchback accesses several parcels of privately owned land, the Horsetail Falls trailhead, and the City of Whittier water reservoir. This access road would be maintained, and could be approached from either intersection with the new road. Detailed maps of the proposed road route are provided in Appendix A. The alignment would be moved to the north of the 1984 design to avoid several of the numerous small streams in the area, minimize stream crossing costs for Cove Creek, and keep the road predominantly in the current right of way (with the exception of the northwest corner of Lot 4, which is owned by the City of Whittier).

Two new stream-crossing structures would be installed and the old bridges would be removed and the streambanks restored at those locations. These stream crossings would require a significant amount of fill. Cove Creek 1 would be crossed with an arched culvert (Figure 4). Cove Creek 2 would be crossed with a bridge. The most likely type of bridge would be a "prestressed" concrete bridge. The prestressed sections would be manufactured off site and shipped to Whittier via barge or rail. They would then be trucked to the site. Careful consideration would be given to the length of the sections and the curves on the road to ensure that it is feasible to transport the prestressed sections on the road to be constructed. The Cove Creek 2 bridge would likely be a single span.

Throughout Segment 1, where private property is adjacent to the right of way, access ramps to private driveways would be constructed to connect the new road to existing private land access. Notably, one structure would have to be demolished or relocated; the structure, a partially collapsing, privately owned ammunition storage unit, is located at Station 9+60.

In Segment 2, the proposed route would follow the existing pioneer access road along much of its length, with minor deviations. The gate installed at the CAC property line at Section 18 would be removed. There is one major stream crossing, and several small crossings. The stream crossings at Station 100+00 and 101+10 would be spanned by one bridge, approximately 200 feet long. The crossings are actually two forks of one unnamed creek, locally known as Second Salmon Run. The existing crossings are in a flat area and the stream channels are wide and shallow. The Second Salmon Run bridge would likely need pilings, although this would be determined during final road design.

Considerable cuts and fills would be required along Segments 1 and 2 to bring the road location to current design standards. The new road would be located to minimize wetland and stream crossings. The road would end where the current trailhead for the Emerald Cove Trail is located (Station 114+31).

In general, the grade would be less than 10 percent, with minimum radius curve of 380 feet. The total road prism width would vary depending on slope. At a minimum, the road would be 40 feet wide including two lanes of asphalt pavement 12 feet wide, and 4 feet of gravel shoulder on each side. In addition, 8 feet of inboard ditch would be included along much of the route. Figure 7 shows a typical road cross section. The actual road prism width would vary substantially, depending on the topography. Where the hillslope is steep, especially from Station 36+00 to 97+00, the hillslope created on the downhill side of the roadway would be extensive. A guardrail would be installed where required by AASHTO and FHWA standards, on 2 feet of roadway adjacent to the hillside.

While these parameters serve as guidelines, there would be places where the road design would deviate somewhat from them. For example, where the road is made entirely of fill and is elevated above the adjacent terrain on either side, there would be no ditch. Some deviations would be necessary due to practicality of road building in certain areas. For example, lowering the design speed in certain locations would enable shorter vertical curves and small-radius horizontal curves, which would lead to substantial construction cost savings. Some deviations in design would also allow for mitigation of environmental effects, such as minimizing the filling of wetlands. Furthermore, deviations in the design guidelines would allow for better integration of the new road with existing properties' access routes, specifically in the Cove Creek area.

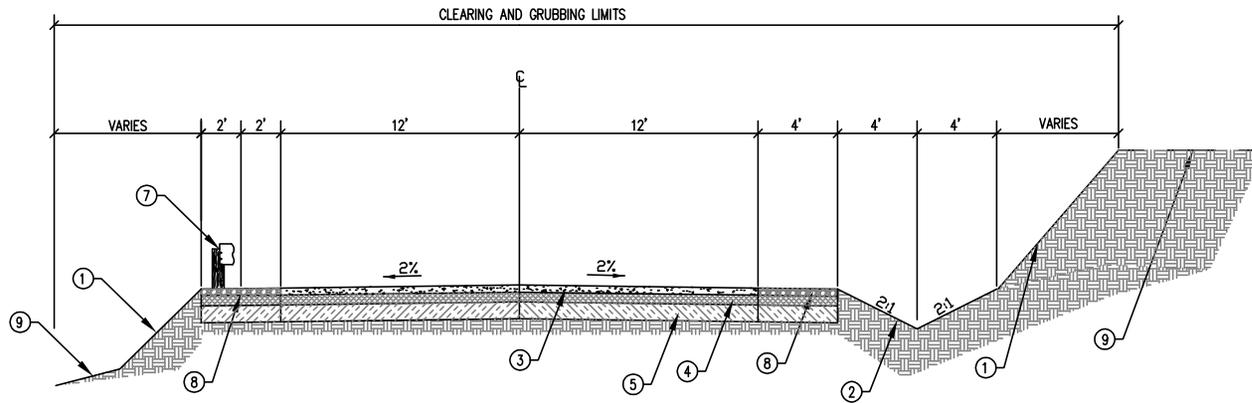
2.3.4 Alternative 3 – Paved Road with Enhancements

Similar to Alternative 2, this alternative would increase the safety and efficiency of a portion of the Whittier road system and would meet the need for economic development, through improved access to public and private lands. Recreation opportunities would be greatly enhanced through improved access to existing facilities, improved facilities, new public facilities, and potential new private facilities. Notably, this alternative would be the most costly (see Table 1).

Under this alternative, the route alignment would be the same as under Alternative 2, but there would be several additional actions associated with enhancement of recreation opportunities. These would include a multipurpose path that would parallel the road, various improvements to the Salmon Run picnic area, a scenic viewpoint pullout, and improved parking at the Emerald Cove trailhead. These enhancements are described in more detail below.

The path that would be built under this alternative would be similar to the one that exists along the Whittier Highway (between the Whittier Access Tunnel and the City of Whittier). It would be open to nonmotorized recreation, such as

**Figure 7 - Typical Road Cross Section
Alternative 2**



ALTERNATIVE 2 SECTION WITHOUT PATH
NOT TO SCALE

LEGEND

- ① CUT/FILL SLOPE (VARIES)
- ② DRAINAGE DITCH
- ③ ASPHALT PAVEMENT
- ④ CRUSHED AGGREGATE LEVELING COARSE
- ⑤ CRUSHED AGGREGATE BASE COARSE
- ⑥ PAVED TRAIL
- ⑦ TRAFFIC BARRIER
- ⑧ GRAVEL SHOULDERS
- ⑨ EXISTING GROUND SURFACE

bicycling, inline skating, walking, and jogging. It would add 16 feet to the right of way, including 5 feet of separation between the roadway and the path (unpaved), an 8-foot-wide path of asphalt pavement, and 3 feet of gravel shoulder on the outside (Figure 8). The total road width, including an inboard ditch, would be 58 feet. As in Alternative 2, a guardrail on 2 additional feet of road width would be constructed where required by AASHTO and FHWA standards. In places where fill is required, this would potentially increase the amount of fill (or cut) substantially. The grade of the path would be generally the same as the road grade, but its curvature as well as grade could deviate from it in places. Some wetland avoidance could be accomplished by locating the pathway on the existing road, in those areas where the proposed new alignment deviates from the existing road. While it would generally be parallel to the road, the pathway could deviate in its alignment in final design, in order to achieve other objectives, such as the following:

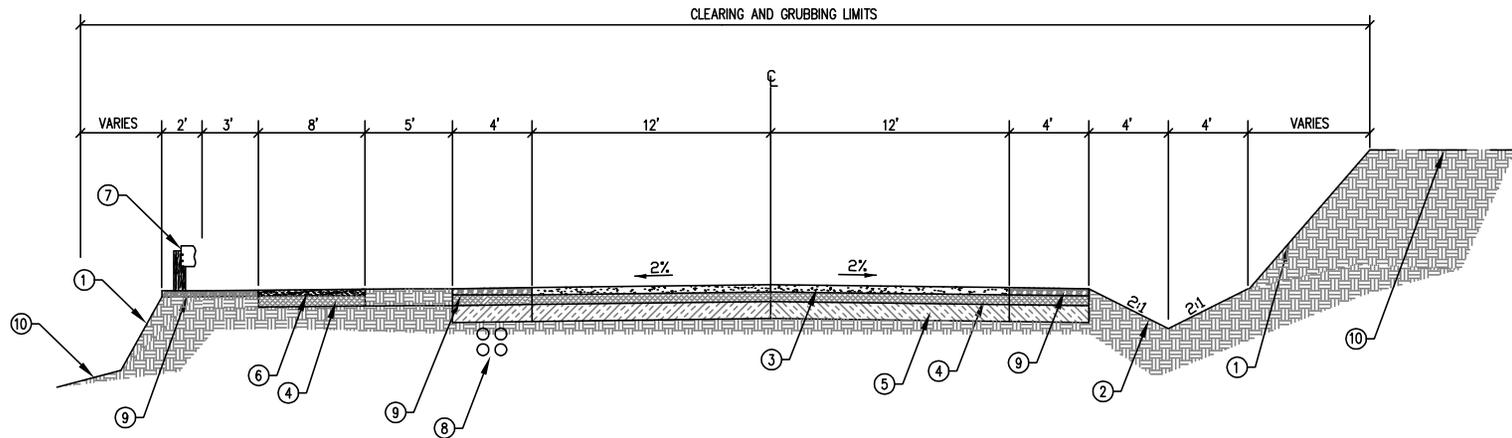
- Avoiding wetlands;
- Accessing viewpoints or tying in with other recreational features;
- Minimizing road prism width; and
- Reducing visual impacts, particularly in steep terrain.

The path would be built from the intersection of Blackstone Road and Cove Creek Road (Station 10+00) to the end of Segment 2 (Station 114+31). Blackstone Road, from its intersection with Eastern Avenue (the beginning of Segment 1) to the intersection with Cove Creek Road, has a concrete sidewalk in good condition; the path would not be built there.

Another major recreational enhancement that would be constructed under this alternative would be the refurbishment and expansion of the Salmon Run picnic area. Refurbished facilities would include new picnic tables, shelters, new fire pits, and restrooms. The parking lot, which is currently unsurfaced fill, would be paved and striped. Figure 9 shows a conceptual design for the area. Also included would be a scenic pullout at the top of the hill east of Cove Creek (Station 57+50 to 60+00). Figure 10 shows a conceptual drawing of the viewpoint pullout. This viewpoint would provide views across Passage Canal, back toward Whittier, and out to Prince William Sound. There would be interpretive signs and garbage collection, and enough parking for three vehicles. A guardrail would be installed for safety. Maintenance of these facilities would be the responsibility of the City of Whittier.

At the eastern end of Segment 2, a turnaround and six parking spaces would be provided, improving the Emerald Cove trailhead. Additional amenities would depend on final design, but could include restrooms, bear-proof waste containers, interpretive signage, and picnic benches.

**Figure 8 - Typical Road Cross Section
Alternatives 3 and 5**

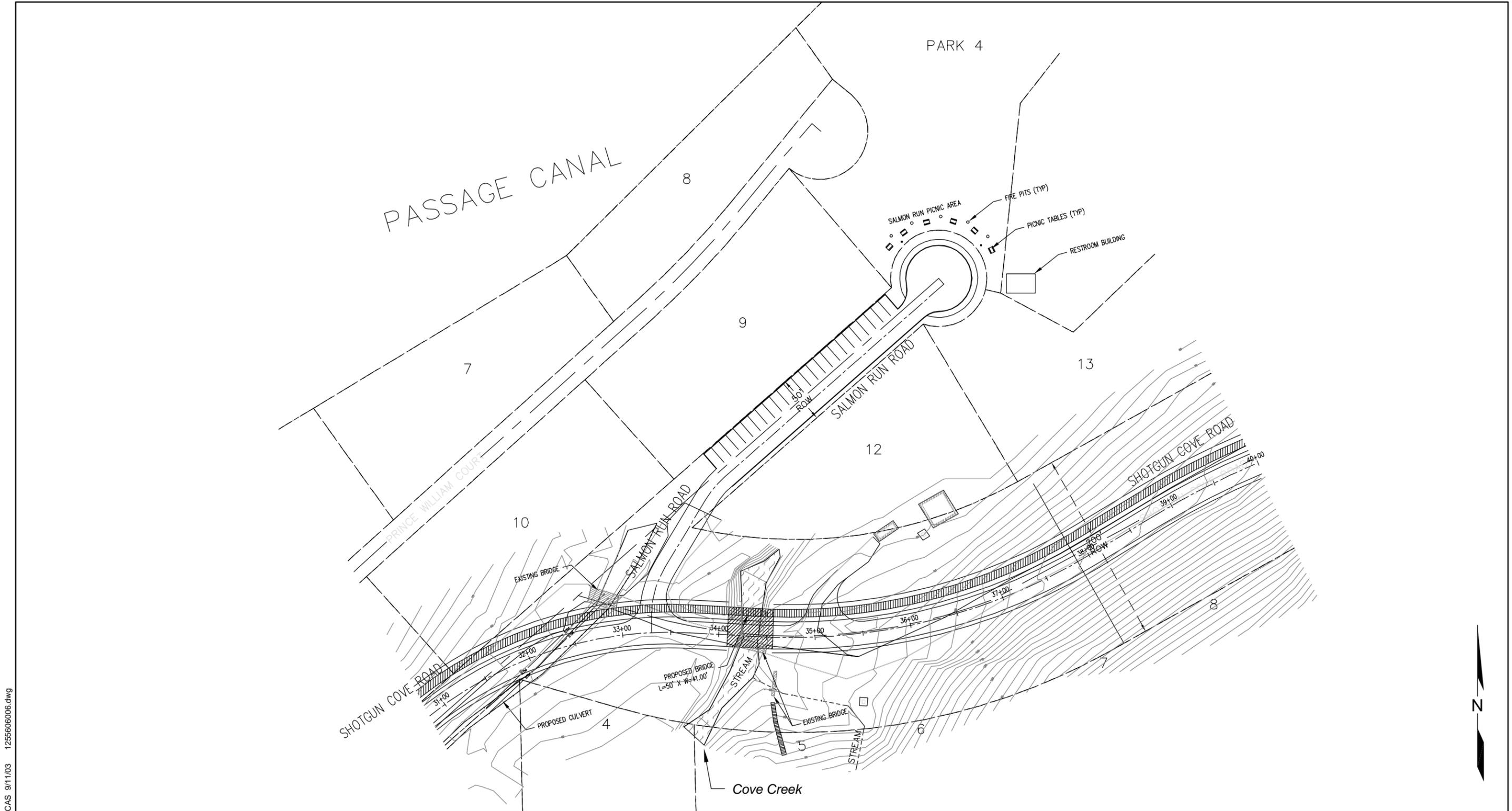


TYPICAL SECTION WITH PATH
NOT TO SCALE

LEGEND

- | | |
|---|--|
| ① | CUT/FILL SLOPE PER GEOTECHNICAL ENGINEERS RECOMMENDATIONS (VARIES) |
| ② | DRAINAGE DITCH |
| ③ | ASPHALT PAVEMENT |
| ④ | CRUSHED AGGREGATE LEVELING COARSE |
| ⑤ | CRUSHED AGGREGATE BASE COARSE |
| ⑥ | PAVED TRAIL |
| ⑦ | TRAFFIC BARRIER (WHERE NECESSARY) |
| ⑧ | CONDUIT (FOR FUTURE UTILITIES) |
| ⑨ | GRAVEL SHOULDERS |
| ⑩ | EXISTING GROUND SURFACE |

Figure 9 - Proposed Salmon Run Picnic Area Improvements



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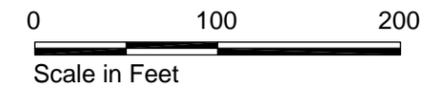
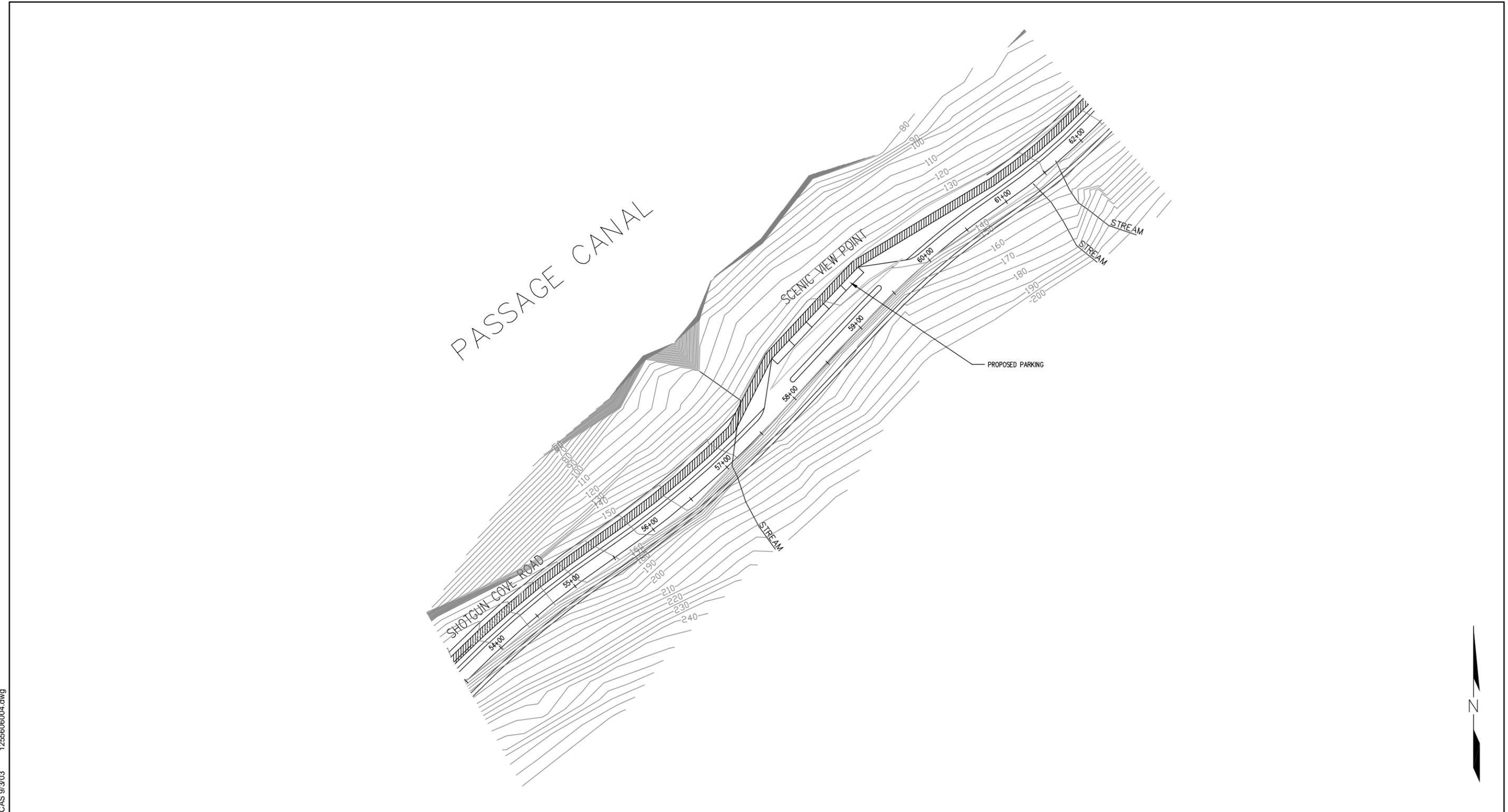


Figure 10 - Proposed Scenic Viewpoint and Pull Out



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0 100 200
Scale in Feet

As in Alternative 2, the gate at the CAC property line at Section 18 would be removed.

2.3.5 Alternative 4 – Gravel Surface Without Enhancements

This alternative represents a less costly approach to meeting the purpose and need than Alternatives 2 or 3 (see Table 1). It would modestly improve the safety and efficiency of a portion of the Whittier road system while allowing for economic development by providing safer access to recreational facilities. Recreation would be modestly enhanced through improved access to the Salmon Run picnic area, the Emerald Cove trailhead, and private facilities.

Under this alternative, the alignment and drainage features would be similar to that under Alternative 2; however, the road surface would not be paved. Rather, a subgrade sufficient for paving would be constructed, and the road would be surfaced with aggregate (gravel). The gravel thickness has not been determined, but would be more than 6 inches. Access to private property driveways would be of similar construction. Existing recreational facilities would not be improved, as under Alternative 3. The gate at the CAC property line at Section 18 would be removed. A multipurpose path would not be constructed. Maintenance would be conducted by the City of Whittier.

2.3.6 Alternative 5 – Paved Segment 1 with some Enhancements

This alternative strikes a balance between construction (and maintenance) costs, while providing greatly improved safety and efficiency to a portion of the Whittier road system. Recreation opportunities would be enhanced through improved access to the Salmon Run picnic area, improvements to the picnic area itself, and through construction of a multipurpose path along Segment 1.

This alternative would consist of upgrading and paving Segment 1 of the existing road, and would include a multipurpose path. The two bridges at Cove Creek 1 and 2 would be replaced as in Alternative 2. The Salmon Run picnic facilities would be upgraded to the same level as under Alternative 3. A multipurpose path along Segment 1 would be included. Segment 2 would not be upgraded to allow passenger car travel, and the gate at Section 18 would remain in place.

This alternative would cost considerably less to build than the other action alternatives. This is because less than half the road construction would occur under this alternative compared to the other action alternatives. Additionally, improvement of Segment 1 would be much cheaper to implement, since a portion involves only minor changes, and the topography is much more gentle

than along Segment 2. Maintenance would be conducted by the City of Whittier.

3.0 ENVIRONMENT AND ENVIRONMENTAL EFFECTS OF ALTERNATIVES

3.1 Overview

This section details the project area environment, and how the various alternatives would affect that environment. The section is divided into three major subsections: a discussion of the effects considered, physical environment and effects, and the human environment and effects. Within the latter two subsections, the characteristics of the existing environment are described, followed immediately by a discussion of the potential effects of each alternative, and possible mitigation measures. Unlike some other Forest Service EAs, this document's analysis of effects is not organized by scoping issues. Rather, discussion of direct, indirect and cumulative effects is included under the various resource topics where warranted. General resource-oriented scoping comments are addressed under the appropriate resource section.

3.2 Direct, Indirect, and Cumulative Effects

This document considers the environmental effects of the proposed action. This includes several categories of effects. Direct effects are those that are derived from the action itself. Indirect effects occur when a proposed action affects one process, which in turn causes other effects. Cumulative effects occur as a result of multiple actions; the effects of a single proposed action may not be significant, but may contribute to a significant effect when considered in combination with other projects. Analysis of cumulative effects considers past, present, and "reasonably foreseeable" actions in and around the project area.

Note: All station numbers reflect the stationing of the preliminary road layout, shown in Appendix A. The stationing begins at the northeast corner of the Buckner Building, at the current intersection of Blackstone Road and Cove Creek Road. This point is designated "10+00," an interim designation to allow for minor changes in alignment.

3.3 Physical Environment and Effects of Alternatives

3.3.1 Air Quality

3.3.1.1 Affected Environment

The air quality of the project area is generally good. A low level of development, light traffic, and frequent, onshore winds contribute to good air quality. The Passage Canal area is listed as an “attainment” area by the Alaska Department of Environmental Conservation; attainment means that there are currently no exceedances listed for any criteria pollutant.

3.3.1.2 Effects of Alternatives

All of the alternatives except the no action alternative would result in a decrease in air quality. However, this decrease would be highly localized and sporadic. Construction equipment would increase the level of pollutants such as carbon monoxide and sulfur dioxide. Following completion of the road, an increase in air pollution due to increased traffic would likely occur as a result of vehicle emissions. Under Alternative 4, dust from the gravel road surface would contribute to air pollution. However, the traffic is expected to be relatively light (ASCG 2001). Prevailing onshore winds and frequent rain are expected to disperse and dilute the increased concentration of contaminants such that state standards are not exceeded.

3.3.1.3 Cumulative Effects

The cumulative effects on air quality as a result of this project are likely to be limited to potential future construction and increases in road traffic which may occur as a result of improved access. It is not expected that increases in traffic will be high. Additionally, there are currently no plans for future construction as a result of this road improvement project. It is reasonable to expect that pollutants added to the air as a result of these activities would be dispersed rapidly as a result of the onshore air flow and frequent storms.

3.3.2 Geology and Soils Resources

3.3.2.1 Affected Environment

The project area is located in Passage Canal, a west-southwest trending, steep-walled, U-shaped fiord. A fiord is a deep valley carved by a glacier that has subsequently retreated, allowing seawater to flood the valley. That there are numerous fiords in the Prince William Sound area is indicative of the strong

effect glaciers had on the landscape during the last ice age. All of Prince William Sound was blanketed with a thick accumulation of glacial ice only 15,000 years ago. During the late Holocene (about 7,000 years before present [B.P.]), glaciers within this region experienced alternating cycles of advance and retreat—with up to three cycles occurring after 5,000 B.P. The most recent advance was the Little Ice Age beginning around 800 B.P. and ending in the late 1800s.

Glacial processes continue to be active today. For example, the Whittier Glacier is just above the city of Whittier, on the southwest portion of Passage Canal. The fiord is locally more than 1,000 feet deep and carved into the Chugach and Kenai Mountains. Passage Canal separates the Chugach Mountains to the north and east, and the Kenai Mountains to the south. Whittier is located on the northern edge of the Kenai Mountains, which rise from tidewater to altitudes greater than 3,500 feet within 2 miles of Whittier.

The bedrock of Whittier is dominantly slate with minor amounts of greywacke (a tight, nonporous, dark-colored sandstone containing angular grains and fragments of other rocks). The rocks are part of the metamorphic sequence known as the Valdez Group, and have been intruded by various igneous rocks. The intruded igneous rocks range from large batholiths to smaller dikes and sills. The dikes and sills are more numerous and common near the batholiths on the north side of Passage Canal. During a geotechnical investigation for the preliminary road design (Hart Crowser 2003b) igneous rock was not observed on the first section of the proposed alignment. Notably, dikes and sills can present cut-slope stability issues.

