

# Chapter 1 – Revised Environmental Assessment for Oil and Gas Exploration in the Katalla Area.

**Introduction** - The Forest Service prepared this Revised Environmental Analysis (EA) to evaluate potential effects of approving Cassandra Energy Corporation's Plan of Operations for oil and gas drilling near Katalla, Alaska. The decision consists of whether to approve the Plan of Operations. There are two major components of the Plan of Operations: (1) exploratory oil and gas drilling operations and establishment of a crew camp on private lands; and (2) access to the drill/camp site which consists of construction of a barge offloading site, establishment of a temporary staging area, and use and maintenance of an existing temporary access road<sup>1</sup>, all on National Forest System lands.

Approval of this Plan of Operations constitutes a federal action because the proposal is to drill directionally from private land into Chugach Alaska Corporation's reserved oil and gas estate, which invokes the terms of a 1982 (CNI)<sup>2</sup> Settlement Agreement, thereby requiring Forest Service approval; and the temporary access road is located on federal lands. This analysis is in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations.

**Project Area** - The project area is defined as ¼ mile on either side of the existing temporary access road, and the proposed new temporary roads between the Katalla River and the private land in the alternatives (see Appendix A). The actual drill site and crew camp are on private land. It is located in the east Copper River Delta region, near the old town site of Katalla. It is approximately 56 miles southeast of the city of Cordova, on the Cordova Ranger District, Chugach National Forest, Alaska Region, (See Figure 1). The drilling operations would occur within the historic Katalla oil field, on private land, which produced oil from 1902 to 1933.

**Background** - The Alaska Native Claims Settlement Act (ANCSA) of 1971, Section 12 (c) enabled Alaskan Regional Native Corporations to select federal lands. Chugach Natives Incorporated (now known as Chugach Alaska Corporation (CAC)) was restricted to selecting lands outside the boundary of the Chugach National Forest, with the exception of historic sites. CAC filed a lawsuit declaring they were barred from selecting lands within the Chugach National Forest and thus prohibited from selecting lands customarily and traditionally used by Chugach Native people. CAC maintained they had not received a fair and just settlement of their aboriginal title, as intended by ANCSA.

On September 17, 1982, the U.S. Secretary of Interior, the U.S. Secretary of Agriculture, the State of Alaska's Commissioner of the Department of Natural Resources, and Chugach Natives Incorporated (CNI) entered into a settlement agreement as culmination of the Chugach Region Study required by Section 1430 of ANILCA. This agreement is called the 1982 Settlement Agreement. In addition to land selection rights and a cash

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<sup>1</sup> The existing road is a temporary road as defined in Forest Service Manual 7700: Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long-term resource management (36CFR 212.1).

<sup>2</sup> CNI - Chugach Natives Incorporated, now known as Chugach Alaska Corporation (CAC).

payment, CNI was granted development rights to oil and gas in the Katalla Area as follows:

**Rights of CNI to Oil and Gas (CNI Settlement Agreement, Section 6.A.).**

*Subject to valid existing rights (the United States shall adjudicate all pending offers to lease by third parties), the terms and conditions contained herein, and the reserved right of the United States to limit or prohibit operations, the Secretary of the Interior shall convey to CNI the exclusive right and privilege to drill for, mine, extract, remove, and dispose of, by primary and secondary methods, all the oil and gas deposits in liquid or gaseous state in natural conditions, except helium gas, together with the right to construct and maintain thereupon all works, buildings, plants, waterways, roads, telegraph or telephone lines, pipelines, reservoirs, tanks, pumping stations, or other structures necessary to the full enjoyment thereof, for a period ending at midnight, (Alaska Standard Time, hereafter "AST") December 31, 2004, and so long thereafter as oil and gas is produced in paying quantities, on the following described lands (herein referred to as the "Katalla Area").*

**Access Road** - The existing temporary access road was originally built and used for the operations at the Katalla Oil Field (1909-1932) (Appendix A, Map 1). It was built on an old stranded beach berm and, according to a USGS engineering geology report, it is excellent road foundation (Kachadoorian, 1960). The road was reconstructed in 1981, and it was used from 1982-1988 for drilling operations on the private land. It was inactive from 1988-1991. In 1992 a Special Use Permit (SUP) for the road was issued to the landowner, Wel-Alaska, to provide access across Forest Service lands. The SUP will expire December 31, 2002, and the landowner is expected to request renewal of the permit at that time. It is not connected to the Cordova road system and is not part of the Transportation System for the Chugach National Forest. Use of the road for this project would be authorized under the proposed Plan of Operations, and this authorization would be concurrent with the landowner's permit. Maintenance work on the access road would include blading, brushing to remove small diameter trees, and replacing seven old substandard timber bridges with new temporary bridges.

**Purpose and Need** - Chugach Alaska Native Corporation (CAC) holds approximately 10,680 acres of subsurface oil and gas rights reserved under the 1982 CNI Settlement Agreement in the Katalla Area, on the east Copper River Delta, on the Chugach National Forest (see Figure 1). The rights reserved under the CNI Settlement Agreement expire and revert to the federal government if paying quantities of oil and gas are not established by December 31, 2004. The surface estate overlying CACs reserved rights is administered by the U.S.D.A. Forest Service as part of the Cordova Ranger District, the Chugach National Forest, in the Alaska Region.

On April 30, 2001, Cassandra Energy Corporation (CEC), under agreement with CAC, filed an initial Plan of Operations for directional drilling from a drill pad on private land into the CAC reserved rights. Under the terms of Section 6H of the 1982 CNI Settlement Agreement, CAC must have an approved Plan of Operations prior to conducting any oil and gas operations in exercise of their grant of rights in the Katalla Area.

**Proposed Action** - The proposed action is to approve the Plan of Operations and issue



# Katalla Project Proposed Oil & Gas Drilling by Cassandra Energy Corporation

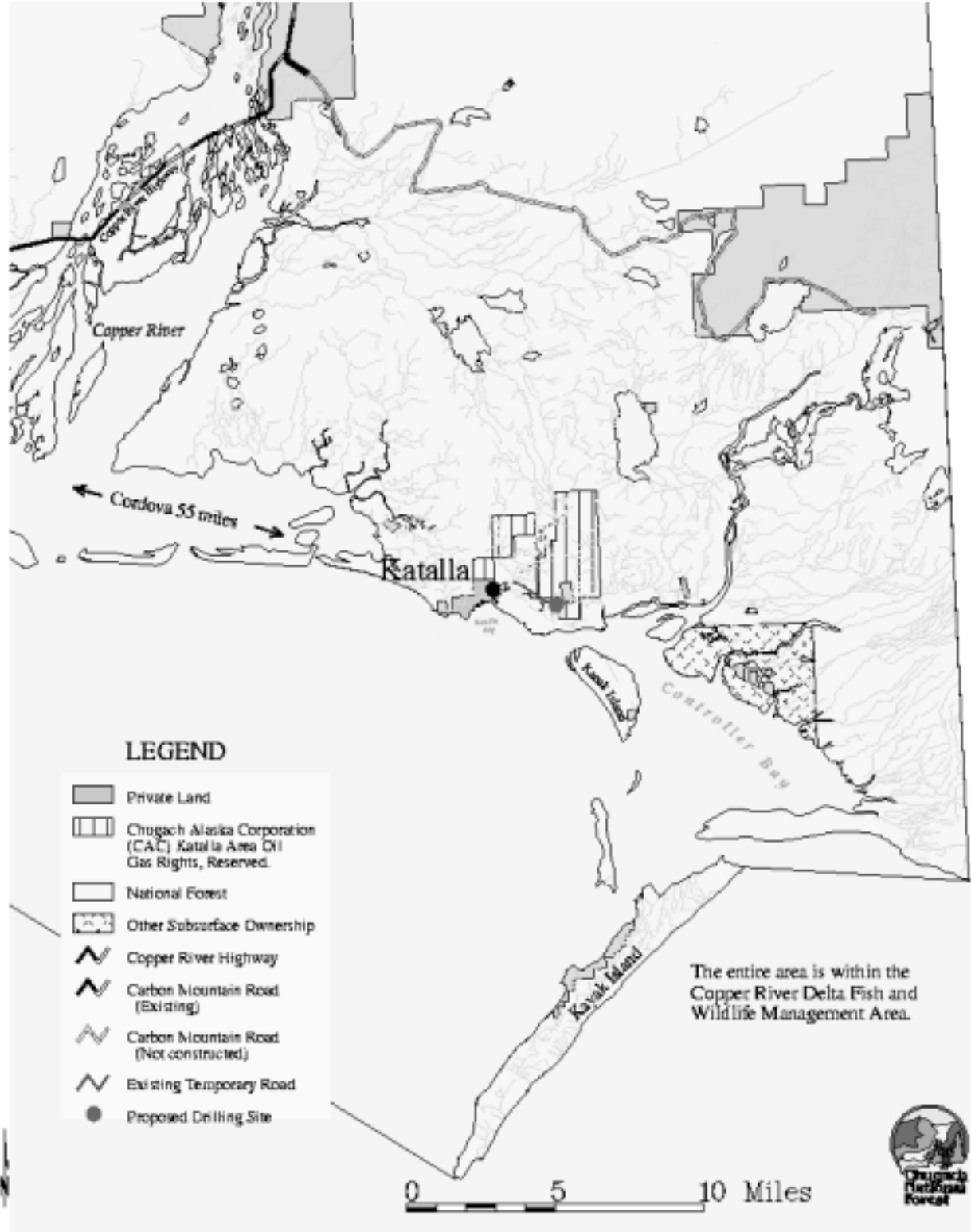


Figure 1 Katalla Location Map

a special use authorization (as per CNI Settlement Agreement, section 6.D.) to CEC for activities in the Plan of Operations. The activities include but are not limited to construction of a barge access ramp (Appendix C), establishment of a temporary staging area, and use and maintenance of an existing temporary access road, (all on National Forest System lands), which begins at the Katalla River and goes east to private land known as Claim No.1.

An ocean going large barge would off load equipment and supplies<sup>3</sup> at a site on the west side of the Katalla River on State of Alaska land (see Appendix A, Map 2; and Appendix B). Up to 2.5 acres of storage area may be required to temporarily store equipment and supplies until it can be hauled up the Katalla River by a smaller shallow draft barge. Brush clearing will be required to remove small diameter recent growth from the storage area. A 50-foot buffer will be left along the bluff above the Katalla River to reduce crosswinds on the airstrip; and a 100-foot buffer will be maintained along Irish Creek at the southwest end of the area for riparian protection. Occasional helicopter and/or small plane flights will provide for personnel access, and deliver equipment and supplies to an existing airstrip located on State of Alaska lands near Katalla (see Appendix A, Map 2). The equipment storage area will be on State of Alaska lands; the drill site and crew camp will be on private lands, and neither are part of the special use authorization, but are included in the effects analysis of this project.

Drilling equipment, materials, supplies and personnel will be transported from the storage area by shallow draft small barge upstream about 1.5 miles at high tide (12-foot Cordova tide or higher) and off loaded at an access ramp constructed on National Forest System lands. In order to allow shallow draft barge access from the Katalla River to the temporary road to off load drilling equipment, an area of vegetation about 25 by 25 feet will be cleared for an access ramp (see Appendix C). Rig matting (synthetic mats, which provide a stable road surface, see Appendix D), will be laid down in the cleared area where needed. A two-acre staging area would be constructed at the west end of the existing roadway. The area would be cleared of vegetation and leveled to serve as a staging area for off loading equipment from a barge. The old drilling equipment and crew camp on the private land would be removed and cleaned up. Approximately 50 to 60 barge off loadings would be made over a two month period for initial set up of the drill rig and crew camp. Approximately 50 to 100 truck trips would be made to transport equipment, supplies and materials to the private land known as the Claim No.1, where a crew camp and drill site are currently located.

The seasonal timing of the activities is important to migratory birds, guided hunting and fishing in the area, and spawning pink salmon. The Alaska Department of Fish and Game has proposed a restriction on barge traffic when pink salmon are present in the river, which is approximately from the beginning of August to possibly mid-September. In addition, CEC has stated that the initial set up could be conducted in the winter of 2002-2003, when migratory birds and guided hunters and anglers would not be present.

The temporary access road is about 2.5 miles long and is not part of the existing Transportation System for the Forest. Use and maintenance of the existing temporary access road would consist of clearing small diameter trees and brush that have grown up

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<sup>3</sup> Approximately 20 to 25 trips would be made over a two to three week period of time to deliver equipment and supplies to the storage area.

along the existing road alignment since 1988, minor grading, and placing seven temporary prefabricated steel bridges over stream crossings. No in stream work would be conducted. The access ramp, staging area and the access road will be on National Forest System lands.

One hole will be drilled to a depth of 9,000 to 9,500 feet from Claim No.1, with a horizontal displacement of approximately 3,000 feet to explore the subsurface of the CAC reserved rights.

**Decisions to Be Made** - Based on the environmental analysis in this EA, the Regional Forester will decide whether to approve the Plan of Operations and what conditions of approval and mitigation measures will be required to protect the surface resources of federal lands. This decision will include:

- The location, design, and standards for construction of a two acre staging area, and a short access ramp approximately 25 feet long; use and maintenance of approximately 2.5 miles of temporary road on National Forest System lands and;
- Restoration requirements upon completion of the project;
- Mitigation measures including access management measures (road, and area restrictions and closures), and monitoring requirements;
- A determination of whether there may be a significant restriction on subsistence uses;
- A consistency determination as required by section 501b of ANILCA<sup>4</sup>.

**Relationship to the Revised Forest Plan** - National forest planning takes place at four levels: national, regional, forest, and project levels. This is a project-level analysis; its scope is confined to addressing the issues and possible environmental consequences of the proposed action. It does not attempt to address decisions made at broader scales. It does implement direction provided at those broader scales. The Forest Plan embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Chugach National Forest. It is the decision document for integrated, long-term resource management, similar to a community-zoning document. It establishes goals, objectives, desired condition, basic principles of forest management, management area prescriptions, standards and guidelines, and monitoring requirements for the Forest.

It was completed in 1984, and in accordance with 36 CFR 219.10(g), the 1984 Forest Plan was revised in 2002. The Revised Forest Plan is the result of extensive analysis, which is documented in the Forest Plan Final EIS, and the Record of Decision signed on May 31, 2002. Printed copies of the FEIS, Forest Plan and ROD were available on July

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<sup>4</sup> 36 CFR 241.22 Consistency Determinations (a) Subject to valid existing rights, a multiple-use activity may be permitted or authorized within areas of the Chugach National Forest subject to this subpart only after a determination by the responsible Forest Officer that such activity is consistent with the conservation of fish, wildlife, and their habitat. A use or activity may be determined to be consistent if it will not materially interfere with or detract from the conservation of fish, wildlife and their habitat.

26, 2002, the date the legal notice of availability was published. Where appropriate, this EA tiers to the Forest Plan FEIS, as encouraged by 40 CFR 1502.20. The following Revised Forest Plan direction is applicable to the proposed action:

**Goals and Objectives** (Revised Forest Plan, Chapter 3, pages 3-1 to 3-12) - Goals and objectives identify the major areas of emphasis for forest plan implementation. Goals are broad statements that focus on the desired condition to be achieved in plan implementation. The objectives provide an added statement of detail identifying the precise steps the Forest will undertake to achieve the goal. The following goals and objectives are relevant to the proposed action:

**Goal** - Conserve air quality related values over Chugach National Forest lands.

- Meet state standards for visible and particulate air quality.

**Goal** - Maintain long-term site productivity.

- Maintain soil productivity by keeping soil disturbance to a minimum.
- Implement measures to protect the soil resource through the use of Best Management Practices and Forest Service Soil Quality Standards.

**Goal** - Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System lands.

- Establish instream flow requirements or suitable mitigation measures for all water impoundments or diversions.

**Goal** - Maintain and restore water quality.

- Meet state standards for non-point source water quality.

**Goal** - Maintain a full range of naturally occurring ecological processes and flora native to Southcentral Alaska including a variety of vegetation types, patterns and structural components.

- Restore vegetation on landscapes affected by activities, natural events or processes to meet desired conditions.

**Goal** - Prevent introduction and spread of exotic plants and reduce areas of current infestation.

- Treat infestations with a high potential to spread.

**Goal** - Conserve rare plant species.

**Goal** - Maintain habitat to produce viable and sustainable wildlife populations that support the use of fish and wildlife resources for subsistence and sport hunting and fishing, watching wildlife, conservation, and other values.

- Implement standards and guidelines to protect species and their habitats through protection, conservation and restoration of important terrestrial and aquatic habitats.

**Goal** - Emphasize maintenance of fish and wildlife habitat in the 501(b) area of the

## Chugach National Forest.

- Identify special needs for fish and wildlife management emphasis within the Copper River Delta Fish and Wildlife Habitat Emphasis Area.
- Identify habitat enhancement and protection needs for cutthroat trout and coho salmon on the Copper River Delta.

**Goal** - Provide opportunities to develop minerals for personal and commercial uses.

- Provide for oil and gas exploration and development in the Katalla Area by zone. Zone 1 is available for oil and gas development by Chugach Alaska Corporation (CAC) until their oil and gas rights terminate (CNI Settlement Agreement, 1982). Zone 2 is available to CAC for oil and gas development under the exchange rights in the CNI Settlement Agreement, 1982. Zones 3 and 4 are not available for oil and gas leasing.

**Goal** - Protect heritage resources.

- Implement management area direction for protection and data recovery from heritage resources.

**Goal** - Maintain quality settings for motorized recreation opportunities.

- Provide roads, trails, and open areas for summer and winter motorized recreation as shown on the Summer and Winter Motorized Recreation Access Maps.

**Goal** - Maintain quality settings for nonmotorized recreation opportunities.

- Provide winter and summer trails and areas for nonmotorized recreation where motorized recreation is prohibited as guided by the Summer and Winter Motorized Recreation Access Maps.

**Goal** - Maintain areas where natural quiet predominates consistent with the management area direction and Recreation Opportunity Spectrum settings.

**Goal** - Maintain the outstanding scenic quality of the Chugach National Forest.

- Conduct forest management activities consistent with Scenic Integrity Objectives.

**Desired Condition** (Revised Forest Plan, Chapter 3, page 3-13 to 3-19). This section provides descriptions of the conditions that are the desired outcomes of the Revised Forest Plan. Not all of the conditions described are within the control of the Forest; they may be dependent on cooperation with others.

## **Forestwide**

The predominant conditions on the Chugach National Forest will be those that result from natural processes. Conditions that result from active management or restoration will be present in selected locations. This general expectation is demonstrated in the following descriptions of Forest resources and uses.

**Forest Vegetation** - Vegetation on the Chugach National Forest will be the vegetation that results from natural processes. Selected locations will be altered by management

activities either to restore degraded conditions or to provide benefits to wildlife. The abundance and distribution of sensitive plants will be stable. Exotic plant infestations will be decreasing in size.

**Fish and Wildlife** - Natural processes with active management in selected locations will sustain fish and wildlife habitat. Fish and wildlife will continue to flourish in their current abundance with stable populations and abundant habitat. Threatened and endangered species will have populations moving toward recovery. Sensitive species will have appropriate habitat conditions with stable or improving population trends. Management indicator species and species of concern will have stable population trends, providing a continuing subsistence resource. Brown bear/human confrontations will be minimal in important seasonal feeding areas and travel corridors, resulting in limited risks to brown bears through “defense of life and property” mortality. The productivity of habitat supporting salmon and other aquatic organisms throughout the Forest will be maintained. Fishery resources will maintain sustainable fisheries for commercial, sport and subsistence uses.

**Recreation and Tourism** - Undeveloped, dispersed recreation settings at considerable distance from human facilities will predominate over most of the Forest. A mix of motorized and nonmotorized recreational opportunities (primarily nonmotorized in summer and motorized in winter) will exist across the Forest. Recreational densities will decline rapidly with increasing distance from roads, marine portal areas or boat accessible shorelines. All areas of the Forest are accessible by fixed-wing aircraft, except where specifically restricted to protect identified resources.

**Resource Development and Use** - Most areas with moderate to high mineral potential are available for mineral development. The Forest road system will be essentially the same road system that exists today, with small segments of new roads for recreation developments and limited improvements for maintenance. Private land inholdings will have development consistent with their economic potential and minimal impact on the surrounding Forest.

### **Copper River Delta Geographic Area**

The Copper River Delta lands of the Chugach National Forest will be managed primarily for the conservation of fish and wildlife. Most of the area will remain in its natural state with the exception of the road corridor extending from Cordova. The unique ecological role of the Copper River Delta in providing habitat to migrating waterfowl, shorebirds and other wildlife will be maintained. Human access will remain almost exclusively by boat or aircraft with the exception of the road corridor.

**Fish and Wildlife** - The Copper River Delta, as one of the largest wetlands in the world, and a unit of the Western Shorebird Reserve network, will continue its high biological productivity for migrating waterfowl, shorebirds and a large variety of other species. Trumpeter swan nesting areas will remain undisturbed from human influences. Populations of dusky Canada geese will be stable or rising. The areas between the wetlands and the mountains and glaciers to the north will continue to sustain much of the wildlife typical of Alaska, such as brown and black bears, gray wolf and bald eagle. It will also sustain moose populations for hunting and subsistence use.

Anadromous fish runs of sockeye, pink, chum, coho, and king salmon, along with Dolly Varden char, cutthroat trout and eulachon are abundant in the waters of the Copper River



Delta. Resident populations of rainbow trout, cutthroat trout, Dolly Varden char and grayling are sustained in the inland waters of the Copper River Delta. Unique stocks of wild fish persist in various locations scattered throughout the Delta. Major anadromous runs of sockeye and king salmon that spawn upstream of the Chugach National Forest boundary continue to pass through the lower Copper River. Subsistence and commercial fishing are sustained at high levels without adversely affecting the fish resource.

**Resource Development and Use** - Resource development and use will be limited to activities on private lands, mining areas and areas immediately adjacent to the few communities in eastern Prince William Sound. Development of the Katalla oil and gas zones will be consistent with their economic potential with minimal impact on surface Forest lands and the lands beyond these areas. Private landowners with inholdings and holders of valid mining claims will have reasonable access to their lands. The means of access will be consistent with management area direction and emphasis.

**Basic Principles of Forest Management** (Revised Forest Plan, Chapter 3, page 3-20). A set of fundamental principles will guide the management of the Chugach National Forest. Direction in the Revised Forest Plan adds to and qualifies these principles. These principles emphasize basic management direction and basic processes for all management areas. Principles relevant to the proposed action are:

**Principle #2** The Chugach National Forest will actively collaborate with interested Native Alaskan tribes, state and federal agencies, private landowners, groups, and individuals in the management of the Forest. It will coordinate any proposed management actions with the appropriate local, state, or tribal governments, as well as other federal agencies.

**Principle #3** National Forest System lands are managed for multiple uses. The Chugach National Forest is open for any legally allowed public activity or management action, unless specifically restricted in law, policy, or the Revised Forest Plan. All areas of the Forest are available for mineral entry unless specifically withdrawn. While allowed, activities and actions will require additional review and authorization before implementation.

**Principle #4** Law and policy authorize reasonable access to private land inholdings, valid mining claims, and where other property rights exist within the Chugach National Forest. The means of access will be consistent with management area direction and emphasis.

**Management Area Prescription** - The Revised Forest Plan management direction is shown for the entire Katalla River watershed and slough (Appendix E). The Revised Forest Plan establishes Management Area Prescriptions for the Forest (Chapter 4), and contains a description of each Management Area Prescription. Each Management Area Prescription provides for a combination of activities, practices, uses, and standards and guidelines. The Katalla project area is within the 501(b) - 1 and 2 Management Area Prescriptions, (Revised Forest Plan, Management Area Prescription Map, May 2002, R10-MB-480f). Upon initiation of application for surface use occupancy (the Plan of Operations) the project area is subject to the 521 - Minerals Management Area Prescription (Revised Forest Plan Record of Decision, page 13; Revised Forest Plan, Chapter 4, page 4-84). Application for surface use and occupancy has been made, and the 521 - Minerals Management Area Prescription now applies and is summarized as

follows, and shown in (Appendix E):

**521 - Minerals Management Area (840 acres)** (Revised Forest Plan, Chapter 4, pages 84 to 87).

**Theme** - Minerals Management Areas are managed for the exploration, development, extraction, and processing of locatable (base and precious metals, such as gold, silver, and copper, etc.), leasable (oil, gas, coal, hardrock minerals in the Copper River addition, etc.), and salable (sand, gravel, and quarry stone, etc.) minerals. This management area prescription is applied to project areas with approved plans of operations for minerals.

In the case of those mineral exploration and development activities on land interests granted in accordance with the 1982 CNI Settlement Agreement, this prescription shall be immediately applied upon initiation of application for surface use occupancy (Zone 1).

### **Management Intent**

**Ecological Systems Desired Condition** - Mining activities are limited to the area necessary for their efficient, economic, and orderly development. Mining activities are carried out so that any long-term adverse effects on other resources are minimized, and all resource protection requirements are met.

The Department of the Interior has the major role for managing leasable minerals activities. The Forest Service cooperates with the USDI agencies to ensure that management goals and objectives are achieved, that impacts upon surface resources are mitigated, to the maximum degree practical, and that the land affected is rehabilitated.

Other resource uses and activities are allowed when they do not conflict with mining activities. The protection of fish and wildlife habitats to prevent or minimize the need for mitigation is a goal and opportunities for increasing or improving fish and wildlife habitat are sought.

**Social Systems Desired Condition** - These lands are often intensively used and have a moderate to high density of facilities and roads. Developed mines can display significant evidence of site disturbance. Users can expect to see other humans and evidence of human resource development activities.

Management activities will generally dominate most visible areas. Recreation settings and opportunities will be managed to be compatible with the underlying (initial) management area prescription. The Recreation Opportunity Spectrum will range from Semi-primitive Motorized to Rural. New recreation facilities will be limited to those compatible with mineral developments. Stabilized historic and prehistoric sites and features are present and may be a focus of interpretation. Some historic structures may be fully restored for public use and enjoyment. Special uses, which facilitate mineral activities, will be authorized.

**Standards** (Revised Forest Plan, Chapter 4, page 4-87)

**Standard** - Activities, identified in the underlying (initial) management area prescription, are allowed so long as they are compatible with mineral activity and provide for public safety.

**Standard** - Prior to and following mineral activities, these lands will be managed according to the underlying (initial) management area prescription. With the

initiation of mineral activities, apply reasonable regulation of surface occupancy and use to manage the mineral activities to be as compatible as possible with the underlying (initial) management area prescription. In the case of those mineral exploration and development activities on land interests granted in accordance with the 1982 CNI Settlement Agreement, mineral activities will be managed consistent with the conservation of fish and wildlife and their habitats, as directed in ANILCA, without consideration for the underlying (initial) management area prescription.

Prior to and following mineral activities, these lands will be managed according to the underlying management area prescription, which is 135 - ANILCA 501(b) - 1; and 213 - ANILCA 501(b) - 2 as described below and shown in (Appendix E):

**135-501(b) - 1, Management Area Prescription (35,400 acres)** (Revised Forest Plan, Chapter 4, pages 25 to 27).

**Theme** - The area is managed to emphasize the conservation of fish and wildlife and their habitats and provide a variety of recreational opportunities for backcountry activities. The areas with this prescription will be managed to retain their wild and natural character.

### **Management Intent**

**Ecological Systems Desired Condition** - Ecological processes, largely unaffected by human activity, dominate this management area. Vegetation in the area will be mostly regenerated by natural processes such as floods, avalanches, earthquakes, wind, fire, insect, and disease. Fish and wildlife habitat restoration or enhancement activities may occur to conserve fish and wildlife and their habitats, but will be designed to minimize impacts to the wild and natural character of the area. Treatment measures may be taken on exotic plants and animals to minimize their impacts on ecological processes.

**Social Systems Desired Condition** - The 501(b) - 1 Management Area will provide outstanding opportunities for solitude, quiet and isolation when traveling cross-country. Scenery will be natural in appearance. The Recreation Opportunity Spectrum will range from Primitive to Semi-primitive Nonmotorized. There may be some evidence of human use in this area, such as primitive trails, campsites, and historic structures. Unacceptable human-induced disturbances may be restored or rehabilitated.

Reasonable access, including roads for conducting mineral operations shall be approved under a mining plan of operations. Aircraft access is allowed for minerals exploration and will be coordinated with the responsible line officer to minimize impacts to other users and, to the extent possible, be consistent with the theme of the prescription. Reasonable access shall be allowed to private lands.

### **Standards and Guidelines**

#### **Minerals Guidelines**

1. Minerals activities, including oil and gas development and exploration and development of locatable minerals resources, may be limited, modified, or restricted to maintain, to the extent possible, fish and wildlife habitat values and the wild and natural character of the area.

2. Road construction should not be authorized for initial prospecting/exploration to determine the existence of mineral or oil and gas deposits. Authorizations for second level, or subsequent evaluations of known mineral or oil and gas occurrences should be limited to the minimum standard necessary to accommodate an exploration plan based upon previous findings. This process is commonly referred to as completing the next logical step evaluation.

### **Access and Transportation Standards**

1. Motorized access for administrative and non-recreational permitted activities can only be authorized by the responsible line officer. The responsible line officer has the discretion to allow, deny or set conditions on this access consistent with the intent of the prescription.
2. Reasonable access, including roads, for conducting mineral operations shall be approved under a mining plan of operations. Aircraft access is allowed for minerals exploration and will be coordinated with the responsible line officer to minimize impacts to other users, and to the extent possible, be consistent with the theme of the prescription.
3. Reasonable access, as defined by ANILCA, Sec. 1323(a), will be allowed to private lands.

### **213 ANILCA 501(b) - 2, Management Area Prescription (10,900 acres)** (Revised Forest Plan, Chapter 4, pages 37-39).

**Theme** - The area is managed to emphasize the conservation of fish and wildlife and their habitats, while providing opportunities for backcountry recreational activities in a natural appearing landscape.

**Ecological Systems Desired Condition** - Ecological processes, largely unaffected by human activity, dominate 501(b) - 2 Management Areas. Vegetation in the area will be mostly late successional unless regenerated by resource projects or natural processes such as fire, insect and disease. Emphasis will be on the conservation of habitats for fish and wildlife. Projects to restore or enhance fish and wildlife habitat or other multiple use activities may be allowed if consistent with the conservation of fish and wildlife or their habitats.

**Social Systems Desired Condition** - Scenery will be natural in appearance. The Recreation Opportunity Spectrum will range from Primitive to Semi-primitive Motorized. There will be evidence of human use such as trails, hardened campsites and historic structures. No new roads will be constructed. Reasonable access, including roads, for conducting mineral operations shall be approved under a mining plan of operations. Aircraft access is allowed for minerals exploration and will be coordinated with the responsible line officer to minimize impacts to other users and, to the extent possible, be consistent with the theme of the prescription. Existing roads may be present to provide access to trailheads, camping areas or recreation nodes.

## **Standards and Guidelines**

### **Minerals Standards**

1. Terms and conditions controlling operating methods and times, to prevent adverse impacts to wildlife and fish, may be included for permitted or authorized mineral activities.
2. Small salable mineral materials sites may be developed to support trail or facility development. All sites will be rehabilitated upon completion of the project.

### **Access and Transportation Standards**

1. Reasonable access, including roads, for conducting mineral operations will be approved under a mining plan of operations. Aircraft access is allowed for minerals exploration and will be coordinated with the responsible line officer to minimize impacts to other users and to the extent possible, be consistent with the theme of the prescription.
2. Reasonable access, as defined by ANILCA, Sec.1323(a), will be allowed to private lands.

### **Access and Transportation Guideline**

1. Administrative or non-recreational motorized activities may be allowed if consistent with the conservation of fish and wildlife as approved by the responsible line officer.

In addition, Management Area Prescription 522, Major Transportation/Utility Systems applies to 170 acres of the general area, see Appendix E, and Revised Forest Plan, page 4-88. It is not described in detail, as it is outside the project area.

**Forestwide Standards and Guidelines** The following standards and guidelines (S&Gs) apply Forestwide (Revised Forest Plan, Chapter 3, page 3-20) and work together with Standards and Guidelines in the Management Area Prescriptions (Revised Forest Plan, Chapter 4). Only measures specific to the proposed action are included. Standards are actions that will be followed or are required limits to activities in order to achieve Forest goals. Deviations from standards must be analyzed and documented in Revised Forest Plan amendments. Guidelines are courses of action that are normally expected to be followed. Deviations from guidelines must be analyzed during project-level analysis and documented in a project decision document but do not require an amendment of the Revised Forest Plan.

### **Soils Standards**

1. Prior to ground disturbing activities greater than ½ acre, a landslide risk analysis will be conducted on slopes between 56 and 72 percent. Proposed ground disturbing activities will be designed to avoid areas with high potential for the occurrence of a landslide. The risk analysis procedure is identical to that described in Standard 2.
2. Evaluate the soil stability and potential soil mass wasting effects prior to ground disturbing activities greater than ½ acre on fine textured soils of lacustrine origin. These soils are mapped as the Map Unit 103 (1) on the Kenai Peninsula and not yet delineated elsewhere on the Forest.

**Fish, Water and Riparian Areas Guideline** - Riparian management activities will be designed to meet the Stream Channel Process Group Objectives and Desired Conditions contained within the Aquatic Ecosystem Management Handbook. For timber and road building activities that may be allowed near streams refer to the Aquatic Ecosystem Management Handbook for riparian prescriptions

### **Threatened, Endangered and Sensitive Plant Species**

**Standard** - Collecting or disturbing any threatened, endangered, or sensitive plant is prohibited unless authorized.

**Guideline** - Avoid, minimize, or mitigate the effects of human activities in areas containing sensitive plant populations.

### **General Wildlife**

**Standard** - Require disposal or removal of garbage from all Forest Service permitted or approved activities to prevent habituation of wildlife. Require food and garbage to be stored in bear-proof containers or by methods that make it unavailable to bears or other wildlife.

**Guideline** - Design and locate facilities or apply seasonal restrictions on human activities when necessary and appropriate to reduce disturbance in important habitat areas, such as birthing areas, nesting areas and winter ranges (Revised Forest Plan, Table 3-5, page 3-28).

### **Brown Bear Habitat Management Guidelines**

1. Locate long-term concentrated human activities away from important seasonal brown bear concentrations. A minimum one-mile avoidance distance is recommended but could vary depending on site-specific circumstances that will also maintain adequate bear protection. This guideline is not intended to preclude the construction of facilities and trails that would reduce bear-human conflict.

2. Outside the Kenai Peninsula geographic area, manage areas of forest cover approximately 750-feet from both sides of important bear feeding areas in Moderate Gradient/Mixed Control, Large Contained and Flood Plain Class I anadromous stream process groups to provide cover for brown bears while feeding, or between brown bears and humans. Important brown bear feeding areas will be located with the advice of the Alaska Department of Fish and Game. Within the 750-foot brown bear management zone the following activities will not be allowed:

- a. new road construction;
- b. any vegetation management not intended to maintain or improve ecological conditions for brown bear. This guideline does not prohibit the relocation, reconstruction, or maintenance of existing roads and trails in these areas. During the process of reconstruction or relocation, emphasize opportunities to locate roads or trails outside of these brown bear zones. It is also not intended to preclude the construction of facilities and trails that would reduce bear-human conflict.

## **Raptor Nest Protection Management**

**Standard** - Bald eagle nest protection standards to be followed are outlined in a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (Appendix G, Processes Referenced in Standards and Guidelines, Bald Eagle MOU). There is a minimum 330-foot retention zone around known eagle nest locations. The active bald eagle nesting season is generally from March 1 to August 31. Refer to the MOU for restrictions pertaining to other management activities.

### **Guidelines**

1. Protect active goshawk nesting habitat. Active nests should have a forested, 300-acre/2,000 foot radius windfirm zone (an area of trees that are deep-rooted enough to be stable even in high wind), where available. Road construction through the zone is discouraged. Prevent continuous disturbance within a 660-foot radius of the nest during the active nesting season (generally March 1 to July 31). If monitoring reveals that previously active goshawk nests remain inactive for two consecutive years, protection measures for the site may be removed.
2. Minimize disturbance within 330 feet of active osprey nesting sites, during the nesting period.
3. Within two miles of known falcon nests, manage human disturbance and falcon habitat to protect nesting pairs and their young and to ensure prey habitat.

## **Seabird Rookeries Habitat Management Guideline**

Human activities may be restricted from known seabird colonies consistent with the Migratory Bird Treaty Act during the sensitive seasons specified in Table 3-5 (Revised Forest Plan, Table 3-5, page 3-28). Specific requirements will be determined in cooperation with the U.S. Fish and Wildlife Service during project analysis.

## **Waterfowl and Shorebird Habitats Management Guidelines**

1. Locate human activities to avoid disturbance of known waterfowl or shorebird intertidal concentration or nesting areas as follows:
  - a. Provide a minimum distance of 330 feet from human activities on the ground and waterfowl or shorebird intertidal concentration or nesting areas (including black oystercatchers). Forest vegetation within these zones is considered to be unsuitable for timber production.
  - b. If the need to restrict road access within these zones is identified during project review, roads may be closed either seasonally or year-long to minimize adverse effects on waterfowl and shorebird habitats. This guideline is not intended to preclude the construction of facilities and trails that would reduce human disturbance of waterfowl or shorebird intertidal concentration or nesting areas.
2. Maintain a 2,640-foot (1/2 mile) no disturbance buffer around active trumpeter swan nests to ensure their solitude and maintain viable nesting habitat. Within the no disturbance buffer the following disturbances will not be allowed:

- a. new road construction;
- b. any vegetation management not intended to maintain or improve ecological conditions for trumpeter swans. This guideline does not prohibit the relocation, reconstruction, or maintenance of existing roads and trails in these areas. During the process of reconstruction or relocation, emphasize opportunities to locate roads or trails outside of these trumpeter swan buffer zones. This guideline is not intended to preclude the construction of facilities and trails that would reduce human disturbance of active trumpeter swan nests.

### **Threatened and Endangered Species Standard**

All projects will comply with requirements of the Endangered Species Act, Marine Mammal Protection Act and their implementing regulations as well as other applicable federal and state laws and Forest Service Policy (FSM 2670). Guidelines 1. Manage human activities within 750 feet of any hauled out sea lion or seal on land areas to avoid disturbance.

### **Vegetation Management Guideline**

Incorporate exotic plant prevention and control into project planning and design.

### **Heritage Resources Standard**

Heritage resource site surveys are required for any surface or subsurface activities disturbing more than one square meter of ground (cumulative disturbance over project area). In addition, in areas of known heritage resources, sites or districts on, or eligible for the National Register of Historic Places, site surveys are required for any surface or subsurface ground disturbing activities.

### **Recreation and Tourism Standards**

1. Management activities will be designed to meet the Scenic Integrity Objective (SIO) as mapped. Within a watershed area, SIO acreage may be changed up to 20 percent within the range shown in Table 3-6 (Revised Forest Plan, Table 3-6, page 3-36) without amending the Revised Forest Plan. In no case may the effects of an activity exceed the level of scenic integrity of the lowest SIO in the range.
2. Management activities will be designed to meet the Recreation Opportunity Spectrum (ROS) class as mapped. Within a watershed association area, ROS class acreage may be changed up to 20 percent within the range shown in Table 3-7 (Revised Forest Plan, Table 3-7, page 3-37) without amending the Revised Forest Plan. In no case may the effects of an activity exceed the setting criteria of the highest ROS class in the range.

### **Emergency Motorized Access Standard**

Emergency motorized access for health and safety purposes is allowed throughout the Forest regardless of management area direction.

### **Fixed-wing Aircraft Standard**

Fixed-wing aircraft will be allowed to land on all suitable lakes, beaches, ice fields, and other areas regardless of management area direction unless closed by Forest Order, for health, safety or resource protection reasons. A special use



permit is required for commercial operations, except air taxis, flying point to point. Special use permits for such commercial operations shall be issued consistent with the management direction for the area of the proposed use.

In addition to the Revised Forest Plan, substantive resource management direction is found in the Forest Service manual and handbook system (FSM & FSH). Of particular importance to this Katalla project is the Soil and Water Conservation Handbook (FSH 2509.22) and Aquatic Habitat Management Handbook (FSH 2090.21). These handbooks provide guidance for fish protection measures, best management practices and riparian standards and guidelines. These are further discussed in the mitigation measures described for the alternatives considered in Chapter 2 of this EA.

**Katalla Project Public Involvement** - To date, the public has been invited to participate in the Katalla project in the following ways:

**Public Mailing** - In August 2001, a letter providing information and seeking public comment was mailed to 92 individuals and groups that had previously shown interest in Forest Service projects on the Chugach National Forest. This included federal and state agencies, Alaska Native groups, municipal offices, businesses, interest groups, and individuals. The letter was also sent by e-mail to 103 additional addresses. A total of 124 responses were received. Overall, people are concerned about the effects of this project on fish and wildlife, recreational users and the risks with respect to possible spills of drilling materials, fuel and any produced water or oil. These comments were grouped to develop the issue statements that follow. Many people expressed support for the proposal. In addition, the Katalla project has been listed on the Chugach National Forest Schedule of Proposed Actions since January 2001. This was mailed out four times a year to approximately 300 people and posted on the Forest website.

**Local News Media** - Announcements about the project were printed in the Anchorage Daily News and Cordova Times. Newspaper stories about the project have appeared in these newspapers and nationally in the New York Times and the Los Angeles Times. Flyers announcing the public meeting in Cordova were posted at six businesses with public bulletin boards and at the U.S. Post Office. An announcement was also placed on the Cordova cable television “scanner” channel, where local advertisements are run.

**Public Meetings** - Public meetings were held in Cordova and Anchorage, Alaska. The purpose was to provide project area information, present the proposed action, and discuss concerns and interests to be addressed in the environmental analysis.

**Meetings with Native Alaskan Groups, Communities, Agencies, and Others** - The Executive Director of the Native Village of Eyak was contacted and informed, as well as the Eyak Native Village Corporation. Continuous contact was made with Chugach Alaska Corporation. The mayor of Cordova was contacted and informed about the proposal. On August 8, 2001, George Brewster of Cassandra Energy, and Dave Ryland, Habitat Biologist with Alaska Department of Fish and Game, met with the ID team on site to discuss barge and road issues. Carol Huber, Forest Service Geologist, has met repeatedly with Greg Noble, BLM petroleum engineer, concerning technical aspects of drilling operations on public lands. Numerous on site field reviews were conducted in the

summer of 2002. These focused on the proposed access ramp in Alternative 2, and what is now Alternative 4. These reviews were conducted jointly between Forest Service specialists and specialists from the Alaska Department of Fish and Game and Cassandra Energy Corporation. The National Marine Fisheries Service (NMFS) has been consulted in regard to the Fish and Wildlife Conservation Act and the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery and Conservation Management Act. NMFS has provided a list of conservation recommendations for the project.

**Public review and comment of the Environmental Assessment** - On April 30, 2002, the Environmental Assessment was released for a 30-day public review and comment period as per 36 CFR 215.3. The Forest received approximately 38 comments during the review period. These comments are summarized in Appendix F along with Forest responses.

During the review period, Cassandra Energy Corporation sought review with the State of Alaska under the Coastal Management Program. In this review, the Alaska Department of Fish and Game objected to Alternative 2, and suggested a modification of the Alternative. The modified Alternative is now Alternative 4. The Forest Service decided to revise the EA rather than supplement the existing EA, to avoid confusion and clarify information in the first EA.

**Issues** - Issues for the Katalla project were derived from the public responses to the mailing, comments made at the public meetings, comments received in the public review of the EA, and meetings held with elected officials and with Alaska Natives. Similar issues were combined into one statement where appropriate. The following issues were determined to be key issues and within the scope of the proposed action and were used either to develop an alternative to the proposed action, or to add mitigation measures to the plan of operations as described in Chapter 2, or are tracked through the disclosure of the effects in Chapter 3.

**Issue 1: Effects on fish and wildlife and historic resources.** People are concerned about possible fish mortality from barge/landing craft traffic in the river, roads, fuel spills or other accidents with hazardous materials, and the use of water from Arvesta Creek for camp and drilling operations. There is also concern that increased coho salmon harvest by the drilling camp workers in addition to the harvest by the guided clients in the area could affect the fish population. Concern was expressed during the State of Alaska's Coastal Zone Consistency review process with respect to the access ramp proposed in Alternative 2. The concern was the potential to further destabilize the stream bank.

Concern for the effects on wildlife stem from disturbances by the alteration of habitat, effects on nesting migratory birds, and increased presence of humans leading to greater hunting or trapping. For bears, the concern is that the attraction to human foods or garbage and possible taking of bears under Defense of Life or Property provisions, along with an increase in people from the drilling camp hunting in the area, will cause a decline in bear populations.

An active bald eagle nest is located along the old temporary roadway, and there is concern that disturbance from trucks and increased use on the roadway will cause the birds to move or nest to fail. During the public involvement process, commenters also expressed general concerns that increased activity would cause a

decline in presence of shorebirds, and other migratory birds in the area.

On April 30, 2002, the Environmental Assessment was released for a 30-day public review and comment period as per 36 CFR 215.3. During the review period Cassandra Energy Corporation sought review of the project by the State of Alaska for consistency with the Alaska Coastal Management Program. In this review, the Alaska Department of Fish and Game objected to Alternative 2 and suggested a modification of the Alternative. The specific concern that was the basis for development of a new alternative was the barge access ramp to be constructed in Alternative 2, the preferred alternative. It was felt that construction would further destabilize an unstable stream bank of the Katalla River. The State of Alaska, Department of Fish and Game suggested a new barge landing area, and a modification of Alternative 2. The modified Alternative 2 is now Alternative 4. The Forest Service decided to revise the EA, rather than supplement the existing EA.

**Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, and any produced water or oil.** Given the possibility for natural hazards such as earthquakes or storms, human error, shipping or other transport mishaps, and equipment failure, there are concerns that spills or accidents involving hazardous materials associated with drilling operations will pollute the waters or contaminate the ground. The severity of effects depends on the type and amount of material, location, circumstances and conditions, and upon the contingency plans and other precautionary measures that could be taken. Concern was expressed about disposal of drilling fluids, cuttings or hazardous materials.

**Issue 3: Effects on recreational users.** The potential effects of this project on recreation users stem from disturbances from truck and barge activity, noise, recreational conflicts with drilling workers, and changes in the visual quality. People come to the area in late summer and fall with the expectation of a unique fishing experience in a wild and remote area of Alaska. These effects, or the anticipation of these effects, may also affect the business of cabin owners and outfitter-guides who cater to the recreational users.

**Issue 4: Consider the proposal in the context of the Roadless Area Conservation Rule.** The project is in the Bering Lake Roadless Area. The Roadless Area Conservation Rule of January 12, 2002, prohibits road construction and reconstruction activities (including temporary road construction) within inventoried roadless areas of the National Forest System. The Roadless Rule is enjoined from being implemented by a lawsuit filed in Idaho Federal District Court. The proposed action constitutes a prior existing reserved right (CNI Settlement Agreement 1982). Recent interim direction by the Chief of the Forest Service has reserved authority for allowing activities within roadless areas to the Regional Forester when road access is needed for a reserved right, such as the CNI settlement agreement. People are concerned that the presence of a road, heavy drilling equipment and people coming and going for up to two years would reduce the natural integrity and opportunity for solitude in the area. There is a concern that this activity would preclude the area from being recommended as Wilderness. The Bering Lake Roadless area was considered for Wilderness in

Alternatives D, E, and F of the FEIS for the Revised Forest Plan, however, it was not recommended in the Record of Decision of May 31, 2002.

**Issue 5: Monitoring of resources, e.g. water quality, and oversight of operations.** Monitoring requirements were developed with respect to a variety of resource concerns and are shown in Chapter 2.

The following concerns were considered but were not addressed through alternative development or mitigation measures. Some are already addressed through other processes or their resolution is beyond the scope of this project. As needed, resource effects related to these concerns are discussed in Chapter 3.

1. One person felt that the Federal Government had no valid property rights in the area, and the private property rights in the area were also not valid. The Master Title Plat and public land records in the Administrative Record show the land status for the area. This concern is outside the scope of this project decision.
2. There were comments on how development would be good for the local economy and the opposite, questioning whether development was worth endangering the commercial fishery. Whether the corporations feel that development is economically feasible and worth the risk of pursuing is a valid existing right, granted by the 1982 CNI Settlement. The scope of the Forest Service decision is limited to the review and approval of the way they go about doing it in the Plan of Operations. The environmental consequences of the proposed action on the fishery resource of the area are disclosed in Chapter 3.
3. There is a concern whether or not the party will be responsible for any hazardous spills or other environmental damage. Cassandra Energy Corporation is responsible for any hazardous spills or environmental damage. A spill prevention plan and contingency plan is included in the Plan of Operation. In addition the State of Alaska requires a \$100,000 bond and the Forest Service requires a minimum \$10,000 bond for this project.
4. Concern was expressed of the need to address field development of oil and gas in an EIS. This issue is beyond the scope of the proposed action, as the proposed action is for temporary access and exploratory drilling, not field development. The following is an explanation of what may happen after an exploratory well is drilled:

The April 30, 2001, Cassandra Energy Corporation's (CEC) Plan of Operations covers the drilling of one exploratory (wildcat) well from private land, directionally into CAC oil and gas rights (which underlie Forest Service surface estate). Exploratory wells are drilled to confirm the presence or absence of suspected oil and gas deposits. If oil is encountered, it may or may not be economic to produce. Once the well is drilled, if indicated, it may be tested. Prior to testing CEC shall submit a Notice for Approval to the Forest Service detailing the manner of testing to be performed. If not covered in the Permit to Drill, then CEC must submit an Application for Sundry Approvals to the State of Alaska, Oil and Gas Conservation Commission (AOGCC). In general, there are two possible outcomes: oil is not encountered or oil is encountered. These outcomes are described below:

**a) Dry Hole** - If oil or gas is not discovered in commercial quantities, the well is considered dry. If the well is dry, the operator must comply with State and federal procedures for plugging a dry hole. Well abandonment operations may not be started without prior approval of a "Sundry Notices and Reports on Wells" by the authorized officer of the U.S. Department of the Interior, Bureau of Land Management (BLM). The Sundry Notice serves as the operator's Notice of Intent to Abandon. An Application for Sundry Approvals must also be submitted to AOGCC for their approval. CEC may want to drill another exploratory well, which would require an additional Plan of Operations to be submitted to the Forest Service for approval. Information that was covered in the previous Plan need not be duplicated.

**b) Not Dry** - If determined to warrant testing and if testing indicates the well may be productive, the well will be completed. Well completion involves installation of steel casing that is perforated opposite the "pay zone". After casing the well is flow tested to determine the well's deliverability. If, after the completion of the test, it is determined that the well will economically produce oil and gas, the drill rig and other equipment is removed and the well is equipped for production. A well completion report for each well must be filed with BLM (per CNI Agreement) and with AOGCC. The completion of a wildcat well as a commercial producer marks the beginning of the development of an oil and gas field.

**c) Field Development** - In order to develop a field, the operator must submit and receive approval of a subsequent Plan of Operations (Application for Permit to Drill). The approval will be subjected to review under NEPA. Forest Service authority to regulate additional drilling (field development or additional wildcat wells) is as follows (CNI Agreement, Section 6D and H):

***D. Requirements for Operations.** All operations by CNI, its successors or assigns, shall be conducted in accordance with a plan of operations approved by the United States. No entry can be made onto National Forest System lands for the purpose of conducting oil and gas operations without a special use permit issued by the Secretary of Agriculture after submission and approval of an operating plan as prescribed herein, and containing such assurances as the Secretary of Agriculture deems necessary or the protection of fish and wildlife and other public resources, and provisions for public use of the Katalla Area.*

***H. Operating Plan Requirements.** Prior to conducting any operations in exercise of the grant of rights in the Katalla Area, CNI shall have prepared an operating plan to be submitted to the Secretary of Agriculture. This operating plan will prescribe the methods of conducting oil and gas exploration, development, production and transportation. Upon approval, this operating*

*plan will be the principal document upon which the Secretary of Agriculture will issue a special use permit.*

*(c) For the development drilling of a pool or field, an operating plan shall be prepared that:*

*(i) Identifies the location of each well to be drilled in the ensuing 24 months. Information common to all wells need only be identified once. Information peculiar to individual wells, such as-anticipated unique construction methods, shall be identified.*

*(ii) Identifies all structures and facilities such-as roads, pipelines, flow lines, sludge pits, waste ponds collection-treatment, storage, and transfer facilities, and other ancillary facilities such as camps, maintenance areas, and airstrips proposed for construction in the ensuing 24 months.*

A Field Development Plan consists of a coordinated collection of site-specific drilling and surface use proposals for individual wells. The operator is required to submit the plan when sufficient information is available to project a reasonably foreseeable development of the field. Sufficient information may not be available and more confirmation wells will be drilled to delineate the characteristics of the reservoir. The proposed field development is subject to environmental analysis and may result in approval or rejection. All drilling operations require an approved Permit to Drill from AOGCC.

Chugach Alaska Corporation holds 10,680 acres of subsurface oil and gas rights reserved under the 1982 CNI Settlement Agreement in the Katalla Area (Figure 1). No adjacent federal lands are under lease for oil and gas. Statewide spacing regulations govern how many wells could be drilled in the Katalla Area. Regulations 20 AAC 25.055(a) state:

*(3) if oil has been discovered, the drilling unit of the pool is a governmental quarter section; not more than one well may be drilled to and completed in that pool on any governmental quarter section.*

**d) Production** - Production is a combination of operations that includes: (1) bringing the fluids (oil, gas, and water) to the surface; (2) maintaining and/or enhancing the productive capacity of the wells; (3) treating and separating the fluids; (4) purifying, testing, measuring, and otherwise preparing the fluids for market; (5) disposing of produced water; and (6) transporting oil and gas to market. The production of oil and gas from a single well is usually initiated as soon as drilling is completed and the well is developed for production. In the meantime, other wells may be in production, being drilled, or exist only in the field development plans. These activities are approved in the Field Development Plan. All activities on National Forest land and those which occur in the exercise of

CACs oil and gas rights (1982 CNI Agreement) must be approved under a Plan of Operations, and subject to NEPA. Past production in the Katalla Area was limited to tertiary age rocks at a depth ranging from 360 to 1,750 feet on private lands (Claim No.1). This proposal is to test deeper formations for which there is no information to delineate the size or any specifics of field development. Analysis beyond this EA would be highly speculative.

Wells may be temporarily shutdown and under state regulations, if operations are not resumed within 12 months, the operator shall abandon or suspend the well. Once a field is in production, the CNI Agreement requires continuous commercial production, but allows for shutdowns not to exceed 180 days.

**e) Abandonment** - All abandonments, whether they involve one wildcat well, a well no longer productive, or an entire field, require the approval and acceptance of the abandonment of the individual well(s) by the BLM and the Forest Service. An acceptable abandonment includes (1) plugging of the wellbore and (2) reclamation of the land surface to a stable and productive use. AOGCC must also approve plugging of a well.

In summary, to embark on a field development EIS at this time would be speculative; as activities involving field development are not ripe for analysis, and are not the proposed action, (Council on Environmental Quality, 1997, page 16-2; Huber, C.S., 2002). Subsequent approvals are required prior to field development, and subject to disclosure upon proposal in the future under NEPA. The recently completed Revised Forest Plan and accompanying FEIS set limits on the area available for exploration and development (Revised Forest Plan, Record of Decision, page 12). The FEIS and Planning Record contain a great deal of resource information with respect to the surface resources in the area.

5. Some people commented on a need for a citizen oversight committee. At the exploratory phase this would be unprecedented, perhaps if field development occurred it would be appropriate to consider. There's nothing to prevent a citizen committee from organizing if they want to.

6. One person commented that there should be inclusion of provisions in the SUP for whistle blower protection for workers reporting safety and environmental concerns including shutdown of operations " ... if more than 10% of the employees are afraid to bring up safety and environmental concerns because of fear of retaliation." Whether "whistleblower" protection applies to the activities authorized under the SUP is a matter of State and Federal law and is not addressed in the SUP.

7. Concerns were expressed about bonds and fiscal responsibility. Bonds will be required as per existing regulations. Cassandra is the assignee and carries all fiscal responsibility.

## **Federal and State Permits, Licenses, and Certifications**

To proceed with the proposed action as addressed in this EA, various permits must be obtained from federal and state agencies. The following permits will be obtained by CAC or Cassandra Energy:

### **U.S. Fish and Wildlife Service**

There is an eagle nest less than 330 feet from the existing temporary road. An eagle nest variance is required if the road is less than 330 feet from an eagle nest. Otherwise, the road could not be used for periods of time when eagles are present, which is from March 15 to May 31; June 1 to July 1; and August 1 to August 31.

### **U.S. Army Corps of Engineers**

The proposed barge access ramp requires a Nationwide permit #36 (Authority: 33 USC 410, Section 10; 1412, Section 404). The proposed activity involves excavation into the stream bank at the off loading site, to create a ramp. This permit application has been submitted.

### **U.S. Environmental Protection Agency**

Storm water discharge permit is not required for construction activities which will disturb less than 5 acres; over 5 acres of disturbance requires a permit.

The Section 402 of the Clean Water Act requires that all point source waste water dischargers obtain and comply with a National Pollutant Discharge Elimination System (NPDES) permit. This operation will discharge wastewater.

A "spill prevention, control, and countermeasure plan" (SPCC), is required under 40 CFR Part 112 and any discharge of oil (oil spill) must be reported immediately to the National Response Center, EPA.

### **State of Alaska, Oil and Gas Conservation Commission**

Before drilling an oil well in the state of Alaska, a person shall submit and obtain the commission's approval of an application for a Permit to Drill (20 AAC 25.005).

### **State of Alaska, Department of Natural Resources**

Tidelands Permit is required (State has authority from water line to mean-high water line) for occupancy and use of tidelands and submerged lands.

A temporary water use permit (5 years) or water rights permit is required for use of water from Arvesta Creek for drilling and camp operation.

### **State of Alaska, Department of Environmental Conservation**

Certification of compliance with Alaska Water Quality Standards (Section 401 Certification) if needed.

Solid Waste Disposal Permit (Section 402 of the Clean Water Act) is required as follows:

- 1) Camp waste: If they intend to bury the incinerator ash or waste onsite, they will need a permit.
- 2) Drilling waste: The applicant will need either a permit or an approval from DEC for disposal and/or storage of drilling waste. A permit is required to dispose of drilling waste at the site, per 18 AAC 60.430(b)-(e). Storing drilling waste



prior to disposal offsite at a permitted facility must be approved by the Department per 18 AAC 60.430(a).

Septic system for camp use must be constructed to DEC standards.

18AAC50.390; Alaska Statute 46.14, requires DEC Air Permit (Permit-by-Rule) for oil and gas drilling operations.

18AAC75; Alaska Statute 46.04.030(b) requires a DEC Oil Discharge Prevention and Contingency Plan (C-Plan) Approval.

18AAC72.500 Requires a DEC permit for disposal of nondomestic wastewater into or onto land, surfacewater, or groundwater.

### **State of Alaska, Department of Fish and Game**

A Title 16 permit is required for activities within or across anadromous streams. These activities include unloading barge in anadromous stream, fill for barge landing site if needed, and use of water from Arvesta Creek for drilling and camp operation, Alaska Statute 16.05.840, (Fishway Act) and Alaska Statute 16.05.870, (Anadromous Fish Act).

### **U.S. Coast Guard**

Barge company must have a permit to transport fuels and other hazardous materials to the offloading site.

## **Applicable Laws and Executive Orders**

Shown below is a partial list of federal laws and executive orders pertaining to project-specific planning and environmental analysis on federal lands. While most pertain to all federal lands, some of the laws are specific to Alaska. Disclosures and findings required by these laws and orders are contained in Chapter 2 and 3 of this EA.

### **Alaska Native Claims Settlement Act (ANCSA) of 1971**

#### **The 1982 CNI Agreement**

1982 Chugach Natives Incorporated (CNI) Settlement Agreement (authorized under ANCSA, ANILCA, and Alaska Statutes 38.05.020 and 38.05.315).

#### **Bald Eagle Protection Act (as amended)(16 USC 668-668d)**

#### **Fish and Wildlife Coordination Act of 1934 (as amended)**

#### **Migratory Bird Act of 1918 (as amended)**

**National Historic Preservation Act of 1966 (as amended)**

**Noxious Weed Act of 1974**

**National Environmental Policy Act (NEPA) of 1969 (as amended)**

**Clean Air Act of 1970 (as amended)**

**Marine Mammal Protection Act of 1972**

**Endangered Species Act (ESA) of 1973 (as amended)**

**Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974  
(as amended)**

**National Forest Management Act (NFMA) of 1976 (as amended)**

**Clean Water Act of 1977 (as amended)**

**Coastal Zone Management Act (CZMA) of 1972 (as amended)**

**Alaska National Interest Lands Conservation Act (ANILCA) of 1980**

Access to inholdings - ANILCA Section 1110(b), and Section 1323(a)(b),  
Notwithstanding any other provision of law, and subject to such terms and conditions as  
the Secretary of Agriculture may prescribe, the Secretary shall provide such access to  
nonfederally owned land within the boundaries of the National Forest System as the  
Secretary deems adequate to secure to the owner the reasonable use and enjoyment  
thereof: *Provided*, That such owner comply with rules and regulations applicable to  
ingress and egress to or from the National Forest System.

**Archeological Resource Protection Act of 1980**

**Magnuson-Stevens Fishery Conservation and Management Act of 1996**

**Executive Order 11593 (cultural resources)**

**Executive Order 11988 (floodplains)**

**Executive Order 11990 (wetlands)**

**Executive Order 12898 (environmental justice)**

**Executive Order 12962 (aquatic systems and recreational fisheries)**

**Executive Order 13112 (invasive species)**

**Executive Order 13212 (expedite energy-related projects)**

**Planning Record** - Additional documentation, including more detailed analysis of  
project-area resources, may be found in the project planning record located at the  
Cordova Ranger District Office in Cordova, Alaska. Other reference documents such as  
the Revised Forest Plan are available at public libraries throughout South-central Alaska  
as well as at the Forest Supervisor's Office in Anchorage, and the Cordova Ranger  
District Office in Cordova, Alaska. The Revised Forest Plan, FEIS and Record of  
Decision are available on the Internet at:

**<http://www.fs.fed.us/r10/chugach>**



## Chapter 2

**Introduction** - This chapter describes and compares the alternatives considered by the ID team for the Katalla project. It includes a description of items common to all alternatives, how alternatives were developed, alternatives analyzed in detail, alternatives considered but not analyzed in detail, and a comparison of the alternatives by issue. Mitigation and monitoring requirements for the project are also summarized. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). For a better understanding of the effects of the alternatives, see Chapter 3.

**Items Common to All Alternatives** - All alternatives are consistent with the Revised Forest Plan. All applicable forest-wide standards and guidelines are incorporated. The Forest Service uses many mitigation and preventive measures in the planning and implementation of projects. The application of these measures begins during the planning and design phases of a project. Additional direction comes from applicable Forest Service manuals, and handbooks.

Operations under Alternatives 2, 3 and 4 would be conducted in accordance with an approved Plan of Operations; the approval includes requirements that the operations adhere to provisions of the 1982 CNI Settlement Agreement, Onshore Oil and Gas Order No. 1, Forest Service Regulations (228.108 Surface use requirements), applicable Standard Lease Stipulations (BLM Form 3100-11 Offer to lease and lease for oil and gas), State and Federal required permits, and Forest Service Conditions of Approval (including applicable Best Management Practices).

Monitoring will be done at startup and throughout the operations to ensure that operations are conducted according to the approved Plan of Operations. Specific direction regarding the role of the Forest Service in monitoring activities during project operations (Section 6.J. of the 1982 CNI Agreement<sup>5</sup>), are as follows:

*“the Secretary of Agriculture or other authorized government official may suspend or modify all or some operations under the following situations where the Secretary or his representative knows or has cause to know that:*

- (a) CNI or other operator is acting contrary to the operating plan or special use permit; or,*
- (b) CNI or other operator is acting in violation of any applicable Federal, state, or local law, regulation, or permit, for the abatement of air or water pollution, or for the protection of the land, fish or wildlife; or,*
- (c) The operations are determined to be causing or pose an immediate threat of damage to multiple use resources of the Katalla Area or other public lands; or,*

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<sup>5</sup> Page 33-34 of the 1982 CNI Settlement Agreement.

(d) *The operations are determined to pose a threat to worker or public safety.*”

**Operations Description** - Under Alternatives 2, 3 and 4, operations would continue for up to two years. The drilling operations will occur on private land and overseen by State of Alaska officials. The Forest Service must approve the Plan of Operations and assure that it meets Forest Service standards. The Region 10 Forest Service Handbook includes a number of “Best Management Practices” (BMPs), which relate to the use and maintenance of the temporary road and drilling operations. The Handbook requires that projects have a contingency plan for oil, fuel, or other hazardous substance spills and the necessary equipment for containing them (FSH 2509.22.12\_9). BMPs for fuel tanks, fueling and maintenance of vehicles, and other related activities are listed in FSH 2509.22.12\_9. Wastes will be incinerated on site or shipped out to the appropriate disposal facility (FSH 2509.22.12.16).

An ocean going barge would make approximately 20 to 25 round trips to off load equipment and supplies at a site on the west side of the Katalla River on State of Alaska land (see Appendix A, Map 2). Up to 2.5 acres of storage area may be required to temporarily store equipment and supplies until it can be hauled up the Katalla River by a shallow draft small barge. Brush clearing will be required to remove small diameter recent growth from the storage area. A 50-foot buffer will be left along the bluff above the Katalla River to reduce crosswinds on the airstrip; and a 100-foot buffer will be maintained along Irish Creek at the southwest end of the area for riparian protection. Occasional helicopter and/or small plane flights will provide for personnel access, and deliver equipment and supplies to an existing airstrip located on State of Alaska land near Katalla (see Appendix A, Map 2). Drilling equipment, materials, supplies and personnel will be transported from the storage area by shallow draft barge upstream about 1.5 miles at high tide (12-foot or higher) and off loaded at an access ramp constructed on National Forest System lands, or at the new temporary roads constructed in Alternatives 3 and 4. Approximately 50 to 60 small barge trips would be needed during the initial mobilization stage and two to three barge trips per week after that for the duration of the project.

There are seasonal timing considerations that could affect pink salmon spawning, migratory birds, and guided hunters and anglers. The Alaska Department of Fish and Game has proposed restricting barge activity when pink salmon are spawning, approximately from the beginning of August to possibly mid September. If the Plan of Operations and permits are approved, CEC has proposed conducting the mobilization phase (which would include the greatest amount of barge traffic, the brush clearing and road building) in the winter of 2002-2003. Migratory birds and the guided hunters and anglers would not be present then.

Another activity common to Alternatives 2, 3 and 4 is the use of an old roadway constructed for operations at the Katalla oil field, and reconstructed in 1981 to provide access for drilling on private lands. An active special use permit for the road has been in effect from 1992 to the present<sup>6</sup>. The old roadway is located on a topographically high area which is an uplifted beach that consists of well-drained, stable sand and beach gravel. It is the most direct route and there were no other routes that would provide for a stable route and offer less surface disturbance. The BMPs relating to road construction and maintenance are found in FSH 2509.22.12 and 14. A list of specific BMPs are listed under mitigation measures in this chapter.

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<sup>6</sup>The permit is held by the land owner and expires December 31, 2002.

All action alternatives would require barging equipment up the Katalla River and trucking the equipment to the drilling site. In Alternative 2, the barge landing site would be near the end of the old roadway (see Appendix A, Map 2); in Alternative 3 it would be one-half mile downstream (see Appendix A, Map 3); and in Alternative 4 it would be about 550 feet downstream. Unloading the barges could take a few hours or longer depending on size and number of items and the complexity of the task. Except at the Alternative 2 landing site, the barges would need to go dry during the low tides and leave on the following high tide, when the unloading takes more than a few hours. The barges are designed to do this. No adverse effects to the channel or fish habitat are anticipated.