Southcentral Alaska, in general, is seismically active. Nearly 7 percent of the world's annual earthquake energy originates in the Alaska seismic zone (Choy and Boatwright 1995). The Cook Inlet region is considered seismic risk zone 4. This is the highest risk zone, defined as areas where major structural damage would occur. In 1964, this century's second strongest earthquake, with a magnitude of 9.2, shook southcentral Alaska. The epicenter was located near Unakwik Inlet in Prince William Sound, less than 40 miles northeast of Whittier. In Whittier, earthquake damage from this event was extensive. The earthquake and resulting tsunamis killed 13 people and resulted in massive destruction of property. It caused a land subsidence of 1.6 meters (5.3 feet) at Whittier, terrestrial and submerged landslides, and snow avalanches.

The soils of the project area have not been mapped. However, the soils described in Landsystems Inventory of Western Prince William Sound (Huecker et al. 1984) are most likely similar to those found in the area of the proposed road, because of the similar soil forming factors (e.g., climate and substrate). This inventory describes both shallow Lithic Cryorthods, (less than 20 inches

deep) to moderately deep Typic Cryorthods (greater than 20 inches deep). These soils most frequently occur under a coniferous forest on top of the sideslopes of small bedrock controlled hills.

There are significant amounts of hydric soils along the proposed route. These soils most often result from poorly drained conditions on gentle sloping landscapes or in small basins that are favorable for the development of organic soils. These are most frequently classified as Lithic Cryosaprists where bedrock normally occurs within 48 inches of the surface.

The soils along the proposed route support timber of mountain hemlock and Sitka spruce; within the Passage Canal area, there are few soils with the right conditions to support high-quality merchantable timber.

3.3.2.2 Effects of Alternatives

The potential effects of alternatives on geology and soils include the following:

- The potential for slope stability issues to affect the road and its maintenance;
- Loss of soils from the base of productive forest soils; and
- Increased sedimentation due to erosion of mineral soils.

The proposed route is located on a steep bedrock slope, particularly in Segment 2. Extensive cuts into the hillside would be necessary to build a road that meets the AASHTO standards for a minor rural collector. Thus, stability of the bedrock is a key issue in road design. Under all action alternatives, however, geotechnical assessment would be used to design safe road cut-slope angles, and slope protection measures, such as rock bolts, needed to create a stable road cross section. The design of road fill would also be engineered to the appropriate factor of safety, so that the chance of slope failure would be minimized. The road would be designed and built with explicit consideration of slope stability. Therefore, there would be minimal effect of the road on slope stability, and minimal effects of unstable slope conditions on the road. While a nominal amount of rockfall would be expected in such terrain, design and maintenance measures would be taken to minimize the effect on the road surface and traffic. Notably, Alternative 5 would not involve major road cuts, because the topography along the proposed right of way is relatively gentle.

Other than the potential for erosion (which is addressed in Section 3.3.4, Water Resources), the effects on soils of the project area would be limited to the loss of soils from the proposed right of way. Table 1 shows the approximate acreages of land used by the proposed right of way, by alternative.

The no action alternative would not affect soils. Alternative 2 would displace approximately 16 acres of soils, about 25 percent of which are in forested soils. Alternative 3 would displace the highest amount of soils, at 19 acres. Alternative 4 would displace the same amount of soils as Alternative 2. Alternative 5 would affect the least amount of soils of the action alternatives, at about 5 acres. However, because each of the action alternatives would affect a very small proportion of the forested soils of the Prince William Sound region, the effects would be negligible.

3.3.2.3 Cumulative Effects

Cumulative effects to geology and soils would not be expected from any of the alternatives. Potential future actions include development along Segments 1 and 2. These would involve disturbance and/or additional soil loss. Such disturbance could involve a number of small watersheds, all draining into Passage Canal; this distribution indicates that the risk of cumulative effects within a single watershed would be minimal. Building permits and construction regulations are assumed to be adequate to address issues of slope stability. It is unlikely that there would be an increase in risk of landslides with the standard engineering measures taken. Loss of forest soils would ultimately be negligible, since most of the surrounding area would remain undeveloped. Erosion of soils and associated sedimentation would be minimal, assuming best management practices (BMPs) were implemented properly. Several jurisdictions would be involved in preventing sedimentation, including the State of Alaska Department of Environmental Conservation, the U.S. Army Corps of Engineers (Corps), and the FHWA.

3.3.3 Mineral Resources

3.3.3.1 Affected Environment

A search conducted on the U.S. Geological Survey's Internet-based database of minerals data in Alaska revealed no active mines or mineral plants in the project area (USGS 2003). Additionally, the State of Alaska Department of Natural Resources (ADNR) jointly operates a Web site with the Bureau of Land Management for state and federal mineral claims (ANDR 2003). A search conducted using their interactive GIS map indicated no claims, either federal or state, within the greater project area. There are considerable amounts of private land in the project area, with the major land owner being CAC. It is unknown if there are known occurrences of economic mineral deposits on private lands in the project area. The Chugach National Forest Revised Land and Resource Management Plan (Forest Service 2002) indicates that the National Forest

system land adjacent to these lands and near the proposed road route has “moderately favorable identified resources, mineral potential.”

3.3.3.2 Effects of Alternatives

The primary potential effects of construction projects on mineral resources are to damage claim markers, or alter access to the claims. In rare cases, construction projects may affect the mineral occurrences themselves (e.g., displacement of surface deposits). Should economic deposits be discovered on private lands along the proposed route, a positive effect of the road would result, since access to mineral claims along the road would be enhanced. It is not expected that there would be any adverse direct or indirect impacts under any of the alternatives.

3.3.3.3 Cumulative Effects

There are currently no claims or active mines in the project area. Cumulative effects to mineral resources would be limited to new mineral discoveries made as a result of improved access. Because no future projects have been identified, effects to the mineral resources would not be expected.

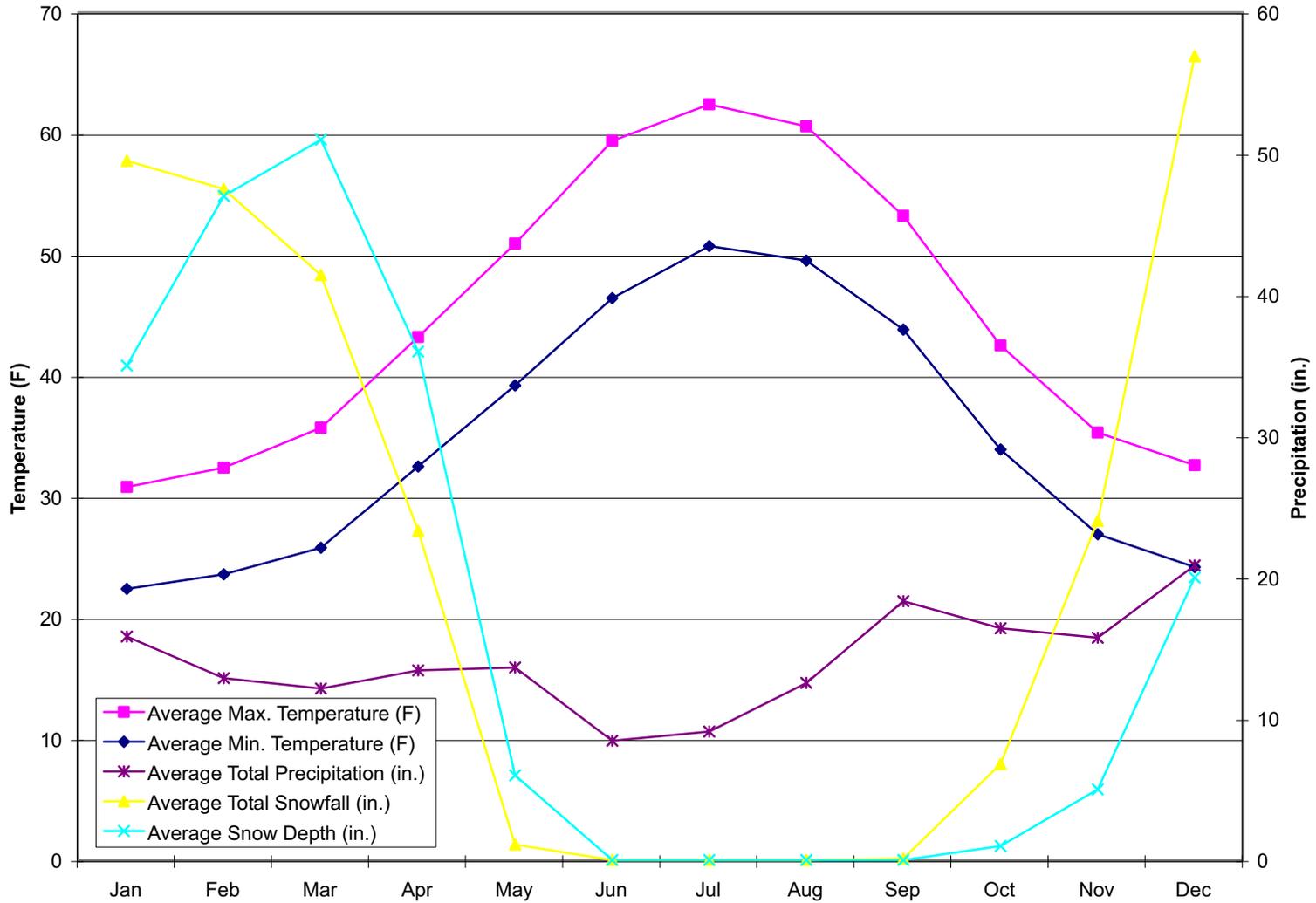
3.3.4 Water Resources

3.3.4.1 Affected Environment—Climate and Hydrology

The project area climate is dominated by its northerly latitude but is moderated by the influence of the Pacific Ocean and Prince William Sound. The area tends to receive a roughly even distribution of precipitation throughout the year, although the summers are somewhat drier than the winters. The total annual precipitation is almost 200 inches. The snow depth reaches its peak on average in March, at about 50 inches. Notably, this depth varies greatly from year to year. In Whittier, January’s daily minimum temperature averages 22.4°F, while the January daily maximum averages 30.8°F. During July, the daily minimum temperature averages 55.7°F, and the daily maximum averages 62.4°F. The chart on Figure 11 provides a summary of the major climate parameters for Whittier.

In a typical year, the ground is snow-free by June, although some shadier portions of the project area may be snow-covered well past June. Peak snowmelt flows generally occur in May and June. However, the largest flood flows occur with late summer and fall rainstorms, which generally occur from August through October, and occasionally with winter thaws, November through February. The closest stream gage with similar drainage basin and

Figure 11 - Climate Summary for Whittier, Alaska



climatic characteristics is on Hobo Creek, near Whittier. The record for this gage was prepared to show monthly average streamflow for the period of record (1990 through 2000). Figure 12 shows how runoff varies with month. The highest flows are experienced in September, when intense rain typically falls in the Prince William Sound region. The streams in the project area also likely experience high flows in September.

Several significant streams are present in the project area (Figure 2). The most notable is Cove Creek, which lies within the greater Whittier community. The drainage area of Cove Creek is approximately 0.8 square miles. In addition, there are two forks to Second Salmon Run where the proposed right of way crosses (Stations 100+00 and 101+10). The confluence of the two forks is 75 feet downstream from the proposed right of way. Second Salmon Run has a major tributary that joins it just above the proposed crossing. This tributary has a drainage area of approximately 0.7 square miles. The mainstem of Second Salmon Run has a drainage area of approximately 1.1 square miles.

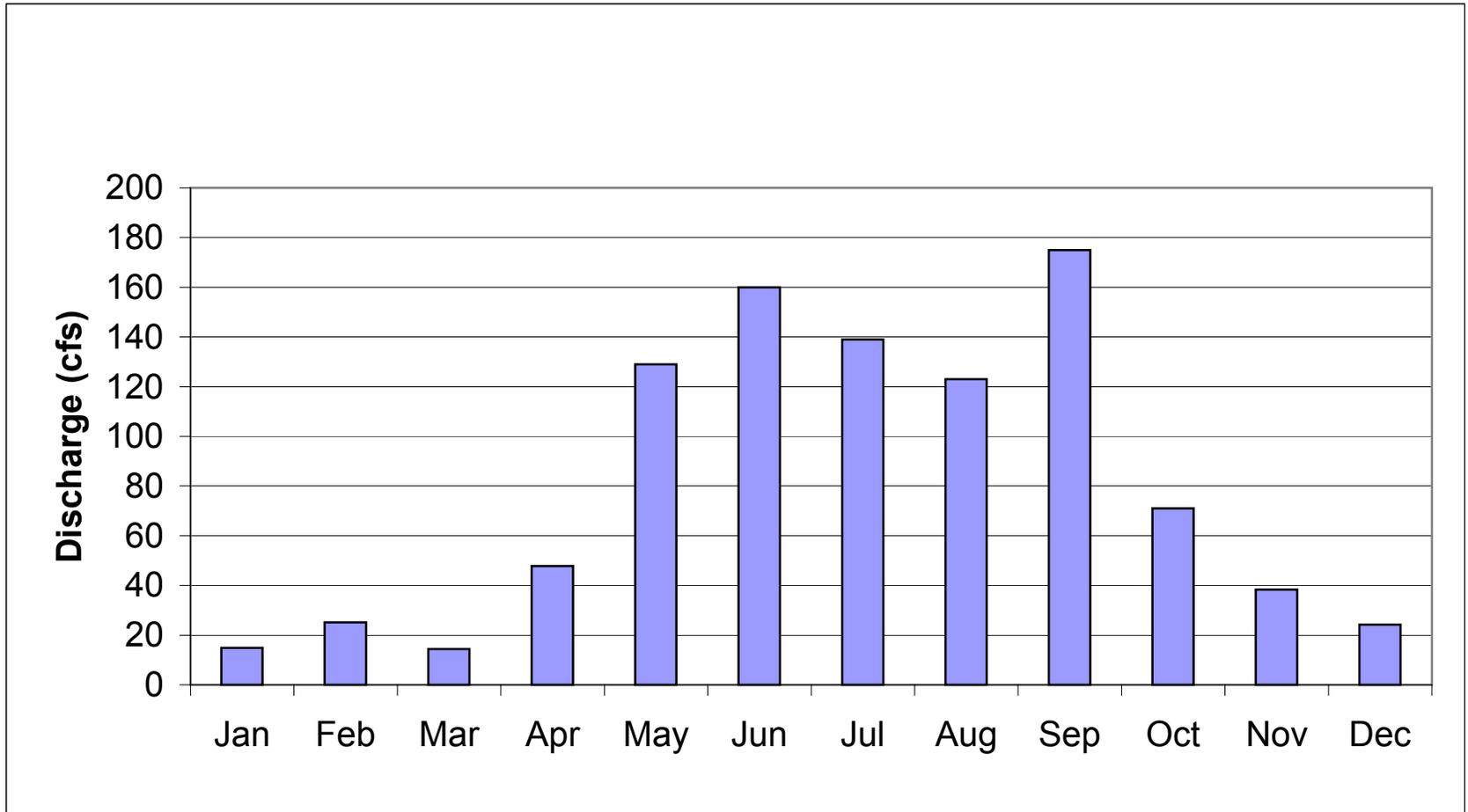
During site investigations in fall of 2002, the major stream crossings were evaluated using the method developed by the Forest Service (Pfankuch 1978). The stream crossings were rated according to characteristics that are indicators of the stream's stability at the crossing. Based on the numerical ranking, streams can rank "poor," "fair," "good," or "excellent" in stability. The ratings serve as an indicator of how sensitive the stream is to constrictions. The Cove Creek 2 had a "good" rating, mostly due to the presence of bedrock banks. Most other streams evaluated had a "fair" rating, indicating potential instability. Streams with a fair rating must be crossed with channel change in mind, including allowing for passage of debris, favoring bridges over culverts, and providing stabilization measures such as wingwalls. The field data and ratings for the streams surveyed are available in the planning record.

Seeps, bedrock rivulets, and small ephemeral streams are present along the route; they were mapped by the road engineering team and accounted for in drainage features of the preliminary design. Numerous wetlands are found along the project route; these are described in detail in Section 3.3.9.

3.3.4.2 Affected Environment—Water Quality

The water quality of the project area is considered likely to be good. There are no water bodies in the project area that are on the federal 303(d) list for water quality impairment. No data are available that are specific to the project area. However, there is very little development upstream from the proposed route, with the exception of the first portion of Segment 1. Here there are a few buildings, including the Buckner Building, which is currently unused.

Figure 12 - Average Monthly Discharge at Hobo Creek, Alaska (1990-2000)



Source: U.S.G.S website (http://waterdata.usgs.gov/ak/nwis/monthly/?site_no=15236000&agency_cd=USGS)

3.3.4.3 Effects of Alternatives

The effects on hydrology and water quality were considered in reference to the following three evaluation criteria:

- Potential for increased turbidity in streams;
- Potential for flow diversion from one drainage basin to another; and
- Potential for increased runoff due to increases in impervious surface area.

Increased turbidity can affect fish habitat and other beneficial uses. Turbidity can be increased through sediment-laden runoff. Turbidity can be naturally high during rainfall/runoff events, but can be exacerbated when the surface layer is disturbed, as by a construction project. Linear projects such as road construction have the potential, without mitigation measures, to increase turbidity wherever they cross streams.

Flow diversion from one drainage basin to another can cause excessive stream incision and related effects. When a road is built, the flow from a stream crossing its path is constricted. Where drainages are small, the flow is typically diverted via ditch to the nearest substantial drainage channel. If too much flow is diverted into a stream channel, the added discharge and increased shear stress can cause scour and/or lateral erosion. Scour in one location may lead to deposition in another downstream, which in turn may lead to additional erosion.

Similarly, increased runoff from an increase in the amount of impervious surface area in a given drainage basin can result in stream incision and other complex feedback effects. Whenever an impervious surface is created, it prevents some amount of natural infiltration of precipitation from occurring. If a significant portion of a drainage basin is converted from pervious to impervious (as in a city), the hydrograph of the streams in the drainage basin becomes much more "flashy." In other words, the peak flows are higher, and the flow tapers off much more quickly. Another effect is decreased flows in the low-flow period. This may occur because recharge to base flow producing groundwater is diminished by the decrease in infiltration. The threshold for effects of impervious surface in a drainage basin depends on climatic and topographic factors.

Alternative 1. Under this alternative, there would be minimal effects. There would be no alteration of stream crossings, no change in impervious surface area, and no additional passenger vehicle traffic. Water quality would remain good, and would remain unaffected. There would continue to be some degradation of wetlands and minor water quality effects, due to ORV traffic on and near the pioneer road.

Alternative 2. Under this alternative, construction would occur from Station 10+00 to Station 114+31, for a total of 10,431 feet of reconstructed, paved road surface. The roadway would be 40 feet wide, including the inboard ditch, but not including the cut and fill slopes, which vary substantially depending on side slopes. This would result in a minimum of about 420,000 square feet of impervious surface. However, because the road route is mostly perpendicular to the average drainage orientation, the impervious surface in each drainage basin would only be a very small proportion of the drainage basin, and effects on runoff would be minimal. There would be several staging areas, although their size would not be known until final design.

The area at the intersection of Whittier Avenue and Eastern Avenue would be reconstructed. However, the area is almost entirely impervious under current conditions. There would be essentially no change in runoff under this alternative at this site.

Where road construction and reconstruction occur, drainage would be typical of minor rural collectors, with a crowned road surface sloping 2 percent in both directions away from the centerline (see Figure 7). An inboard ditch would be present to collect runoff from the road surface toward the hillslope side, and from the hillslope itself. There would be minor diversions of flow from ephemeral streams draining the slopes south of the proposed route. However, all of the major stream crossings would be bridged or culverted (with open arch culverts). Cross drains would be installed where needed to minimize excess flow in the inboard ditch. Spacing and sizing of cross drains would be designed according to the methods in the AASHTO guidelines. The AASHTO Highway Drainage Manual (AASHTO 1991) describes all aspects of drainage related to highway construction, including culvert sizing and erosion and sediment control.

As part of the State of Alaska general permit for construction activities with greater than one acre of disturbance (as regulated under the National Pollution Discharge Elimination System or NPDES), a stormwater pollution prevention plan (SWPPP) would have to be developed for the site. This plan requires that BMPs be used to prevent erosion and sediment delivery to streams. The State of Alaska, as well as the FHWA, has standards and guidelines for SWPPPs. The SWPPP would include erosion and sediment control BMPs appropriate for the project and site. This plan would be developed in coordination with the Alaska Department of Environmental Conservation (ADEC) and would include all appropriate and relevant BMPs identified in the Highway Drainage Manual. In addition, the plan would specify how BMPs would be monitored and maintained to ensure that they perform as intended. This plan would also meet the permit requirements of the NPDES Permit, Alaska Title 16 Fish Passage Permit, and Section 401 Water Quality Certification. In addition, the contractor would be

required to prepare a site-specific spill prevention control and countermeasure plan or pollution control plan.

The drainage requirements, SWPPP, and the BMPs therein would provide substantial mitigation for erosion during construction and afterwards. Staging areas would be reseeded and re-vegetated. The drainage measures in the Highway Drainage Manual would minimize effects of flow capture. Sufficient cross drains would be installed to prevent excessive flow diversion. While some erosion would likely occur during construction, the effects would be minimal.

The potential for increased flow due to increased impervious surfaces would be low. The roadway and associated cut and fill slopes would represent very low proportions of each drainage basin crossed. For example, the Cove Creek watershed is approximately 0.8 square miles in area. There are currently few roads in the watershed, representing less than 1 percent of the watershed. The impervious surface created under this alternative would be approximately 14,000 square feet, or less than 1/10 of 1 percent of the watershed. Given the relatively pristine nature of this and the other watersheds crossed along the proposed route, the effects on runoff are likely to be negligible.

Should the road be plowed throughout the winter and spring months, snow storage would need to be addressed. There would be few potential snow storage areas under this alternative. In the more gentle sections of the road, snow could simply be placed along the shoulders on either side (while not blocking any driveways). On the steeper sections of the road (Station 36+00 to 98+00), snow would likely be dumped over the railing on the downhill side of the road. This could have minor effects on vegetation (stem breakage, suppressed growth), and could cause small-scale snow slumping and avalanches. Assuming snow was placed uniformly along the downhill side of the road, these effects would be dispersed, and would not have a significant effect on hydrology or water quality. The potential minor effects to roadside vegetation would not likely affect water quality because root structure would not be affected.

Alternative 3. This alternative is similar to Alternative 2 in terms of potential water quality and quantity effects. However, there would be more construction activity, with the construction of the Salmon Run picnic area improvements and the viewpoint pullout. Additional measures would be required to prevent erosion and subsequent sediment delivery at these sites. Furthermore, the roadway would be 20 percent wider, due to the multipurpose path. However, the amount of impervious surface area would be small compared with the total undisturbed area of the watersheds crossed. Because adherence to the Highway Drainage Manual would be required, and because a SWPPP would be in place, the effects on turbidity and changes in hydrology would be minimal.

With the extra width provided by the multipurpose path and shoulder, there would be more options for snow removal. Snow could be left on the roadcut side, serving as a buttress to decrease snow slumpage onto the roadway. This would decrease snow plowing costs, relative to Alternatives 2 and 4, and would disperse any effects of snow storage on the hillslopes in between Station 36+00 and 98+00, relative to Alternatives 2 and 4.

Alternative 4. Under this alternative, the road would not be paved. During construction, erosion control measures included in a SWPPP would be used as described under Alternatives 2 and 3, which would minimize runoff and erosion. While gravel surface road would be nearly impervious, the roadway footprint would be nearly identical to that under Alternative 2, and therefore there would be minimal effects on flow diversion or increased runoff. However, the potential for increased turbidity in streams after construction could be an issue. The road would be surfaced with 6 inches of crushed rock, which would serve to minimize turbidity. However, turbidity in runoff would increase shortly after construction. Reid and Dunne (1984) measured the effects of gravel roads on water quality. They determined that road traffic was the most important variable in estimating the amount of sediment that could be generated from forest roads.

The potential traffic on the proposed road would be heavier during the summer tourist season than most of the rest of the year. Combined with the intense summertime rain that the area experiences, there would be a potential for increased turbidity in the streams along the route. Cross drains would help minimize the increased turbidity by diverting road surface runoff onto side slopes. Erosion and sediment control measures, such as seeding and revegetation of fill slopes, would help minimize increased turbidity.

Cove Creek would be potentially affected by road surface runoff from the hill just east of it. Without specialized measures such as sediment detention ponds, Cove Creek could be subject to seasonal increased turbidity downstream of the road. This section of Cove Creek is short (less than 100 feet), but potentially important to anadromous fish (see Section 3.3.5 Fisheries). Sediment detention ponds, and other BMPs to minimize sediment-laden runoff, would be part of the mitigation necessary.

Because there would be no multipurpose path, snow storage options, as under Alternative 2, would be limited. The effects to hydrology and water quality would be similar to those under Alternative 2, except there would be a slightly greater risk of increased turbidity, due to the gravel surfacing of the road.

Alternative 5. Under this alternative, the effects would be of the same general nature as under Alternative 3. However, only Segment 1 would be constructed.

For Segment 2, there would be no construction and use would continue as under Alternative 1, with minimal traffic mainly limited to occasional ORVs. Overall, the effects would be minimal due to the mitigation discussed above under Alternatives 2 and 3.

As under Alternative 3, snow storage would likely be in partly on the road, should the road be plowed. However, snow plowing overall would be much less expensive than under Alternatives 2, 3, or 4, because the road would be much shorter, and because the snow slides and slumps that affect Segment 2 would not be an issue. Effects to hydrology or water quality due to snow storage would be minimal.

3.3.4.4 Cumulative Effects

Potential projects that could contribute to cumulative effects include development of CAC property along Segment 2.

Under Alternative 1 and Alternative 5, development along Segment 2 would be unlikely. Therefore, it is not expected that there would be cumulative effects on hydrology or water quality.