**Alternative Development Process** - Cassandra Energy proposes to drill for oil and gas on private land, within the old Katalla oil field. Numerous shallow wells have been drilled in this area prior to 1933; 18 of them produced oil. A deeper exploratory well was drilled in 1985-6. This proposed well would be drilled within 40 feet of the 1985-6 well and will utilize the existing drill pad. Currently there is an existing temporary roadway on National Forest System lands that provides access to the now abandoned crew camp and drill site on private lands<sup>7</sup>. The roadway is not part of the Forest's Transportation System although the route is still intact. In the Plan of Operations that Cassandra Energy submitted, they propose to use and maintain the temporary access road<sup>8</sup>, use the existing crew camp footprint<sup>9</sup>, and use the existing drill site footprint<sup>10</sup>. Both camp and drill site are on private land. Maintenance of the existing roadway would consist of removal and clearing of small diameter trees and brush that have grown since 1988, and removal of old bridges and placement of seven temporary prefabricated steel bridges over stream crossings. Alternatives were heavily influenced by the presence of an existing roadway.

In the original Plan of Operations that Cassandra submitted, they proposed construction of approximately 0.5 mile of additional temporary road on the east side of the Katalla River to allow access to the old roadway. This was because it was uncertain whether a barge could navigate further up the Katalla River through some shallow water to directly access the old roadway. Through a depth survey of the Katalla River, it was determined they can access the old roadway directly and there is no need to construct the 0.5 mile of additional temporary road on the east side of the river. The original proposal became Alternative 3 because it avoids some pink salmon spawning areas, avoids some sportfishing areas and provides for barge access at lower tides, thus providing more times available for barge access and addressing several of the key issues raised during the scoping process.

On April 30, 2002, the Environmental Assessment was released for a 30-day public

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<sup>7</sup> The camp was last used during the drilling of an exploratory well in 1985-6.

<sup>8</sup> Also called the "old roadway". The existing road is a temporary road as defined in Forest Service Manual 7700: Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long-term management (36 CFR 212.1).

<sup>9</sup> The footprint means the 1985-6 cleared and disturbed area. The old structures are not usable and must be replaced.

<sup>10</sup> The footprint means the 1985-6 clearing and disturbed area. The proposed well would be drilled just 40 feet from the 1985-6 well using rig matting laid down for that operation.

review and comment period as per 36 CFR 215.3. During the review period, Cassandra Energy Corporation sought review with the State of Alaska under the Coastal Management Program. In this review, the Alaska Department of Fish and Game objected to Alternative 2, and suggested a modification of the Alternative. The modified Alternative is now Alternative 4. The Forest Service decided to revise the EA rather than supplement the existing EA, to avoid confusion and clarify information in the first EA.

**Alternatives Analyzed in Detail** - Four alternatives are analyzed in detail:

**Alternative 1. No Action.** The proposed action of drilling on private land, via the use and maintenance of an existing temporary road and a barge landing area is not authorized. Sportfishing and hunting would continue, the holder of the current road use permit would request renewal of the permit, and activity on the private land would continue. CAC's rights under the 1982 CNI Settlement Agreement would continue until December 31, 2004, and they would likely submit an additional Plan of Operations. It would not provide employment estimated at up to 66 people at peak times, and 44 to 48 jobs at other times, for the duration of the project, about two years. The oil and gas potential of the area would not be further evaluated at this time.

**Alternative 2 (Appendix A, Map 2).** An ocean going large barge would off load equipment and supplies at a site on the west side of the Katalla River on State of Alaska land (see Appendix A, Map 2). Up to 2.5 acres of storage area may be required to temporarily store equipment and supplies until it can be hauled up the Katalla River by a shallow draft small barge. A 50-foot buffer will be left along the bluff above the Katalla River to reduce crosswinds on the airstrip; and a 100-foot buffer will be maintained along Irish Creek at the southwest end of the area for riparian protection. Occasional helicopter and/or small plane flights will provide for personnel access, and deliver equipment and supplies to an existing airstrip located on State of Alaska lands near Katalla (see Appendix A, Map 2). Under this alternative, drilling equipment, supplies, and other materials would be barged 1.5 miles up the Katalla River to a landing site near the end of an old 2.5-mile existing roadway, which leads to the camp and drilling site. The river is shallow in places, so even a shallow-draft barge will need a 12-foot tide or greater to access the site. At the landing site, the riverbank will be graded to create a 25 by 25-foot access ramp (Appendix C) to transport supplies from the barge to the end of the old roadway.

A staging area of up to two acres of National Forest System lands would be cleared of trees and vegetation along the roadway about 200 yards east of the river. Rig matting (Appendix D) would be placed on the cleared area to protect the soil. Slash and stumps would be stored along the edge of the clearing and then scattered back over the area when the project is completed (FSH 2509.22.14.19). The area is flat, therefore the debris would not be transported to streams or other areas where it would cause erosion or flow problems.

On the old roadway, fallen trees and brush would be cleared, minor grading would be done, and seven temporary pre-fabricated bridges would be installed over stream crossings. The operator will not disturb the streambanks, alter the channels, or have equipment in the streams to install the bridges. No culverts would be installed; existing culverts and ditches would need to be maintained. No sand, gravel or rock (mineral materials) would be required.



The drilling activity would take place on private land and would use land that was cleared in 1985-6. A few buildings are still intact; however there will be a need to construct a crew camp, a drill pad, storage facilities, and other support facilities. The buildings and tent platforms that comprise the existing crew camp would be cleared and a new camp constructed. Water for the camp and operations will be taken from Arvesta Creek at the rate of 31,700 gallons per day. The drill pad and storage area for hazardous wastes will be designed to prevent soil and water contamination if there are spills or leaks.

**Alternative 3 (Appendix A, Map 3).** Alternative 3 is similar to Alternative 2, except that the operator would build a 0.5-mile new temporary road running from the end of the old roadway to a point one-half mile downstream on the east bank of the Katalla River. Barges would then travel only 1.0 mile upstream and could use 11-foot tides. This road would require crossing the upstream end of a 40-foot wide slough with either a bridge or multiple culverts. A staging area up to two acres would be cleared at the downstream landing site using the methods described above. An additional 900 feet of new road would also be built along the old roadway to create a detour around an eagle nest tree. The proposed road construction would require mineral materials either from a quarry on private land or shipped in from elsewhere.

**Alternative 4 (Appendix A, Map 4).** This alternative was proposed by the State of Alaska during the Coastal Zone Consistency review process. Alternative 4 is similar to Alternative 2, except that the operator would build approximately 550 feet of new temporary road extending from the end of the old existing roadway to a gravel bar downstream on the east bank of the Katalla River. The (shallow) barge landing point or entry point leading to the existing old roadway on the Katalla River for Alternative 4 is approximately 550 feet downstream from the Alternative 2 landing.

The river bank above the gravel bar is a gradual slope that would not require any excavation for an access ramp. It is covered with young alder and appears to have been used as an access point and staging area during the 1985-86 activities. An area about 100 by 100 feet (0.2 acres) would be needed for an access road and a turning area for trucks and other equipment. Rig matting would be used in this area to protect the soil from erosion. A 30-50 foot vegetation buffer would be left next to the river to prevent any sediments from being washed into the river.

After the slope area the road would run about 250 feet over an old uplifted flood channel vegetated with young Sitka spruce. The soils consist mainly of gravels and sand, and rig matting may be laid on the cleared surface. There are four shallow channels that have water in them at various times of the year. These would be crossed with temporary bridges.

The final 300 feet of road would cross through a dense stand of young Sitka spruce (150 feet) and then over a sphagnum moss wetland area with small spruce and some alder patches (150 feet). The soil here has a layer of marine clays and sediments overlying the previously mentioned gravel. Rig matting will be required, with logs and brush or other materials for additional support in the wetter areas.

For Alternative 4, a road and staging area have been flagged, 550 ft long and 20 feet wide. This area is 0.5 acre. CEC would need an area at least 100 feet wide at the stream

entry point in order to turn equipment around. A two-acre staging area at the old roadway as proposed in Alternative 2 would be also be needed.

**Alternatives Considered but Eliminated from Detailed Study** Five additional alternatives were considered during the analysis, but not studied in detail. These are described below, along with the reasons for not considering them further.

1. Possible ice road in winter. This was eliminated from detailed study because of the relatively warm maritime climate of the area. It might be possible to build an ice road in the winter during cold spells, but warmer periods occur in the winter that would destabilize an ice road. Additionally, there is an old roadway in the area that provides access, which is stable and usable with some maintenance required.
2. Direct barge access to the west side of the Katalla River. The work would involve constructing 0.5 miles of temporary road on the west side of the Katalla River, a bridge across the river, and use and maintenance of the 2.5 miles of the old roadway. Equipment would be transported to a crew camp and drill site on private land. This was eliminated from detailed study because of the presence of an old roadway on the east side of the river and the presence of extensive wetlands on the west side of the river. This would be nearly identical to Alternative 3 with the exception that a major bridge across the Katalla River would be constructed. It was not apparent how construction of a major bridge would reduce environmental consequences, given the additional impacts to the wetlands and disturbance associated with bridge construction.
3. Use of helicopters to deliver drilling equipment and materials. This alternative would require conveying large pieces of equipment to the drilling sites, including drilling rigs, trucks, pumps, and other large pieces of equipment. Frequent storms in the winter and rainy or foggy weather in the summer make it difficult to get helicopters to the site safely on a regular basis. A large landing area would need to be cleared for helicopters to land equipment. This was eliminated from detailed analysis because of the presence on an old roadway and the weather. Given the high cost and likely downtime due to weather this alternative was not considered in detail.

The following two additional alternatives were proposed in the public review and comment period of April 30, 2002:

1. Construct a new road from the Strawberry Point area along the coast directly to the private land where the drilling is proposed. This would avoid barging equipment and materials on the Katalla River. This would involve construction of approximately two miles of new temporary road. This was eliminated from detailed study because of the presence of an existing old roadway on the east side of the Katalla River, and the presence of extensive wetlands between Strawberry Point and the private land. It was not apparent how construction of approximately two miles of new temporary road would reduce environmental consequences, given the additional impacts to the wetlands and disturbance associated with construction. It would result in less disturbance to spawning gravels and recreation associated with the Katalla River. In the event a discovery of oil and gas is made this could be a viable alternative for long-term access.

2. Utilize the Katalla Slough to barge drilling equipment and supplies to the private land. This would avoid the Katalla River, and avoid use and maintenance of the existing old roadway; as the slough extends from the river to close proximity to the private land. This was eliminated from detailed study because Forest Service measurements of the channel depths show that the slough is too shallow for barging equipment and supplies. To be a viable alternative approximately two miles of the slough would have to be dredged and a road would have to be built across wetland areas. It was not apparent how this would have less disturbance than barging on the Katalla River and utilizing an existing old roadway.

**Comparison of Alternatives Considered in Detail** The proposed action (Alternative 2) and three alternatives are considered in detail. Alternative 1 is the no-action alternative, under which the Plan of Operations would not be approved and no drilling would take place at this time. The other alternatives represent different means of satisfying the purpose and need by responding with different emphases to the key issues discussed in Chapter 1. Maps of all alternatives considered in detail are provided in the map packet.

**Alternative 1 (No Action).**

The Plan of Operations would not be approved at this time. It does not preclude re-submitting a Plan of Operations for other areas, or for the same project area at some time in the future. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) requires that a "no action" alternative be analyzed. This is also in accordance with Section 6-A of the CNI Settlement Agreement, in which the United States has a reserved right to limit or prohibit operations, and Section 6-B, which states, "the United States reserves all authorities to regulate all and prohibit any particular surface occupancies within the Katalla Area". This alternative represents the existing condition against which the other alternatives are compared.

**Resource Outputs** - The No Action Alternative would not provide Cassandra Energy the opportunity to further evaluate the oil and gas potential of the Katalla area and would not allow CAC to exercise their rights under the 1982 CNI Settlement Agreement. The economic and social benefits that could be derived from these resources would be foregone. Selection of the No Action Alternative would not necessarily violate the presidential Executive Order 13212: Actions to Expedite Energy-Related Projects, which emphasizes, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people." This alternative could be selected if this analysis were to find that the project could not be done in a safe or environmentally sound manner.

**Economic Effects** - There were a number of public comments asking about the economic effects of the alternatives, particularly to the local economy. Cordova is the closest community and is presumed to be the "local" economy. The economic effects can be divided into those derived from the proposed exploratory drilling activities and those that would ensue if payable quantities of oil and gas were found. For the exploratory phase, the No Action alternative would not provide the estimated employment of up to 66 people at peak times, and 44 to 48 people at other times for the duration of the project - about two years. The applicant said that he hoped to hire CAC shareholders for at least 10% of the jobs, some of whom could be from Cordova, Tatitlek, and Chenega areas.

The No Action alternative would forego the air, boat, and lodging services, and some miscellaneous supplies that would be obtained in Cordova, and the lodging services that the Katalla lodges could provide to oil workers and government employees.

The No Action alternative would prevent any adverse effects the drilling activities might have on the guided hunting and fishing businesses in the Katalla area. Barge traffic (two to three barges per week) could disturb guided anglers on the Katalla River for about two weeks of the eight-week coho salmon fishing season, or perhaps 20 of the 80 annual clients. Disturbances to hunters would be less, since they could hunt in areas away from the river. It is hard to quantify how many clients would cancel or not return because of the presence of barges, but some loss would be expected. Air services that fly clients from Cordova to Katalla or other businesses that benefit from the anglers and hunters would not be affected under the No Action alternative.

Since it is not known if there are payable quantities of gas and oil, the economic effects of the production phase cannot be quantified. We can only say that the No Action alternative would preclude the possible royalty income from gas and oil for CAC shareholders. The economy of Cordova would not receive the stimulus that might occur with development. Conversely, the No Action alternative would preserve the economic benefits of the current hunting and fishing services. It might also be said that the No Action alternative would prevent the adverse effects an oil spill or other catastrophe associated with development might have on the commercial fishery, which is the mainstay of the Cordova economy.

**Environmental Consequences** - A summary of the effects of implementing Alternative 1 by key issue is presented below:

Issue 1: Effects on fish and wildlife and historic resources. None.

Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil. How will drilling fluids, cuttings or hazardous materials be disposed of? There would be no risk of spills.

Issue 3: Effects on recreational users. None.

Issue 4: Consider the proposal in the context of the Roadless Area Conservation Rule. There would be no change in the Bering River Roadless area.

Issue 5: Monitoring: both of resources, e.g. water quality and oversight of operations. None required.

### **Alternative 2 (Proposed Action, Appendix A, Map 2).**

**Resource Outputs** - This alternative would provide Cassandra Energy the opportunity to further evaluate the oil and gas potential of the Katalla area and would allow CAC to exercise their rights under the 1982 CNI Settlement Agreement. In the event oil and gas are discovered in paying quantities, this project could contribute to the nation's oil and gas supply, and provide for royalty income to CAC shareholders and other Native Corporations. This would be in keeping with the presidential Executive Order 13212: Actions to Expedite Energy-Related Projects, which emphasizes, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people."

**Economic Effects** - The economic effects for all of the action alternatives would be fairly similar, since the project would be implemented, and would essentially be the opposite of the effects described in the No Action alternative.

The proposed exploratory drilling could provide up to an estimated 66 people at peak times, and 44 to 48 jobs during the normal operations. The project is estimated to last two years. The applicant says he hopes to hire at least 10% CAC shareholders, some of whom could be from the Cordova, Tatitlek, and Chenega areas. The applicant expects to use some air, boat, and lodging services in Cordova and to make some purchases of supplies there. Lodge owners in Katalla could provide cabins to oil workers until the camp is established, and for government employees throughout the project.

The proposed barge activities, two to three barges per week, could disturb guided anglers on the Katalla River for about two of the eight weeks of the coho salmon season, or perhaps about 20 of the 80 clients per season. If clients cancel reservations or do not return, the guides, air services, and other businesses would be affected.

Since it is not known if there are payable quantities of gas and oil, the economic effects of production cannot be quantified. We can only say that production would provide royalty income from gas and oil for CAC shareholders. Goods and services obtained in Cordova would provide revenues for the local economy. Full oil and gas production would be likely to mar the wilderness-like quality that guided hunters and anglers seek in the area. Oil development also introduces the risk of oil spills and other environmental damage that could affect the commercial fisheries and other environmentally dependent industries. The magnitude of the effects would depend on a number of specific circumstances, so it would be speculative to say much except that spills and negative economic effects would be possible.

**Environmental Consequences** - A summary of the effects of implementing Alternative 2 by key issue is presented below. A full discussion of the effects follows in Chapter 3.

**Issue 1: Effects on fish, wildlife and historic resources.** No effects on fish and wildlife populations are anticipated, and only minimal effects on individual species are anticipated provided avoidance and mitigation measures are implemented. Barge and truck traffic may frighten or displace individuals, but the effects would only be temporary. Barges would travel across one-half mile of pink salmon spawning area. This should have no effect on pink salmon spawning since the spawners would only be disturbed for several minutes while barges pass. Construction of the barge access-landing ramp could further destabilize the banks of the Katalla River. As in Chapter 3, aerial photographs taken in 1974 and 1993 show that large sections of the riverbank and valley floor have eroded and have been washed away. Since the spawning areas are not highly sedimented, it is felt that the river flows are sufficient to transport most of the fine materials out of the system. Surveys of the channel cross-sections by the Alaska Department of Fish and Game and the Forest Service show that shallow draft barges (two-foot draft) can navigate the river with a foot of clearance at a 12-foot tide. With this clearance the propellers are not expected to disturb eggs buried in the gravel. Deeper draft barges would only be permitted by special permits from ADF&G Habitat Division. Barge traffic would not be permitted by ADF&G when pink salmon are spawning. Aquatic habitats will not be altered. The National Marine Fisheries Service (NMFS) has been consulted in regard to the effects on regulated fish species and Essential Fish

Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act. NMFS has provided conservation recommendations on the staging of spill response equipment, disposal of drilling cuttings, and monitoring of the guidelines in the state permits to prevent adverse effects to EFH.

Some alteration of terrestrial habitat would occur, but the habitat areas are relatively small compared to the amounts of similar habitat available in the area. Habitat would revegetate naturally after the project is over and roads are obliterated. The U.S. Fish and Wildlife Service stated that migratory bird nests, eggs, and young could be harmed by brush clearing during nesting season, approximately April 15 to July 15. Depending on the timing of the Plan of Operations and permits, CEC proposes to begin work in the winter of 2002-2003, which would prevent adverse effects to nesting migratory birds. The Historic resources would not be adversely affected, as activities on the existing roadway and in the Claim No.1 area are restricted to the existing cleared land.

A bald eagle nest tree is located about 20 feet from the existing road, which would be used under this alternative. A variance from F&WS for activities less than 330 feet from an eagle nest is required.

**Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil (Disposal of drilling fluids, cuttings or hazardous materials).** Best Management Practices (BMPs), and other standards for handling and storage of fuels and other hazardous materials will minimize risks of spills. Spill contingency plans and proper containment equipment will lead to minimal consequences of spills. Containment equipment will be stored at the drilling area and also at the down river staging area, to take care of spills in the river and slough areas. Hazardous materials, cuttings, or fluids that cannot be incinerated or otherwise taken care of properly on site will be stored in suitable hazardous material storage areas and then shipped to appropriate disposal sites.

Commenters also asked that the effects of an oil spill be described. It should be noted here that the proposed activities do not include the building of oil pipelines, large oil storage facilities, or transporting oil in tankers. Within the scope of the proposed actions, major (greater than 1,000 barrels, or 42,000 gallons) spills of crude oil would only occur if there were a well blowout. This could occur if the drills hit high pressure pockets of gas and/or oil and the pressure could not be controlled through the hydrostatic pressure of the drilling muds, through the blowout prevention equipment, or other means. The detailed description of how these measures work and the responses that would be taken are discussed in detail in the discharge prevention and contingency plan. A Canadian environmental effects assessment estimated the possibility of a major blowout as one in 2,600 annually (Husky Oil Operations Limited, 2001). The Division of Oil and Gas, Alaska Department of Natural Resources (2000) reports, "There has never been an oil spill from a platform blowout in Alaska." The Oil Discharge Prevention and Contingency Plan (ODPC plan) for this project does state that there have been blowouts when pockets of high pressure gas were encountered, but these did not contain significant amounts of oil.

If a blowout were to occur, the ODPC plan estimates that oil could be carried up to 6,000 feet from the drill site, using the maximum flows presented in models by Belore et al. (1997). This is about the distance to the open ocean at its closest point. Within this

6,000 ft. radius, approximately 58% of the area (1,500 acres) is in the Katalla Slough watershed and the remaining area (1,100 acres) is in the Redwood Creek and Strawberry Harbor drainages. Hills to the north, east, and south could help to confine oil to the Katalla Slough drainage. The ODPC plan states that equipment staged on the Katalla River would be used to contain oil in the slough. Booms and other equipment would need to be flown by helicopter to contain oil in streams in the other drainages.

Effects would be dependent on the amount of liquid oil released, accompanying gas pressure, weather, tides, and other factors. In a worst case scenario where the entire area within 6,000 feet in all directions were oiled, some of the effects would be: 2,600 acres of land contaminated; direct loss of fish and wildlife in this area; contamination of most of the 12.9 miles of stream in the Katalla Slough drainage, 2.5 miles of stream in the Redwood Bay area, one mile of stream in the Strawberry Harbor drainage; lingering effects of oil in the soil and streams, and other effects. Effects to commercial fisheries and other areas would depend on the amount of direct contamination of the ocean and the ability to contain oil within the inland streams. Chapter 3 has a more detailed discussion.

**Issue 3: Effects on recreational users.** Presence of barges in the river, truck and occasional helicopter/small plane (weekly) noise, and expected competition for fishing areas between guided anglers and drilling workers, could temporarily diminish the recreational experience for coho anglers. Guides and lodge owners say that their clients are seeking quiet, solitude, and a wilderness-like experience. This experience could be diminished along the lower 1.5 miles of the river where the equipment is stored and barges travel, and for a certain distance upstream from the landing site where truck noises may still be discernible. One of the best fishing sites is a pool where the barges would anchor to unload equipment. Since barge traffic would be limited in the river when pink salmon are spawning (August to mid-September), the effect on coho salmon anglers would be reduced to the last few weeks of September. Guided hunters are usually flown to more remote locations so the effects would not be as great for them. However, when they are in camp, they would also hear the truck and helicopter noise at times when those activities occur.

**Issue 4: Consider the proposal in the context of the Roadless Area Conservation Rule.** The proposed temporary road would affect 742 acres of the 1,032,730-acre Bering Lake Roadless area, based on 2.5 miles of road and an influence zone of up to one-quarter mile on each side of the road. The effect would be temporary and upon completion of the project it would revert back to the current condition. Should oil and gas be discovered this would be a long-term effect and would be subject to additional disclosure under NEPA prior to field development.