Under Alternatives 2 through 4, cumulative effects would be minimal. There could be effects from the road itself and from associated development, although specific development plans have not been developed. It is likely that CAC would develop their property at Section 18 along Segment 2. This could be in the form of lodges or other visitor facilities. The construction associated with any such development would be subject to state stormwater discharge permit standards, and would have minimal effects on water quality. Additionally, because most of Section 18 is very steep, only a small portion of it (less than 5 percent of the land) would be suitable for development of visitor facilities. Because of the limited amount of development and the mitigation that would be required by the state, cumulative effects on hydrology along Segment 2 would be minimal.

3.3.5 Fisheries

3.3.5.1 Affected Environment—Fisheries Resources

Because much of the Prince William Sound region is mountainous, the drainage systems are characterized by many short, steep coastal streams (Forest Service 2002). Consequently, the limited amount of relatively low-gradient streams and their associated tidal estuaries are extremely important fish habitat areas in the Prince William Sound.

The only documentation of salmon in streams in the project area is pink (humpback) salmon in the estuarine section of Cove Creek 1 and 2 (ADF&G 1999). There is no record of cutthroat trout, Dolly Varden, or rainbow trout in Cove Creek, or any of the other creeks along the proposed roadway. Local residents have also indicated that salmon inhabit Cove Creek 1 and 2 (Hart Crowser 2003a). There are no threatened, endangered, or candidate fish species found in the freshwater systems in the project area.

The mouth of Second Salmon Run is an estuarine-type channel similar to Cove Creek 2. The Alaska Department of Fish and Game (ADF&G 1999) classifies this stream as having potential to provide habitat to anadromous and/or resident fish, although there has not been actual documentation of these fish. Upstream, however, is a series of cascades that represent a barrier to fish.

The other small streams that would be affected by the project are non-fish-bearing streams. These are small, shallow streams in steep areas with high gradients.

3.3.5.2 Affected Environment—Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth the essential fish habitat (EFH) provision to identify and protect important habitats of federally managed marine and anadromous fish species. Federal agencies, such as the Corps, which fund, permit, or undertake activities that may adversely affect EFH, are required to consult with NOAA Fisheries regarding the potential effects of their actions on EFH, and respond in writing to NOAA Fisheries' recommendations.

EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom (bedrock), structures underlying the waters, and associated biological communities (NPFMC 1998).

Cove Creek 2 is the only body of water that contains known EFH that may be impacted by the project; this is known to be freshwater habitat for pink salmon. Fish use of Second Salmon Run has not been documented, but is probable; thus, it too may provide EFH for pink salmon.

3.3.5.3 Effects of Alternatives

This section describes the potential impacts of the proposed road improvement alternatives and new construction on freshwater EFH and organisms, as well as related mitigation for those impacts. Water quality impacts that may arise from construction of the improved roadway have been discussed previously in the Water Resources section. Under all alternatives, implementation of Best Management Practices would prevent adverse impacts to EFH waters, Cove Creek 1 and 2, and Second Salmon Run. Currently, a bridge crosses Cove Creek with a span that extends from bedrock benches well above the high water line on either side of the creek. Stormwater runoff from the bridge may drain directly into the creek without treatment. Possible pollutants in the runoff may include dust and small amounts of petroleum products from automobiles and ORVs.

The effects on fisheries resources and EFH were considered in reference to the following evaluation criteria:

- Potential impacts of fish and fish habitat due to construction; and
- Potential impacts of increased sedimentation; and
- Potential to restrict access to habitat upstream of road crossings.

Alternative 1. Under this alternative, there would be no effects. There would be no alteration of stream crossings, and no increase in passenger vehicle traffic. Fisheries resources and EFH would not be affected.

Alternative 2. Under this alternative, 2.6 miles of road would be reconstructed and paved. Stream crossings in Segment 1 consist of an arched culvert for Cove Creek 1, and a bridge crossing Cove Creek 2. In Segment 2 there is one major stream crossing the two forks of Second Salmon Run and several small (non-fish-bearing) stream crossings.

Potential impacts on fish include short-term construction impacts resulting in increased sedimentation and disturbance to streams. Increases in sedimentation from road fill used during road construction can be detrimental to spawning beds (Waters 1995). Noise, vibration, and disturbance associated with the construction may temporarily displace fish and invertebrates from the Cove Creek 2 crossing area. However, BMPs included in the preferred design of the bridge and other roadway improvements would keep all supports and construction activities above the high water mark of the stream. Other BMPs (see Water Quality Section) would be used to restrict sediment and pollutants from being carried into the stream.

Paving the existing gravel surface would reduce dust and sediment erosion from the road that could affect nearby EFH in streams. Assuming that the road improvements lead to increased road usage, there would be increases in the low levels of metals, oils, ethylene glycol, and potentially other pollutants now experienced. However, traffic would still be relatively light, and potential contaminants would be dispersed among a number of watersheds.

Direct adverse effects to salmonids are not expected because construction at Cove Creek 1 and 2 would be timed to avoid periods when large numbers of spawning pink salmon are expected to be present (August to October) (NPFMC 1998). In addition, the period of egg development (August to early spring) would also be avoided.

The project actions described have little potential to adversely affect the EFH of managed species, with any effects highly localized and minimal. The overall productivity of the EFH would not be reduced. Following completion of the project, revegetation of disturbed areas, along with erosion control measures prescribed by BMPs, is expected to minimize impacts to EFH.

Other mitigation measures would also be implemented. No long-term impacts are anticipated to EFH from Alternative 2 road improvements and bridge construction.

Indirect effects could include increased fishing pressure in marine water off the mouth of Cove Creek 1 and 2 due to increased accessibility. If catch rates are deemed to be excessive by the ADF&G, angling restrictions may be implemented to reduce catch to acceptable levels.

Alternative 3. Under this alternative, direct and indirect effects on fisheries and EFH would be similar to those under Alternative 2. While there would be a greater amount of construction activity associated the multipurpose path and the improvements at the Salmon Run picnic area, implementation of BMPs would minimize potential effects to fish and EFH.

Alternative 4. Under this alternative, the road would not be paved and the various improvements would not be made. Direct and indirect effects of construction would be similar to those under Alternative 2. The potential for turbidity from road surface runoff could be an issue (see Water Quality, Section 3.3.4.2), although as stated previously, properly implemented BMPs would minimize any potential effects to fish and EFH.

Alternative 5. Under this alternative, the road would be improved and facilities upgraded as under Alternative 3, but only for Segment 1 up to Cove Creek 2.

As under Alternative 3, there would be a potential for EFH to be affected at Cove Creek 2, though BMPs would minimize these effects. Segment 2 would not be constructed and would therefore experience minimal effects as in Alternative 1.

3.3.5.4 Cumulative Effects

Cumulative effects of projects in the area would be minimal. There are no reasonably foreseeable projects in the project area. However, with increased access, development pressure may increase along the road corridor. Effects of developmental activities would be expected to be localized and temporary in nature.

3.3.5.5 Mitigation Measures

The following mitigation measures are proposed for all action alternatives, to minimize potential adverse impacts to designated EFH areas during construction of the bridge and road.

- Avoid all inwater construction activities. Keep activity above ordinary highwater mark (as defined by state and federal agencies).
- Avoid activity when salmon are spawning (August to October) or eggs are incubating (August to early spring).
- Minimize sedimentation in streams by using silt fences downslope of work areas near surface waters and other BMPs.

The proposed activities may result in short-term localized adverse impacts to freshwater EFH parameters. Therefore, the proposed project may temporarily adversely affect designated salmonid EFH. However, implementation of the mitigation measures listed above and other considerations outlined previously would avoid, minimize, or otherwise offset potential adverse effects to EFH in the proposed project area, under each of the action alternatives.

3.3.6 Wildlife

3.3.6.1 Affected Environment

The affected environment consists of a roadbed that ranges in width from 16 to 49 feet, and adjacent areas upslope and downslope. The dominant vegetation on the existing roadbed is alder. Most of the wildlife habitat that would be lost consists of alder and willow. These stands of alder and willow are the result of previous road building. The alder-willow habitat is narrow and simply structured; it may provide foraging areas for songbirds. During surveys conducted in May

and June 2003 for this study, no bird nests were found in this habitat. Other common species include willow, young mountain hemlock, and Sitka spruce. The site is very disturbed from previous leveling. Vegetation adjacent to the proposed route is described in Section 3.3.7.1.

The immediate and adjacent environment provides foraging habitat for passerine birds and spruce grouse (*Dendragapus canadensis*) and roosting habitat for bald eagles (*Haliaeetus leucocephalus*). Mammals that may use the area include black bear (*Ursus americanus*), hoary marmot (*Marmota caligata*), red squirrel (*Tamiasciurus hudsonicus*), and weasels (*Mustela* spp). Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) and brown bears (*Ursus arctos*) are rare in the Whittier area but are seen occasionally (Crowley, D., Cordova Area Wildlife Biologist, ADF&G, personal communication, 2003). There are two known roosting sites for bald eagles about 120 feet downhill from the existing road at approximately 40+100.

3.3.6.2 Effects of Alternatives

The effects on wildlife were considered in reference to the following evaluation criteria:

- Potential for habitat loss and fragmentation;
- Potential for short- and long-term disturbance; and
- Potential for increase in hunting.

There are known wildlife effects associated with road construction (Knight and Cole 1995). Construction of roads results in habitat loss and fragmentation (Andrews 1990, Dickman 1987), creation of barriers to wildlife movement and dispersal (Mech et al. 1988, Brody and Pelton 1989, Mader 1984, Wilkins 1982), and increased mortality of species attempting to cross these roads (Sargeant and Forbes 1973, Wooding and Brady 1987, Gilbert and Wooding 1994, Oxley et al. 1974). Habitat loss may result in lowered production of wildlife on a local scale, loss of feeding areas, and reduced habitat quality for wildlife. In the project area, wetlands can be highly productive foraging areas, while spruce-hemlock forest may provide nesting habitat and thermal cover.

Road construction may also result in disturbance of wildlife. Many wildlife species may avoid road construction sites, at least during times of high human activity levels. This may negatively affect breeding, feeding, and migration patterns for local wildlife. For some wildlife, such as black bears, this could result in altered activity and/or habitat use patterns. For avian species, such as chestnut-backed chickadees, this may result in abandonment of nesting habitats (Reijnen et al. 1995). The ability of many birds to move their nest sites away

from human disturbances is limited if nesting territories are limited and all nesting territories are already occupied.

Some species that adapt to human activities and thrive in areas of high human use, such as common ravens and black-billed magpies, often prey upon the eggs and young of other species, while other species, such as American robins, appear to have little affect on other species. Generally, the species that can adapt to and thrive in areas of high human use are common species (American robin, gray jays, red squirrels), while those that cannot are more rare or declining species (blackpoll warbler, northern goshawk). Additionally, there would be potential for bears, primarily black bears, to habituate to humans during the construction phase of the project (Follman and Hechtel 1990). Habituation can lead to access to human foods and other attractants. This may potentially lead to human injury and destruction of bears.

Road construction and reconstruction can improve hunting access. With improved access for hunting, local game animals may be affected. Increases in ORV use could also affect game animals by causing them to avoid areas adjacent to the road.

Alternative 1. Under this alternative, no changes would occur. Some negative effects associated with roads are most likely already occurring due to the existing Segment 1 road and pioneer road (Segment 2), but would not be expected to increase.

Alternative 2. This alternative would increase the width of the existing roadbed by up to 30 feet, especially along the pioneer road (Segment 2). There would be an additional loss of 2 to 5 acres of mature spruce-hemlock forests alongside the road. Mature spruce-hemlock forest habitat is plentiful and does not appear to be limiting to wildlife populations in the area. Also, burrows adjacent to the existing roadbed would be destroyed when the roadbed is expanded. Two hoary marmot burrows were located during surveys in June 2003. Relative to the region as a whole, this represents a small fraction of marmot habitat.

Alternative 2 would likely increase the amount of vehicle traffic on the road, as well as increase the vehicle speed. The increase in road traffic would most likely result in reduced use of the immediate area by wildlife. Increased vehicle speed may lead to an increase in wildlife mortality caused by collisions with vehicles. The improved road would also allow easier access to adjacent areas for ORV users. Areas of ORV use along Segment 2 could actually decrease because paving the road would likely reduce the overall lengths of possible off-road trips. However, access to areas beyond the end of Segment 2 would be increased, and ORV use of those areas could increase.

Short-term effects to wildlife under this alternative would not be great, because wildlife would adapt to human presence, or because only a small portion of wildlife populations would be affected. Similarly, long-term effects are not expected to be notable because the project area represents a small portion of available habitat. Additionally, mitigations cited at the end of this section would help minimize negative effects.

While hunting access to the area would be improved, hunters currently have reasonably good access. Additionally, hunting would continue to be regulated by ADF&G. Therefore, substantial effects would be expected.

Alternative 3. The effects of this alternative would be similar to those of Alternative 2, but with slightly more habitat loss, and somewhat more disturbance. The increased width of the roadbed would result in an approximate loss of 3 to 6 acres of spruce-hemlock habitat along the entire route. This is very small compared to the amount of spruce-hemlock habitats in the Prince William Sound area, and would therefore constitute a minor loss. The carrying capacity of the area may be reduced for some songbirds and other species of wildlife due to a reduction in feeding areas and increased noise levels (Reijnen et al. 1995). This alternative may impact individuals but would not have a significant effect on long-term viability of populations of affected animals.

As with Alternative 2, the road improvements would likely increase the vehicle traffic and vehicle speed, which may lead to an increase in wildlife mortality caused by collisions with vehicles.

The area near Cove Creek is already heavily impacted by homes and other developments. Improvements to the picnic area located here would have minor additional impacts on wildlife. These are areas that already concentrate human activity and the small increase in human traffic to the immediate area as a result of the improvements will not contribute to more impacts to wildlife.

Overall, effects to habitat and disturbance would be similar to Alternative 2. Hunting access would be similar as well.

Alternative 4. This alternative would have the same effects as under Alternative 2. Consequently, effects to wildlife are expected to be minimal.

Alternative 5. Of the action alternatives, this alternative would have the least impact to wildlife. This alternative would result in a short-term loss of approximately 2 acres of alder habitat that currently borders Segment 1 but this habitat would eventually grow back along the newly created border. There would be negligible additional harassment of wildlife, as there are already homes

and other developments in the immediate area that have reduced the quality of existing habitats. Hunting access would be similar to Alternative 1. This alternative may impact individuals but would not have a detrimental effect on long-term viability of populations.

3.3.6.3 Cumulative Effects

The cumulative effects associated with the proposed road improvements deal primarily with future development as a result of improved access. Potential projects in the future that would contribute to cumulative effects include development along Segments 1 and 2. There would be effects from the road itself and future associated development. This would increase the potential for impacts to wildlife in these areas and likely result in more loss of wildlife habitat and reduction in the quality of remaining habitats. No projects are formally proposed or scheduled at this time. Additionally, any future development would require permitting and mitigation through state and federal regulatory agencies.

Because the lands adjacent to the road are private lands, development could be expected as a result of improved access. Alternatives 2 through 4 provide the greatest likelihood of such activity. This development would result in loss of spruce-hemlock forest and wetland habitat. Assuming most development occurs on the less steep terrain, wetlands would suffer the greatest impact from future development. Even if wetlands are preserved, human activities associated with future development could reduce the habitat quality of wetlands. This loss could potentially affect deer, marmots, squirrels, weasels, grouse, and passerine birds. However, the cumulative effects of this development would affect individuals but would not reduce the population viability of these species.

Increased access would most likely result in higher harvest of game animals, primarily black bear (Crowley, D., Cordova Area Wildlife Biologist, ADF&G, personal communication, 2003). The ADF&G may have to adjust harvest limits in this area to maintain viable local populations of game animals. There would also be increased harassment of this and other species that use the area, again reducing the quality of the habitat.

3.3.6.4 Mitigation Measures

Mitigation would minimize effects of the proposed action on wildlife. Because of the importance of wetlands to wildlife, corridors should be maintained between wetlands for smaller species by using underpasses that allow these species access to and through the underpass. Also, vegetative buffers along the roads should be kept intact to provide security to species that use the wetlands and other open areas. These buffers would provide visual as well as acoustic

security from the road traffic. In addition, where possible, wetlands should be protected from human intrusion. Signing these areas to prevent or discourage human access could help alleviate this problem.

BMPs should be implemented at all stream crossings to minimize fragmentation (see Section 3.3.4, Water Resources). Culverts would be flush with the ground at both ends to allow passage of smaller species and also overlap with the banks of the streams to allow terrestrial species to use them.

Consultation with ADF&G should precede all construction activity to ensure that workers understand how to minimize food conditioning of bears. Also, the necessary equipment should be present to ensure that bears do not have access to foods and attractants. In addition, bear-proof garbage cans, educational posters, and other measures to reduce the chance for bear habituation should be placed at all areas that concentrate human activity, to minimize post-construction habituation of bears.

The two bald eagle roosting sites provide excellent opportunity for observing bald eagles at close range and should be protected from destruction caused by construction activities. Care should be taken during all blasting and earthmoving activities near the sites, to avoid damaging the trees.

Although the current road and pioneer road already impact wildlife negatively through harassment and through habitat destruction and degradation, proper measures would decrease additional impacts and could improve habitat quality of the wetlands adjacent to the road corridor.

3.3.7 Threatened, Endangered, and Sensitive Plant Species

Four plants listed as sensitive by the Forest Service Region 10 Regional Forester are suspected to occur in the area: Norberg arnica (*Arnica lessingii* ssp. *Norbergii*), goose-grass sedge (*Carex lenticularis* var. *dolia*), Unalaska mistmaiden (*Romanzoffia unalaschkensis*) and pale poppy (*Papaver alboroseum*).

3.3.7.1 Affected Environment

The dominant vegetation along the existing roadbed is alder. Other common species include willow, mountain hemlock, and Sitka spruce. The site is very disturbed from previous leveling.

The vegetation adjacent to the existing roadbed consists mainly of two habitat types: mature spruce-hemlock forest with a shrubby understory, and sedge bog meadow wetlands. The mature spruce-hemlock forest consists of large trees

(>51 cm [20 inches] diameter at breast height [DBH]) and medium-sized trees (25 to 51 cm [10 to 20 inches] DBH) with a blueberry/huckleberry shrub layer underneath. Snags are a prevalent component of the forest.

The most likely habitat for pale poppy in the project area is on the surface and edges of the pioneer road. Nearby, in the Bear and Portage Valleys, pale poppy occurs on side cast of the railway and well drained gravelly areas. If pale poppy is present on segments of the pioneer road that would be modified by construction, the species would be directly affected by road construction. However, as indicated in the biological evaluation (Hart Crowser 2003d), no pale poppy or other sensitive plants have yet been found in surveys of the project area.

Norberg arnica habitat includes tall shrubland, forest edges, open forests, meadows, and alpine/subalpine habitats (Stensvold 2002). Goose-grass sedge habitat includes lake/margins/marshy areas and alpine/subalpine habitats (Stensvold 2002). Unalaska mistmaiden occurs on bluffs and rock outcrops along the coast of western North America. Its habitat includes forest edges, streamsides/ riverbanks, and rock outcrops (Stensvold 2002). A similar species, *Romanzoffia sitchensis*, was observed along the edge of tall scrub habitat along the existing road during site surveys in June 2003. Pale poppy occurs in the rocky tundra of ridges and mountain summits, ash and cinder slopes, and in sand and gravel of glacial outwash and river flood plains (Hultén 1968), and well-drained areas, dry meadows and alpine/subalpine areas (Stensvold 2002).

Norberg arnica may occur in the project area since appropriate habitat is present and the species has been documented nearby in the Bear and Portage Valley areas (DeVelice, R., Forest Ecologist, Chugach National Forest, personal communication, 2003). Although appropriate habitat exists for goose-grass sedge within the project area, the species has not previously been found in surveys in the vicinity (DeVelice, R., Forest Ecologist, Chugach National Forest, personal communication, 2003).

In June 2003, Hart Crowser personnel conducted level 5 surveys for Unalaska mistmaiden, pale poppy, and goose-grass sedge. In late July 2003, Hart Crowser personnel conducted level 5 surveys for Norberg arnica. These surveys covered most of the proposed right of way, although not all adjacent areas. No specimens of these species were found within the project area.

3.3.7.2 Effects of Alternatives

Direct effects on sensitive plant species may include destruction of individuals if any exist and destruction of potential habitat for the plant within the proposed road corridor.

Indirect effects may result from disturbance of soils that could lead to introduction of invasive and/or non-native species. Additionally, increased human traffic may lead to social trails or other impacts.

Alternative 1. Under this alternative, no changes would occur; therefore, Alternative 1 would have no impact on sensitive plant species. Because pale poppy colonizes disturbed areas, the limited vehicle usage of the pioneer road may allow pale poppy to gain a foothold or increase along the roadbed.

Alternatives 2 through 5. The effects from these alternatives would be similar, the primary difference being that Alternatives 2, 3, and 4 impact a larger area. Because none of the four sensitive plants suspected to occur in the project area were encountered during field surveys, direct, or indirect effects to these species are not likely to occur.

3.3.7.3 Cumulative Effects

The potential projects in the future that could contribute to cumulative effects include development that might occur along Segments 1 and 2. Landowners may develop lands at Section 18 along Segment 2 in some way. This would increase the potential for impacts to Norberg arnica and Unalaska mistmaiden, should they occur in areas adjacent to the right of way.

Under Alternative 1 (no action) and Alternative 5, development could occur along Segment 1, although land adjacent to Segment 1 is already disturbed and partially developed.

Under Alternatives 2 through 4, cumulative effects would be minimal. Rock outcrops that may provide habitat for Unalaska mistmaiden should be surveyed for this plant and if found, these areas should be protected. Therefore, cumulative effects may impact individuals but are not likely to effect long-term viability of these species.

3.3.7.4 Mitigation Measures

While none of the species mentioned above were found during surveys, it is possible that there could be occurrences outside the surveyed area.

Implementation of the Weed Survey and Management Plan (Hart Crowser 2003e) would minimize any potential indirect effects due to weed invasion.

3.3.8 Threatened, Endangered, and Sensitive Wildlife Species

3.3.8.1 Affected Environment

Several species that are listed as endangered or threatened by the federal government, species of special concern by the State of Alaska, sensitive by the Forest Service, or “not recovered” by the *Exxon Valdez* Oil Spill Trustees may occur on or near the impacted area.

Federally listed species include the humpback whale (*Megaptera novaeangliae*) and Steller sea lion (*Eumetopias jubatus*)—both endangered.

Eleven avian species of special concern for southcentral Alaska have been identified by the Boreal Partners in Flight Working Group. The five species that occur in the project area include the following:

- Rufous hummingbird (*Selasphorus rufus*);
- Northwestern crow (*Corvus caurinus*);
- Chestnut-backed chickadee (*Parus rufescens*);
- Varied thrush (*Ixoreus naevius*); and
- Golden-crowned sparrow (*Zonotrichia atricapilla*).

Several species listed as “not recovered” by the *Exxon Valdez* Oil Spill Trustees (2001) include the following:

- Common loon (*Gavia immer*);
- Double-crested cormorant (*Phalacrocorax auritus*);
- Red-faced cormorant (*Phalacrocorax urile*);
- Pelagic cormorant (*Phalacrocorax pelagicus*);
- Harbor seal (*Phoca vitulina*);
- Harlequin duck (*Histrionicus histrionicus*);
- Killer whale (*Orca orcinus*); and
- Pigeon guillemot (*Cepphus columba*).

A part of Passage Canal is included in the Critical Habitat Zone for Steller sea lions due to its proximity, within 20 nautical miles, to the Perry Island haulout. The boundary of the critical habitat zone is adjacent to the western end of Shotgun Cove. Segments 1 and 2 do not fall within this critical habitat area.

3.3.8.2 Effects of Alternatives

Direct effects that may occur as a result of the road construction are immediate death, habitat loss, disturbance, and pollution. Effects caused by noise associated with construction would be short-term and would cease once construction has halted. Effects associated with habitat loss may be long-term (the habitats covered by the roadbed are permanently altered) or short-term (habitats adjacent to the roadbed may be rehabilitated or allowed to recover to original condition).

Note that the effects of each alternative are discussed under each species.

Federally Listed Threatened or Endangered Species

Humpback Whale. Humpback whales may use Passage Canal for resting and feeding activities. Because most of the road construction activity and subsequent human activity occurs away from the water, the effects to humpback whales would be minimal (Smith, B., Biologist, NOAA Fisheries, Anchorage Field Office, personal communication, 2003). Blasting associated with road construction could disperse whales from feeding sites, if present. Blasting could be done in ways to minimize dispersal. If humpback whales are present, then NOAA Fisheries would be consulted.

Steller Sea Lion. Because construction operations would be onshore and away from the shoreline, Steller sea lions may also use Passage Canal for feeding and resting. The impacts on Steller sea lions would be minimal (Smith, B., Biologist, NOAA Fisheries, Anchorage Field Office, personal communication, 2003).

Boreal Partners in Flight State Listed Species of Special Concern

Rufous Hummingbird. Rufous hummingbirds are found in spruce-hemlock forests, deciduous woodlands, muskeg forests, early successional spruce-hemlock forests, riparian shrubs, and old growth and scrub forests (Pogson et al. 1999). High densities have been reported in a variety of habitats, most often in scrub or early successional habitats. In wintering areas, they are found in pine and pine-oak forests and second-growth scrub (Stotz et al. 1996). They nest low (up to 10 m) in conifers, deciduous shrubs, and vines. They arrive in Alaska as early as late April.

Alternative 1 would have no effect on rufous hummingbirds. Alternatives 2 through 5 may result in loss or abandonment of nests adjacent to the roadbed. These alternatives may displace individual birds but because of the small amount

of habitat affected relative to the Prince William Sound area, it would have minimal effect on the long-term viability of the species.

Northwestern Crow. Northwestern crows are found along coastal beaches, rocky shores, estuaries, coastal ponds, and inshore islands. They most often nest in conifers but also in shrubs or on the ground. They adapt easily to human-induced environmental changes and are becoming increasingly common in and around coastal towns and cities (Boreal Partners in Flight Working Group 2003). Alternative 1 would have no effect on northwestern crows. Alternatives 2 through 5 may result in loss or abandonment of nests found adjacent to the roadbed. These alternatives may affect individual birds but would not affect the long-term viability of the species, because only a few acres of potential nesting habitat would be lost, and because of their adaptability to humans.

Chestnut-Backed Chickadee. Chestnut-backed chickadees are found in coastal spruce-hemlock forests in the Prince William Sound region. They nest in cavities left by other birds or may excavate their own cavity (Boreal Partners in Flight Working Group 2003). Alternative 1 would have no effect on chestnut-backed chickadees. Alternatives 2 through 5 may result in loss or abandonment of nests adjacent to the roadbed. These alternatives may affect individual birds but are not expected to affect the long-term viability of the species, because only a few acres of habitat would be lost; this is small relative to the Prince William Sound area.

Varied Thrush. Varied thrushes are found mostly in thick, wet, coniferous forests of the coast, but also in dense inland mixed forests. They usually nest in conifers but also on the ground (Boreal Partners in Flight Working Group 2003). Alternative 1 would have no effect on the varied thrush. Alternatives 2 through 5 may result in loss or abandonment of nests adjacent to the roadbed. These alternatives may affect individual birds but are not expected to affect the long-term viability of the species, because only a few acres of habitat would be lost; this is small relative to the Prince William Sound area.

Golden-Crowned Sparrow. Golden-crowned sparrows prefer alder and willow scrub on hillsides and near tundra. They are commonly found in proximity to lakes, streams, and bogs. In winter, they prefer interrupted brushland, streamside thickets, and chaparral (Davis 1973). They nest in open dwarf shrub to dense low-mid shrub thickets (Boreal Partners in Flight Working Group 2003). Alternative 1 would have no effect on gold-crowned sparrows. Alternatives 2 through 5 may result in loss or abandonment of nests adjacent to the roadbed. While these alternatives may affect individual birds, they would not affect the long-term viability of the species, because only a few acres of habitat would be lost; this is small relative to the Prince William Sound area.

Exxon Valdez Oil Spill Species “Not Recovered”

Common Loon. Common loons nest on lakes and small ponds. They are very sensitive to human disturbance. There is no nesting habitat for common loons near the construction area; therefore, none of the alternatives would have an impact on common loons.

Double-Crested Cormorant. Double-crested cormorants occur both at sea and inland. They are colonial nesters and nest in trees and near the tops of cliffs overlooking the ocean. Although there does not appear to be available nesting habitat for these cormorants on the shoreline along the proposed route, if nests are found nearby, the United States Fish and Wildlife Service (USFWS) would be consulted immediately. Because resting habitat along the proposed route is unlikely, none of the alternatives is likely to impact double-crested cormorants.

Pelagic Cormorant and Red-Faced Cormorant. These cormorants are strictly marine, are colonial nesters, and nest in cliffs and on rocks. Similar to the double-crested cormorant, there does not appear to be available nesting habitat for these cormorants along the proposed route. However, if nests are found nearby, the USFWS should be consulted immediately. None of the alternatives is likely to negatively impact either cormorant species.

Harlequin Duck. Harlequin ducks nest in fast-flowing streams and rivers, on tundra ponds, and on glacial lakes. Detecting active nests is exceedingly difficult. However, it is unlikely that harlequin ducks nest along either creek near the construction site due to the small size of the creeks; therefore, none of the alternatives is likely to adversely impact harlequin ducks.

Killer Whale. Killer whales use Passage Canal for feeding and resting. Because most of the road construction activity and subsequent human activity occurs away from the water, the effects to killer whales would be minimal. Blasting is the primary activity that may affect killer whales, causing them to move away and potentially be displaced from preferred feeding sites. However, this effect would not likely affect long-term viability of the species.

Pigeon Guillemot. Pigeon guillemots are colonial nesters, building their nests along rocky coasts. There appears to be no nesting habitat for pigeon guillemots near the construction area. If nests are found nearby, the USFWS would be consulted immediately. None of the alternatives is likely to adversely impact pigeon guillemots.

Indirect effects of the proposed action on these species could occur as a result of habitat fragmentation. Habitat fragmentation, which road networks often

cause, is an indirect effect that may result in reduced success of nests. This is due to increased access by and exposure to predators, increased access by competitors, and increased disturbance to breeding segments of the population (Rodewald 2002). Disturbance of native species may increase the potential for invasion of non-native and invasive species. However, because the road would follow an existing road, and because the total length of road is limited to 2.6 miles, fragmentation impacts are not expected to be large. Marine species' habitat would not be affected.

3.3.8.3 Cumulative Effects

The cumulative effects associated with the proposed road improvements deal primarily with future development as a result of improved access. This development would result in more loss of wildlife habitat, and substantial reduction in the quality of remaining habitats. Future development is highly speculative, and not reasonably foreseeable at this time.

Potential projects in the future that would contribute to cumulative effects include development along Segments 1 and 2. There would be effects from the road itself and future associated development. This would increase the potential for impacts to wildlife in these areas. However, no projects are formally proposed or scheduled at this time.

Under Alternative 1 (no action) and Alternative 5, some development along Segment 1 would be expected, but this area is already highly disturbed.

Under Alternatives 2 through 4, potential cumulative effects may occur. Additional development of private facilities, and human activity associated with potential commercial developments, would increase the impacts of the road building. Although local effects may occur, it is unlikely that the cumulative effects would negatively affect the long-term viability of species.

The opening of forest canopy could allow birds that compete with rufous hummingbirds, northwestern crows, chestnut-backed chickadees, varied thrush, and golden-crowned sparrows to invade the previously undisturbed habitat and reduce productivity of these species. Also, predators of these and other bird species such as common ravens (*Corvus corax*) and gull species (*Larus* spp.) may gain access to areas of future development via the road corridor.

It is important to note that any future development would be subject to NEPA analysis, mitigation, and other permitting to proceed. The effects of future development along Segments 1 and 2 are expected to be negligible or mitigated.

3.3.9 Vegetation and Wetlands

Wetland and upland vegetation types described in this section follow the Alaska Vegetation Classification (Vioreck et al. 1992). Most of the study area is covered by closed needleleaf forest dominated by coniferous trees, and the flat areas are open meadows characterized by wet graminoid herbaceous subarctic lowland sedge bog meadows. Narrow bands of alder-dominated, closed, tall scrub vegetation types occur along some of the streams, road cuts, and in avalanche ravines. Plant nomenclature generally follows Hultén (1968), except where there have been a few recent taxonomic changes. More recent taxonomy is found on the Natural Resources Conservation Service National Plants Database (NRCS 2002) Web site at <http://plants.usda.gov/>.

3.3.9.1 Affected Environment

Upland Vegetation Types

Closed Needleleaf Forest. The dominant trees in the upland forests are mountain hemlock (*Tsuga mertensiana*) and Sitka spruce (*Picea sitchensis*). Trees are on average 18 to 24 meters (60 to 80 feet) tall and create a canopy with approximately 70 to 90 percent cover. The understory layer is moderately dense and is composed of copperbush (*Elliottia pyroliflorus*), early blueberry (*Vaccinium ovalifolium*), Alaska blueberry (*V. alaskaense*), deer fern (*Blechnum spicant*), bunchberry (*Cornus canadensis*), five-leaf bramble (*Rubus pedatus*), salmonberry (*Rubus spectabilis*), clubmoss (*Lycopodium* sp.), partridgefoot (*Luetkea pectinata*), and foamflower (*Tiarella trifoliata*). Most of the upland forests appear to be relatively undisturbed and do not appear to have been logged for at least 80 years, if at all.

Closed Tall Scrub. An upland variant of the closed tall scrub vegetation type occurs along the disturbed fill slope adjacent to the existing road cut and in steep ravines. The dominant plants in the tall scrub are American green alder (*Alnus crispa*), salmonberry (*Rubus spectabilis*), and devil's club (*Oplopanax horridus*). Also found in this vegetation type, but not dominant throughout, are western hemlock and Sitka spruce. Much of this vegetation type has grown in response to the disturbance caused by the old road cut. Frequent snow and rock slides on some of the steeper slopes also create disturbed areas that are rapidly colonized by herbs and shrubs and result in this vegetation type.

Wetlands

As part of this study, 30 wetlands were delineated in a 200-foot-wide corridor along the road alignment in October of 2002 using the Routine Onsite

Determinations methods described in the Corps Wetlands Delineation Manual (Corps 1987). The types, approximate areas, and functions of delineated wetlands are described in a jurisdictional wetland determination report prepared for this document (Hart Crowser 2003c) and are summarized in this section. Wetlands are classified according to the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). In the project area the wetland classifications—palustrine forested (PFO), palustrine scrub-shrub (PSS), and palustrine emergent (PEM)—correspond with the vegetation types described in the Alaska Vegetation Classification (Viereck et al. 1992)—closed needleleaf forest, tall scrub, and lowland subarctic sedge bog meadow, respectively. For the purposes of assessing functions, the wetlands were classified using a hydrogeomorphic (HGM) method (Powell et al. no date).

This section provides a summary of the specific wetland conditions in the project area, followed by a review of the expected effects for each alternative. Table 2 summarizes the wetland determinations, classifications, and estimated sizes. Table 3 is a summary of the expected wetland effects for each alternative. Wetland boundaries within the project area are shown on Figure 13. The Wetland Delineation Report and Conceptual Mitigation Plan also contains a table with the results of the functional assessments for each of the 30 wetlands.

Wetland Vegetation Types

Closed Needleleaf Forest. Palustrine needle-leaved evergreen forested wetlands with apparently permanently saturated soils occur on many of the sloped areas of the project site. The species compositions in these forests varies between wetlands, but the dominant plants are common between most of the forested wetlands. Dominant plants include Sitka spruce, mountain hemlock (*Tsuga mertensiana*), copperbush, early blueberry, Alaska blueberry, ladyfern (*Athyrium filix-femina*), and fauria (*Fauria crista-galli*). Sphagnum mosses (*Sphagnum* spp.) were also common throughout the forested wetlands. Other plants within the wetland that did not occur with enough cover to be considered dominant include skunk cabbage (*Lysichiton americanum*), devil's club, bluejoint reedgrass (*Calamagrostis canadensis*), willow (*Salix* sp.), American green alder, salmonberry, and sedges (*Carex* sp.).

Closed Tall Scrub. Palustrine broad-leaved deciduous scrub-shrub wetlands that appear to be seasonally flooded or saturated (PSS1C) occur along road cuts, streambanks, and steep drainage ravines. The dominant plant in the scrub wetlands is American green alder. Also in the scrub wetland, but with less cover, are willow, skunk cabbage, bluejoint reedgrass, ladyfern, salmonberry, and sedges.

Table 2 - Summary of Wetland Determinations, Classifications, and Estimated Acreages

Wetland	Wetland Classification ¹	Preliminary Jurisdictional Wetland Determination ²	Approximate Size ³ (acres)
1	PEM, PSS, PFO	Jurisdictional	2.88
2	PSS	Jurisdictional	0.18
3	PFO, PEM	Jurisdictional	1.68
4	PFO	Nonjurisdictional (isolated)	0.31
5	PEM, PSS	Jurisdictional	2.07
6	PFO, PSS	Nonjurisdictional (isolated)	0.62
7	PSS, PEM	Jurisdictional	0.62
8	PSS	Jurisdictional	0.34
9	PSS	Nonjurisdictional (isolated)	0.06
10	PSS, PEM	Jurisdictional	0.30
11	PEM, PSS	Jurisdictional	2.80
12	PSS	Nonjurisdictional (isolated)	0.08
13	PEM,	Jurisdictional	0.12
14	PFO	Jurisdictional	0.39
15	PFO	Jurisdictional	0.89
16	PFO	Jurisdictional	0.07
17	PEM	Jurisdictional	0.17
18	PEM, PFO	Jurisdictional	4.17
19	PEM, PFO	Jurisdictional	6.33
20	PEM, PFO	Jurisdictional	8.14
21	PEM, PSS	Jurisdictional	0.71
22	PSS	Jurisdictional	0.07
23	PFO	Jurisdictional	0.21
24	PFO	Jurisdictional	1.77
25	PFO	Jurisdictional	0.66
26	PEM, PFO	Jurisdictional	1.04
27	PEM, PFO	Jurisdictional	0.91
28	PEM	Nonjurisdictional (isolated)	0.11
29	PSS	Jurisdictional	0.48
30	PSS	Jurisdictional	0.90

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Source: Hart Crowser 2003c

¹ Wetland classification follows Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). PEM – palustrine emergent; PSS – palustrine scrub-shrub; PFO – palustrine forested.

² The Alaska District of the U.S. Army Corps of Engineers will make the final jurisdictional determination.

³ Area estimates are based on boundaries drawn on digital color aerial photographs (1:1,000 scale). Each wetland was visited in the field and wetland boundaries within the project site were delineated and flagged. Wetland boundaries drawn on the aerial photo were based on observations of site conditions at each wetland.

Table 3 - Summary of Wetland Effects (acres) for Each of the Alternatives

Classification¹ of Affected Portion of Wetland	Wetlands	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
PEM	1, 7, 13, 17, 18,19	--	1.0	1.2	1.0	0.9
PSS	2, 30	--	0.2	0.2	0.2	0.2
PFO	14, 15, 16, 21, 22, 23, 24, 25	--	0.3	0.4	0.3	--
Total Affected Area²		--	1.5	1.8	1.5	1.1

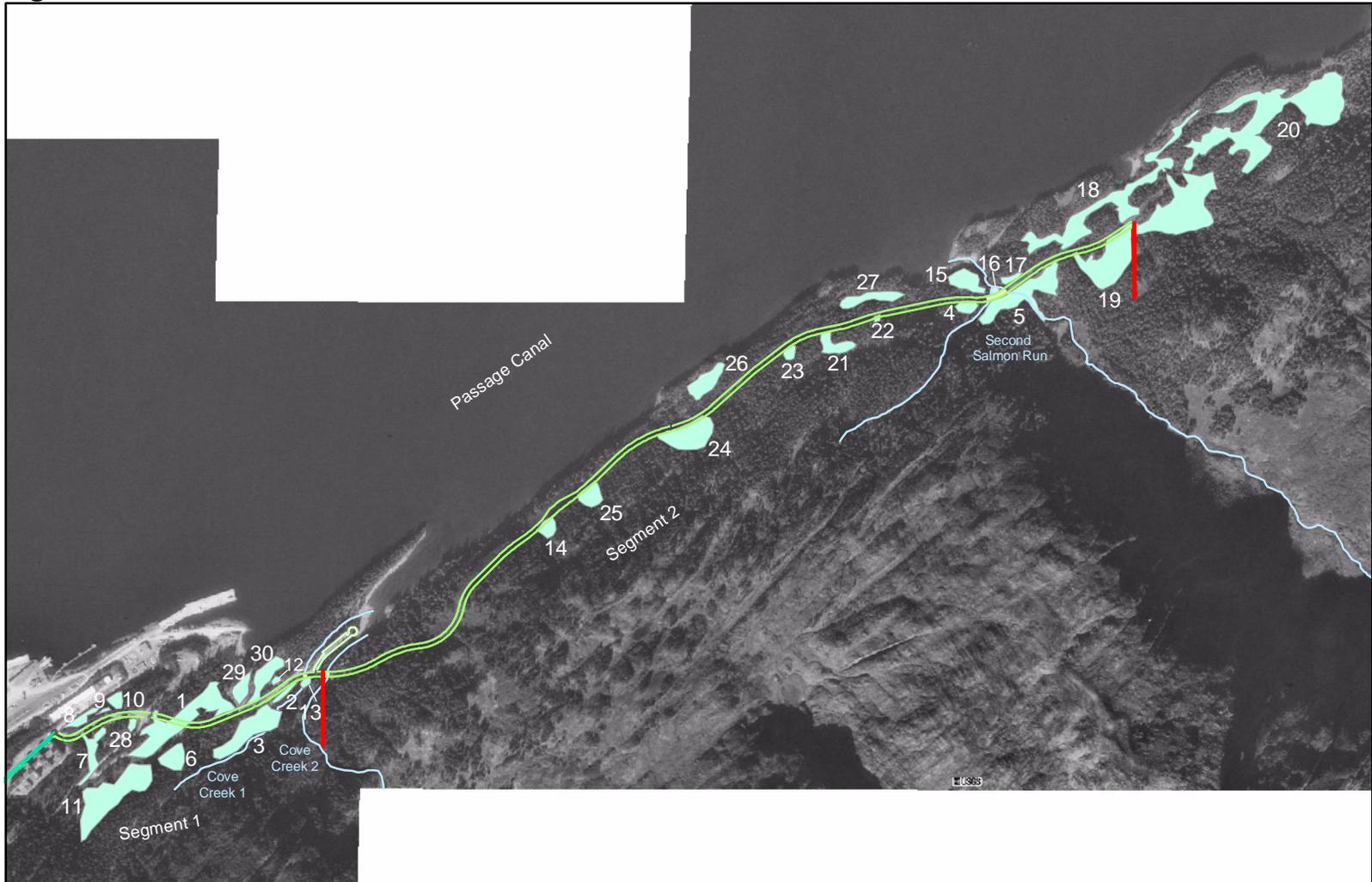
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Source: Hart Crower 2003c

¹ Wetland classification follows Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). PEM – palustrine emergent; PSS – palustrine scrub-shrub; PFO – palustrine forested.

² Calculations of affected wetland area were made using digital overlays of the proposed road alignment on wetland boundary maps and were based on the following assumptions: Alternatives 2 and 4 will have a road footprint width of 40 feet; Alternatives 3 and 5 will have a road and improvement footprint of 58 feet; side slopes will be constructed with a 1:2 grade; upslope cuts into existing rock will be on average 10 feet out from road footprint.

Figure 13 - Wetland Boundaries and Numbers



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Legend

-  Proposed Right of Way
-  Segment Boundary
-  Bridges
-  Wetland

0 500 1,000 2,000 3,000 4,000 Feet

Note: USGS orthophotos downloaded from www.terraserver.com



Sedge Bog Meadows. Palustrine emergent wetlands that are seasonally flooded and appear to have permanently saturated soils (PEM1B) are associated with the relatively level areas within the project site. These wetlands are primarily lowland subarctic sedge bog meadows (sedge bogs). The vegetation in the sedge bogs consists of meadow-like vegetation composed of graminoids, herbs, sphagnum moss, dwarf shrubs, and a few scattered small trees. Dominant plants include many-flower sedge (*Carex pluriflora*), few-flower sedge (*C. pauciflora*), crowberry (*Empetrum nigrum*), and mountain cranberry (*Vaccinium vitis-idaea*). Other plant species with less cover include deer cabbage and mountain hemlock.

Wetland Functions

Wetland functions were assessed using an HGM method that is currently under development by the Alaska Department of Environmental Conservation and the Corps Waterways Experimental Station (Powell, et al. no date). The HGM-based functional assessment methodology is being developed for riverine and slope river proximal wetlands of coastal southeast and southwestern Alaska and is the model most applicable to the project area. When completed, use of the method would involve collecting field data for input into a mathematical model. The model would generate a functional index score for each function assessed. Although the model is not yet finalized, the list of functions and variables developed by extensive field investigations is applicable to the wetlands in the Shotgun Cove Road project area. A qualitative assessment (high, medium, low) of functions was made for each of the wetlands based on the physical and biological characteristics observed during October 2002 field investigations. Additional details on the functions and relevant variables are provided in the Wetland Delineation Report and Conceptual Mitigation Plan (Hart Crowser 2003c).

The wetlands that rated highest for most functions are those toward the end of Segment 2. These wetlands rated high for most functions because of their large size, diverse vegetation structure, connection to a stream corridor, organic soils, and relatively undisturbed condition. Many of the wetlands near the end of Segment 1 and the beginning of Segment 2 rated high for some functions and moderate for others. Most of these wetlands already have been disturbed from development of the existing road and from residential houses and driveways.

3.3.9.2 Effects of Alternatives

The effects to wetlands from each of the alternatives were evaluated based on the estimated area of wetland fill, the type of the wetland, the apparent wetland functions, and the potential ability for the affected wetlands to be restored or

re-created. Wetland fills for each wetland were estimated from a GIS map with proposed road corridor and wetland boundary layers. The wetland boundaries were digitized in the GIS by drawing boundaries on black and white digital orthophotos. Drawing of the wetland boundary lines was based on information gathered during site visits and aided by referring to preliminary boundary drawings made on color aerial photos (1:1,000 scale).

Effects to wetlands are expected to be minimal under each of the action alternatives. The estimated area of wetland fill is similar under each of the four action alternatives and is relatively small compared with the amount of wetland in the project area and vicinity. As shown in Table 3, estimated wetland impacts range from 1.1 acres under Alternative 5 to 1.8 acres under Alternative 3. Additional details on effects under each alternative are provided in the following sections.

Alternative 1. The no action alternative would have minimal effects on wetlands. Effects on wetlands under this alternative are limited to small amounts of plant destruction and soil disturbance caused by wheel ruts of ORVs that currently cross the sedge bog wetlands.

Alternative 2. Direct effects to wetlands under this alternative would include the filling of approximately 1.5 acres of wetland and possible changes in wetland hydrology. Hydrologic changes could include interception of shallow lateral flow, increases in surface water runoff, and alteration of surface water flow patterns. Much of the potential changes to hydrologic conditions would be avoided by installation of appropriately sized culverts. Remaining hydrologic changes are expected to be minor within or outside of the project corridor. All of the wetland types in the study area would likely be affected, including closed needleleaf forest, tall scrub, and sedge bog meadow. The wetlands that would be affected by this alternative appear to be jurisdictional, including about 0.9 acre of palustrine emergent wetlands, about 0.2 acre of palustrine scrub-shrub wetlands, and about 0.3 acre of palustrine forested wetlands (Table 3).

The loss of wetland area would result in a loss of wetland functions. Most of the wetlands affected by this alternative rated moderate to high for most functions. A detailed discussion of wetland functions is provided in the Wetland Delineation Report and Conceptual Mitigation Plan (Hart Crowser 2003c). This alternative is expected to impact only a small amount of the highly functional sedge bog wetlands. Although Alternative 2 would have negative effects on some wetland functions, all of the affected wetlands and vegetation types are common in this area of coastal Alaska. Effects on the functions of these wetlands are expected to be less than under Alternative 3.

Indirect effects of this alternative include possible increased disturbance from ORV use in the sedge bog meadows, because improvements to the road would improve the access to these areas. Effects from increased ORV use include disturbance to plants, soil, and hydrologic conditions in the wetland and disturbance of wildlife using the wetland as breeding or feeding habitat (See Section 3.3.6, Wildlife). In addition, there is the potential for increases in sediment inputs to the wetlands and associated streams as a result of stormwater runoff from the roadway (See Section 3.3.4, Water Resources). Potential increases in sediment inputs to the wetlands would be avoided or minimized by following the BMPs in the Conceptual Wetland Mitigation section of the Wetland Delineation Report.

Because of the relatively small amount of wetland affected, and because appropriate BMPs would be implemented, effects of this alternative on wetlands are expected to be minimal.

Alternative 3. This alternative would affect the largest amount of wetland area (1.8 acres), and would likely affect all three of the wetlands types in the study area. The affected wetland area is relatively small compared with the amount of wetlands in the vicinity and is very similar to the area affected under the other three action alternatives. The wetlands that would be affected by this alternative appear to be jurisdictional, including about 1.2 acres of palustrine emergent wetlands, 0.2 acre palustrine scrub-shrub wetlands, and 0.4 acre of palustrine forested wetlands (Table 3). In addition to the loss of wetland area, small-scale changes in wetland hydrology would also be expected. Hydrologic changes could include interception of shallow lateral flow, increases in surface water runoff, and alteration of surface water flow patterns. Much of the potential hydrologic changes would be avoided by installation of appropriately sized culverts.

Many of the wetlands toward the end of the Segment 2 (sedge bog wetlands) received high ratings for many functions (Hart Crowser 2003c). The high ratings were primarily due to the large size, diverse vegetation communities, and thick organic soils of these wetlands. Even if sedge bog type plants and topsoil are stockpiled, wetlands with peat (organic) soils are unlikely to be successfully restored or created. The organic soils and the physical, chemical, and biological processes in these bog systems are not replicable at this time. Although Alternative 3 would have negative effects on some of the highly functional wetlands, the effects would be limited to the project corridor, and all of the affected wetland types are common in this area of coastal Alaska. Negative impacts to wetland functions are proportional to loss of wetland area; therefore, impacts to wetland functions are expected to be relatively small.

Indirect effects of this alternative are similar to Alternative 2 and include possible increases in ORV use in the sedge bog meadows. Effects from increased ORV use include disturbance to plants, soil, and hydrologic conditions in the wetland and disturbance of wildlife using the wetland as breeding or feeding habitat.

Alternative 4. This alternative would have the same direct impacts to wetlands as Alternative 2. Direct effects to wetlands under this alternative would include the filling of approximately 1.5 acres of wetland and possible small-scale changes in wetland hydrology. Much of the potential hydrologic changes would be avoided by installation of appropriately sized culverts. All three wetland types in the study area would likely be affected. The wetlands that would be affected by this alternative appear to be jurisdictional, including about 1.0 acre of palustrine emergent wetlands, 0.2 acre of palustrine scrub-shrub wetlands, and 0.3 acre of palustrine forested wetlands (Table 3). Effects on wetland functions would be similar to those under Alternative 2.

Indirect effects of this alternative are similar to Alternative 2 and include possible increases in ORV use in the sedge bog meadows. Effects from increased ORV use include disturbance to plants, soil, and hydrologic conditions in the wetland, and disturbance of wildlife that use the wetland as breeding or feeding habitat.

Alternative 5. This alternative would affect the least amount of wetland area compared with all the other action alternatives. Wetland fills are estimated to total about 1.1 acres under this alternative and include about 0.9 acres of palustrine emergent, and 0.2 acre of palustrine scrub-shrub wetlands. Wetland types that would be affected by this alternative include tall scrub and sedge bog meadow. Because loss of wetland functions is proportional to loss of wetland area, this alternative would result in the least loss of functions. As with the other three action alternatives, this alternative could have potential small-scale alterations to hydrologic conditions in the wetlands, much of which would be avoided by the installation of appropriately sized culverts. This alternative would not have direct effects on the large sedge bog meadow wetlands toward the end of Segment 2.