**Issue 5: Monitoring, both of resources, e.g. water quality, and oversight of operations.** A Forest Service inspector will monitor the road maintenance to ensure it is maintained according to Forest Service standards and guidelines, BMPs, and all conditions as described in the Special Use Permit. These will include CEC's assurance that no equipment will work in streams and streambanks are not disturbed along the old roadway. The inspector will ensure that an Erosion Control Plan has been developed and implemented and that there are no problems with sedimentation of streams.

A Forest Service biologist will monitor the effects of barge traffic passing over pink salmon spawning areas to ensure there are no adverse effects due to turbulence from

propellers. A biologist will also monitor harvest of coho salmon by providing voluntary harvest reports to guided clients and drilling workers. Site visits will be made to corroborate the information. If there are escapement concerns, visual counts of the spawners in the Katalla system will be conducted.

The State of Alaska will issue permits for drilling operations and will be responsible for seeing that the terms of those permits are implemented. These terms will include, among others, safe storage and handling of fuels, drilling wastes, and hazardous materials. Minimum flow levels in Arvesta Creek, which is the proposed water supply for the camp and drilling operations, will be monitored.

### **Alternative 3, (Appendix A, Map 3).**

**Resource Outputs** - This would provide Cassandra Energy the opportunity to further evaluate the oil and gas potential of the Katalla area and would allow CAC to exercise their rights under the 1982 CNI Settlement Agreement. In the event oil and gas are discovered in paying quantities could contribute to the nation's oil and gas supply, and provide for royalty income to CAC shareholders. This would be in keeping with the presidential Executive Order 13212: Actions to Expedite Energy-Related Projects, which emphasizes, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people."

**Economic Effects** - The economic effects for all of the action alternatives would be fairly similar, since the project would be implemented, and would essentially be the opposite of the effects described in the No Action alternative.

The proposed exploratory drilling could provide up to an estimated 66 people at peak times, and 44 to 48 jobs during the normal operations. The project is estimated to last two years. The applicant says he hopes to hire at least 10% CAC shareholders, some of whom could be from the Cordova, Tatitlek, and Chenega areas. area. The applicant expects to use some air, boat, and lodging services in Cordova and to make some purchases of supplies there. Lodge owners in Katalla could provide cabins to oil workers until the camp is established and for government employees.

The proposed barge activities, two to three barges per week, could disturb guided anglers on the Katalla River for about two of the eight weeks of the coho salmon season, or perhaps about 20 of the 80 clients per season. If clients cancel reservations or do not return, the guides, air services, and other businesses would be affected.

Since it is not known if there are payable quantities of gas and oil, the economic effects of production cannot be quantified. We can only say that production would provide royalty income from gas and oil for CAC shareholders. Goods and services obtained in Cordova would provide revenues for the local economy. Full oil and gas production would be likely to mar the wilderness quality that guided hunters and anglers seek in the area. Oil development also introduces the risk of oil spills and other environmental damage that could affect the commercial fisheries and other environmentally dependent industries. The magnitude of the effects would depend on a number of specific circumstances, so it would be speculative to say much except that spills and negative economic effects would be possible.



**Environmental Consequences** - A summary of the effects of implementing Alternative 3 by key issue is presented below. A full discussion of the effects follows in Chapter 3.

**Issue 1: Effects on fish and wildlife and historic resources.** No effects on fish and wildlife populations are anticipated, and only minimal effects on individual species are anticipated provided avoidance and mitigation measures are implemented. Barge and truck traffic may frighten or displace individuals, but the effects would only be temporary. Barges would travel over 100 yards of pink salmon spawning area and anchor in the deeper part of the channel at the off-loading site adjacent to the spawning area. Although the barges may be anchored there for several hours to a day, the spawning salmon should not be affected since they would be spawning in the shallow areas, not the deep channel at the site. Barges would not be permitted in river when pink salmon are spawning. As the barges travel to the site, they may pass over shallow spawning areas. Channel surveys show that shallow draft barges (two-foot draft) could reach this area with about two feet of clearance on a 12-foot tide. With this clearance the turbulence from the propellers is not expected to disturb eggs buried in the gravel. The National Marine Fisheries Service (NMFS) has been consulted in regard to the effects on regulated fish species and Essential Fish Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act. NMFS has provided conservation recommendations on the staging of spill response equipment, disposal of drilling cuttings, and monitoring of the guidelines in the state permits to prevent adverse effects to EFH.

Alteration of habitat would be greater in Alternative 3. The new road could alter about 800 square feet of slough, which could provide rearing habitat for juvenile coho salmon. There are about 3.6 miles of slough habitat in the area, so the relative amount of altered fish habitat is small. About 4.25 acres of various terrestrial habitats would be altered, but the habitat areas are relatively small compared to the amounts of similar habitat available in the area. Habitat would revegetate naturally after the project is over and roads are obliterated. The U.S. Fish and Wildlife Service stated that migratory bird nests, eggs, and young could be harmed by brush clearing during nesting season, approximately April 15 to July 15. Depending on the timing of the Plan of Operations and permits, CEC proposes to begin work in the winter of 2002-2003, which would prevent adverse effects to nesting migratory birds. The historic resources would not be adversely affected, as activities in the Claim No.1 area (private land) are restricted to the existing cleared land. The area along the east bank of the Katalla River, where a road and staging area would be built, has been determined to have a low probability of having historical or cultural artifacts (Shaw, 2001).

**Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil (Disposal of drilling fluids, cuttings or hazardous materials).** Alternative 3 would involve trucking the hazardous materials for a slightly longer distance than in Alternative 2, but the increase in risk is negligible. BMPs and other standards for handling and storage of fuels and other hazardous materials will lead to minimal risk of spills. Containment equipment will be stored at the drilling area and also at the down river staging area, to take care of spills in the river and slough areas. Spill contingency plans and proper containment equipment will minimize consequences of spills. Hazardous materials, cuttings, or fluids that cannot be incinerated or otherwise taken care of properly on site will be stored in suitable hazardous material storage areas and then shipped to appropriate disposal sites.

Commenters also asked that the effects of an oil spill be described. It should be noted here that the proposed activities do not include the building of oil pipelines, large oil storage facilities, or transporting oil in tankers. Within the scope of the proposed actions, major (greater than 1,000 barrels, or 42,000 gallons) spills of crude oil would only occur if there were a well blowout. This could occur if the drills hit high pressure pockets of gas and/or oil and the pressure could not be controlled through the hydrostatic pressure of the drilling muds, through the blowout prevention equipment, or other means. The detailed description of how these measures work and the responses that would be taken are discussed in detail in the discharge prevention and contingency plan. A Canadian environmental effects assessment estimated the possibility of a major blowout as one in 2,600 annually (Husky Oil Operations Limited, 2001). The Division of Oil and Gas, Alaska Department of Natural Resources (2000) reports, "There has never been an oil spill from a platform blowout in Alaska." The Oil Discharge Prevention and Contingency Plan (ODPC plan) for this project does state that there have been blowouts when pockets of high pressure gas were encountered, but these did not contain significant amounts of oil.

If a blowout were to occur, the ODPC plan estimates that oil could be carried up to 6,000 feet from the drill site, using the maximum flows presented in models by Belore et al. (1997). This is about the distance to the open ocean at its closest point. Within this 6,000 foot radius, approximately 58% of the area (1,500 acres) is in the Katalla Slough watershed and the remaining area (1,100 acres) is in the Redwood Creek and Strawberry Harbor drainages. Hills to the north, east, and south could help to confine oil to the Katalla Slough drainage. The ODPC plan states that equipment staged on the Katalla River would be used to contain oil in the slough. Booms and other equipment would need to be flown by helicopter to contain oil in streams in the other drainages.

Effects would be dependent on the amount of liquid oil released, accompanying gas pressure, weather, tides, and other factors. In a worst case scenario where the entire area within 6,000 feet in all directions were oiled, some of the effects would be: 2,600 acres of land contaminated; direct loss of fish and wildlife in this area; contamination of most of the 12.9 miles of stream in the Katalla Slough drainage, 2.5 miles of stream in the Redwood Bay area, one mile of stream in the Strawberry Harbor drainage; lingering effects of oil in the soil and streams, and other effects. Effects to commercial fisheries and other areas would depend on the amount of direct contamination of the ocean and the ability to contain oil within the inland streams. Chapter 3 has a more detailed discussion.

**Issue 3: Effects on recreational users.** The presence of barges in the river, truck and helicopter noise, and expected competition for fishing areas between guided anglers and drilling workers, could diminish the recreational experience for coho anglers. Guides and lodge owners say that their clients are seeking quiet, solitude, and a wilderness like experience. Since barge traffic would be limited in the river when pink salmon are spawning (August to mid-September), the effect of barges on coho salmon anglers would be limited to the last few weeks of September. Interruption of sportfishing by barges would be lower in Alternative 3 since the barges would only travel 1.0 mile up the river instead of 1.5 miles. The last half-mile is where the river narrows, pools are more accessible, and much of the sportfishing takes place. Since barges could travel at lower tides, traffic may be spread out over time and may not be as intense on a given day. Barges would have longer working times and may not have to go dry and be present all

day as frequently. Truck noises would still be audible over the last one-half mile, however, since the new road would parallel the river until it joins the old roadway. Guided hunters are usually flown to more remote locations so the effects would not be as great for them. However, when they are in camp, they would also hear the truck and helicopter noise and there would be noise from the equipment storage area.

**Issue 4: Consider the proposal in the context of the Roadless Area Conservation**

**Rule.** The proposed temporary road would affect 1,045 acres of the 1,032,730-acre Bering Lake roadless area, based on 3.2 miles of road and an influence zone of up to one-quarter mile on each side of the road. The effect would be temporary and upon completion of the project it would revert back to the current condition. Should oil and gas be discovered this would be a long-term effect and would be subject to additional disclosure under NEPA.

**Issue 5: Monitoring, both of resources, e.g. water quality, and oversight of operations.**

A Forest Service inspector will monitor the road maintenance to ensure it is maintained according to Forest Service standards and guidelines, BMPs, and all conditions described in the Special Use Permit. These will include the operator's assurance that no equipment will work in streams and stream banks are not disturbed along the old roadway. The inspector will ensure that an Erosion Control Plan has been developed and implemented and that there are no problems with sedimentation of streams.

A Forest Service biologist will monitor the effects of barge traffic passing over pink salmon spawning areas to ensure there are no adverse effects due to turbulence from propellers. A biologist will also monitor harvest of coho salmon by providing voluntary harvest reports to guided clients and drilling workers. Site visits will be made to corroborate the information. If there are escapement concerns, visual counts of the spawners in the Katalla system will be conducted.

The State of Alaska will issue permits for drilling operations and will be responsible for seeing that the terms of those permits are implemented. These terms will include, among others, safe storage and handling of fuels, drilling wastes, hazardous materials and maintaining minimum flow levels in Arvesta Creek, which is the proposed water supply for the camp and drilling operations.

**Alternative 4, (Appendix A, Map 4).**

**Resource Outputs** - This would provide Cassandra Energy the opportunity to further evaluate the oil and gas potential of the Katalla area and would allow CAC to exercise their rights under the 1982 CNI Settlement Agreement. If oil and gas are discovered in paying quantities, they could contribute to the nation's oil and gas supply, and provide for royalty income to CAC shareholders and other Native Corporations. This would be in keeping with the presidential Executive Order 13212: Actions to Expedite Energy-Related Projects, which emphasizes, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people."

**Economic Effects** - The economic effects for all of the action alternatives would be fairly similar, since the project would be implemented, and would essentially be the opposite of the effects described in the No Action alternative.

The proposed exploratory drilling could provide up to an estimated 66 people at peak times, and 44 to 48 jobs during the normal operations. The project is estimated to last two years. The applicant says he hopes to hire at least 10% CAC shareholders, some of whom could be from the Cordova, Tatitlek, and Chenega areas. The applicant expects to use some air, boat, and lodging services in Cordova and to make some purchases of supplies there. Lodge owners in Katalla could provide cabins to oil workers until the camp is established, and for government employees.

The proposed barge activities, two to three barges per week, could disturb guided anglers on the Katalla River for about two of the eight weeks of the coho salmon season, or perhaps about 20 of the 80 clients per season. If clients cancel reservations or do not return, the guides, air services, and other businesses would be affected.

Since it is not known if there are payable quantities of gas and oil, the economic effects of production cannot be quantified. We can only say that production would provide royalty income from gas and oil for CAC shareholders. Goods and services obtained in Cordova would provide revenues for the local economy. Full oil and gas production would be likely to mar the wilderness like quality that guided hunters and anglers seek in the area. Oil development also introduces the risk of oil spills and other environmental damage that could affect the commercial fisheries and other environmentally dependent industries. The magnitude of the effects would depend on a number of specific circumstances, so it would be speculative to say much except that spills and negative economic effects would be possible.

**Environmental Consequences** - A summary of the effects of implementing Alternative 4 by key issue is presented below. A full discussion of the effects follows in Chapter 3.

**Issue 1: Effects on fish and wildlife and historic resources.** No effects on fish and wildlife populations are anticipated. Barge and truck traffic may frighten or displace individuals, but the effects would only be temporary. Barges would travel over 700 yards of pink salmon spawning area before reaching a gravel bar about 550 feet downstream from the existing road. Channel surveys show that a shallow draft barge can float over the downstream end of the gravel bar, which, being dry at low tides, is not a spawning area. Matt LaCroix (ADF&G biologist, personal communication) stated that the substrate is more highly sedimented downstream from the gravel bar and no fish were spawning there. The barges would go dry on the gravel bar without resting on spawning areas. Equipment would be driven from the gravel bar to the beginning of the road on the river bank. As the barges travel to the site, they may pass over shallow spawning areas, but there will be at least a foot of clearance. Given this clearance the turbulence from the propellers is not expected to disturb eggs buried in the gravel. The National Marine Fisheries Service (NMFS) has been consulted in regard to the effects on regulated fish species and Essential Fish Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act. NMFS has provided conservation recommendations on the staging of spill response equipment, disposal of drilling cuttings, and monitoring of the guidelines in the state permits to prevent adverse effects to EFH.

Alteration of habitat would be less than in Alternative 3. The landing area would remove about 0.2 acres of alder, while the road would remove about 0.2 acres of young Sitka spruce and 0.1 acre of sphagnum moss with scattered small spruce, alder, and willow. A staging area along the existing road would clear up to 2.0 acres of Sitka spruce. The amounts of these habitats are relatively small compared to the amount of similar habitat available in the area. Habitat would revegetate naturally after the project is over and roads are obliterated. The U.S. Fish and Wildlife Service stated that migratory bird nests, eggs and young could be harmed by brush clearing during nesting season, approximately April 15 to July 15. Depending on the timing of the Plan of Operations and permits, CEC proposes to begin work in the winter of 2002-2003, which would prevent adverse effects to nesting migratory birds. The historic resources would not be adversely affected, as activities in the Claim No. 1 area (private land) are restricted to the existing cleared land. The area along the east bank of the Katalla River, where a road and staging area would be built, has been determined to have a low probability of having historical or cultural artifacts (Shaw, 2001).

A bald eagle nest tree is located about 20 ft. from the existing road, which would be used under this alternative. A variance from F&WS for activities less than 330 feet from an eagle nest is required.

**Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil (Disposal of drilling fluids, cuttings or hazardous materials).** Alternative 4 would involve having the hazardous materials being trucked for a slightly longer distance than in Alternative 2, but the increase in risk is negligible. BMPs and other standards for handling and storage of fuels and other hazardous materials will lead to minimal risk of spills. Spill contingency plans and proper containment equipment will minimize consequences of spills. Hazardous materials, cuttings, or fluids that cannot be incinerated or otherwise taken care of properly on site will be stored in suitable hazardous material storage areas and then shipped to appropriate disposal sites.

Commenters also asked that the effects of an oil spill be described. It should be noted here that the proposed activities do not include the building of oil pipelines, large oil storage facilities, or transporting oil in tankers. Within the scope of the proposed actions, major (greater than 1,000 barrels, or 42,000 gallons) spills of crude oil would only occur if there were a well blowout. This could occur if the drills hit high pressure pockets of gas and/or oil and the pressure could not be controlled through the hydrostatic pressure of the drilling muds, through the blowout prevention equipment, or other means. The detailed description of how these measures work and the responses that would be taken are discussed in detail in the discharge prevention and contingency plan. A Canadian environmental effects assessment estimated the possibility of a major blowout as one in 2,600 annually (Husky Oil Operations Limited, 2001). The Division of Oil and Gas, Alaska Department of Natural Resources (2000) reports, "There has never been an oil spill from a platform blowout in Alaska." The Oil Discharge Prevention and Contingency Plan (ODPC plan) for this project does state that there have been blowouts when pockets of high pressure gas were encountered, but these did not contain significant amounts of oil.

If a blowout were to occur, the ODPC plan estimates that oil could be carried up to 6,000

feet from the drill site, using the maximum flows presented in models by Belore et al. (1997). This is about the distance to the open ocean at its closest point. Within this 6,000 foot radius, approximately 58% of the area (1,500 acres) is in the Katalla Slough watershed and the remaining area (1,100 acres) is in the Redwood Creek and Strawberry Harbor drainages. Hills to the north, east, and south could help to confine oil to the Katalla Slough drainage. The ODPC plan states that equipment staged on the Katalla River would be used to contain oil in the slough. Booms and other equipment would need to be flown by helicopter to contain oil in streams in the other drainages.

Effects would be dependent on the amount of liquid oil released, accompanying gas pressure, weather, tides, and other factors. In a worst case scenario where the entire area within 6,000 feet in all directions were oiled, some of the effects would be: 2,600 acres of land contaminated; direct loss of fish and wildlife in this area; contamination of most of the 12.9 miles of stream in the Katalla Slough drainage, 2.5 miles of stream in the Redwood Bay area, one mile of stream in the Strawberry Harbor drainage; lingering effects of oil in the soil and streams, and other effects. Effects to commercial fisheries and other areas would depend on the amount of direct contamination of the ocean and the ability to contain oil within the inland streams. Chapter 3 has a more detailed discussion.

**Issue 3: Effects on recreational users.** The presence of barges in the river, truck and helicopter noise, and expected competition for fishing areas between guided anglers and drilling workers, could diminish the recreational experience for coho anglers. Guides and lodge owners say that their clients are seeking quiet, solitude, and a wilderness-like experience. Since barge traffic would be limited in the river when pink salmon are spawning (August to mid-September), the effect from barges on coho salmon anglers would be limited to the last few weeks of September. Guided hunters are usually flown to more remote locations so the effects would not be as great for them. However, when they are in camp, they would also hear the truck and helicopter noise and there would be noise from the equipment storage area.

**Issue 4: Consider the proposal in the context of the Roadless Area Conservation**

**Rule.** The proposed temporary road would affect 833 acres of the 1,032,730-acre Bering Lake roadless area, based on 2.6 miles of road and an influence zone of up to one-quarter mile on each side of the road. The effect would be temporary and upon completion of the project it would revert back to the current condition. Should oil and gas be discovered this would be a long-term effect and would be subject to additional disclosure under NEPA.

**Issue 5: Monitoring: both of resources, e.g. water quality and oversight of**

**operations.** A Forest Service inspector will monitor the road maintenance to ensure it is maintained according to Forest Service standards and guidelines, BMPs, and all conditions described in the Special Use Permit. These will include the operator's assurance that no equipment will work in streams and stream banks are not disturbed along the old roadway. The inspector will ensure that an Erosion Control Plan has been developed and implemented and that there are no problems with sedimentation of streams.

A Forest Service biologist will monitor the effects of barge traffic passing over pink salmon spawning areas to ensure there are no adverse effects due to turbulence from propellers. A biologist will also monitor harvest of coho salmon by providing voluntary

harvest reports to guided clients and drilling workers. Site visits will be made to corroborate the information. If there are escapement concerns, visual counts of the spawners in the Katalla system will be conducted.

The bald eagle nest along the existing road will be monitored to determine if the nest is active. Measures will be taken to minimize disturbance.

The State of Alaska will issue permits for drilling operations and will be responsible for seeing that the terms of those permits are implemented. These terms will include, among others, safe storage and handling of fuels, drilling wastes, and hazardous materials. Minimum flow levels in Arvesta Creek, which is the proposed water supply for the camp and drilling operations, will be monitored.

**Comparison of Alternatives by Issue** - Table 1 provides a comparison of the alternatives focusing on the key issues. For more detailed descriptions of the affected environment and the environmental consequences of the alternatives, refer to Chapter 3.

**Table 1, Comparison of Alternatives by Issue.**

<b>Alternative</b>	<b>1-No Action</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Issue</b>				
<b>Effects on fish.</b>				
Barge/landing craft traffic.	No Effects	Temporary disturbance of fish in 1.5 miles of river; temporary disturbance of 0.5 mile of pink salmon spawning area.	Temporary disturbance of fish in 1.0 miles of river; temporary disturbance of 100 yards of pink salmon spawning area.	Temporary disturbance of fish in 1.4 miles of river; temporary disturbance of 0.4 mile of pink salmon spawning area.
Use and maintenance of the temporary road.	No effects			
New temporary road and barge access ramp construction.	No Effects	Minor amount of sedimentation associated with construction of barge access ramp and staging area.	Minor amount of sedimentation associated with construction of barge access ramp and staging area.  Loss of 800 sq. ft. of salmon rearing habitat from construction of approximately 0.5 miles of new temporary road. No effects to populations foreseen.	Minor amount of sedimentation associated with construction of the road up the river bank, disturbance of the gravel bar.

<b>Alternative</b>	<b>1-No Action</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Issue</b>				
Fuel spills or accidents involving hazardous materials.	No Effects	If there were spills at unloading site, 1.75 miles of river and tidal areas possibly contaminated. Unloading site is 100 yards upstream from spawning area. Containment equipment to be stored at the drill site and downstream storage area to reduce spread to streams, river, or to ocean.	If there were spills at unloading site, 1.75 miles of river and tidal areas possibly contaminated. Unloading site immediately adjacent to spawning area. Containment equipment to be stored at the drill site and downstream storage area to reduce spread of materials to streams, river, or to ocean.	
Harvest of fish.	No Effects	Up to 66 drilling workers fishing for two fishing seasons, plus 80 guided anglers. Applicant states that he will try to limit number of workers fishing at any one time, will not have freezer space for fish so workers will mostly practice catch and release, work to protect resource. Guided anglers mostly catch and release. Increased human presence and fishing pressure will increase harvest. Harvest will be monitored, ADF&G consulted to determine any need for closures.		
Use of water from Arvesta Creek on private land.	No Effects	No adverse effects foreseen. State Department of Natural Resources and ADF&G Habitat will issue permit and determine minimum flow levels in creek that must be maintained. NMFS says State standards will prevent effects to Essential Fish Habitat.		
<b>Effects on Wildlife.</b>				
Human disturbance.	No Effects	Temporary displacement of wildlife along roadway during use. Presence of bald eagle nest will invoke terms of MOU between USFS and USFWS. Possible abandonment of nest or premature fledging.	Temporary displacement of wildlife along roadway during use. Construction of road detour around nest may cause disturbances even though it is beyond the 330-foot buffer. Possible blow down of timber from temporary road.	Temporary displacement of wildlife along roadway during use. Presence of bald eagle nest will invoke terms of MOU between USFS and USFWS. Possible abandonment of nest or premature fledging.