Unlike Alternatives 2, 3, and 4, this alternative is not expected to result in an increase in ORV use in the sedge bog meadows because Segment 2 would not be constructed.

3.3.9.3 Cumulative Effects

The cumulative effects associated with the proposed road improvements deal primarily with future development as a result of improved access. This development could result in more loss of wetlands and wetland functions.

Future development is highly speculative and not reasonably foreseeable at this time. Potential projects in the future that would contribute to cumulative effects include development along Segments 1 and 2. However, no projects are formally proposed or scheduled at this time.

Under Alternative 1 (no action) and Alternative 5, some development along Segment 1 would be expected. Because this area is already highly developed, effects would be expected to be minimal.

Under Alternatives 2 through 4, potential cumulative effects to wetlands include wetland fills associated with future development along Segments 1 and 2 and increased sediment delivery to wetlands and associated surface waters from erosion of adjacent roads and developments. It is likely that landowners would develop their property following the completion of Segment 2 to the Emerald Cove trailhead. Development in the watersheds of wetlands would likely result in increased surface water runoff, erosion, and delivery of sediments to wetlands and associated surface waters. Assuming that increased surface runoff and sediments contribute to higher nutrient export and loading to surface waters draining to Passage Canal, these may contribute to increased nutrient loading of nearshore waters. Effects on estuarine wetlands would likely be negligible, but would be commensurate with the degree of development.

Cumulative effects could be mitigated, provided that proper BMPs were implemented, with appropriate mitigation by the Corps and other agencies during the permitting and analysis of future development.

3.3.9.4 Mitigation Measures

Impacts to wetlands and wetland functions would be minimized under all of the action alternatives through specific modifications during the design phase of the project and by careful adherence to all applicable BMPs (33 CFR 323.4(a)(6) (I-xv)) during construction. Mitigation for unavoidable wetland impacts would be compensated for following consultation with the Alaska District of the Corps. Conceptual plans for compensatory mitigation are in the Wetland Delineation Report and Conceptual Mitigation Plan (Hart Crowser 2003c).

3.4 Human Environment and Effects of Alternatives

3.4.1 Heritage Resources

This section discusses characteristics of the area of potential effect as they relate to prehistoric, historic, and future human activities. It also discusses potential effects of the alternatives on those resources and activities.

3.4.1.1 Affected Environment—Overview of Cultural Chronology and Local History

At the time of first European contact early in the 18th century, the coastal region of Alaska—extending roughly west of the Copper River Delta to just west of Chignik Bay on the Alaska Peninsula—was occupied by the Sugpiaq (previously Alutiiq and also known in literature as Pacific Eskimo) people. Population estimates for this period suggest that between 9,000 and 10,000 people occupied about 100 villages dispersed along nearly 6,200 miles of coastline.

During this time, the Sugpiaq lifestyle was characterized by focus on the exploitation of marine resources—primarily fish and sea mammals. Through extensive travel and trade, the Sugpiaq population as a whole maintained a large degree of cultural and linguistic continuity, with local differences in dialect and culture. All of Prince William Sound was occupied by one of these subgroups, known historically as the Chugach.

Soon after European contact, the Sugpiaq population throughout the region began a period of rapid decline as the result of introduced disease, forced resettlement and enslavement, starvation, and economic disruption. (The Prince William Sound Sugpiaq did not experience the same degree of decline as those on Kodiak Island, Alaska Peninsula.) Among the Chugach, the population dropped from an estimated 1,563 in 1825 (Wrangell) to 1,000 individuals in 1839, to 276 in 1880 (Petroff 1884).

Unlike elsewhere within the region, the prehistoric cultural sequence within Prince William Sound remains poorly understood; in part, this may be attributed to the dynamic geologic processes which characterize this region. Tidewater glacier advances may have destroyed some archaeological sites. Coastal archaeological sites are also vulnerable to the effects of earthquake-caused tsunamis and periodic subsidence and uplift events associated with tectonic processes.

Prehistoric site density tends to be quite low in comparison with other coastal settings. The most prominent prehistoric site types are rock shelters and open-air sites. Villages are typically located in protected settings close to shore, and strategically sited to allow early detection of potential enemies. Rock shelters often contain shell middens, but were often used for mortuary purposes also, particularly in late prehistoric and early historic times. Smaller sites, thought to be seasonal camps, are generally associated with areas of resource procurement—often consisting of stone artifacts in the intertidal zone, thin midden deposits, or modified trees.

Recently discovered within Prince William Sound are artifact assemblages from two sites that have been typologically attributed to the Uqciuvit phase, which appears to be related to the Ocean Bay Phase (dated ca. 7,000 to 3,500 B.P.) in Cook Inlet. Generally, however, the earliest consistently recognized occupations throughout Prince William Sound date to the Palugvik phase (ca. 2,700 to 1,000 B.P.) and the Chugach Phase (ca. 1,000 to 250 B.P.).

Significant events in the Russian Period (1741 to 1867) following the arrival of Europeans are primarily associated with exploration and exploitation of the region's resources. During the Exploration Period (1741 to 1783) British and Russian trading companies funded expeditions to procure valuable sea otter skins. The Russians were driven out of Prince William Sound by the Chugach after violating hunting territories and attacking villages. Some subsequent fur trade was conducted by British and Spanish explorers. The Chugach fur trade with the Russians resumed under the Maritime Trade Period (1784 to 1866); but unlike other Sugpiaq, the Chugach received goods in trade.

The American Period (1867 to present) is associated with commercial resource exploitation after the purchase of Alaska by the United States. It is marked by an influx of large numbers of Americans and Europeans who developed commercial industries associated with fishing, fox farming, whaling, logging, and mining.

Whittier Glacier, from which the present-day town takes its name, was named for the American poet John Greenleaf Whittier, and was first published in 1915 by the U.S. Coast & Geodetic Survey. One of the earliest area records (1916) refers to a roadhouse located at the head of Passage Canal (then called Portage Bay). This was operated by Mr. and Mrs. Ed Grisct, who took pack horses over the Portage Pass Trail, connecting with Turnagain Arm.

A port and railroad terminus were constructed by the U.S. Army for transport of fuel and other supplies into Alaska during World War II. The railroad spur was completed in 1943, and the Whittier Port (Port) became the entrance for troops and dependents of the Alaska Command. Following the end of World War II, the military began conversion of Whittier into a permanent base with construction of the Buckner Building (once the largest building in Alaska, and called the "city under one roof") beginning in 1949 with final completion in 1953. The Hodge Building (now Begich Towers) was completed in 1956 as Army bachelors' quarters and family housing. The Port remained an active Army facility until 1960, at which time the military reassessed its need for a port and announced that the facility was to be mothballed. At that time, the military population of Whittier dropped from a high of 1,200 to a maintenance crew of 48. The City was incorporated in 1969. The Begich Building is now a condominium, and houses nearly all of Whittier's 170 year-round residents.

3.4.1.2 Affected Environment—Heritage Resources Evaluation

The pioneer road was constructed in 1973. It does not meet the minimum 50-year age criteria for consideration as a heritage resource, nor is it associated with a recognized significant current event or prominent individual. Aerial photographs do not indicate the presence of any historic developments in the project area prior to construction of the road.

There are seven historic properties listed on the Alaska Heritage Resources Survey (AHRs) within the area of potential effect. These are as follows:

- Oyotu (Passage Canal Camp) (SEW-059)—A reported traditional Chugach camping place at the head of Passage Canal; surveyed for but never located.
- Criset's Roadhouse (SEW-104)—A ca. 1916 roadhouse reportedly located at the head of Passage Canal, but likely destroyed by Army construction activities during World War II.
- Buckner Building (SEW-656)—A seven-story structure constructed by the Army between 1949 and 1953, now abandoned and deteriorating. Listed on the AHRs as National Register Eligible. Located adjacent to Shotgun Cove Road above the intersection of Whittier and Eastern avenues.
- Hodge Building (Begich Towers) (SEW-657)—Rectangular 14-story apartment complex. Listed on the AHRs as National Register Eligible. Located outside of the project area boundary.
- Alaska Railroad Corporation Transit Shed (SEW-962)—No data, eligibility not evaluated. Located outside of the project area boundary.
- Whittier Fire Hall (SEW-976)—Associated with World War II and subsequent military development. Potentially eligible. Located near the intersection of Whittier and Eastern avenues.
- Whittier Access Corridor (SEW-1009)—No data, eligibility not evaluated. Located outside of the project area boundary.

There are no documentary records indicating the presence of a Traditional Cultural Property or other association sensitive to Chugach descendants within the project area (Joan Dale, Alaska State Historic Preservation Office, personal communication 2003).

The area of potential effect (APE) for the Segments 1 and 2 project area is defined as the slope parallel to the south side of Passage Canal, beginning at a point approximately 100 feet above the existing road and extending to tidewater. This area was archaeologically surveyed in 2002. This area was archaeologically surveyed in October and November of 2002, and October of 2003. Culturally modified trees (CMTs) were found near the end of the current primitive trail, on land owned by CAC; however, intensive survey within the area of greatest perceived sensitivity did not yield evidence of the presence of a site which might be eligible for the National Register of Historic Places. CMTs are evidence of human bark gathering activities in an area, but are not, in themselves, a definitive indicator of the presence of a historic property.

3.4.1.3 Effects of Alternatives

The effects on historic properties were considered in reference to the following evaluation criteria:

- Documented historic properties; and
- Landforms or other settings having potential for an unrecognized heritage resource.

Although CMTs were discovered within one of the four identified high sensitivity areas, no historic properties eligible for the National Register of Historic Places were located within the area of potential effect (APE) for this project. Any effects to the located CMTs would be expected to be indirect. CAC, the current land owner of this part of the project area, will be consulted regarding the CMTs prior to the signing of this EA.

Alternative 1. Under this no action alternative there would be no further requirements for compliance with Section 106 of the National Historic Preservation Act on the part of the Chugach National Forest because the identified high sensitivity areas for cultural resources are on non-National Forest system lands and no future actions are proposed. No historic properties would be affected by this alternative.

Alternative 2. Under this alternative, construction would occur from the intersection of Blackstone Road and Cove Creek Road to Station 114+31. This alternative would have no effect on historic properties. Future use of the high sensitivity area where CMTs were identified would be monitored after construction was completed to determine if creating easier public access to the trails that led to this area would produce an indirect effect on the CMTs. If indirect effects were detected the Forest Service would consult with the land

owner, as necessary. However, no historic properties would be affected by this alternative.

Alternative 3. This alternative is similar to Alternative 2; however, there would be somewhat more construction activity from the Salmon Run picnic area improvements and the viewpoint pullout, due to the road being much wider. Future use of the high sensitivity area where CMTs were identified would be monitored after the construction was completed to determine if creating easier public access to the trails that led to this area would produce an indirect effect on the CMTs. If indirect effects were detected the Forest Service will consult with the land owner, as necessary. However, no historic properties would be affected by this alternative.

Alternative 4. This alternative differs from Alternative 2 only in that it would not be paved. Future use of the high sensitivity area where CMTs were identified would be monitored after construction was completed to determine if creating easier public access to the trails that led to this area would produce an indirect effect on the CMTs. If indirect effects were detected the Forest Service would consult with the land owner, as necessary. However, no historic properties would be affected by this alternative.

Alternative 5. This alternative calls for upgrading the existing road, replacing two bridges at Cove Creek, and constructing a multipurpose path along Segment 1. Future use of the high sensitivity area where CMTs were identified would be monitored after construction has completed to determine if creating easier public access to the trails that led to this area would produce an indirect effect on the CMTs. If indirect effects are detected the Forest Service would consult with the land owner, as necessary. However, no historic properties would be affected by this alternative.

3.4.1.4 Cumulative Effects

As no historic properties were identified during the archaeological surveys of the project area, this project would not have any cumulative effects on historic properties. Possible effects to the CMTs located during the surveys would be primarily associated with future development as a result of improved access. Potential projects in the future that would contribute to cumulative effects to the CMTs include development along Segments 1 and 2. However, no projects are formally proposed or scheduled at this time. Should development occur, use of the high sensitivity area where CMTs were identified would be monitored to determine if there were any direct or indirect effects on the CMTs and any historic property that may be in the area. If effects were detected the Forest Service would consult with the land owner, CAC, as necessary.

3.4.2 Land Use Plans, Policies, and Regulations

3.4.2.1 Affected Environment—Existing Land Use in the Project Vicinity

The project area lies mostly within the City of Whittier, Alaska. The incorporation boundaries of Whittier encompass 17 sections (17 square miles or nearly 11,000 acres) of land, most of Passage Canal, and undeveloped lands eastward to Shotgun Cove. Private individuals, the CAC, the City of Whittier, the federal government, and the State of Alaska own land in the project vicinity. The City also owns the roads and road rights of way (typically 30 meters [100 feet] in width) within the city limits.

The majority of land surrounding the community of Whittier lies within the Chugach National Forest, and is administered by the Forest Service. The State of Alaska also owns and administers substantial acreage in the vicinity. This area is largely uninhabited and is used for recreation and subsistence practices. Potential land uses within the vicinity of the project include timber production, mining and mineral excavation, and recreation (e.g., hunting, fishing, canoeing, camping, and backpacking). The state and the Forest Service maintain trails and recreation cabins within the forest lands in this general area. The Alaska State lands are directly adjacent to the southern Whittier city boundary. The Chugach National Forest boundary lies adjacent to the south of the specific lands on which the project would occur. The nearest major communities to Whittier are Anchorage (47 miles to the northwest), Cordova (110 miles to the east), Valdez (97 miles to the northeast) and Seward (80 miles to the southwest).

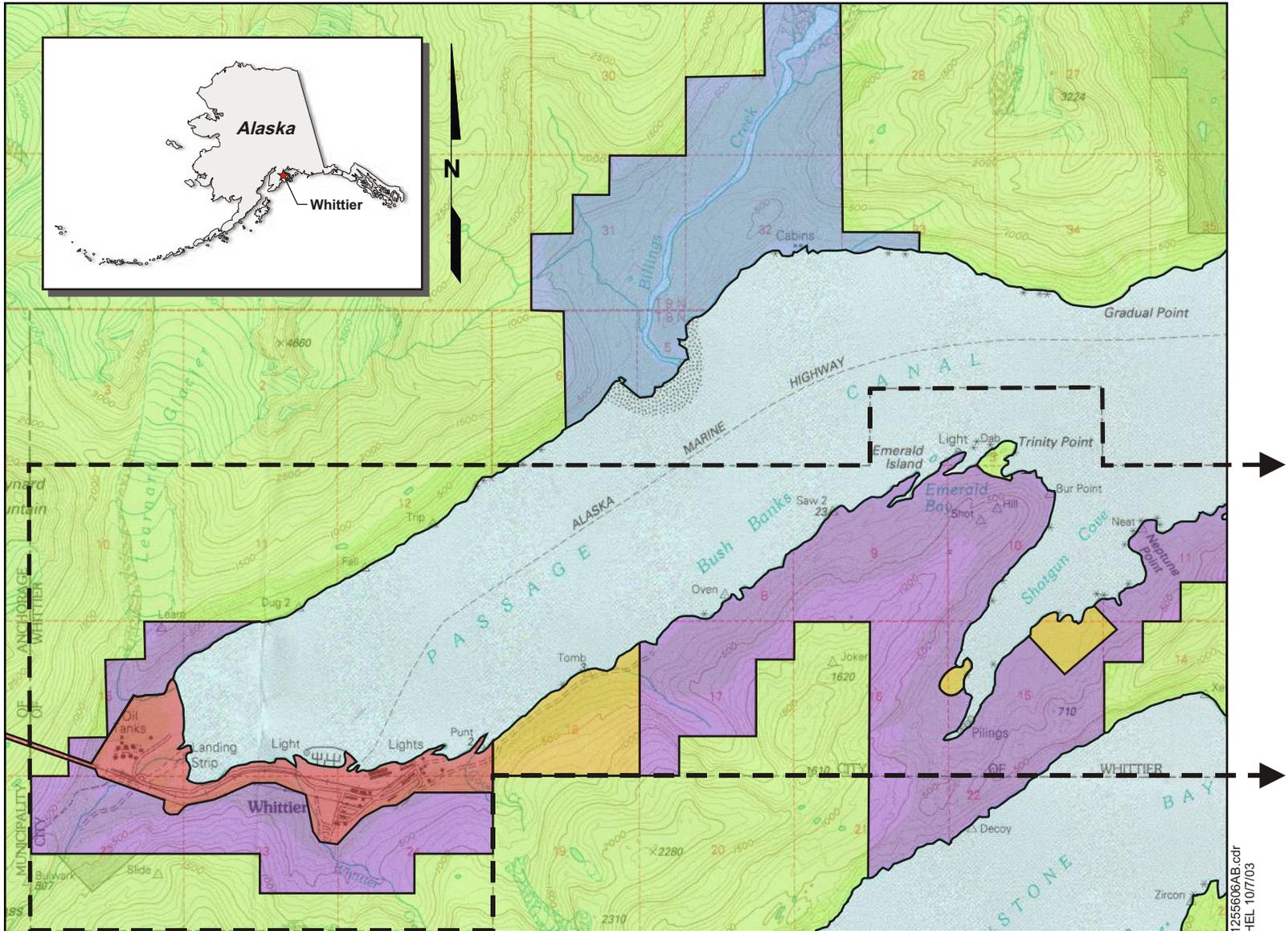
3.4.2.2 Affected Environment—Existing Land Use in Whittier

This section describes existing land ownership and use patterns within the local area of Whittier that would be affected by the proposed action. The discussion addresses conditions along the proposed road route for the alternatives. The discussion references specific locations and property parcels within the project area, which are indicated on Figure 14.

Segment 1

Most of the land surrounding the existing road is hilly and forested, with a few residences and informal recreational uses scattered within the forest. Land uses adjacent to Segment 1 include commercial, residential, informal recreational and park uses, and undeveloped forested land. A motel (the Anchor Inn) and the abandoned Buckner Building are located near the beginning of Segment 1 within the downtown area of Whittier.

Figure 14 - Land Use Status Map



Note: Base map prepared from the USGS 1:63,350 quadrangle Seward (D-5), Alaska.

- City of Whittier
 - Chugach Alaska Corporation
 - State of Alaska Department of Natural Resources
 - U.S. Forest Service - Chugach National Forest
 - Conveyed State Land
- City of Whittier Boundary Line

0 1 2
Scale in Miles

There are several residential land uses located adjacent to the existing roadway in Segment 1. Shortly before reaching the first switchback on the existing road there is an old, largely demolished cabin on the south side of the road. There is also an old, dilapidated, and apparently unused shack immediately to the east of the road at the first switchback. There are two additional residences on the northern/western side of the road near the second switchback. Two homes or cabins also are located on the north side of Cove Creek Road just uphill of the first wooden bridge at the end of Segment 1.

Recreational uses within or near Segment 1 include the access to the Horsetail Falls Trail, maintained by the state (ADNR, Parks Division), which is located close to the second switchback in the existing road. The Salmon Run picnic area, which is administered by the City of Whittier, is situated on a narrow peninsula between two creek channels (Cove Creek 1 and 2) and adjacent to the spur road just beyond the first wooden bridge. Facilities are limited to two heavy wooden picnic tables, a rusted metal barbecue grill, and four metal flip-lid fire grates that have been arranged in a square to form a large fire pit. At the end of the peninsula is a wooden stairway structure that provides access down the steep bank to the gravel beach, as well as a viewing platform out to Passage Canal.

Segment 2

Most of the land surrounding the existing pioneer road in Segment 2 consists of forested, steep terrain with several small streams cutting down through the hillside to Passage Canal. There are two residential uses adjacent to Segment 2 at its western end. On the south side of the road to the east of the second bridge is a cabin situated at an elevation about 40 to 50 feet above the level of the road. To the north a driveway leads to the Lee Embley Youth Cabin, owned and operated by the Whittier Christian Community Church. There are no other developed land uses along the road in the remainder of Segment 2. At the boundary of Section 18, the road is blocked by a chain-link fence and gate installed by CAC (see Section 1.2).

Recreational uses in Segment 2 consist of a dispersed campsite adjacent to (south of) the road slightly to the west of Second Salmon Run. There is another dispersed campsite evident along the north side of the road just past Second Salmon Run. The existing pioneer road ends approximately one-quarter mile past the creek crossing, in the western portion of Section 17 where the Emerald Cove Trail begins.

3.4.2.3 Effects of Alternatives

Several types of potential effects from implementation of the proposed project are discussed below. These include the construction-period disturbance of land uses adjacent to the project area, land use conversion on properties subject to project activities, and land use compatibility concerns related to potential indirect effects on adjacent uses during the long-term operation of the proposed facilities.

Alternative 1. With no action on this specific proposal, there would be no new land use impacts resulting from road development. Other, future proposals by the City or other parties could lead to improvements on this roadway in the project area, and/or to future developed land uses adjacent to the existing roadway.

Alternatives 2 and 4. All of the land necessary for the proposed route is located within existing City-owned road rights of way or properties and on privately held land. In these areas, no land would need to be acquired; however, some new easements may need to be obtained.

The most direct and immediate land use impact associated with these alternatives would be a permanent change in the alignment, width, and composition of the roadway. The change would require acquisition of right of way for a new road corridor in several locations, new bridges and stream crossings, and areas of extensive clearing, grading, and cut/fill in order to comply with current roadway design standards. Construction of the roadway would result in a larger roadbed than currently exists throughout the entire roadway corridor. In addition, the ammunition storage shed located at Station 19+30 would require demolition or relocation. Please refer to the previous sections of this EA for more details on impacts to slopes, soils, streams, and wildlife habitat.

During construction of the project, short-term, construction-related impacts associated with the project could indirectly affect nearby land uses. The nature of such impacts could include temporary decreases in air quality from dust and construction vehicle emissions, temporary increases in localized noise levels, increased levels of ambient light (if construction activity were to occur at night), and increases in traffic on local roads within the City as a result of construction-related traffic. Access to properties located adjacent to the affected segments of the existing pioneer road could be temporarily disrupted or suspended by construction activities for the roadway improvements. Such impacts would be highly localized, intermittent and temporary.

Alternative 3. The type and magnitude of land use impacts associated with development of the project under this alternative would be similar in most areas to those discussed under Alternatives 2 and 4, but greater in those areas where recreational enhancements would occur.

Under this alternative, clearing required to accommodate the multipurpose path would require an additional 16 feet of right of way for the proposed roadway. In places where clearing, grading, and cut/fill are required, this alternative would potentially increase the required amount of each substantially. Areas where additional recreational enhancements would occur (Salmon Run picnic area and the scenic pullout) would also require clearing, grading, and cut/fill beyond that identified under Alternatives 2 and 4.

Alternative 5. Under this alternative, only land use along Segment 1 would be affected. New easements could be required in this area. Access to City and private land would be improved, though not nearly as much as under Alternatives 2, 3, or 4.

3.4.2.4 Cumulative Effects

The proposed project would facilitate better access to CAC land in Section 18 from central Whittier, which could result in additional development of property adjacent to the new roadway. An improved roadway that would allow future access for more and various types of vehicles could result in additional residential development, development of tourism facilities/activities and associated commercial development, and/or other development related to City economic development plans where there are mostly forested areas today. Such changes to existing land uses associated with this project (i.e., more residential and tourism development) are desired by the city in this area and support one of the goals associated with project development.

Cumulative impacts are those that could occur as a result of the project in conjunction with other land use actions in the vicinity. Cumulative impacts overall are anticipated to be similar in kind to the direct and indirect impacts identified above. Although this area would probably remain sparsely populated, with the completion of the proposed road, the amount of development in this area would increase over current conditions. Construction of the proposed roadway could create pressure for future conversion or intensification of additional nearby properties to more intensive residential, recreational, or commercial land uses than originally planned, and could create pressure for development of other roadways. Nevertheless, this development would be consistent with the City's, as well as CAC's, stated goals for economic, recreational, and tourism development.

3.4.2.5 Mitigation Measures

Proposed mitigation measures for effects on existing land uses on federal-, state- or privately owned lands within the City of Whittier would include the following:

- Throughout Segment 1, where private property is adjacent to the right of way, access ramps to private driveways would be constructed to connect the new roadway to existing private land access, and
- Where potential dislocations/relocations would occur, every attempt would be made to find housing of a similar type and value.

3.4.2.6 Plans, Policies, and Regulations

This section describes the relation of the proposed action to plans, policies, and regulations regarding land use, transportation, and community planning and operations. The next section, 3.4.2.7, addresses the consistency of the proposed action with the plans, policies, and regulations that are applicable.

Chugach National Forest Revised Land and Resource Management Plan (2002)

The Forest Plan guides all natural resource management activities and establishes management area direction for the Chugach National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability for different kinds of resource management (Forest Service 2002). However, because there are no Forest Service lands along the proposed right of way, the Chugach National Forest Plan is not applicable, nor does the proposed action involve implementation of the forest plan.

The Alaska Coastal Management Program

The Alaska Coastal Management Program (ACMP) (Alaska Division of Governmental Coordination 1988) was developed because of the pressure Alaska's coastal areas are experiencing from resource development and subsistence use of resources. The ACMP balances uses, such as timber harvesting, oil and gas development, mining, and seafood processing, with the needs of the environment for the long-term health of the state's coastal industries. Objectives of the ACMP include the following:

1. The use, management, restoration, and enhancement of the overall quality of the coastal environment;

2. The development of industrial or commercial enterprises that are consistent with the social, cultural, historical, economic, and environmental interests of the people of the state;
3. The orderly, balanced utilization and protection of the resources of the coastal area consistent with sound conservation and sustained yield principles;
4. The management of coastal land and water uses in such a manner that, generally, those uses which are economically or physically dependent on a coastal location are given higher priority when compared with uses which do not economically or physically require a coastal location;
5. The protection and management of significant historical, cultural, natural, and aesthetic values and natural systems or processes within the coastal area;
6. The prevention of damage to or degradation of land and water reserved for their natural values as a result of inconsistent land or water usages adjacent to that land;
7. The recognition of the need for a continuing supply of energy to meet the requirements of the state and the contribution of a share of the state's resources to meet national energy needs; and
8. The full and fair evaluation of all demands on the land and water in the coastal area.

The state is divided into 35 coastal districts, each of which is required to adopt district coastal management programs that are consistent with the state ACMP. Projects within the coastal zone of Alaska, which in some cases can extend as far as 250 miles inland, require a determination that the project is consistent with the ACMP before permits are issued and development can occur.

The City of Whittier is one of the 35 coastal districts in the state and has adopted Coastal Management Program Enforceable Policies that were effective on April 27, 1990 (City of Whittier 1990). These policies address elements ranging from coastal development (water-dependent and water-related activities, dredging, floating facilities), transportation and utilities, geophysical hazard areas, coastal habitats and resources, fisheries and seafood processing, archaeological and historical resources, air and water quality, subsistence use, timber harvest, energy facilities, recreation, and mineral extraction and processing. Mitigation requirements are also included throughout the document.

Prince William Sound Area Plan (1988)

The Prince William Sound Area Plan (ADNR 1988) guides development and management of state-owned land in the area surrounding Prince William Sound administered by the ADNR. This plan guides state decisions to keep or sell

lands, open or close areas to mineral entry, recommend legislative designations, and allocate the uses of state land. The plan for this area was completed in June 1988.

Vision: 2020—Statewide Transportation Policy Plan (2002)

The Alaska Statewide Transportation Policy Plan, Vision: 2020 (ADOT&PF 2002) provides the basis for developing a statewide transportation system, for all modes of transportation, that balances the diverse needs of citizens with the effective and efficient use of available resources for the future. Vision: 2020 comprises policies and associated objectives that provide direction for transportation system development in Alaska for the next 25 years. The policies and objectives guide project selection and transportation investment decisions (expenditure of transportation funds) that directly affect the citizens of the state. The document also presents the technical analyses that address the major transportation issues for the state and support the Vision: 2020 plan. The document includes public comments received during the update process for the plan, many of which were incorporated into the final plan.

Prince William Sound Area Transportation Plan—An Element of the Statewide Transportation Plan (2001)

The Prince William Sound Area Transportation Plan (PWSATP; Parsons Brinckerhoff 2001) is one of a series of regional, multimodal transportation plans being developed for Alaskan communities; it forms part of the Statewide Transportation Plan and presents the project recommendations for the Prince William Sound region. This plan draws its authority from Alaska Statute 44.42.050, which requires ADOT&PF to prepare plans for transportation facilities, and is also an element of the federally required Statewide Transportation Plan as defined in 23 CFR 450.214. The federal requirement is important, because federal transportation funds must be allocated consistent with transportation plans prepared following federal guidelines.

PWSATP reflects a broad-based effort that seeks to improve year-round mobility and access for residents, and to broaden and diversify the region's transportation network. Transportation is intrinsic to the region's economic vitality. Thus, mobility and access determine people's ability to live, work, and explore. This transportation plan provides a means of improving the quality of life of the region's residents through improved mobility. At the same time, the plan provides a low-impact, focused path for transportation development, preserving the natural beauty of Prince William Sound and its surrounding areas for future generations.

The PWSATP focuses on linking communities within the region to each other, to the rest of the state, and to outside the state. The Prince William Sound area historically has provided two natural gateways to Alaska's interior via Thompson Pass near Valdez and via the Copper River Valley. Completion of the Whittier Access Tunnel, which provides direct auto and rail access from Anchorage to Whittier, further strengthens the region's gateway role. The key element of the PWSATP is the purchase of two new high-speed ferries (one immediately and the second several years later), which would be deployed to serve Cordova, Whittier, and Valdez with much greater frequency, capacity, and convenience than are now provided.

Constraints upon the provision of lower-cost, more convenient, faster transportation alternatives include the area's challenging weather and topography, the predominance of state and federal land ownership, the importance of conserving subsistence resources, and the value of preserving the area's natural resources.

City of Whittier Transportation Plan (2001)

The City of Whittier developed this transportation plan to address current and future transportation needs. The purpose of the Whittier Transportation Plan (ASCG 2001) is to establish a multimodal framework for transportation improvements that address local transportation issues for the next 20-year planning period. The emphasis in this study is on road, pedestrian/bicycle, and trail systems. The railroad, the ferry, the small boat harbor, and the airport are briefly touched upon in this plan as well.

This transportation plan provides an inventory of existing transportation facilities, evaluates current transportation conditions and needs, sets goals and objectives for future transportation systems, and outlines short-, medium-, and long-range transportation improvements. The study also provides implementation strategies to improve the chances that the recommended transportation improvements become a reality.

The Whittier Transportation Plan identifies short-range (1 to 2 years in the future), medium-range (2 to 5 years), and long-range (5 to 20 years) priorities for local transportation projects. Among the short-range transportation projects identified in the plan is a feasibility study for the access road to Shotgun Cove; among the medium-range projects is the design and construction of the first portion of the road to Shotgun Cove; and among the long-range projects is the design and construction of Phase II and III of the Shotgun Cove Access Road project.

City of Whittier Comprehensive Plan (1995)

The City of Whittier developed the 1995 update to its original 1990 comprehensive plan to project and plan for the community's anticipated future needs, particularly in response to the potential for new access to the community from Portage and the southcentral Alaska road network (via the Whittier Access Tunnel project). The purpose of this Whittier Comprehensive Plan (City of Whittier 1995) is to ensure the long-term viability of the City through economic diversification and development of residential areas without sacrificing the current quality of life for the residents. The plan notes that development of improved access to Whittier will bring significant changes to the existing social structure of the City, including local government. When improved access is developed, and as the tourism/recreation industry expands, the comprehensive plan is to be updated to reflect and accommodate these changes.

The comprehensive plan provides an overview of the community, including an informational inventory of current development characteristics and conditions in the City, and information developed in relation to plans for new access to Whittier. The plan contains chapters on the Natural Setting of Whittier, People of Whittier, Housing, Community Services, Transportation, Current Economy and Potential Growth, Land Ownership, Use and Management, Other Plans and Recommendations, Community Goals and Policies, and Plan Implementation.

The comprehensive plan states that the City's intent for the Shotgun Cove area is to encourage development that will support a quality living environment for year-round residents, seasonal residents, and tourism/recreational users. As indicated by the 1993 International Tourism and Resort Advisors report for the Anchorage Economic Development Corporation, construction of the proposed Shotgun Cove Road and Harbor is the centerpiece for developing the area. Uses that will be permitted include commercial uses (hotels, lodges, restaurants, stores), public purposes (boat harbor, parking, camping facilities), single- and multifamily residential development, and open space for lands that are unsuitable for development. The plan states that the City will work closely with CAC and the State of Alaska to encourage development of the Shotgun Cove area. CAC is interested in establishing commercial developments and the state may dispose of additional lands in this area. The City encourages high- to medium-density developments (commercial developments and condominiums to 1-acre lots) on lands located close to the cove's waterfront to receive an adequate return on their capital investments. However, the state lands are in the higher elevations located away from the shores of the cove, and could allow low-density development (1- to 5-acre lots).

City of Whittier Ordinances

The Alaska Statutes, Title 29, provides the option for Second Class Cities, of which Whittier is one, to adopt planning, platting, and land use regulations. The City of Whittier has several adopted ordinances containing development standards that would apply to the proposed project when constructed. The Whittier Municipal Code requires a land use permit prior to development, which facilitates the coordination of the zoning, subdivision and building code requirements. Other land management tools mentioned in City plans and ordinances include the state land disposal program, land leases, cooperative agreements, and covenants.

Zoning Ordinance. The zoning ordinance classifies uses into single-family residential, multifamily, commercial, industrial, small boat harbor, open space, and planned unit development. A few standards, such as setbacks and lot sizes, indicate land densities.

Subdivision Ordinance. The subdivision ordinance outlines the approval procedures for plats and improvements. There are some general definitions and guidelines for streets, intersections, utility lines, drainage, and easements; however, the ordinance does not contain exact design specifications.

Signs. The code limits the use of rotating, flashing, or overly bright signs, or unusual devices.

Chugach Alaska Corporation (2003)

CAC is one of the 13 regional Native Corporations created by the Alaska Native Claims Settlement Act as amended by the Alaska National Interest Land Conservation Act. The Chugach region comprises some 10 million acres in southcentral Alaska. CAC is entitled to 928,000 acres in this region, of which approximately 378,000 acres are to be full fee entitlement and 550,000 acres are to consist of subsurface estate. CAC owns approximately 333 acres of land within Whittier, along Passage Canal (in Section 18). The corporation's management plan designates that these lands be managed to support long-term revenue from development associated with tourism and recreation. Several conceptual plans for development of Section 18 have been prepared, but none have been finalized or adopted.

3.4.2.7 Consistency with Land Use Plans, Policies, and Regulations

The project alternatives would be consistent with the applicable land use plans, policies, and regulations reviewed previously in this section. The provisions of

the Revised Chugach National Forest Land and Resource Management Plan are in general not directly applicable to the proposed project, because they govern activities on National Forest lands and the proposed action would occur on lands owned or controlled by the City of Whittier. The Forest Plan does state support for economic development and diversification actions of the local communities in southcentral Alaska, however, which is consistent with the purposes for the proposed action.

The project alternatives would also be consistent with the applicable transportation plans and policies reviewed previously in this section of the EA. The provisions of Vision: 2020 are applicable to the proposed project in a statewide context. This plan states support for economic development and diversification actions of the local communities in southcentral Alaska, which is consistent with the purposes for the proposed action. The Prince William Sound Transportation Plan, which is part of Vision: 2020, is also applicable to the project because the plan promotes transportation improvements associated with increased economic viability for cities. The Whittier Transportation Plan is directly applicable and identifies the improvements to the Shotgun Cove Road as important projects for the next 20 years.

The City does have a zoning ordinance, land use development standards, and other regulations that would apply to the project. In addition, the City has provided input to the development of the project alternatives and the proposed road improvements. The proposed project would, at least in concept, be consistent with CAC's plans and objectives for Section 18.

3.4.3 Socioeconomics

3.4.3.1 Affected Environment

Population

The proposed project is located in the City of Whittier along Passage Canal near the Chugach National Forest. Whittier lies within an unorganized section of southcentral Alaska, in the Valdez/Cordova census area. The population of the census area in 2000 was 7,696, 6 percent higher than it was in 1990 (U.S. Census Bureau 2000). Populations in cities near Whittier in the Valdez/Cordova census area have had various changes in population as shown in Table 4.

As of 2000, the City of Whittier had a population of 182 residents, compared with 243 in 1990. The City contained 213 total housing units, 127 of which were vacant (79 due to seasonal use; ADCED 2002).

Table 4 - Population of Prince William Sound Communities, 1990-2000

Community	1990 Census	2000 Census	Percent Change
Chitina	49	123	151%
Copper Center	449	362	-19%
Cordova	2,110	2,454	16%
Glennallen	451	554	23%
Paxon	30	43	43%
Slana	63	124	97%
Valdez	4,068	4,036	-1%
Whittier	243	182	-25%
Total	7,463	7,878	6%

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Source: ADLWD 2002

Local Economy

The Alaska Department of Community and Economic Development (ADCED; 2002) recently reported 90 residents were employed. The unemployment rate was 15.89 percent, although 37.06 percent of all adults were not in the work force. The median household income was \$47,500, per capita income was \$25,700, and 7.1 percent of residents were living below the poverty level. The ADCED (2002) identified transportation, warehousing, and utilities industries as the biggest employers (18 jobs), followed by arts, entertainment, recreation, accommodation and food services (17 jobs); public administration (13 jobs); and construction (10 jobs). Tours, charters, and sport fishing in Prince William Sound attract seasonal visitors. Nine residents hold commercial fishing permits. Whittier has an ice-free port and two City docks (70-foot cargo dock and 60-foot floating passenger dock). It also has a small boat harbor with slips for 334 fishing, recreation, and charter vessels. The City is served by road, rail, state ferry, boat, and aircraft. The state-owned 1,480-foot gravel airstrip accommodates charter aircraft, and a City-owned seaplane dock is available for passenger transfer.

According to the Alaska Department of Labor and Workforce Development (ADLWD; 2002), job losses are expected in the government sector, but slight increases are expected in the transportation, construction, and services sectors in 2003. Unemployment in Alaska is currently at 7.8 percent; on the Kenai Peninsula it is at 12.3 percent (ADLWD 2002).

In the recent past the fishing industry has suffered economically. Low prices, especially in the salmon fishery, have driven many fishermen from the industry. In many cases the cause has been a glut of farmed salmon on world markets, which has lowered salmon prices.

Whittier is the gateway and transportation link to the Prince Williams Sound for many southcentral Alaskans as well as for thousands of potential visitors. Whittier is accessible by rail, and, since the summer of 2000, by car on the Portage Glacier Highway through the Anton Anderson Memorial Tunnel (Whittier Access Tunnel). The \$70 million road connection was completed in the summer of 2000. Between 1994 and 2002, the Valdez/Cordova census area received \$135 million for transportation-related capital improvement projects. Road projects received 90 percent (\$122 million), ports and harbors received 8 percent (\$10.5 million), and airport projects received 2 percent (\$2.6 million) (ADLWD 2002).

Regionally, near-term job growth is expected in the transportation, construction, and service sectors (ADLWD 2002). The expected increase in service

employment is related to the projected increase in tourist traffic in the region, and construction employment increases are expected from the road projects in the area.

3.4.3.2 Effects of Alternatives

The following discussion addresses the potential short-term socioeconomic effects of constructing the proposed project and the potential long-term effects associated with operation and maintenance of the proposed road in Whittier. Specific issues to be considered include the generally positive impacts represented by project-related employment and income, as well as any aspects of the project that might be detrimental to local businesses or represent additional costs to the community. Because the potential socioeconomic effects would be determined primarily by the economic magnitude of the project and would not be location-specific, the identifiable differences between alternatives are a result of the magnitude of construction proposed in each.

Alternative 1. Employment and income in the City of Whittier would not be increased through temporary (construction) and long-term (operation) employment associated with the proposed road improvements and construction if the project were not implemented. Similarly, infrastructure improvements intended to support economic development related to tourism would not take place. This alternative would not support economic development in the City of Whittier.

Alternative 2. Construction of the proposed project would result in a temporary increase in local employment and possibly population, as well as a modest temporary infusion of money to the local economy. Short-term demand for housing within Whittier is expected to increase. An increase in housing demand would not be expected to produce a housing shortage because vacancy in Whittier is currently near 60 percent (ADCED 2002). Whittier residents would likely fill a portion of the project construction jobs, although a specific proportion cannot be estimated until project labor requirements are known and can be compared with local labor availability.

A portion of payrolls would be spent in the local economy and, to the extent that goods and services are purchased locally, money would also be spent locally. The likely increased employment and the purchase of goods and services during construction of the proposed project would result in new spending within the local economy. The project would provide short-term construction employment opportunities. Construction activities and the presence of contractors and construction workers would temporarily increase local business revenues and demand for additional housing or lodging.

Construction of the project might also result in a temporary increased demand for rental housing in Whittier. The likelihood of a housing shortage would be low based on the amount of vacant housing and the decline in population in the recent past (Table 4). The size of the construction work force and the proportion of construction jobs filled by nonlocal residents cannot be known exactly.

Specific estimates of the amount of labor required for road construction and improvements are not currently available, because detailed design work for the project has not yet been conducted. Nevertheless, the project would represent a noticeable increase in employment, temporary and permanent, relative to existing employment in the community.

Construction activities could result in temporary disruption of access to local businesses and service functions in the vicinity of the project work. Specifically, road improvements in the City of Whittier would have the potential to interrupt existing traffic patterns to commercial and government operations that are accessed via these roads. These interruptions may lead to a temporary decline in patron access to businesses and possibly a slight decline in sales. However, such interruptions would be intermittent and likely of short duration in any given location, and might be avoidable through use of construction-period detour routes.

Operation of the project would likely result in some direct contribution to local employment and income. The road improvements and construction of Segments 1 and 2 could facilitate development of the tourism industry in Whittier to a small degree, and thereby create indirect increases in local economic activity. Proposed Segments 1 and 2 would be built completely within the municipal boundary of the City of Whittier. The City would, therefore, have primary responsibility for road maintenance and repair during the life of the project. Maintenance of the road would require additional funding and labor by employees of the City, although it is unlikely that operation of the road would require additional City employees.

Improving transportation facilities by connecting Whittier to the rest of southcentral Alaska is important for the development of tourism opportunities. The proposed project along with the introduction of auto access via the Whittier Access Tunnel is a component of the transportation infrastructure. The indirect economic benefits that arise from modification of Segment 1 and construction of Segment 2 would be modest. There are currently limited tourist and tourist-related development opportunities through the proposed road corridor.

In summary, the proposed project would provide short-term and long-term increases in local economic activity through employment and payrolls directly associated with the project. The proposed project could also provide indirect economic benefits from development of infrastructure that could support increased tourism through Whittier. The project would not result in substantial adverse economic impacts, and mitigation is not required. Precise estimates of economic growth resulting from the alternatives are not available at this time.

Alternative 3. Under this alternative the route alignment would be the same as Alternative 2, but several additional actions would be associated with enhancement of recreational opportunities. The impacts to the local economy due to the proposed improvement and construction of the road would be the same as for Alternative 2. Impacts would include short-term and long-term increases in local economic activity through employment and payrolls directly associated with the project.

The primary difference in the alternatives is the emphasis placed on enhancing the recreational opportunities in the project area. The enhancements include a multiuse path that would parallel the road, various improvements at the Salmon Run picnic area, a scenic viewpoint pullout, and improved trailhead parking. These enhancements would increase the access and opportunities for tourists and recreationists in the Whittier area, which would create indirect benefits for the local economy through increased visitors, lodging, dining, and shopping.

In summary, Alternative 3 would provide similar short-term increases in economic activity to those reported for Alternative 2. This alternative would probably provide greater long-term economic benefits to the City of Whittier through the increased access and recreational opportunities. Precise estimates of economic growth resulting from the alternatives are not available at this time.

Alternative 4. Alternative 4 proposes the same alignment as Alternatives 2 and 3, but uses an aggregate (gravel) road instead of asphalt. The impacts on the local economy would be very similar to those identified under Alternative 2. The use of gravel would lower both the construction costs and labor requirements for the project. The project would generate jobs and increase wealth in the City of Whittier, but lower construction costs and labor requirements would decrease the duration of the project and its economic benefit to the City. Precise estimates of economic growth resulting from the alternatives are not available at this time.

Alternative 5. Alternative 5 proposes to improve the road only as far as Cove Creek, but would include a multipurpose path and improvements to the Salmon Run picnic area. Minor increases in employment and a minor infusion of money

into the town would result from such a scaled-down project. Economic benefit would be lower than Alternatives 2, 3, or 4. Under this alternative many of the indirect effects of improving recreational opportunities for tourists, detailed in Alternatives 2 and 3, would result, although the benefits would be lower because none of the recreational enhancements along Segment 2 would be built. Precise estimates of economic growth resulting from the alternatives are not available at this time.

3.4.3.3 Cumulative Effects

The proposed project would facilitate better access to CAC land in Section 18 from central Whittier, which could result in additional development of property adjacent to the new roadway. The expansion of tourism in the eastern portion of Whittier and the Chugach National Forest is currently limited by road conditions, the small supply of established recreation sites and campgrounds, and inefficient transportation facilities. An improved roadway that would allow future access for more and various types of vehicles could result in additional residential development, development of tourism facilities/activities and associated commercial development, and/or other development related to City economic development plans where there are mostly forested areas today. Such changes to existing land uses associated with this project (i.e., more residential and tourism development) are desired by the City in this area and support one of the goals associated with project development.

Cumulative impacts are those economic benefits that could occur as a result of the project in conjunction with other developments in the vicinity. Cumulative impacts overall are anticipated to be similar in kind to the impacts identified above in terms of project-related employment and income. Although this area would probably remain sparsely populated, with the completion of the proposed road, the amount of development in this area would increase over current conditions. Construction of the proposed roadway could create pressure for future conversion or intensification of additional nearby properties to more intensive residential, recreational, or commercial land uses than originally planned, and could create pressure for development of other roadways. Nevertheless, this development would be consistent with the City's, as well as CAC's, stated goals for economic, recreational, and tourism development.

For these reasons, none of the action alternatives would result in any adverse economic cumulative impacts.

3.4.4 Recreation Resources

3.4.4.1 Affected Environment

Chugach National Forest

The City of Whittier is located at the head of Passage Canal, a fiord in western Prince William Sound. Most of the land around the City of Whittier lies in the Chugach National Forest. The 5.5-million acre Chugach National Forest in southcentral Alaska forms a great arc around Prince William Sound on the Gulf of Alaska. Diverse landscapes of the forest include high-altitude ice fields, rugged mountain peaks, tidewater glaciers, and extensive wetlands. The Chugach National Forest is the second largest in the National Forest System and has three distinct geographic areas: the Kenai Peninsula, Prince William Sound, and the Copper River Delta. The Prince William Sound area, where Whittier is located, encompasses 2,625,140 acres (48 percent of the forest). It is an area of forested islands, intricate coastlines, and tidewater glaciers.

The Chugach National Forest provides a variety of recreational opportunities, including fishing, hunting, canoeing, driving for pleasure, and hiking. The Chugach National Forest Land and Resource Management Plan (2002) designated most of the lands south of Whittier with the "Fish, Wildlife, and Recreation prescription." The lands to the north are designated "Backcountry." The Forest Plan also designates all of the lands surrounding Whittier as "High Value for Recreation."

Chugach Alaska Corporation

CAC holds title to over 300,000 acres in the Prince William Sound and Gulf Coast regions. CAC issues permits, which offer a wide range of recreational activities to the public, including boating, sightseeing cruises, hiking, kayaking, and camping. Within the city boundary of Whittier, CAC owns 333 acres along Passage Canal. This land offers access to shorelines as well as hiking and sightseeing opportunities. Five miles east of Second Salmon Run, CAC owns approximately 100 acres on Shotgun Cove. There is currently no road access to Shotgun Cove, but the area does receive boat traffic from pleasure boaters, sightseeing cruises, and kayakers.

Alaska State Parks

There are eight state parks near Whittier and the project location. Each offers various levels of facilities and amenities.

Decision Point State Park is located at the eastern end of Passage Canal, approximately 8 miles from the City of Whittier. The park has two excellent camping beaches, one at the head of Squirrel Cove, the other just south of Decision Point.

Entry Cove State Marine Park is located 2 miles directly east of Decision Point on the northeast corner where Passage Canal and Port Wells meet. There is a site for 10 tents on the beach between the trees. Larger kayaker groups typically use the site.

Surprise Cove State Marine Park is located on the western side of the mouth of Cochran Bay. Surprise Cove offers numerous recreational opportunities including forested uplands with hiking trails and North Lake. There are about 7 camping sites on various terrains. Inside the entrance to the cove is room for approximately 12 tents. Three other tent platforms offer scenic views. There is also a small bear-proof locker and latrine.

Ziegler Cove State Marine Park is located on the northern side of the mouth of Pigot Bay 18 miles from Whittier. A maximum of four boats can safely anchor in the cove at one time. A picnic site with fire ring is located on the east corner of the cove above the shale pebble beach. Drinking water can be found farther up in Pigot Bay.

Four more state parks that are slightly farther away from Whittier are South Esther State Marine Park, Bettles Bay State Marine Park, Granite Bay State Marine Park, and Horseshoe Bay State Marine Park. There is also a proposed state park project to develop a 2-acre park with three campsites at the head of Shotgun Cove. The Emerald Cove Trail begins at the end of the current Shotgun Cove Road (the end of Segment 2), and generally parallels the shoreline and the right of way. The trail was built and is maintained by the Alaska State Parks division of ADNR.

The City of Whittier

The city limits extend over 17 square miles and include most of Passage Canal and undeveloped lands eastward to Shotgun Cove. The City includes several recreational areas and facilities, such as the delta west of Whittier Creek and the delta known as West Camp. Recreational activities are available on undeveloped land and open waters within the Whittier city limits. Activities include freshwater and saltwater fishing, picnicking, hiking, driving for pleasure, boating, and sightseeing.

Within the City, there are currently three sites dedicated for parkland, but none has been developed. The site proposed to be developed first is a park located on Whittier Avenue and Glacier Avenue. This grassy area, of approximately 2.5 acres, would be fenced and available for picnicking and other activities. A second undeveloped area is a forested patch north of Cove Creek. The City also maintains the Salmon Run picnic area, situated on the narrow peninsula between the estuaries of Cove Creek 1 and Cove Creek 2. The site has several picnic tables, four flip-lid fire grates, and a wooden stairway that provides access to the gravel beach and a viewing platform.

Within the City are three trails. The Portage Pass Trail is on the south side of Whittier Highway across from the tank farm. The trail offers views of the Passage Canal and the surrounding mountains and glaciers. The trail has a picnic site near its midway point. Except for a small portion of land at the beginning, the trail is in the Chugach National Forest and is maintained by the Forest Service. The Horsetail Falls Trail is located near the City water reservoir. The trail winds 1 mile through alpine country southeast of Whittier. A lookout platform provides views of the harbor and nearby mountains. According to the Whittier Transportation Plan, there is concern that the City's water supply could be vandalized and, consequently, the trail is not heavily advertised. The Emerald Cove Trail begins at the end of the current Shotgun Cove Road and follows the right of way for 3 miles. The trail was built by Alaska State Department of Parks and Recreation, and like the Horsetail Falls Trail, was turned over to the City when construction was completed.

The Harbor Triangle area also offers some recreational opportunities. It has a covered pavilion with several picnic tables and is located near Whittier's small boat harbor. The small boat harbor is also a primary source of recreational opportunities for residents and tourists. The harbor is ice-free year round. It has 350 slips for both transient and permanent berth holders to 54 feet. A recreation and tourism report published by the Forest Service (Colt et al. 2002) estimated that in 1997 approximately 50,000 people participated in day cruises and charter activities. This number may expand, because Princess Cruise Lines is currently studying Whittier as a potential stop.

3.4.4.2 Effects of Alternatives

Alternative 1. There would be no foreseeable additional impacts to recreational facilities or activities within the City of Whittier or within the vicinity of the site under the no action alternative, as the proposal would not be implemented.