<b>Alternative</b>	<b>1-No Action</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Issue</b>				
Alteration of habitat.	No Effects	<p>Clearing of up to 2.5 acres of small diameter trees and brush for equipment storage could displace migratory birds, considered negligible effect because of abundance of habitat.</p> <p>Removal of up to 2.0 acres of old growth Sitka Spruce habitat and 625 sq. ft. of riparian vegetation. No effect on species that require old growth habitat. Riparian vegetation would be re-established upon completion of the project.</p>	<p>Clearing of up to 2.5 acres of small diameter trees and brush for equipment storage could displace migratory birds, considered negligible effect because of abundance of habitat.</p> <p>Removal of up to 2.4 acres of beach rye grass/lupine habitat, 0.46 acres of old growth Sitka Spruce, 0.6 acres of young spruce forest, 0.5 acre western hemlock/Sitka spruce forest, (this is included in the 2.4) 0.14 acres of wetland, and 0.1 acre of alder and other brush species. No effect on species that utilize habitat. Rye grass/lupine and young Sitka spruce habitats would be re-established when the project is completed.</p>	<p>Clearing of up to 2.5 acres of small diameter trees and brush for equipment storage could displace migratory birds, considered negligible effect because of abundance of habitat.</p> <p>Removal of up to 2.0 acres of Sitka spruce for a staging area, 0.2 acre of alder, 0.2 acre of young Sitka spruce, and 0.1 acre of sphagnum moss with scattered spruce, alder, and willow. Less than 0.1 acre of wetland covered by road. No effect on species that require old growth habitat. Vegetation along 550-ft road would be re-established when project is finished and rig matting is removed.</p>
Effects on migratory birds.	No effects	Brush clearing will occur outside of the nesting season, so no young will be endangered. Loss of habitat is relatively minimal and the effect on populations is negligible.		
Increased human presence.	No Effects	Up to 66 drilling workers in camp. Main concern of commenters was the effect of workers hunting bear. Applicant states that no bear hunting would be allowed for those people at the camp. No unauthorized firearms would be allowed in camp. Some species would avoid camp area due to human presence.		

<b>Alternative</b>	<b>1-No Action</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Issue</b>				
Defense of life and property, (DL&P).	No Effects	Incineration of garbage, bear-proof containers and storage areas would prevent bear attraction to camp and keep bear encounters and DL&P takings to a minimum. Conflicts would be negligible or low.		
<b>Effects on TES Species.</b>				
Dusky Canada geese.	No Effects	Possible temporary disturbance by passing barges to dusky Canada geese, which could feed along lower river. Negligible to low effect because this would only cause them to fly away and temporarily disrupt feeding. No habitat or nesting area would be disturbed.		
Trumpeter Swan.	No Effects	No effect to trumpeter swans because none are known to nest in the area. Barge traffic would be screened from possible nesting areas by the riverbanks and riparian vegetation.	No effect to trumpeter swans because none are known to nest in the area. Road along Katalla river may be more visible to areas where trumpeter swans could nest. No swans known to nest in affected area.	
<b>Effects on Historic Resources.</b>	No Effects	No adverse effect, survey completed, historic and cultural resources avoided.		
<b>Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil. Disposal of drilling fluids, cuttings or hazardous materials.</b>	No risk	Operational delays likely due to storm events. Spills unlikely, as hazardous materials and fuels will be stored in lined, diked areas to contain spills. Low probability of large earthquake. Unlikely to be affected by tsunami or seiches. Drilling mud, cuttings will be reinjected, incinerated, or shipped to an appropriate waste disposal site. Wastes that cannot be incinerated will be shipped to an appropriate waste disposal site.		
<b>Effects of Blowouts.</b>	No Effects	Low probability of major blowout. Odds estimated as 1 in 2,600 annually. Effects dependent on numerous factors. The worst case would be contamination of 2,600 acres, 16.4 miles of stream, direct mortality of fish and wildlife, lingering effects on soil and water.		
<b>Effects on recreational users.</b>				
Equipment storage, truck and barge	No Effects	Equipment storage would be	Equipment storage would be	Equipment storage would be a visual

<b>Alternative</b>	<b>1-No Action</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Issue</b>				
activity.		a visual intrusion. Barge traffic could temporarily interrupt sportfishing up to roadway and detract from the sense of serenity and remoteness. Truck noises could be heard along river up to the old roadway.	a visual intrusion. Barge traffic could temporarily interrupt fishing to a point one-half mile downstream from existing road and detract from the sense of serenity and remoteness. Truck noises could be heard along river up to the old roadway.	intrusion. Barge traffic could temporarily interrupt fishing to a point 550 feet downstream from existing road and detract from the sense of serenity and remoteness. Truck noises could be heard along river up to the old roadway.
Helicopter noise.	No Effects	Helicopter noise clearly audible. Minor, occasional noise from drilling activity.		
Barge noise.	No Effects	More barge noise up river to old roadway. Main barge activity proposed outside of peak fishing season.	More barge/truck noise along river with proposed road. Main barge activity proposed outside of peak fishing season.	
Recreation conflicts with drilling workers.	No Effects	Up to 66 drilling workers could be present. Fishing areas may become overcrowded, remote fishing experience temporarily lost.		
Changes in visual quality.	No change	No change	Temporary change from very high to high Scenic Integrity Objective to low, in areas adjacent to Katalla River.	
Changes in ROS.	No change			
Effect on cabin owners/outfitter-guide business.	No Effects	The downstream unloading site proposed in Alternative 3 may be somewhat less disruptive to anglers, but overall, the combination of noise, traffic, and the loss of the ambience of a wild setting could temporary diminish the recreational experience.		
<b>Roadless Area Conservation Rule.</b>	No change	No effects. Recent interim direction by the Chief of the Forest Service has reserved authority for allowing activities within roadless areas where road access is needed pursuant to reserved or outstanding rights or as provided by statute or treaty, to the Regional Forester, (USDA Forest Service, 2001a).		
Reduction in roadless acres.	No change	Temporary reduction of 742 acres, reduced by 2.5 miles of temporary road, 1/4 mile on each side affected	Temporary reduction of 1,045 acres, reduced by 3.2 miles of temporary road, 1/4 mile on each	Temporary reduction of 833 acres, reduced by 2.6 miles of temporary road, 1/4 mile on each side affected.

Alternative	1-No Action	2	3	4
Issue				
		side affected.	1/4 mile on each side affected.	
<b>Monitoring, both of resources, e.g. water quality, and oversight of operations.</b>	None	A Forest Service inspector will monitor the use and maintenance of the temporary road. A Forest Service fish biologist will monitor the effect of barge traffic on spawning gravels. Harvest levels of coho salmon will be monitored to determine whether the run is being overfished.		

**Mitigation Measures** - The analysis documented in this EA discloses the possible adverse impacts that may occur from implementing the actions proposed under each alternative. Measures have been formulated to mitigate or reduce these impacts. These measures were from the Revised Forest Plan, previously described, public comments and Forest Service concerns. Regulations found at 36 CFR 228 Subpart E, Oil and Gas Resources, set the standards for surface use for oil and gas operations. Adherence to these standards is a Condition of Approval (COA).

Region 10, Best Management Practices (BMPs) relating to road construction and maintenance are found in FSH 2509.22.12 and .14. They require that the use of equipment in streams be minimized, disturbed surfaces are revegetated, culverts and road ditches are maintained to reduce erosion, fish passage is maintained, an erosion control plan in place, and riparian stream buffers are preserved. The Proposed Plan of Operations already addresses some of these issues. The operator will place bridges across streams to maintain fish passage and eliminate the need to place roadfill in streams. The operator will not need to have equipment in the streams, disturb the stream banks, or alter the stream channels along the old roadway. The operator, in accordance with the BMPs, will do maintenance of existing culverts and ditches. Mitigation as outlined in applicable BMPs will be included as Condition of Approvals, and attached to the approved plan. A list of specific BMPs are addressed below:

*Oil pollution prevention and servicing/refueling.* Approval of a spill contingency plan is required by the State of Alaska, Department of Environmental Conservation, and by the Environmental Protection Agency. No fuels will be stored and no servicing/refueling will be done on National Forest land, per COA, as outlined in BMP 12.8.

*Control of solid waste disposal.* A permit is required by the State of Alaska for onsite disposal or storage of drill cuttings. Injection of ground up drill cuttings require approval of AOGCC. The Plan of Operations states as follows: 1) cuttings will be temporarily stored onsite<sup>11</sup>, and then either hauled out, incinerated onsite or injected; 2) the existing septic system will be enlarged according to ADEC standards (18 ACC 72), and 3) garbage will be incinerated. No solid

<sup>11</sup> Onsite means the activity is on private land known as Claim No. 1.

waste will be stored or disposed of on National Forest land.

*Revegetation of disturbed areas (using native seed sources).* This is addressed as a Condition of Approval (COA), attached to the Plan of Operations.

*Stream channel protection and Riparian stream buffers.* The Plan of Operations states that the stream banks will not be disturbed except for excavation of a ramp at the small barge off loading site. Additionally, some brush clearing for the 2-acre staging area will be allowed adjacent to the stream. This will be flagged on the ground prior to activities commencing (addressed in COAs as outlined in BMP 13.16). The ramp must be permitted by the Corp of Engineers (COE). There is no stream buffer established for this project. The ground will be protected from erosion and rutting at the ramp and staging area by rig matting. Revegetation will occur when the rig matting is removed.

*Erosion control plan.* This is addressed as a COA, attached to the approved Plan of Operations.

*Control of in-channel operations (e.g., grounding of barges).* Possible grounding of barges is addressed as a mitigation measure, below (Mitigation for Effects on Fish, Barge Traffic). Otherwise, there is no need for in-channel operations. Temporary prefab bridges will be placed over stream crossings on the roadway. No in-channel work is proposed in the Plan of Operations.

*Measures to minimize surface erosion and drainage control to minimize erosion and sedimentation.* This is addressed as a COA as outlined in BMP 14.9 and 14.8, attached to the approved Plan of Operations.

*Control of excavation and side cast.* This is addressed as a COA as outlined in BMP 14.12, attached to the approved Plan of Operations. The activity where this is applicable is the excavation of the ramp at the small barge landing, which requires a COE permit. The permit will carry stipulations.

*Development and rehabilitation of gravel sources and quarries.* Alternative 3 requires gravel fill. The source of the gravel will not be on National Forest System lands. Any site would be rehabilitated according to the requirements of the owner.

*Disposal of construction slash and stumps* - addressed as design requirement.

*Management of off highway vehicle (OHV) use* - OHVs are not permitted on or off the road. This is addressed in COAs, attached to the approved Plan of Operations. OHVs could only go a few hundred yards before hitting brush or sloughs.

### **Mitigation for Effects on Fish:**

**Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat:** Under this act, federal agencies are required to consult with the National Marine Fisheries Service (NMFS) if federal actions may cause adverse effects to regulated species of fish or Essential Fish Habitat (EFH). NMFS provided several conservation

recommendations that will help meet the requirement that there be no adverse effects to EFH. These include pre-staging of spill containment equipment to protect biologically important areas, reinjecting drill cuttings, and incorporating State permit standards and restoration plans into the Plan of Operations.

**Barge traffic:** Permits from the Alaska Department of Fish and Game Habitat Division will require the use of shallow draft barges (two-foot draft) to access landing areas. Barge traffic would be limited when pink salmon are spawning (approximately August 1 to September 15). Alternative 3 would have less potential to cause an adverse effect since the barges would not travel over as much spawning area.

**Temporary Roads:** Sedimentation from the existing or proposed roads is not expected to be a problem. The operator will not work in the streams or disturb banks along the old roadway. All disturbed surfaces, other than the road bed, will be revegetated with native grasses to hold the soil. The road surfaces, stream crossings, and ditches will be monitored to determine whether any erosion problems develop which could affect the streams. Upon completion of use, the access ramp and staging area will be obliterated. The holder of the road use permit will have the option of maintaining the temporary road and structures in a state to prevent resource damage, or decommission the temporary road including removal of structures and terminating the permit.

**Fuel or other hazardous material spills:** During transport, all hazardous or toxic materials shall be in containers approved by the Department of Transportation and secured in a stable position. The State permits require that hazardous materials are stored in a lined, diked area so spills will be contained. Emergency spill plans and equipment are required. No fueling nor vehicle or equipment maintenance will be performed on National Forest System lands. No fueling nor vehicle or equipment maintenance will be performed adjacent to the river or streams. One place for fueling vehicles and equipment and performing vehicle and equipment maintenance will be developed on private lands. The NMFS has recommended pre-staging spill containment equipment to protect Essential Fish Habitat. This has been proposed in CEC's spill contingency plan, which is being reviewed by the Alaska DEC.

**Harvest of fish:** Guided anglers and drilling workers will be encouraged to practice catch and release methods. Educational material will be made available explaining the need and the proper techniques. We will ask for voluntary harvest reports from guides and workers, with site visits to corroborate information. The applicant stated that he will not provide freezer space for workers to store fish, which should minimize harvest. He has also proposed limiting the number of workers fishing at any one time.

**Use of water from Arvesta Creek:** Minimum flow levels needed to protect fish and fish habitat will be determined and included in the terms of the permit from the Alaska Department of Natural Resources and ADF&G Habitat Division. The NMFS has stated that State standards will prevent adverse effects to Essential Fish Habitat.

#### **Mitigation for Effects on Wildlife:**

**Human disturbance, alteration of habitat:** These actions will have unavoidable negligible to low effects. No mitigation is anticipated.

**Increased human presence:** A major concern in the comments was that drilling workers would increase hunting pressure and kill too many bears. William Stevens, president of CEC, has stated that bear hunting would not be allowed for anyone staying at the camp. No unauthorized firearms would be permitted in camp.

**Defense of life and property:** Incinerating garbage and using bear-proof storage containers will prevent bears from associating the camp with food and will keep bears from being attracted to the campsite. Bear/human encounters and the taking of bears in defense of life and property would be minimized.

**Disturbances to bald eagles:** Under Alternative 2 and 4 the memorandum of understanding between the U.S. Forest Service and the U.S. Fish and Wildlife Service will be in effect. A variance to this MOU has been sought and received from the FWS. Under Alternative 3, a new section of road would be built to maintain a 330-foot buffer between truck traffic and the nest tree.

**Mitigation for Effects on TES species:**

**Disturbances to dusky Canada geese:** Barge traffic along the river could temporarily frighten geese away from feeding areas if they are present. This is an unavoidable, but negligible effect, because interruptions would be infrequent and geese could fly to nearby feeding areas. No habitat or nesting area would be disturbed, no mitigation required.

**Effects on trumpeter swans:** Under Alternative 3 and 4, the proposed road could be visible to swans nesting on the east side of the river. There is no record of swans nesting there. The effect is unavoidable, but negligible, no mitigation required.

**Effects on nesting migratory birds:** Under all of the action alternatives, vegetation would be removed for staging areas or temporary roads. If the project is approved, vegetation would be cleared when migratory birds would not be nesting. The U.S. Fish and Wildlife Service recommends clearing vegetation outside of the April 15 to July 15 period.

**Mitigation for Risk of Natural Hazards:**

**Earthquakes, storms:** Safe storage of hazardous materials in approved sites, and emergency spill plans and equipment, as required in state and federal permits, should prevent problems caused by most earthquakes. The danger of spills caused by shipping accidents during storms can be avoided by delaying shipping during severe storms.

**Disposal of drilling fluids, cuttings, or hazardous materials:** The cuttings will be stored in a hazardous waste area and then will either be transported back to Cordova for disposal, ground up and reinjected at the drill site, or incinerated for decontamination. Garbage and most wastes will be incinerated. Those wastes that cannot be incinerated will be stored and shipped to an appropriate disposal facility. Drilling fluids, cuttings, waste, or hazardous materials will not be disposed on National Forest System lands. Drilling fluids, cuttings, waste, or hazardous materials will not be disposed in river or streams.

## **Mitigation for Effects on Recreational Users:**

**Truck and barge activity:** Use of the existing road will be restricted to commercial activity only, prohibiting the use of off-road vehicles or other motorized vehicles for recreational purposes or other uses not essential to drilling operations.

**Noise:** Truck and barge noise would be unavoidable. Helicopter noise will be partially mitigated by having helicopters fly offshore as safety permits away from the cabin and river area, and turn inland only when they are directly south of the drilling camp area. Some noise will still be audible.

**Recreation conflicts with drilling workers:** Some competition for fishing spots between drilling workers and guided anglers is unavoidable. Prohibition of non-commercial vehicle use along the existing road will reduce the number of drilling workers fishing along the river, since they would have to walk about five miles. William Stevens, president of CEC, has proposed limiting the number of workers fishing at the river at any given time.

**Changes in visual quality:** Changes in visual quality would be unavoidable. On completion of the project, restoration of the disturbed areas will restore the visual quality. Under Alternative 2, this will necessitate restoring the barge landing site and staging areas to their former contours and revegetating. Under Alternative 3, this will require removing the road fill and leveling the road area to match the surrounding terrain.

**To minimize the potential conflicts between sportfishers and barge traffic:** The Alaska Department of Fish and Game has proposed eliminating barge traffic when pink salmon are spawning (August to mid September). Since the pink salmon spawning seasons overlaps with the coho salmon fishing season, there would be no barges except during the last weeks of the coho season in late September. Barge traffic during this period should be light, two to three barges per week. CEC and guides could exchange information on the barge schedules to reduce conflicts.

## **Mitigation for Invasive Plant Species**

Possibility of Transporting Exotic Plants (FSM 2080): CEC will clean equipment of dirt, vegetation, or other material that might carry non-native plant seeds or parts before transporting the equipment to Katalla.

**Implementation Monitoring** - Implementation monitoring assesses whether the project was implemented as designed. Chugach National Forest staff annually conducts a review of BMP implementation and effectiveness. The results of this and other monitoring are summarized in a Chugach National Forest Annual Monitoring and Evaluation Report. In addition, the following project specific monitoring is proposed:

**Maintenance of Existing roadway, installation of temporary bridges and any New Temporary Road Construction:** A Forest Service inspector will monitor the use and maintenance of the temporary road. The inspector will ensure that road safety and construction standards are met, bridges are placed as described in the Plan of Operations without disturbances to stream banks, an erosion control plan is developed and implemented, streams are protected from sedimentation, and all other requirements of the Special Use Permit are met.



**Effect of Barge Traffic on Spawning Gravels:** While it is thought that the spawning gravels in the Katalla River will not be disturbed by the thrust of the propellers of the barge motors, a Forest Service fish biologist will monitor the effect after barges have passed. The effects will be examined at the lower tide levels and occasionally throughout the mobilization period, since the thrust levels and water depths will vary among barge trips.

**Harvest of Coho Salmon by Guided Anglers and Drilling Workers:** Harvest levels of coho salmon will be monitored to determine whether the run is being overfished. Voluntary reporting by guides and workers will be used to estimate harvest. Site visits, observations, and interviews with anglers will be used to corroborate those reports.

## Chapter 3

**Introduction** - This chapter describes the affected environment and the environmental consequences of each alternative by key issue. It also presents the scientific and analytical basis for the comparison of alternatives in Table 1 in Chapter 2.

All effects, including direct, indirect and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are also included. The means by which potential adverse effects will be reduced or mitigated are described (see also Chapter 2).

The discussions of resources and potential effects take advantage of existing information included in the Revised Forest Plan, FEIS, other project EA's, project-specific resource reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to minimize duplication. The planning record for the Katalla Exploratory Oil and Gas Drilling project includes all project-specific information, including resource reports, and other results of field investigations. The record also contains information resulting from public involvement efforts. The planning record is located at the Cordova Ranger District Office in Cordova, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

**Analyzing Effects** - Environmental consequences are the effects of implementing an alternative on the physical, biological, social and economic environment. The Council on Environmental Quality regulations implementing the National Environmental Policy Act (NEPA) includes a number of specific categories to use for the analysis of environmental consequences. Several are applicable to the analysis of the proposed project and alternatives, and form the basis of much of the analysis that follows. They are explained briefly here.

**Direct, Indirect and Cumulative Effects** - Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity, but would be significant in the foreseeable future. Cumulative effects result from incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

**Unavoidable Adverse Effects** - Implementation of any action alternative would cause some adverse environmental effects that cannot be fully mitigated or avoided. Many adverse effects can be reduced, mitigated or avoided by limiting the extent or duration of effects. The application Revised Forest Plan standards and guidelines, Best Management Practices (FSH 2509.22.12 and 14), project-specific mitigation measures, and monitoring are all intended to further limit the extent, severity, and duration of potential effects. Regardless of the use of these measures, some adverse effects will occur. The purpose of this chapter is to fully disclose these effects.

### Existing Conditions

**Watershed, Streams** - The project area lies in parts of two watersheds, the main Katalla River watershed and the Katalla Slough watershed. Although the project may affect only parts of these watersheds, the entire watersheds were examined to see how existing conditions in other areas may contribute to cumulative effects or may otherwise contribute to our understanding of the processes that relate to the project.

The Katalla River watershed has 23,419 acres, and more than 83.4 miles of stream. There are extensive networks of wetlands, beaver ponds, and oxbow ponds across the upper valley floor. Only the lower 1.75 miles of river could be affected by this project; 1.5 miles below the old roadway where supplies would be unloaded and about 0.25 mile upstream which is the extent of tidal influence. The Katalla Slough watershed is smaller, encompassing 1,977 acres and having about 12.9 miles of stream. The old roadway runs parallel to the slough and crosses a number of small streams that flow into the slough. The proposed drilling site and most of the past drilling activities are located in this watershed, primarily in a section to the east on the slopes above the slough.

The area has a maritime influenced climate, moderate temperatures (40° F mean temperature), heavy rainfall (120 inches/year), 60-80 inch snow packs in the surrounding hills, and cloudy, wet weather throughout the year (USDA Forest Service, 1983).

The vast majority of the Katalla River watershed is in a natural, untouched state. There is a substantial amount of natural bank erosion as the Katalla River meanders through the valley. Comparisons of aerial photographs taken in 1974 and 1993 show many areas where the river has shifted and eroded large sections of bank in a relatively short amount of time. Despite the sediment input, habitat surveys at three sites on the main river in 1989 show that there are large amounts of suitable spawning area for salmon (Unpublished USFS survey data, 1989). Apparently there are sufficient flows to transport excess sediment out of the system.

Irish Creek is a tributary to the Katalla River and joins the river on the west bank south of the airstrip. It would not be affected by the project except where it makes a loop and borders the southwest end of the airstrip for about 200 feet. This area would be at the edge of the proposed equipment storage area on State of Alaska lands. A 100-foot vegetation buffer will be maintained between the creek and storage area to protect pink salmon spawning area.