Alternative 2. Negative impacts of the proposed action on recreation resources would occur primarily during construction. Construction activities could

temporarily disrupt access to existing recreational facilities within the City and in surrounding lands. In the City, construction impacts would primarily be felt around the road segments nearest town. Construction crews and equipment may temporarily create access disruptions to the harbor, the Salmon Run picnic area, and the Horsetail Falls Trail. Access disruptions would consist primarily of detour routes and construction zone delays experienced by recreational users driving or walking to recreational facilities within the City and surrounding area.

Noise from construction activity would temporarily increase along the proposed road during construction. The noise would have the strongest impact along Segment 1 of the proposed road because the segment is closer to the City and more people would be impacted. However, all construction-related noise and access would be minor in scale and temporary.

Following construction, access to recreational areas within the City and surrounding areas would improve. The proposed road improvements of the Shotgun Cove Road would improve access to recreational areas. Recreation sites along Segment 2 would be much easier to access. These sites include the Salmon Run picnic area and Horsetail Falls Trail. The improved road in Segment 2 would allow easy access to the Emerald Cove Trail at the end of the road. It would also generally improve opportunities for driving for pleasure, sightseeing, and other activities in the City, the surrounding lands, and across the waters.

Alternative 3. The type and magnitude of impacts to recreational facilities and activities associated with this alternative would be similar to those discussed under Alternative 2. Access interruptions and noise would increase as a result of the construction.

As detailed for Alternative 2, construction of the road would also improve access to and opportunities for recreational activities in the City of Whittier and surrounding areas. Under Alternative 3 the recreation opportunities would be further expanded. Enhancements in the area of road construction would include a multipurpose path that parallels the road, a refurbishment and expansion of the Salmon Run picnic area, a scenic pullout at the top of the hill east of Cove Creek, and a parking area for the Emerald Cove trailhead. The road construction and enhancements would increase the activity base for hiking, biking, sightseeing, driving for pleasure, and accessing all of the lands surrounding the proposed road project. This alternative would be the most beneficial in terms of recreation opportunities.

Alternative 4. Alternative 4 proposes the same alignment as Alternatives 2 and 3, but would use an aggregate (gravel) road instead of asphalt. The impacts on recreation would be very similar to those identified under Alternative 2. Some

activities, including bicycling, driving for pleasure, and sightseeing by car, would be more difficult on an aggregate surface than a paved surface. However, gravel would not completely preclude these activities along the road.

The use of gravel would lower the construction impacts on access and noise somewhat. This is because less construction equipment would be involved, and the construction period would be shorter. The project would increase access along Passage Canal from the City of Whittier, as in Alternative 2.

Alternative 5. Alternative 5 proposes to improve the road only as far as Cove Creek, but implement some of the enhancements listed in Alternative 3. Detrimental impacts from construction and noise would occur, but would be temporary and smaller in scale than the other action alternatives. The upgraded Salmon Run picnic facilities would increase recreation opportunities. Relative to Alternatives 2, 3, and 4, not upgrading Segment 2 would limit the opportunities for residents and tourists to engage in recreational activities beyond the improved road. This alternative is least beneficial to recreation, with the exception of the no action alternative.

3.4.4.3 Cumulative Effects

The proposed project would facilitate better access to CAC land in Section 18 from central Whittier, which could result in additional development of property adjacent to the new roadway. An improved roadway that would allow future access for more and various types of vehicles could result in additional residential development, development of tourism facilities/activities and associated commercial development, and/or other development related to City economic development plans where there are mostly forested areas today. Such changes to existing land uses associated with this project (i.e., more residential and tourism development) are desired by the City in this area and support one of the goals associated with project development.

The presence of the completed road and development could indirectly contribute to future cumulative impacts. The paved road would improve access for hikers, bikers, drivers, and water activity users. It is possible that use could increase to a point where recreation uses would be in conflict with each other. However, given the size of the affected area, the small population nearby, and the distance to population centers, adverse cumulative impacts are unlikely.

3.4.4.4 Mitigation Measures

Measures proposed to mitigate potential impacts on recreation include the following, which are applicable to all of the action alternatives:

- Coordinate with the Forest Service to provide information to tourists arriving in the City of Whittier, directing them to use alternate routes not affected by construction activities to access local and regional recreation opportunities.
- Provide adequate signage to direct recreational users through construction areas to recreational facilities.
- Provide an alternate access route for periods when an existing access is unavailable.
- Locate construction staging areas as far from recreational areas and facilities as feasible.

3.4.5 Scenic Resources

3.4.5.1 Affected Environment

The Whittier/Passage Canal area is highly scenic, containing numerous streams, wetlands, and lakes in a forested and mountainous setting coupled with an extensive saltwater shoreline. With the exception of the Whittier and West Camp deltas, the topography of the area generally rises abruptly from the shoreline at grades of 30 percent to 60 percent, to mountain altitudes ranging from 3,500 to 4,600 feet. Protrusions of bedrock and rock faces are numerous throughout the area (City of Whittier 2003). The proposed road would be below 500 feet.

In visual character, the downtown Whittier area can be considered a developed, urbanized area in this part of southcentral Alaska; the town shows more evidence of landscape modification compared with some of the surrounding areas (Figures 15 and 16). Roadways, houses, and commercial buildings exist throughout much of the community. The larger structures in Whittier were all built in the 1940s and 1950s to service the U.S. Army personnel working there. The 14-story Hodge Building (now Begich Towers) was built in 1956 for army housing, with 198 apartments (ADCED 2003). The Buckner Building was completed in 1953. It had 1,000 apartments and was once the largest building in Alaska.

While views within and from the City of Whittier include features of urban development in the community, the landscape also includes significant natural-appearing elements that add visual variety and appeal. Even within the developed areas of the community, foreground views can take in largely unmodified scenes such as the mountains and glaciers above the City and the waters of Passage Canal. Many of the platted lots in the town have not been developed or cleared, and retain relatively intact forest stands. Outward views in many locations also include the marine waters of Passage Canal, forested hillsides in the land area surrounding the city, and/or distant islands and ridges

Figure 15 - South to Begich Tower and Glacier from Harbor Triangle



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Figure 16 - East-Southeast View to East End of Whittier and Cove Creek from Harbor Triangle



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across the canal. The following paragraphs describe existing views and landscape conditions within the immediate project area; i.e., the lands along the current and proposed road alignment.

Views along the first segment of the proposed Shotgun Cove Road, from the intersection of Blackstone Road and Eastern Avenue to Cove Creek, include excellent intermittent views back toward the city (Figure 17) and across Passage Canal. The views from Segment 1 mainly consist of the City of Whittier and a large, open expanse of marine and forest surroundings.

Farther along the proposed alignment in Segment 2, views are primarily of water, mountains, and forest on the west shore of Passage Canal (Figures 18 and 19).

3.4.5.2 Effects of Alternatives

The assessment of the potential scenery and visual impacts of the proposed project includes consideration of both short-term (construction) and long-term (operation) effects of the project on the local landscape. These effects are discussed below by alternative.

Alternative 1. Views along the current Shotgun Cove Road routes would not be modified through road improvements and construction if the project were not implemented. Existing sources of landscape and scenery modification in the project area would generally continue. No change to the current views would be expected to occur under the no action alternative.

Alternative 2. Short-term project visual effects would consist of evidence of ground disturbance and the presence of construction equipment, workers, materials, and products. Construction activity along the length of Segment 1 would be seen by motorists traveling in the core area of Whittier, by residents of the homes located along roads involved in construction, and by tourists arriving by car or boat. Construction activity on Segment 2 would only be visible from the largely undeveloped lands on the east side of Passage Canal and from drivers on the current Shotgun Cove Road. The greatest visual impacts would occur looking from Passage Canal back toward the road, between Station 46+00 and Station 97+00 near Second Salmon Run. A visual simulation was conducted, indicating that there would be substantial changes in the view from Passage Canal toward the project area. Appendix B contains perspectives from several different viewpoints.

The improved road would mostly follow the alignment of existing roadways. No existing views would be blocked or obscured by terrain changes from grading or filling associated with road construction. The nature of the landscape change

Figure 17 - View West to Whittier from High Point above Cove Creek



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Figure 18 - View North-Northwest Across Passage Canal from High Point above Cove Creek



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Figure 19 - View Northeast to Seth Glacier from Meadow in Segment 2



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along the road from “downtown” Whittier to Cove Creek (Segment 1) would be modest, resulting from minor widening of the roadway surface and minor realignment. Segment 2 would be either resurfaced or constructed and would not block any views. Long-term visual impacts arising from Alternative 2 would be minimal, from the perspective looking from Whittier and the road itself. However, the cut slope of the road would be clearly visible from the boats on Passage Canal, and would somewhat diminish the scenic value of this waterway.

The project, as proposed, would occur within the City of Whittier’s boundaries. None of the project’s actions would occur on Forest Service land and so Forest Service visual management directions do not apply. There are no equivalent municipal directions in the City of Whittier ordinances. In summary, the improved road would follow the alignment of existing roadways for the most part. The improved, paved roadway would contrast with its surroundings to a somewhat greater extent than the current gravel road. The scar left by excavation of the cut slope would remain evident from Passage Canal.

Alternatives 3, 4, and 5. The type and magnitude of visual impacts associated with these alternatives would be essentially the same as those discussed for Alternative 2. The primary difference between the alternatives would relate to the extent of the proposed road improvements, and the extent of recreation enhancements. Alternative 3 would have a moderately stronger impact because of a wider roadway due to the multipurpose path. Alternative 4 would have somewhat less impact because the gravel road would not contrast with its surroundings as much as a paved road. Alternative 5 would have much less impact on views because it would not extend as far, and would not create a large cut slope in Segment 2. All of these alternatives would have the same construction-related visual impacts in central Whittier. Long-term visual impacts of these alternatives beyond central Whittier would be similar to those under Alternative 2; they all would be minimal.

3.4.5.3 Cumulative Effects

The potential for development along Segment 1 and 2 could affect scenic resources, particularly views from Passage Canal. However, given the relatively limited amount of suitable land for development (land that is not steep), only a minor effect to scenery would be expected. Future development activities, which could include recreational and residential development, are likely to be located on the road, although spur roads could be built for access to private lands. Some of these spurs could be visible from the road or water. None of these potential future cumulative impacts can be quantified at this point, as they are highly speculative. Impacts would be determined by the placement and configuration of future developments along the road.

3.4.5.4 Mitigation Measures

Measures that could be employed to mitigate potential modifications to local scenery, for all of the action alternatives, include the following:

- Limit roadside clearing widths to the minimum necessary to provide adequate operating safety margins along the roadway; and
- Revegetate staging areas, construction areas, and material source and waste sites with native vegetation as soon as feasible following construction.

3.4.6 Subsistence

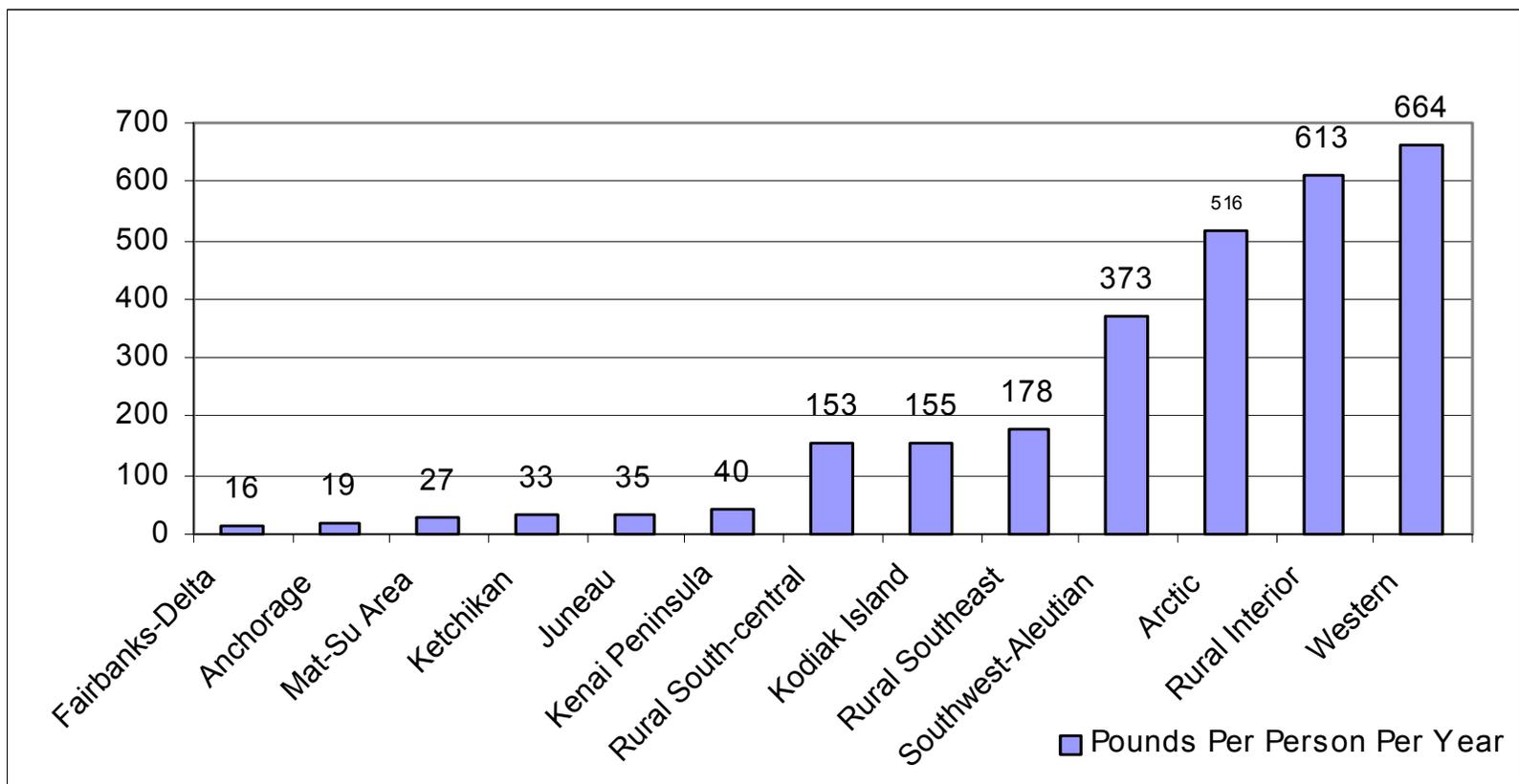
3.4.6.1 Affected Environment

Federal and state laws define subsistence as the “customary and traditional uses” of wild resources for food, shelter, fuel, clothing, transportation, construction, art, crafts, and customary trade. Subsistence activities are economically and culturally important to many Alaska families and communities, especially in remote areas where subsistence hunting and fishing are often the most stable economic resources. In 1980, the Alaska legislature passed the Alaska subsistence law requiring that subsistence use of fish and game be authorized and protected. Federal and state laws currently differ in identifying the populations who are qualified to engage in subsistence activities. Rural Alaska residents qualify for subsistence use under federal law, while all state residents qualify under state law. In the State of Alaska, subsistence use is given priority over commercial fishing as well as recreational fishing and hunting.

In southcentral Alaska, where resource-based employment is highly seasonal, subsistence hunting, fishing, trapping, and gathering constitute a way of life that becomes crucial during periods of limited or nonexistent employment opportunities. In addition, the local availability of subsistence resources contributes to self-reliance and the ability to provide for oneself in a region where commercial products come at a high price. Among recently surveyed southcentral Alaska communities, 94 percent of sampled households used fish harvested for subsistence purposes, 79 percent used game, 80 percent harvested fish, and 55 percent harvested game (ADF&G 2000).

The subsistence food harvest provides a major part of the nutritional requirements of Alaska’s population (Figure 20). The average annual rural wild food harvest of 375 pounds per person in Alaska represents 242 percent of the protein requirements and 35 percent of the caloric requirements of the rural population (840 Kcal daily – 2,400 Kcal/day mean daily requirement). In comparison, the urban wild food harvests contain 15 percent of the protein

Figure 20 - Wild Food Harvests in Alaska by Area, 1990s



Source: ADF&G 2000



requirements and 2 percent of the caloric requirements of the urban population. According to a 1990 survey conducted by the ADF&G, the annual wild food harvest for Whittier is approximately 79.9 pounds per person (0.22 pounds/person/day), which represents approximately 52 percent of the recommended dietary allowance of protein per person per day (ADF&G 2000).

Research has shown that subsistence users tend to harvest in traditional use areas surrounding their communities and generally do not harvest outside these areas (ADF&G 2000). Subsistence harvest areas are generally accessible from most rural communities, although seasonal camps are also used to access some species (ADF&G 2000).

The ADF&G Community Profile Database (2000) provides detailed data on subsistence harvest by the Whittier population. The latest data available are from 1990. According to the database, 78.9 percent of Whittier area residents are engaged in harvesting some subsistence resource. Most take some form of vegetation (77.9 percent), although vegetation only comprises a small portion of the harvest by weight (4.1 pounds per capita annually). A large segment of the population is also engaged in harvesting fish resources (57.9 percent) and most of the fish harvest is salmon (33.9 pounds per capita annually). Approximately 15 percent of the population is involved in both marine invertebrate and bird and egg harvests. Only 7.9 percent are involved in land mammal harvest, although land mammals make up a substantial segment of the harvest by weight: 11.0 pounds per capita are taken annually, and 10.7 pounds are from large land mammals.

Salmon and other fish (cod, greenling, halibut, rockfish, sablefish) are the primary subsistence fish resources in the vicinity of the City of Whittier. 67.1 percent of the total subsistence harvest was fish, and 42.4 percent of the harvest was salmon. Land mammals made up 13.7 percent of the subsistence harvest. Deer and moose were the primary land mammal resources taken (5.0 and 7.8 percent of the total harvest, respectively). Marine invertebrates also contributed to the subsistence harvest near Whittier; 11.2 percent of the harvest came from those animals. Of the invertebrates, crab (3.02 percent) and shrimp (6.0 percent) made up the highest percentages of the harvest. Lastly, vegetation comprised approximately 5.1 percent of the harvest (ADF&G 2000).

3.4.6.2 Effects of Alternatives

The Alaska National Interest Lands Conservation Act (ANILCA) requires an analysis of subsistence resources on National Forest lands and potential effects on subsistence resources resulting from management activities. The following discussion focuses on the three aspects of subsistence resources typically

included in an ANILCA subsistence analysis: abundance and distribution of the resources, access to the resources, and competition for use of the resources. Under ANILCA, if it is determined that a significant restriction on subsistence resources may result from a specific project or may result cumulatively from a specific wildlife analysis area, additional analysis is required.

Alternative 1. Under this alternative subsistence resources and harvest activities in the vicinity of the project would generally continue as at present, subject to unknown natural and human-caused events that might affect subsistence resources.

Alternative 2. Abundance and Distribution of Subsistence Resources. The current abundance and distribution of subsistence resources (deer, fisheries, and gathering activities) on or near the project site is dependent upon natural distribution, habitat reduction, over-harvesting, and the severity of winter weather.

Road construction activities might result in increased sedimentation and disturbance of fish habitat due to noise and inwater construction activity. Stream crossings are planned at Cove Creek as well as at several unnamed streams in road Segment 2. Noise and human activity during project construction may affect the short-term distribution of fish in the waters and terrestrial wildlife near the proposed road construction sites by displacing them from the immediate project corridor. However, these impacts would be minor in scale and temporary.

Road operation may have impacts on wildlife resources as well (see Section 3.3.6, Wildlife). The presence of the road may increase road kill and may also degrade nearby habitat through increased runoff. However, based on the low expected traffic volumes and speeds, impacts to the distribution and abundance of subsistence resources are not expected to be high (see Wildlife section for related discussion). Similarly, it is unlikely that run-off from the road would impact subsistence resources (see Water Resources and Wildlife sections for related discussions).

Access to Subsistence Resources. Based on the current access conditions of the site, construction of the proposed project might result in direct short-term disruption of the local population's access to subsistence use resources during the construction period. Long-term operation of the proposed project would be expected to have a small positive effect on access to public lands and waters for the purposes of subsistence hunting, fishing, or gathering activities. Increased road traffic could create occasional, short-term inconveniences or disturbances to subsistence fishing, hunting, or gathering activities in the road corridor.

Competition for Subsistence Resources. The level of existing competition for subsistence resources in the project area is determined by factors such as natural distribution of resources, habitat reduction, over-harvesting, and access provided by roads. The proposed project would improve the safety and efficiency of the local road system. The existing road is drivable up to CAC land, where the road is gated and accessed by permit only. The gate would be removed and the road could be driven with passenger cars. The proposed road construction could, therefore, support increased access to potential subsistence harvesting areas. It is unlikely, however, that residents of other communities would begin using the new road to access subsistence resources in the area. Because subsistence users predominantly harvest in areas close to their homes, it is unlikely that the new road accessibility would enable an appreciable increase in competition for local subsistence resources. Therefore, a minimal or no increase in competition for subsistence resources from surrounding communities is expected in connection with the proposed action.

Alternatives 3, 4, and 5. These alternatives would all likely have similar effects on subsistence use as Alternative 2. Negative impacts for all of these alternatives would primarily include short-term localized alterations in fish and wildlife distribution during the construction phases of the proposed projects and potential longer-term changes arising from increased traffic due to improved access. The most likely long-term change would be possible increased competition for resources as a result of improved access. Alternatives 3 and 5, which include additional recreational enhancements, might have a slight incremental increase in effect on wildlife distribution from somewhat higher recreational activity levels. New road construction would have the positive impact of improving subsistence users' access to fishing, hunting, and gathering areas in the project area.

3.4.6.3 Cumulative Effects

Cumulative effects could occur with possible development of lands along Segments 1 and 2. Improved access could create an adverse cumulative impact on the abundance and distribution of subsistence resources in the road vicinity. The improved road would likely spur future development and increase both the number of vehicles and the number of people in the vicinity. Both of these factors would impact subsistence resource distribution. Prey species would tend to avoid human activity, thereby altering their current distribution; development would likely reduce habitat. However, the limited size of the impacted area, relative to the entire vicinity, precludes the impacts from degrading subsistence resources.

3.4.6.4 Mitigation Measures

While no long-term impacts to subsistence use are expected from the proposed action, the following measure is identified to minimize potential disturbance to local subsistence use: coordinate road closures during construction with the ADF&G and the Forest Service so that access to subsistence use areas can be maintained during the primary fishing and hunting seasons for local residents.

3.4.7 Transportation

The primary source for information included in this section of the EA is the City of Whittier's Transportation Plan, which was adopted in September 2001 (ASCG 2001).

3.4.7.1 Affected Environment

Transportation Facilities Within the City of Whittier

Roadway System

There are approximately 7 miles of roads in Whittier, including approximately 4 miles of paved roads and nearly 3 miles of unpaved roads. The City Public Works Department is responsible for maintaining most roads in Whittier, which includes grading the unpaved roads, snow removal, and dust control. The City does not clear Cove Creek Road in the winter. The existing primitive road to Salmon Run picnic area (a distance of about 1 mile) is unpaved and generally not maintained.

Roads are generally categorized into functional classes. Functional classification is defined as the grouping of roads, streets, and highways into integrated systems, each ranked by its relative importance and the function it is intended to serve, relative to mobility and land access. It also identifies the role each street or highway should play in channeling the flow of traffic through a rural and/or urban environment in a logical and efficient manner. The general functional classification categories identified in Whittier's Municipal Code are Major, collector, local roads, and alleys. The classification system does not consider traffic volumes but primarily relies on roadway width and definition. The definitions of major and collector streets are very similar, with the width being the primary distinction. Using width as the deciding factor, most roads would fall into the local road category. Table 5 illustrates the road classification system and identifies how the roads within Whittier are classified.

Table 5 - Whittier's Current Road Classification and Standards

Classification	Description	Right of Way	Surface Width	Roadways
Major Streets	A street designed to move traffic between major traffic generators in the city.	60 feet	40 feet	Whittier Highway, Whittier Avenue
Collectors	A street designed to move traffic from local streets to major streets.	50 feet	30 feet	Glacier Avenue Eastern Avenue, Depot Avenue
Local Roads	A street designed to provide traffic access to individual abutting properties.	40 feet	25 feet	Blackstone Road, Hill Street, Parkview Road, Triangle Road, Kenai Street, Billings Street, Portage Street, Harbor Loop Road, Kittiwake Court, Cove Creek Road, Bunker Road, Tank Farm Road
Alleys	A public right of way shown on a plat that provides secondary access to a lot, block, or parcel of land.	20 feet	20 feet	Alley Road

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Source: ASCG 2001

Traffic Counts. The average daily traffic is defined as the average number of vehicles that travel over a road in a day. This number is used to determine the level of service needed along the roadway and to set design criteria for all aspects of the road, including pavement structure and roadway width. A traffic count was conducted in May and in July 2001 along six roads in Whittier: the Whittier Highway, Whittier Avenue, Glacier Avenue, Blackstone Road, Depot Avenue, and Cove Creek Road (Table 6). In addition, information was gathered from a July 2001 traffic count taken along Whittier Highway by the ADOT&PF. As expected, all counts indicated an increase in traffic in the summer season.

Accidents. The City of Whittier Police Department has reported a significant increase in the number of moving violations since the opening of the Whittier Access Tunnel. In 1999, they reported eight moving violations resulting in one injury, two Driving While Intoxicated (DWI) arrests, and three accidents with property damage. In 2000, these numbers jumped to include 51 moving violations, three resulting in injuries; four DWI arrests; and four accidents with property damage. The locations of the traffic accidents do not appear to be concentrated in any specific location.

Railroad

The rail line into Whittier was constructed in the 1940s and is maintained and operated in its original alignment by the state-owned Alaska Railroad Corporation. A nearly 3-mile railway tunnel connects Whittier to Portage and the Seward Highway. In June 2000 the state opened the tunnel for one-way motor vehicle traffic, with traffic direction alternating every half hour. The tunnel closes to vehicle traffic twice a day to allow the passage of passenger and freight trains.

Marine Transportation

Several marine facilities enable transport of people and goods to and from the city.

Marine Services. Crowley Maritime, the Alaska Railroad Corporation, Alaska Hydro-Train, Dojer Ltd. Inc., and Northern Management Services are the major marine transporter companies out of the city. These companies have tugs and barges that deliver supplies and materials in Prince William Sound.

Rail Barge Dock. Barges are in dock 2 to 4 days per landing; the dock handles barges carrying up to 100 railcars. Current freight deliveries average 65 per year (approximately one per week).

Table 6 - Traffic Counts for Whittier in 2001

Road Name	Average Daily Traffic		Annual Average Daily Traffic
	May High/Low	July High/Low	
Whittier Highway	1,539/587	2,139/1,312	1,500
Whittier Avenue	2,879/1,040	2,405/1,361	1,800
Glacier Avenue	826/469	1,252/822	600
Blackstone Road	297/160	433/304	200
Depot Avenue	458/305	638/305	400
Cove Creek Road	88/25	196/45	50

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Source: ASCG 2001

Cruise Ship Facilities. The dock is approximately 1,000 feet long and is adequate for cruise ship docking. The dock is currently in reasonably good condition; however, some repairs are needed to support larger loads than are currently served. No cruise ships currently dock in Whittier.

Ferry Dock. This dock has one berth and a 165-foot moorage length.

City Dock. The 120-foot-long face and one dolphin (a cluster of piles used for mooring) are inadequate to meet current demand. Most tour boats use the transient float for moorage, and ships longer than 65 feet use the ocean dock (glacier tour boats).

Ferry System. The state ferry, *E.L. Bartlett*, connects Whittier with Cordova and Valdez 6 days a week from May through September, and is equipped to allow both vehicle and foot passengers. However, this vessel has been sold. There are plans by the State of Alaska to replace the service with high speed ferries.

Small Boat Harbor. A 100-berth boat harbor was constructed in 1972 at the mouth of Whittier Creek, and expanded to 334 berths in 1980. The City operates the harbor through a lease agreement with the ADOT&PF. Recreational boat owners that live in Anchorage rent most of the harbor's available berths, all of which are currently occupied; there is currently an 800-person waiting list for berths. Local charter boats, fishing boats, tug boats, and dry docks also use the harbor during various times of the year. There is parking for approximately 160 vehicles at the harbor; facilities include a harbormaster office, a 25-ton boat lift and dock, two boat launching ramps, electrical and water service, and a fuel service depot. A recent study completed for the City estimated that there is an unmet demand of between 1,500 and 2,000 berths for smaller recreational vessels and larger vessels to accommodate tourism, fishing, and industrial uses (ASCG 2001).

Air Travel

The Whittier runway, located at the head of Passage Canal, is 1,480 feet long by 58 feet wide, and is geographically constrained by mountainous terrain, tidal water, and by the only access road into Whittier. The airport is owned and operated by ADOT&PF, has no tower, no lighting system, no navigational aids, no aircraft parking apron, nor any based aircraft, and is considered a general aviation facility suitable for small aircraft only. The airport is used occasionally by pilots who fly small planes, and functions as an "airport of last resort" for small aircraft traveling westward through Prince William Sound that, due to weather or other problems, are unable to cross the Chugach Mountain Range at Portage Pass. There is no air service between Whittier and other locations.

The ADOT&PF has scheduled an airport master plan for Whittier that will outline a program of specific project improvements that will be identified with associated costs, recommended time frames, and proposed solutions for each time period. The plan is scheduled for completion in 2003.

Pedestrian/Bicycle System

The military installed 4-foot-wide sidewalks with rolled curbs in the core area of the City, but nowhere else. The Whittier subdivision ordinance encourages sidewalks to be constructed within rights of way; however, it lacks specificity regarding placement on the road, or their accompanying improvements such as utility boxes, street trees, or driveway aprons.

ADOT&PF installed a separated bike path/walkway between the Whittier Highway and Passage Canal, which is intended to continue when the Whittier Highway improvements to the ferry are underway. The railroad has constructed a pedestrian pathway under the railroad yard to provide a connection from the harbor area to the town center and main residential area.

Trails

There are currently two major trails in the project area: the Horsetail Falls Trail and the Emerald Cove Trail.

Horsetail Falls Trail. The trailhead for this trail is located adjacent to the first fork on Cove Creek Road near the City water reservoir and has limited parking. The trail is located on City property and winds for approximately 1 mile through alpine country southeast of Whittier. The trail was built by the Department of Parks and Recreation in 1998 and turned over to the City to maintain after trail construction was complete. The trail offers views of the City of Whittier, Passage Canal, mountains, glaciers, and a number of waterfalls.

Emerald Cove Trail. The trailhead starts beyond the Salmon Run picnic area, and it follows near the coastline of Passage Canal for approximately 3 miles to Emerald Cove. About 1.7 miles of this trail is on the pioneer road. There are trail signs at the very end of the pioneer road; a series of boardwalks crossing the muskegs is present beyond this point. The Department of Parks and Recreation built this trail, then turned over maintenance of the trail to the City of Whittier. This trail offers views of Passage Canal, mountains, glaciers, rivers, and falls.

Planned Transportation Improvement Projects

The Alaska Statewide Transportation Policy Plan, Vision: 2020 (ADOT&PF 2002) and the Prince William Sound Area Transportation Plan (Parsons Brinckerhoff 2001), described in Section 3.4.2, apply to the project area. The proposed action nests within these documents, and is consistent with their objectives.

Previous plans and reports indicate a wide variety of population projections. The differences are primarily due to speculation about the effect of the opening of the Whittier Access Tunnel to vehicular traffic. In reality, in the 1 year since the tunnel opened there has not been an increase in population. Using historical data from 1970 onward only, the population would be approximately 345 by 2020. With development of Shotgun Cove and enhancements for tourism, this projection may need adjustment upwards.

Statewide, the number of summer visitors to Alaska has increased substantially over the past 15 years. Southcentral visitors increased at a 6 percent annual rate between 1985 and 1989 and now account for a higher proportion of all visitors to the state. No reliable historical visitor statistics exist for Whittier, although the state is beginning to keep records of traffic through the tunnel that will assist in developing visitor projections. Given the limited historical data, and speculative and imprecise nature of previous visitor projections, a visitor projection is not available. However, considering the current tourist growth statistics statewide and for southcentral Alaska, and the opening of the tunnel, it is likely that the number of summer visitors to Whittier and the number of vehicles traveling the City's streets will continue to grow.

The City of Whittier developed a transportation plan to address current and future transportation needs (ASCG 2001). The purpose of the Whittier Transportation Plan is to establish a multimodal framework for transportation improvements that addresses local transportation issues for the next 20-year planning period. The emphasis in this study is on road, pedestrian/bicycle, and trail systems. The railroad, the ferry, the small boat harbor, and the airport are briefly touched upon in this plan as well.

The Whittier Transportation Plan identifies short-range (1 to 2 years in the future), medium-range (2 to 5 years) and long-range (5 to 20 years) priorities for local transportation projects. Among the short-range transportation projects identified in the plan was a feasibility study for the access road to Shotgun Cove; among the medium-range projects is the design and construction of the first portion of the road to Shotgun Cove; and among the long-range projects is the design and construction of Phase II and III of the Shotgun Cove Access Road project.

3.4.7.2 Effects of Alternatives

Alternative 1. There would be no construction impacts to transportation facilities within Whittier under the no action alternative, as the proposal would not be implemented. Similarly, no additional traffic would be generated on local streets from development or other activities (increased tourism) that might result from construction of the proposed project. However, traffic could continue to increase on local roadways if the local population and the tourism industry associated with Whittier continued to grow. In addition, the pioneer road would remain unmaintained and closed to vehicular traffic. Given the low number of trips on Cove Creek Road, it is unlikely that traffic congestion would be significant under this alternative.

Alternatives 2 and 4. An improved roadway would provide greater vehicular access into areas near the proposed roadway corridor and would likely result in an increased number of visitors, recreationists, and others into what is now only accessible mostly by four-wheel-drive vehicle or on foot. However, since no specific development plans for this area exist at this time, it is not possible to estimate the potential increase in traffic.

The roadways that connect with the proposed new roadway and the Cove Creek Road are in an area of the City that currently contains primarily nonresidential land uses. Therefore, proximity impacts to residents, such as increased noise from traffic and decreased air quality from vehicle exhaust, would be minimal.

Alternative 3. The type and magnitude of impacts to transportation facilities associated with this alternative would be similar to, but greater than, those discussed under Alternatives 2 and 4 due to the increased attraction of the recreational enhancements included under this alternative. There would also be increased pedestrian/bicycle traffic in this area that would utilize the new multipurpose pathway adjacent to the roadway.

Alternative 5. The type and magnitude of impacts to transportation facilities associated with this alternative would be similar to, but less than, those discussed under the other action alternatives due to the decreased distance/amount of roadway improvements. Impacts would also be fewer because there will be fewer recreational enhancements under this alternative to serve as an attraction for people, vehicles, and development.

3.4.7.3 Cumulative Effects

Cumulative effects could occur with possible development of lands along Segments 1 and 2. These activities would likely increase traffic levels. However, no projections have been made to date regarding the level of traffic that would occur. Current traffic on Cove Creek Road averages 50 trips per day, compared with 1,800 trips per day on Whittier Street and 1,500 on the Whittier Highway (ASCG 2001). Although traffic levels would likely be on the same order of magnitude as currently on the Whittier Highway, this would not likely result in adverse effects to the transportation system because the traffic would still be relatively light.

The proposed action could contribute to cumulative traffic disruptions if construction occurs concurrently with other projects. Resulting cumulative impacts on traffic, if any, would consist of increased delays during project construction. Based on the location of the proposed roadway, there would likely be traffic delays (mostly during summer months when traffic volumes are higher) along Blackstone Road, Whittier Street, and Eastern Avenue. These delays would be temporary.

3.4.7.4 Mitigation Measures

Measures that could be implemented to mitigate potential project construction impacts on transportation include the following:

- Develop a traffic control plan for each local roadway prior to construction, to move traffic through the project area as efficiently as possible during the construction and to provide prior public notification of activities that would substantially delay traffic;
- Limit the duration of time for construction traffic stoppages and provide at least 1-day advance notice of the closure; and
- Provide detour routes during construction if possible to allow road closures that would shorten the duration of construction.

3.5 Findings and Disclosures

3.5.1 National Forest Management Act

The Chugach National Forest Revised Land and Resources Management Plan (Forest Service 2002) guides all natural resource management activities and establishes management standards and guidelines for the National Forest,

pursuant to the overall direction of the National Forest Management Act. The provisions of the Forest Plan are in general not directly applicable to the proposed project, because they govern activities on National Forest lands and the proposed action would occur on privately owned lands. The Forest Plan does state support for economic development and diversification actions of the local communities in southcentral Alaska, however, which is consistent with the purposes for the proposed action.

3.5.2 Endangered Species Act

A biological evaluation (BE) has been prepared (Hart Crowser 2003d) to comply with the Section 7 consultation requirements of the Endangered Species Act (ESA). The conclusion of the BE is that the proposed project may affect but is unlikely to adversely affect the listed marine mammal species that may occur in the project area. NOAA Fisheries has been consulted and will review the document and BE. Although NOAA Fisheries has given preliminary concurrence that the project is unlikely to affect any listed species and therefore complies with the ESA, final approval would come during the permitting phase of the project.

3.5.3 National Historic Preservation Act

The proposed project complies with the requirements of the National Historic Preservation Act. There would be no adverse impacts on cultural, historical, or archaeological resources from this proposed project.

3.5.4 Federal Cave Resource Protection Act

There are no caves in the project vicinity, and none would be adversely affected by the proposed project. Therefore, the proposed project is consistent with the requirements, goals, and objectives of the Federal Cave Resource Protection Act.

3.5.5 Alaska National Interest Lands Conservation Act

ANILCA requires an analysis of subsistence resources on National Forest land and potential effects on subsistence resources resulting from management activities. Section 3.4.6, Subsistence, focuses on the three aspects of edible subsistence resources typically included in an ANILCA subsistence analysis: abundance and distribution of the resources, access to the resources, and competition for use of the resources. The analysis determined that, because the project area for the proposed action is not likely to support subsistence resources to a substantial degree, the proposed action would not likely have an

effect on the abundance or distribution of subsistence resources. Furthermore, no residents of Whittier have signed up for the federal subsistence users program (Cliff Fox, Resource Line Office, Glacier Ranger District, Chugach National Forest, personal communication, 2003). Therefore, any effects on existing subsistence resources are unlikely.

Construction of the proposed project might result in direct short-term disruption of the local population's access to subsistence use resources during the construction period, and long-term operation would be expected to have a small positive effect on access to public lands and waters for the purposes of subsistence hunting, fishing, or gathering activities. A negligible increase in competition for subsistence resources from surrounding communities is expected in connection with the proposed action.

3.5.6 Clean Water Act

The proposed project is consistent with the goals and objectives of the Clean Water Act. Impacts of the proposed project on water quality would be negligible. Providing adequate implementation of mitigation measures, the project is expected to maintain the biological integrity and fishable and swimmable goals of the act as they pertain to surface water resources.

In addition, a Section 404 permit would be required from the Corps to protect waters of the United States, including wetlands, from significant adverse effects. Mitigation would be required for any unavoidable adverse impacts. The Corps has been consulted and would appropriately condition the Section 404 permit once the final design has been submitted.

3.5.7 Clean Air Act

The proposed project is consistent with the goals, objectives, and requirements of the Clean Air Act. Air quality is not expected to be adversely impacted by the proposed project.

3.5.8 Coastal Zone Management Act

Under the Coastal Zone Management Act of 1972, proposed projects within the coastal zone must be reviewed for consistency with the state's Coastal Zone Management Plan. The Alaska Division of Intergovernmental Coordination (ADIC) administers the Coastal Zone Management Plan for Alaska and was included in the mailed distribution of the scoping notice for the proposed action. An application for a consistency review will be submitted to the ADIC when project plans are available in sufficient detail to support permit applications.

3.5.9 Executive Order 11988, Floodplain Management

All federal agencies are directed to avoid potential short- and long-term impacts to floodplains and risk of loss of property or life from flooding. There are no flooding problems or floodplains in the project area. Therefore, the proposed action would not adversely affect flooding or potentially increase the risk of loss of property or life from flooding.

3.5.10 Executive Order 11990, Protection of Wetlands

All federal agencies are directed to avoid, minimize, and compensate for impacts to wetlands from proposed projects. The goal of this executive order is to achieve no net loss of wetlands. Compensatory wetland mitigation would be required for this project by the Corps. Therefore the proposed project is consistent with this executive order.

3.5.11 Executive Order 12898, Environmental Justice

This executive order requires that all federal agencies shall make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

The proposed project is not expected to result in adverse changes in the socioeconomic environment of the Whittier area; to the contrary, the project is expected to provide positive short-term and long-term economic benefits through construction and operations employment and payroll, and through infrastructure improvements that would support local economic development. Therefore, the proposed action is not expected to have adverse direct or indirect impacts to minority or low-income populations or communities.

3.5.12 Executive Order 1296, Recreational Fisheries Improvement

All agencies are directed to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities to the maximum extent allowable by law. As indicated in the Fisheries Resources section, the proposed action would not adversely affect fisheries resources. The proposed action would likely promote increased recreational fishing opportunities by providing improved access and facilities at the Salmon Run picnic area. Therefore, the proposed action is consistent with this executive order.

3.5.13 Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth the EFH provision to identify and protect important habitats of federally managed marine and anadromous fish species. Federal agencies, such as the Corps, which fund, permit, or undertake activities that may adversely affect EFH (defined in Section 3.3.5.2), are required to consult with NOAA Fisheries regarding the potential effects of their actions on EFH, and respond in writing to NOAA Fisheries' recommendations.

Operation of the proposed project could affect water quality and use of EFH. Implementation of relevant and appropriate BMPs would ensure that erosion is minimized, and that surface water runoff is collected and treated before being conveyed to streams along the proposed road route. This is expected to prevent any potential adverse effects on water quality or use of EFH.

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APPENDIX A
SHOTGUN COVE ROAD PLAN DRAWINGS

**APPENDIX B
VISUAL SIMULATION**

APPENDIX B – VISUAL SIMULATION

The following procedure was used for interpreting visual impact of proposed road:

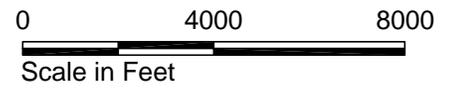
- Located the position of desired photograph on the site plan showing the alignment of the proposed road.
- Determined orientation of photograph via topography shown on U.S. Geological Survey (USGS) Quadrangle Seward (D-5), SE Alaska.
- Used photograph, USGS Quad map and site plan to determine approximate areas where proposed road will be visible from water.
- Modified (retouched) photograph using Corel Photopaint to depict proposed road.

Photograph Location Map



DJH 9/15/03 1255606005

Source: Base map prepared from USGS Quadrangle Seward (D-5), SE Alaska.



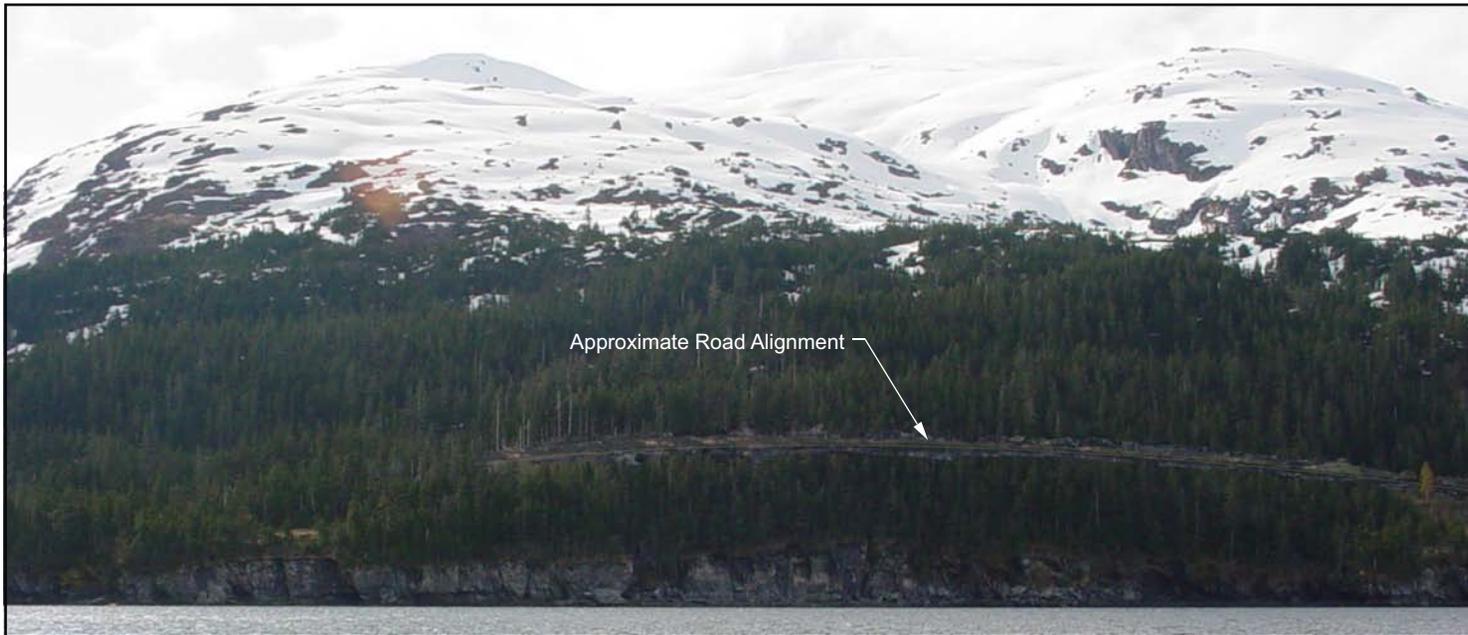
① Photograph Location, Number, and Direction

HARTCROWSER
 12556-06 9/03
 Figure B-1

Visual Simulation of Proposed Road

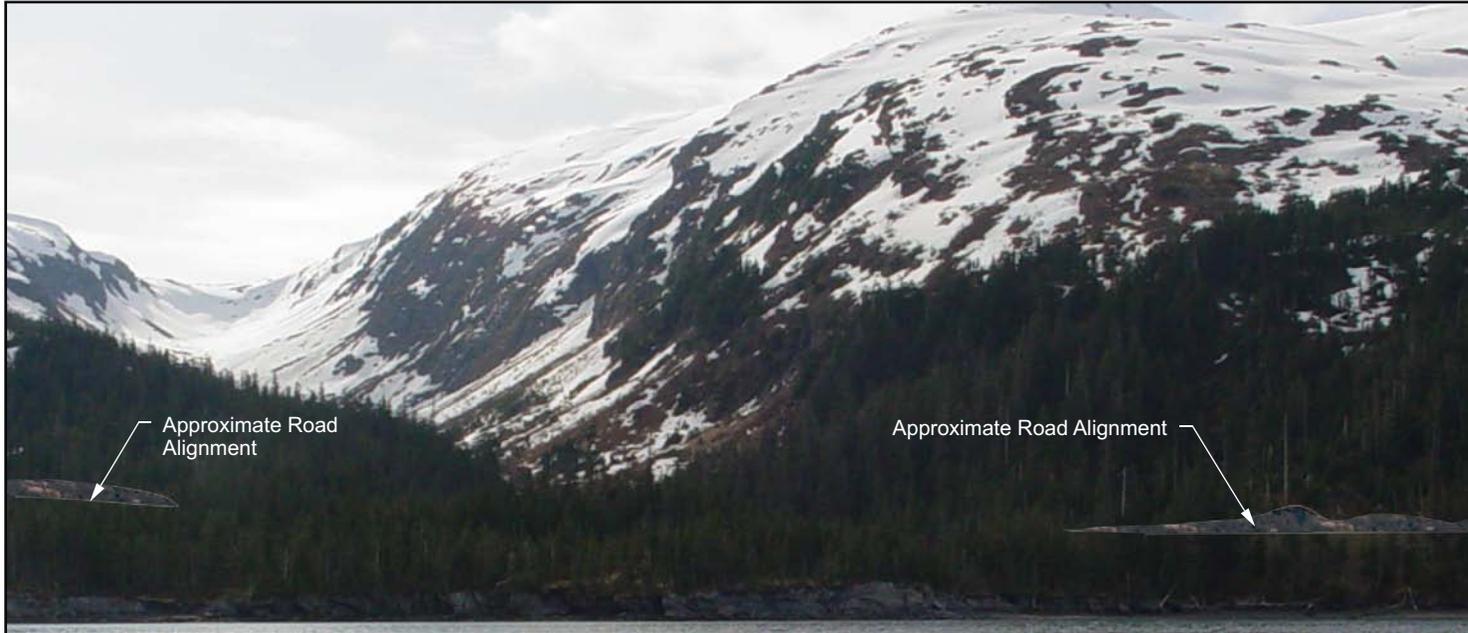


Photograph DSC00835 Located at N. 60° 47.133, W. 148° 39.773

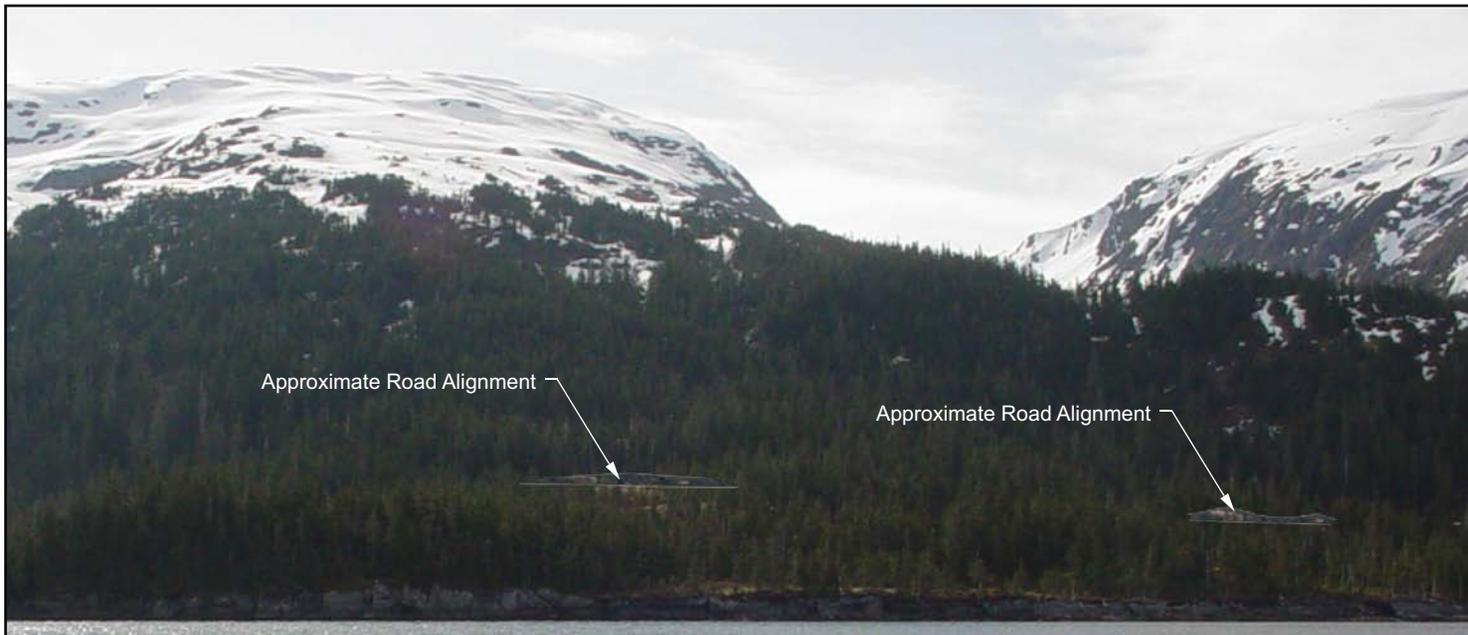


Photograph DSC00839 Located at N. 60° 47.338, W. 148° 38.692

Visual Simulation of Proposed Road



Photograph DSC00841 Located at N. 60° 47.467, W. 148° 38.130



Photograph DSC00843 Located at N. 60° 47.606, W. 148° 37.681

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