The Katalla Slough watershed was greatly affected by the 1964 earthquake, which raised the area about 10 feet. Pre-earthquake photographs show that much of the main slough area used to be a more open, navigable lagoon with large intertidal mudflats. The channel has incised and narrowed, and the mudflats are now sedge and sphagnum meadows. The growth of alder and willow in this area since the uplift has attracted beavers, as the main slough and many smaller slough channels have beaver dams and ponds.

**Effects of Past Human Activities** - Natural oil seeps were discovered in the Katalla district and on the north side of Controller Bay, 20 miles to the east, about 1896 (Martin, 1921). Forty-four wells were drilled in this area between 1901 and 1932. Of the 44 wells, 28 wells were drilled in the “Katalla field” and of the 28 wells, 18 wells produced (Appendix A, Map 1). The producing wells were within an area of approximately 60 acres<sup>12</sup> of private land, and produced oil from fractured sandstone and siltstone of the Katalla (renamed Poul Creek) formation, at depths ranging from 360 to 1,750 feet (Miller, 1959). Most of the productive wells were on a claim (Claim No. 1, MS 599) patented under the placer mining law prior to enactment of the oil and gas leasing law (Miller, 1959). This is the area where the current activities are proposed. Production in the Katalla district amounted to 153,922 barrels of oil, from 18 wells over 30 years. A refinery was constructed and the refined oil was used for fishing fleets and other local uses. Production ceased in 1933 when the refinery burned down. The refinery was not rebuilt.

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<sup>12</sup> This 60 acres is private land and known as Claim No.1.

Past human activities, which may have affected the watersheds and the water resources, include logging of the nearby forests for building materials, construction of roads and railways, and oil drilling and production. Most of the activities occurred from 1896 to 1933, the period from the first exploration of the area until the refinery burned and the town of Katalla was abandoned (Shaw, 2001). From 1985 to 1986 there was additional exploratory drilling activity. The 2.5-mile old roadway was used to access the private land at the Claim No.1 site. On this private land, about 7.0 acres were cleared for a camp, drill site and other facilities; and a test well was drilled. Equipment from these later activities, and an abandoned crew camp still remains on site, and there is a “reserve pit” where some drilling wastes are still stored. Cassandra Energy proposes to use the same cleared area for their crew camp, drill site and other facilities.

The logging does not appear to have had a long-term effect on the watersheds, based on examination of aerial photographs and some stream survey data from 1989. Areas which were logged include the old townsite on the west bank of the Katalla River, an area along Clear Creek about one mile from the end of the old roadway, some sections along Katalla Slough, and on an old beach berm between Katalla Slough and the ocean (Shaw 2001). There is no evidence in the photographs of landslides or blowdown. Stream survey data from Clear Creek, downstream from a logged area, show that fish habitat has not been impaired. There are good salmon spawning gravels and abundant large woody debris for rearing habitat (Unpublished USFS survey data 1989). The areas along the slough and on the beach berm do not show any signs of erosion or other ongoing effects (Ken Hodges, personal observations, aerial photography analysis). Thus, there do not appear to be adverse effects from the logging, and this past action would not contribute to cumulative effects in the watersheds.

One can easily see the old railway beds on the aerial photographs. Near the town site, the raised beds still impound water or divert small streams. Although the natural stream channels have been altered, new drainage patterns and channels have developed over the years. It would be speculative to say whether or not any substantial adverse impacts remain. In the main valley area the diversions are fewer, and there are a number of places where smaller streams or the meanders of the main river have washed away or cut through the bed. The photographs show that the beds are well vegetated and would not be causing serious erosion or sedimentation problems compared to the natural conditions. Again, none of these past activities have impacts that would contribute to the cumulative effects in the watershed.

Road building in the area has been limited to the area around the old Katalla town site and the 2.5-mile roadway leading to the drilling site. The roads around the town site are mostly overgrown with vegetation. All that appears to be left of them are the all-terrain vehicle trails between the cabins (Ken Hodges USFS, personal observations). As with the railway beds, some stream channels may have been altered, but there do not appear to be any lasting effects or impacts to streams. The 2.5-mile roadway on the east side of the Katalla River was last used in 1988 and is still intact, although some trees have fallen across the roadway, and there is one culvert that has washed out. This has caused one bank to erode, depositing some sediment downstream. A survey crew noted that some culvert and ditch maintenance was needed, but there does not appear to be any threat to fish habitat since the affected streams do not have fish and are incapable of carrying large amounts of sediment. The road has diverted some small seeps and ephemeral streams, but these are few in number and have no fish habitat. The effects on drainages, flows, and wetland functions are negligible.

An important issue related to roads is the ability of fish to pass through culverts or other structures at the stream crossings. The current Forest Service standard for fish passage is that the

migration of fish at all life stages should not be impeded (USDA Forest Service, 2001). Generally fish passage problems are associated with culverts, which can increase velocities so fish cannot swim against the current or which can create other physical barriers (Furniss et al., 1991). Fish surveys have been conducted in all of the streams crossed by the old road to the drilling site. Bridges rather than culverts cross all the streams that were found to have fish. The bridges did not create any barriers, so there would be no fish passage problems.

The effect of past oil drilling in the area has been visually assessed. It is possible that there has been some contamination of soils or groundwater with fuels or oil, but since the more recent activity and most of the historic drilling have been on private land, no tests have been conducted. In 1992, Forest Service employees walked through the camp while looking at the old roadway. They noted that bags of concrete were broken open and spilled, but these substances are not on the hazardous materials list. No other spills were mentioned. It should be noted that there are numerous surface oil seeps occurring naturally in the area, so it would be difficult to determine whether any oil contamination is related to human activity or natural processes. Some machinery and artifacts from the earlier drilling operations (pre 1933) can be found in the area, and much of the equipment from the 1985 to 1986 activity is still on site. There is also a "reserve pit," where drilling wastes are stored, left over from this time period on private land. The Cassandra Energy Corporation has submitted an in-place closure plan to the Alaska Department of Environmental Conservation, calling for the solidification of the drill cuttings with cement. This is an approved method of cuttings disposal, but no written permit has been issued at this time (oral communication, Judd Peterson, State of Alaska, Department of Environmental Conservation).

**Soil, Landforms** - Davidson and Harnish (1978) describe the general landtypes and soils of the Katalla area as follows. Forested mountain slope landtypes surround the low-lying areas. Soils on steeper slopes are moderately well drained and thin, ranging from bedrock to 50 cm. (20 inches). Gentler slopes are well drained with soils thicker than 100 cm. The Katalla River valley is mostly an unforested glacial outwash area. The finely textured alluvial sediments and flat gradient cause the area to be poorly drained. Soils are generally thicker than 100 cm. In some outwash areas there are sands and gravels that are better drained. The Katalla Slough area is mostly uplifted tidal marsh with poorly drained sandy loams and silty loams greater than 100 cm. thick.

**Geology** - The general geology of the area is described as mainly tertiary aged marine and continental clastics consisting of siltstones, organic shales, sandstones, and locally abundant submarine volcanic rocks (USDA Forest Service, 1983). Around the proposed drilling site there are also quaternary marine and alluvial sediments. Of particular interest for this project are the quaternary beach deposits. There is a series of these deposits near the mouth of the Katalla River valley; they are generally long linear features that are parallel to the shoreline. The old access roadway to the Katalla oil field follows an old railway bed that was constructed on one of these old stranded beach deposits. This type of deposit consists of clean, washed sand, pebbles, boulders, and little, if any, fines. It is considered to be excellent as road foundation (Kachadoorian, 1960).

More specifically, the project area is in the Gulf of Alaska Tertiary Province. This province includes tertiary age, sedimentary rocks that are exposed east of the Copper River. These rocks were deposited in a continental margin basin where marine regression and transgression took

place during the middle Eocene and possibly during the early Miocene. The Gulf of Alaska Tertiary Province has been designated by the U.S. Geological Survey as a “Favorable Petroleum Geological Province” (FPGP)<sup>13</sup>. The Katalla area, as defined in the 1982 CNI Agreement, lies completely within the FPGP. Although there are known deposits, past exploration has not revealed sufficient quantities for commercial production, and this area is considered to have low potential for oil and gas development, (Nelson and others, 1984).

The Gulf of Alaska Tertiary Province is underlain by several tectonostratigraphic terranes, chiefly the Prince William and Yakutat terranes. Mesozoic and early Tertiary rocks of the Prince William terrane, (the Valdez and Orca Groups respectively), have no known oil and gas resource potential (Bruns, 1996).

The oil bearing rocks are mostly from the Oligocene through Miocene (middle Tertiary) in the Poul Creek formation (formerly the Katalla formation) of the Yakutat terrane. Attributes indicative of a hydrocarbon province are present, including extensive onshore oil and gas seeps and numerous anticlinal traps (Blasko, 1976; Plafker, 1987). The Poul Creek formation and offshore equivalents are known to have some sections with favorable hydrocarbon characteristics, including source and reservoir rocks and thermal maturity.

**Vegetation** - Most of the hillslopes up to the tree line are forested with Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla*). The spruce dominate on the well-drained alluvial fans and beach berms, while the hemlock are more prevalent on the steeper slopes. The lowland areas are covered mostly by grasses in the drier areas and sedge or sphagnum mosses in the wetland areas (Unpublished USFS survey data 1989). In the sandier areas along the river and beach area, lupine (*Lupinus nootkatensis*), beach rye grass (*Elymus arenarius*), and beach pea (*Lathyrus maritimus*) are the dominant species. Sitka alder (*Alnus sinuata*) and willows (*Salix spp*) are found near the streams along with salmonberry (*Rubus spectabilis*) and other shrubs.

The uplifting of the Katalla Slough area by the 1964 earthquake has caused much of the lowland area to drain and become drier. Different plant species are colonizing these areas, so the vegetation types are in a state of change. Willow is colonizing some of the area along the coast, while thick, young Sitka spruce stands have become established on the uplifted river bluffs and other drier areas. Alder is also a pioneer species but eventually gives way to Sitka spruce where the soil is dry enough.

During the sensitive plant surveys, the crews identified all of the plants that were encountered. No exotic plant species were found.

## **Threatened, Endangered, and Sensitive (TES) Plant and Animal Species**

### **Plants**

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<sup>13</sup> This means that the geology of the broad area is favorable for the occurrence of petroleum. It does not indicate whether economic quantities are present. Within a “favorable” area can be areas of varying oil and gas potential, e.g. high, medium and low.

There are no federally listed threatened or endangered plant species known to exist on the Chugach National Forest. There are, however, 13 species on the Forest Service Alaska Region Sensitive Species list which are known or are suspected to occur on the Forest. These are:

Eschscholtz's little nightmare	<i>Aphragmus escholtzianus</i>
Norberg arnica	<i>Arnica lessingii</i> ssp. <i>norbergii</i>
Moonwort fern, no common name	<i>Botrychium tunux</i>
Moonwort fern, no common name	<i>Botrychium yaaxudakeit</i>
Goose-grass sedge	<i>Carex lenticularis</i> var. <i>dolia</i>
Tundra whitlow-grass	<i>Draba kananaskis</i>
Truncate quillwort	<i>Isoetes truncata</i>
Calder lovage	<i>Ligusticum calderi</i>
Pale poppy	<i>Papaver alboroseum</i>
Kamchatka alkali grass	<i>Puccinellia kamtschatica</i>
Smooth alkali grass	<i>Puccinellia glabra</i>
Unalaska mist-maid	<i>Romanzoffia unalascensis</i>
Circumpolar starwort	<i>Stellaria ruscifolia</i> ssp. <i>aleutica</i>

Sensitive plant surveys were conducted along the old roadway on June 19, 2001, and along the new road proposed in Alternative 3 on August 17, 2001 (Zimmerman 2001, 2001a). No sensitive plants were found during either survey. Additional plant surveys will be conducted on the areas to be disturbed for the proposed staging area on National Forest land, and/or if a section of new road is built to avoid impacts to an eagle nest. These areas would have habitats similar to the ones in the previous surveys where no sensitive plants were found. Based on the types of habitats, no sensitive plants would be expected to be present. A road or staging site could be moved if sensitive species were found.

### Animals

There are seven threatened, endangered, or sensitive animal species known to exist in the waters around or on the land of the Chugach National Forest. These are:

Humpback whale	<i>Megaptera novaeangliae</i>	Endangered
Steller sea lion	<i>Eumetopias jubatus</i>	Threatened
Montague Island Vole	<i>Microtus oeconomus elymocetes</i>	Sensitive
Trumpeter swan	<i>Cygnus buccinator</i>	Sensitive
Dusky Canada goose	<i>Branta canadensis occidentalis</i>	Sensitive
Osprey	<i>Pandion haliaetus</i>	Sensitive
Peale's peregrine falcon	<i>Falco peregrinus pealei</i>	Sensitive

**Humpback Whale** - The humpback whale may occur in the off shore waters of the Gulf of Alaska, but would not venture into the Katalla River or otherwise be in the project area.

**Steller Sea Lion** - The Steller sea lion can be found in the off shore waters of the Gulf of Alaska. They also use the islands at Point Martin, about three miles southwest the Katalla River, as a

haul-out site. There is a sea lion rookery about 27 miles southeast of the project area on Kayak Island. Sea lions are not known to use the Katalla River.

**Montague Island Vole** - The Montague Island vole is found only on Montague Island, about 80 miles to the west, and would not be in the project area.

**Trumpeter Swan** - Trumpeter swans live in wetland areas and nest in ponds similar to those found in the lower Katalla River and Katalla Slough area. There is one known trumpeter swan nesting site about one-half mile from the lower section of the Katalla River.

**Dusky Canada Goose** - The dusky Canada goose breeding range is restricted to the Copper River Delta and surrounding wetlands, including the lower Katalla River valley and wetlands near the Bering Glacier (Campbell, 1990). It winters primarily in the Willamette Valley in Oregon, and along the Columbia River in Washington (Comely et al. 1988; Bartonek, 1971). Suitable nesting habitat for Canada geese exists along the lower Katalla River and Katalla Slough, but no nests have been documented.

**Osprey** - The osprey is considered uncommon to rare throughout Alaska (Palmer, 1988). The osprey is widely distributed across much of Alaska south of the Brooks Range, but localized in the vicinity of lakes, large rivers and coastal bays (Gabrielson and Lincoln, 1959). The osprey could occur within the project area although no observations have been documented and no nests were seen while conducting bald eagle nest searches. The lower reaches of Katalla River would be ideal fishing habitat. Suitable nesting habitat, in the form of coniferous forests surrounds the valley.

**Peale's Peregrine Falcon** - Peale's peregrine falcon nests in Alaska along the Pacific coast from southeastern Alaska through the Gulf of Alaska and west to the Aleutian Islands. Nesting habitat in Alaska includes ledges of vertical rocky cliffs in the vicinity of seabird colonies (Gabrielson and Lincoln, 1959). There is a known nest site on the sea cliffs north of Point Martin, approximately three miles from the mouth of the Katalla River.

### **Wildlife (non -TES species)**

The Katalla area has abundant wildlife resources with many species of mammals and birds. During the public comment period, people specifically mentioned concern about bears, bald eagles, shorebirds, and "migratory birds."

**Bear** - Two species of bear are present in the project area, brown bear (*Ursus arctos*) and black bear (*U. americanus*). All of the habitats in the Katalla area are used by brown and black bears during spring, summer and fall. They are usually found in dens from late fall to winter through early spring. The lower Katalla River area offers early spring foods for bears in the form of herbaceous vegetation. Salmon runs provide food for bears in the area from at least mid July through the end of October. Berries, clams, and other potential food sources are also present.

**Bald eagle** - The bald eagle (*Haliaeetus leucocephalus*) is found throughout the coastal regions of Alaska and particularly where abundant food sources such as salmon are available. The protection of eagles is regulated under the Bald Eagle Protection Act (16 USC 668-668d). The



U.S.D.A. Forest Service (USFS) Alaska Region and the U.S.D.I. Fish and Wildlife Service (USFWS) have developed an MOU that describes the standards and guidelines for bald eagle conservation (USFS Agreement No. 02MU-1110001-018). In accordance with the agreement, Forest Service biologists have conducted surveys to determine whether eagle nests are present in the project area and whether the nests are being used (active). In 2001, there was an active eagle nest near the old roadway about one mile east of the Katalla River. They also found two inactive nests in the general area, but not close to areas where project activities would be a concern (Logan, 2001).

**Goshawk** - The northern goshawk (*Accipiter gentilis*) is a forest habitat generalist, breeding in coniferous, deciduous, and mixed forests across its holarctic range (Reynolds et al., 1992). While goshawks occur in a variety of forest successional stages, it is believed that nesting birds are most commonly associated with mature forests (Crocker-Bedford, 1993, Titus et al., 1994; Titus 1996). The species is considered a non-migratory resident in the Prince William Sound area (Isleib and Kessel, 1973).

Due to concerns over population declines, the northern goshawk is currently listed by the U.S. Fish and Wildlife Service as a species of management concern. Species of management concern include those for which there is some evidence of vulnerability but for which there are not enough data to consider a listing proposal under the Endangered Species Act of 1973. On June 19, 2001 a calling survey was conducted along the old roadway to determine whether any goshawks might be in the area. There were no calling responses, nor were any individuals seen (Burcham 2001).

**Shorebirds** - Coastal areas of south-central Alaska are important migration stopovers for migrating shorebirds. Each May, as many as 4-6 million western sandpipers (*Calidris mauri*) and Pacific dunlins (*C. alpina*) use the Copper River Delta as a migration stopover. Red knots (*C. canutus*), least sandpipers (*C. minutilla*), pectoral sandpipers (*C. melanotos*), lesser yellowlegs (*Tringa flavipes*), short (*Limnodromus griseus*) and long-billed dowitchers (*L. scolopaceus*), marbled godwits, black-bellied plovers (*Pluvialis squatarola*), Pacific (*P. fulva*) and American golden plovers (*P. dominica*), and many other species use this area during migration as well. These birds use mudflats as critical feeding areas to replenish their fat reserves during their long migrations to breeding grounds.

Approximately 300 acres of tidal flats, that represent potential migratory shorebird habitat, exist in the lower Katalla River and on beaches between Katalla River and Palm Point, about two miles southwest of the mouth of the river. Shorebird surveys flown in during migration in 1992, and 1994, revealed no shorebirds using the area near Palm Point, and surveys of outer beaches of Kanak Island, 2.5 miles southeast of the drilling site, revealed relatively low numbers of shorebirds. Undoubtedly shorebirds use the area, but due to its small area, it is not nearly as critical as tidal flats on the Copper River Delta or Controller Bay, 10 miles southeast of the project area.

**Other Migratory Birds** - The public comments concerning migratory birds were more general in nature, but this category would include the aforementioned shorebirds, waterfowl such as ducks and geese, raptors, passerines, and numerous others. Given the uplifted areas with

pioneering brush, the estuarine and beach areas, the older forests, and the grass and sedge areas, the Katalla area provides a wide variety of vegetation and habitat types for these species. These habitats are typical of the coastal mainland areas along most of Gulf of Alaska. Ann Rappoport with the U.S. Fish and Wildlife Service stated in a comment letter that vegetation clearing, excavation, and fill placement for roads or staging areas could result in the destruction of bird nests, which is a violation of the Migratory Bird Treaty Act. Mitigation would include avoiding clearing between April 15 and July 15 when birds are nesting.

Isleib and Kessel (1973) recorded 79 species of passerine birds in the north Gulf Coast-Prince William Sound Region of Alaska. When this list is cross-referenced with the Migratory Nongame Birds of Management Concern in the United States: the 1995 List (Division of Migratory Bird Management 1995) and the bird species of southcoastal Alaska in the Partner's in Flight Alaska Biogeographic Regions Landbird Conservation Plan, Ver. 1.0 (Boreal Partners in Flight Working Group 1999), the following species of concern are identified:

<b>Species</b>		<b>Habitat</b>
Alder flycatcher	<i>Empidonax alnorum</i>	Alder thickets
Blackpoll warbler	<i>Dendroica striata</i>	Conifers, primarily spruce
Chestnut-backed chickadee	<i>Parus rufescens</i>	Conifers, mixed forests
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	Thickets, shrubs, dwarf conifers
Gray-cheeked thrush	<i>Catharus minimus</i>	Riparian thickets, coniferous forest edges
Northern shrike	<i>Lanius excubitor</i>	Deciduous, coniferous trees, thickets
Northwestern crow	<i>Corvus caurinus</i>	Coniferous forest, forest edges
Olive-sided flycatcher	<i>Contopus cooperi</i>	Conifers, bogs
Red-breasted sapsucker	<i>Sphyrapicus ruber</i>	Conifers, coastal lowlands
Rufous hummingbird	<i>Selasphorus rufus</i>	Conifers, brush, adjacent meadows
Townsend's warbler	<i>Dendroica townsendi</i>	Conifers, mixed forests
Varied thrush	<i>Ixoreus naevius</i>	Coniferous, deciduous forests with dense understory

There are numerous other species that are not on the species of concern list that could nest in the areas affected by the proposed activities. We assume that all of the areas that would be cleared could be used by some migratory bird species.

**Other Mammals** - Mountain goats (*Oreamnos americanus*) inhabit the steeper portions of the Ragged Mountains that form the western boundary of the Katalla Valley and in the Don Miller Hills to the east. The goat populations are managed by ADF&G by strict harvest quotas. Moose (*Alces alces*) use the Katalla Valley and the uplifted areas where willow is becoming established, but it is thought that the densities are low (Dave Crowley, ADF&G, personal communication). Again, the populations are monitored and the harvests are regulated by ADF&G. Wolverine (*Gulo gulo*), lynx (*Lynx canadensis*), and wolves (*Canis lupus*) are all thought to be in the Katalla area in relatively low numbers.

Additional information including value ratings for habitat disturbed is in the Biological Evaluation for Wildlife, (Burcham, 2002).

## Fish

The Katalla River watershed has populations of all five species of Pacific salmon: chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), chum salmon (*O. keta*), and pink salmon (*O. gorbuscha*). Dolly Varden (*Salvelinus malma*) are known to inhabit the system. Geneticists collected cutthroat trout *O. clarki* in Irish Creek, which flows into the lower Katalla River near the mouth (Gordon Reeves USFS Forestry Sciences Laboratory, personal communication). Three-spined stickleback (*Gasterosteus aculeatus*), and various types of sculpin (*Cottus spp.*) are also likely to be present.

Since the 1.5-mile stretch of the river in the project area (downstream from the road) is all tidally influenced, some of the species that do not dwell in brackish waters only use the area as a migration corridor. For other species, this is a prime spawning area. There is an approximately 0.5-mile segment with areas where pink salmon and possibly chum salmon spawn. Pink salmon spawn in this area from early August until mid-September. The other species of salmon, and pink and chum salmon as well, spawn farther upstream in areas not affected by tides. Chinook and coho salmon juveniles may use this estuarine area for rearing habitat, but at least for coho salmon, the lower Katalla River lacks extensive backwaters, vegetation, and other complex habitat coho juveniles prefer. Upstream from the old roadway there is good habitat for all salmonid species. No rainbow trout (*O. mykiss*) or its anadromous form, steelhead, are known to be in the system.

The only Katalla River fish population data are for coho and sockeye salmon, taken from aerial surveys conducted by the Alaska Department of Fish and Game (unpublished data provided by ADF&G Commercial Fisheries Division, Cordova). The numbers of fish reported in these surveys are not intended to be accurate population estimates, since water clarity, tree cover, or other factors may hinder viewing. Instead, the counts serve as an index, showing relative abundance from year to year.

Peak coho salmon counts in the Katalla River from 1993 to 2001 have averaged 4,600 (no estimate 1998), although the last three years have averaged 2,900. Sockeye salmon counts from 1993 to 2001 have averaged 1,200. Pink salmon spawning in the lower river could number from 500 to several thousand (Todd Rogers, lodge owner, personal communication, Ken Hodges USFS, personal observations 1989, 1990, 2001), but no systematic counts have been made. No estimate is made for the number of pink salmon spawners upstream from the road. There is no information for chum or chinook salmon populations except that they are present (Ken Hodges USFS, personal observations, 1990, 2002).

Katalla Slough is a smaller, mostly estuarine system, but pink and coho salmon, cutthroat trout, and Dolly Varden have been observed there. Pink salmon have been seen in the main slough channel, while juvenile coho salmon have been observed in Arvesta Creek, Oil Creek, a small tributary crossing the road, and a small tributary off of the main slough (Unpublished USFS survey data, 1989; unpublished USFS survey data, 2001, 2002). Adult coho salmon carcasses were observed in Arvesta Creek near the road indicating that there is spawning in the system (Sean Stash USFS, personal observation, 2002). Cutthroat trout were caught in the main slough

channel for a genetics study in 2001 (Gordon Reeves USFS Forestry Sciences Laboratory, personal communication). Juvenile Dolly Varden were also found in the tributary crossing the road (Unpublished USFS survey data 2001). One unidentified juvenile flatfish was observed in Katalla Slough, perhaps a starry flounder (*Platichthys stellatus*), a common estuarine fish, as well as an unidentified sculpin (Unpublished USFS survey data, 1989). Sticklebacks are likely to be present either in the main channel or in the small slough tributaries. No chinook, chum, or sockeye salmon have been seen in this area. No population information is available from ADF&G or other sources for the Katalla Slough system. No rainbow trout or steelhead are known to be in the system.

Except for the small tributaries along the old roadway, the streams in the system provide good fish habitat. Coho salmon probably spawn in the eastern half of the main slough and in the lower sections of the larger tributaries where we have seen suitable spawning habitat. The small slough channels and beaver ponds in the wetlands do not have spawning area, but provide extensive and valuable rearing habitat for juvenile coho salmon. The smaller tributaries crossing the old roadway may go dry at times, and only one of these was found to have fish. These smaller streams are also steep and tend to form shallow braids as they reach the flat wetland area adjacent to the slough, which would prevent fish migrating into these streams from the slough.

There is also one creek (sometimes called Irish Creek) close to the end of the airstrip in the general area of the proposed 2.5-acre equipment storage area on State of Alaska land. It is on the southwest end of the airstrip and is separated from the cleared area by an approximate 25-foot wide section of alder and other brush. An off-road vehicle trail used to run from the airstrip and across the creek, so there is a small cleared path that is now being overgrown. Irish Creek has pink salmon spawning habitat in the section closest to the airstrip. A local landowner, Terry Zeznock, stated in a public comment that coho salmon spawn there as well. Cutthroat trout are also present in the creek (Gordon Reeves USFS Forestry Sciences Laboratory, personal communication).

## **Cultural and Historic Resources**

The Katalla area has numerous historical artifacts related to the early oil and gas production. For this project, Shaw (2001) conducted a historic field survey of the drilling site, camp area, and the route for a new road on the southeast bank of the Katalla River in Alternative 3, to meet the requirements of the National Historic Preservation Act, and paragraph K of the 1982 Department of the Interior/Chugach Natives Incorporated Settlement Agreement. Based on past surveys, it was determined that the old roadway did not require additional surveys. The survey report documents the locations of wellheads, equipment, pipelines, artifacts, and other relics from the early Katalla era. Shaw recommends that the Claim No.1 Oil Field, the private land on which the proposed drilling operations would take place, and the site of the old Residence Camp be determined to be eligible for the National Register of Historic Places. A logging/wharf site downstream from the end of the road proposed in Alternative 3 was not recommended for eligibility.

After Shaw had completed his survey work, Cassandra Energy Corporation proposed clearing a 2.5-acre equipment storage area on State of Alaska land near the Katalla airstrip. The proposal

states that, “Some brush clearing may be required to remove recent growth from both the storage area and airstrip.” Some of the area is already disturbed from the construction of the airstrip, but depending on the boundaries of the proposed area and the ground disturbance required to clear the brush, there could be potential effects to historic resources. Prior to any activity, an archaeologist will determine whether there is likely to be any effect, whether surveys are required, or whether any mitigation is necessary.

In Shaw’s report (2001) he states that the area is interesting from the standpoint of Native history because it is the northern territorial boundary of the Tlingit nation. He states, “The lower elevations have potential for the presence of prehistoric/protohistoric camps ...” but these areas are outside of the area of potential effects of the project and that it was improbable that the Claim No.1 area was ever used for a “major occupation.” The low pass to the east may have been a travel corridor, but the area around the drilling site and camp has a low probability for finding prehistoric material. During the historic survey, the crew looked for evidence of prehistoric artifacts or materials, but none was found.

Shaw (2001) recommends a “no adverse effect” determination regarding historic properties for the proposed use of the old roadway and the proposed exploratory drilling activities under all action alternatives, and the construction of a new road under Alternative 3. This recommendation was made with the following stipulation: “The agreement should contain provisions for activities of the undertaking to occur only on Clearings 1-3 of the 1985 developed area within Claim No.1, and restrict personnel to the developed footprint of the three clearings and their connecting roads.” Since there are old wellheads near Clearing 3 at the east end of the development, “... lateral expansion should only be allowed in areas well away from these site features.”

### **Current Human Use**

**Subsistence** - The lack of permanent residents, the low number of temporary workers at the Katalla cabins, and the distance from the nearest town make it unlikely that subsistence harvest occurs in the area. The area is about 55 miles by air from Cordova and 70 miles by boat. There is no road access to this area. In either case, potential subsistence users would have to invest considerable amounts of time and/or money to get to the area. The resources that could be obtained in the Katalla area are readily available in the immediate Cordova area.

There are no winter caretakers for the cabins there, and the owners of the cabins do not live there as a primary residence. Before the guided fishing and hunting season, there are only a few people caretaking and getting the facilities ready (Todd Rogers, personal communication). If subsistence users from other areas were in Katalla, for whatever reason, it is possible that they could harvest some species. This harvest, however, would be more likely to be opportunistic rather than being the focus or the purpose of the trip.

Under the federal subsistence fisheries regulations, the Katalla area is considered part of the Prince William Sound subsistence district. Salmon and smelt are the only fish recognized as having customary and traditional use that would be found in the project area. Under subsistence regulations, salmon can only be caught with gill nets or seine nets in saltwater, not in the Katalla

River or in Katalla Slough. Smelt have not been documented in the Katalla River, but it is possible that one species of smelt, the eulachon (*Thaleichthys pacificus*), could spawn in the river anytime from February to early June. Eulachon are abundant in the Cordova area, spawning in freshwater streams as well as tidally influenced areas where there are fine gravels and coarse sand for spawning substrate. The lower Katalla River has some sandy areas (Ken Hodges, personal observations), but again, the presence of eulachon has not been documented.

There are no special federal subsistence hunts in the Katalla area, such as there are for mountain goats in certain areas of Prince William Sound or for moose on the west Copper River Delta. There are, however, numerous species that have federally recognized customary and traditional use, such as black bear, snowshoe hare (*Lepus americanus*), spruce grouse (*Dendragapus canadensis*), wolverine, and many others. Again, the lack of people in the area makes it unlikely that there is substantial subsistence harvest, and the availability of these species close to Cordova makes it unlikely that people would go to the expense of traveling to Katalla.

**Commercial Fishing** - There is a large commercial fishery in the off shore waters, mostly for sockeye, coho, and chinook salmon. In 2001 the commercial fisheries in the Copper River and Bering River districts caught 1.3 million sockeye; 250,000 coho; and 39,600 chinook worth approximately \$12.9 million, ex-vessel price (Alaska Department of Fish and Game website). There is, however, no commercial fishery in the Katalla River or Katalla Slough. Undoubtedly some of the fish produced in the Katalla systems are harvested in the commercial fishery. Since the fish being harvested come from a mixture of different stocks, it cannot be determined what percentage of these fish are produced in the Katalla or other systems.

**Recreation** - Aside from the current interest in oil and gas drilling, the existing human use of the Katalla area is geared to recreation. Most of the recreational use is provided by commercial guides, who provide hunting and fishing services and lodging at the cabins there. Current recreational activities in the Katalla area are:

1. Commercial sportfish outfitting and guiding on the Katalla River.
2. Commercial big game outfitting and guiding for brown bear, black bear, moose and mountain goats.
3. Unguided sport hunting for the species listed above.
4. Unguided sport fishing on the Katalla River.
5. Cabin rentals for hunters and sportfishers at the old Katalla town site.
6. Day use hiking and exploring of the town site and surrounding area.
7. Beachcombing, berry picking, photography, and other secondary activities associated with the above activities.

Two businesses provide lodging and fishing services, one averaging 30-50, and the other 40-45 fishing clients per year. Five outfitter/guides are permitted for big game hunting in the game management unit, but since they tend to split up the territory among themselves, only one guide uses the Katalla area as his core region, and another guide uses it infrequently. The hunting guide that uses the Katalla area also provides lodging.

While the main exploratory drilling activity would occur on the private land 2.5 miles to the east of the Katalla River, barge traffic on the river, truck noises, drilling workers fishing and hunting in the area, and helicopter or airplane noise could all affect the aforementioned recreational users around the cabins, river, and beach areas.

**Sportfishing** - The owners of the two fishing services said that almost all of the sportfishing is for coho salmon in the months of August and September, with the peak being from mid-August to mid-September (Steve Ranney, Todd Rogers personal communications). Some of the early clients may fish for pink salmon when coho salmon are not yet abundant. There are cutthroat trout in the area, but the regulations require catch-and-release fishing only. No rainbow trout or steelhead are known to be in the area, but they would also be managed for catch-and-release fishing only.

The businesses average around 80 clients per year (five or more clients per week for eight weeks for one, about four to 10 per week for six weeks for the other), but there are probably few other anglers besides the guided clients. There are no public campgrounds or facilities near the Katalla River, and the nearest Forest Service cabin is 4.5 miles to the west. Since the weather in August and September is often windy and rainy, not too many anglers would be expected to camp in tents. The ADF&G sportfishing reports do not have separate listings for the Katalla River, so there are no data on the fishing effort and harvest. Although the aerial index escapement numbers for coho salmon have been somewhat lower for the past three years than the 10-year average (2,900 average vs. 4,600), there is no indication of overharvest by anglers. One lodge operator said that the runs were actually increasing over the past several years (Todd Rogers personal communication).

**Hunting** - Most of the hunting occurs during the spring bear season in the latter part of May and then during the fall moose and bear season from mid-September to the end of October. There are no statistics on the number of hunters using the Katalla area itself, but there are records of harvests in the area for brown bear, black bear, and moose.

From 1982 to 2000 (19 years) the reported harvest of brown bear averaged 1.05 bears per year. However, the average is misleading since in eight of those years no bears were killed, while five were harvested in 1985, and three each in 1986 and 1982. There may have been increased hunting pressure in 1985 and 1986 when there were people working at the drilling operations. Black bear harvest averaged 1.52 annually from 1980 to 2000 (21 years) with four killed in 1987 and 1998, and three in 1986 and 1989. Moose harvest from 1980 to 2000 has been relatively low, 0.33 moose per year, with three killed in 1988 and none in 17 of the 21 years. There are no records for waterfowl or other game effort or harvest. There is no known trapping since there are no caretakers or other people spending the winter and spring there.

**Other Recreational Activities** - It is assumed that most of the hiking, beachcombing, exploration of the old town site, and other recreational use in the area is associated with the clients of the cabin owners and the outfitter/guides who are primarily in the area for hunting and fishing.

The number of people who would travel to Katalla for purposes other than hunting or fishing are probably limited by the expense of flying to the area, the absence of public facilities, and the lack of extensive historic features. There are no old buildings or derricks, but there are some artifacts and pieces of equipment in the woods. Occasionally people staying at the Forest Service cabin 4.5 miles to the west will walk to the Katalla area to see the graveyard or the town site, but it is a long walk and access along the beach is complicated at high tide. The graveyard itself is hard to find and difficult to walk to because of the thick brush and swamps (Ken Hodges USFS, personal observations).

The Recreation Opportunity Spectrum (ROS) for the East Delta as identified in the Revised Forest Plan is Primitive II. Upon initiation of activity associated with rights reserved under the 1982 CNI Settlement Agreement, the 521 Minerals Management Prescription applies to the project area (Revised Forest Plan Record of Decision, page 13; Revised Forest Plan, Chapter 4, page 4-84). The ROS for the project area is Roaded Natural (RN). The characteristics of a RN classification are:

- Access: Snowmachines, OHVs, developed trails, foot, bicycles, on designated routes only. Roads may be present. Roads maintained for high clearance vehicles only.
- Remoteness: Nearby sights and sounds of human activity may be present. Distant sounds may be heard.
- Social Encounters: Users should expect to encounter other groups.
- Visitor Impacts: Use noticeable but not degrading to resources. Rustic facilities may be constructed for users.
- Visual: Alterations away from travel corridors are few and subordinate to landscape.

**Existing Scenery Inventory** - The value of an area for recreation is also tied to the natural scenery, which is expressed in terms of the “integrity” of the scenery. Scenery is a part of all forest settings and contributes to the quality of the user’s experience. The existing scenic integrity for the Katalla Analysis Area and the East Copper River Delta is “very high.” Upon initiation of activity associated with rights reserved under the 1982 CNI Settlement Agreement, the 521 Minerals Management Prescription applies to the project area (Revised Forest Plan Record of Decision, page 13; Revised Forest Plan, Chapter 4, page 4-84). The Scenic Integrity Objective for the project area is Very Low.

The scenic integrity objectives (SIO) identify the specific management direction for managing the scenery of the Chugach National Forest. The SIO for the Katalla analysis area is expressed as a range from Very low in the project area to “High” to “Very High” in the watershed outside the project area.

- **High Scenic Integrity Value:** The valued landscape character appears intact. Deviations may be present but must repeat form, line, color, texture, pattern, and landscape character so that they are not evident.
- **Very High Scenic Integrity Value:** The valued landscape character is intact with only minute if any deviations. The existing landscape character and sense of place is expressed at the highest possible level.



- **Very Low Scenic Integrity Value:** The valued landscape character appears heavily altered. Deviations are noticeable and do not mimic typical size, shape or pattern of the viewed landscape.

**Bering Lake Roadless Area** - The proposed action is located within the Bering Lake Roadless Area #15, (Appendix C, FEIS, Revised Forest Plan, May 2002). The Roadless area has a gross acreage of 1,032,730, of which 966,240 acres are National Forest System lands. The Bering Lake Roadless Area was not recommended for designation under the Wilderness Act of 1965 (Record of Decision, Revised Chugach Forest Plan, May 2002).

The Roadless Area Conservation Rule of January 12, 2002, prohibits road construction and reconstruction activities (including temporary road construction) within inventoried roadless areas of the National Forest System. The Roadless Rule is enjoined from being implemented by a lawsuit filed in Idaho Federal District Court. The proposed action constitutes a prior existing reserved right (CNI Settlement Agreement, 1982), and as such is unaffected by the proposed Roadless Rule (U.S.D.A. Forest Service, November 2000, Roadless Area Conservation FEIS, page 2-4). Recent interim direction by the Chief of the Forest Service has reserved authority for allowing activities within roadless areas where road access is needed pursuant to reserved or outstanding rights or as provided by statute or treaty, to the Regional Forester prior to completion of a Roads Analysis in the Revised Forest Plan (USDA Forest Service, 2001a).

**Wild and Scenic Rivers** - The Katalla River was eligible for classification under the Wild and Scenic Rivers Act of 1972 (FEIS for Revision of the Chugach Forest Plan, May 2002). The Katalla River was found to be not suitable, and not recommended for classification as a Wild and Scenic River, (Record of Decision, Revised Land and Resource Management Plan, May 2002).

## **Environment and Effects by Key Issues**

### **Issue 1: Effects on fish, wildlife, historic resources.**

#### **Effects on Fish**

The public scoping process identified concerns about the possible effects to fish from barge/landing craft traffic in the river, disturbing salmon spawning areas with the barges, disturbing/scouring of the river banks or gravel around the barges at the landing areas, roads, fuel spills or other accidents with hazardous materials, and the use of water from Arvesta Creek for camp and drilling operations. The effects under each alternative are disclosed here. There is also concern that increased coho salmon harvest by the drilling camp workers in addition to the harvest by the guided clients could affect the population. This will be discussed under the Cumulative Effects section. This will further reduce the potential for any adverse effects.

In the first EA we assumed that barge operations would occur during the pink salmon spawning season and during the coho salmon sportfishing season. Since that time the Alaska Department of Fish and Game Habitat Division has said that it will restrict barge traffic in the Katalla River when pink salmon are spawning, which is approximately early August to mid-September.

One other major concern was whether barges could travel to the proposed landing sites without scraping the bottom of the river and disturbing the spawning gravels. The Alaska Department of Fish and Game and the Forest Service have conducted separate surveys of the channel cross sections at various sites along the Katalla River. The data show that the channel is deep and wide enough for smaller barges at 12.0-foot tides. Matt LaCroix of ADF&G Habitat Division said that the shallowest area was 3.6 feet at a 12.6-foot tide (Cordova tide table, 9.7 Wingham Island tide table). At this area the bottom is relatively flat across the channel, so the channel is sufficiently wide for barges. Thus, the permit would only allow shallow draft barges (two-foot draft) at 12-foot tides or better. During especially high tides, larger barges could carry the heavier pieces of equipment. These trips would be worked out with ADF&G on an individual basis.

It also appears that the mobilization period, which would include the heaviest barge traffic, could occur in the winter of 2002-2003, if the Plan of Operations and permits are approved. Previously it was thought that this could occur during the pink salmon spawning season or the coho salmon fishing season.

### **Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat**

Under this act, federal agencies are required to consult with the National Marine Fisheries Service (NMFS) if federal actions may cause adverse effects to regulated species of fish or Essential Fish Habitat. In this area, this includes all five species of Pacific salmon (chinook, chum, coho, pink, and sockeye salmon) and any waters they use for migration, rearing, or spawning. NMFS is required to make Conservation Recommendations to help mitigate possible adverse effects. NMFS made the following recommendations, which would apply to all of the action alternatives:

1. Pre-stage oil response equipment to protect biologically important sites such as river deltas, lagoons, and barrier islands.
2. Muds and cuttings from drilling operations shall be reinjected down hole.
3. All standards and mitigations set by the Alaska Department of Natural Resources and the Alaska Department of Fish and Game in the issuance of any related permits for oil and gas exploration shall be adopted as part of the Plan of Operations approved by the USFS. Monitoring should be initiated at startup and repeated periodically throughout the project to ensure compliance with the standards and guides listed in the aforementioned permits. A site restoration plan including revegetation and clean-up shall be provided and coordinated with regulatory and resource agencies prior to approval of the Plan of Operations.
4. Should commercially producible hydrocarbon reserves be found, the USFS, in coordination with NMFS and other affected parties, will initiate a Special Area Management Plan, or similar comprehensive area-wide planning process. This process will use a watershed approach in conjunction with the preparation of an Environmental Impact Statement to provide a larger framework in which to analyze cumulative and secondary impacts.

The pre-staging of spill response equipment has been proposed in CEC's Oil Discharge Prevention and Contingency Plan, which is being reviewed by the state DEC and will require

approval before a permit is issued by the State. The plan calls for equipment to be staged at the drilling area and at the downstream staging area on the Katalla River. While it may not be possible to prevent all adverse effects to fish or their habitat in the unlikely event of a major well blow-out, the state permit should ensure that adequate measures are being taken to prevent the spread of spills beyond the Katalla systems to the Copper River and Bering River deltas, nearby bays and lagoons, and the offshore barrier islands.

Similarly, DEC is responsible for issuing permits for the disposal of drilling muds and cuttings. In addition to reinjection, incineration and solidification are also approved methods for the disposal of cuttings. The plan does not call for the use of reserve pits, which could possibly leach contaminants. This was the main concern expressed by NMFS. NMFS biologist Brian Lance stated in a later consultation that the standards in the permit should meet the requirements of the Magnuson-Stevens Act (personal communication September 12, 2002).

The third recommendation recognizes the state permits as the standards to be followed for protecting fish and EFH. The state agencies will be responsible for monitoring the activities regulated by the permits they issue, but the Forest Service will assist within its authority and on National Forest land. The last recommendation would only be applicable if commercial quantities of gas and oil are found. The Forest Service would welcome closer and coordinated efforts with other agencies as proposed in this recommendation.

Generally speaking, the actions proposed in alternatives 2, 3, and 4 should have only negligible, temporary effects on Pacific salmon and EFH as defined in the Magnuson-Stevens Act. These effects are described in the following discussions. The Forest Service standards, guidelines, and Best Management Practices, combined with the standards set in the NMFS recommendations and state permits, will be used to protect fish and EFH to the maximum extent possible.

### **Barge/Landing Craft Traffic**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under all of the action alternatives, large ocean-going barges would unload equipment at a storage area on State of Alaska land downstream from the pink salmon spawning areas. The equipment would be transferred to smaller landing craft-type boats or barges which would travel directly over the pink salmon spawning areas and either over or near coho salmon holding in the channels. ADF&G will limit barge traffic while pink salmon are spawning, but after that period barges could still pass over adult coho salmon holding in pools in the last few weeks of September and in early October. Coho salmon do not spawn in the intertidal areas, but generally hold in the pools before moving farther upstream to spawn.

The most likely effect on adult coho salmon will be that the fish would be scared away from their holding positions. The barges would have 1.0 to 5 feet of clearance in the shallow areas and about 6 to 8 feet above the deeper pools, so the fish will be aware of the boats. In shallow water fish are easily frightened by boats or other large moving objects (Chick et al. 1999), but would be expected to return when the disturbance ends. The disturbance would be temporary and infrequent. Only two to three barges per week would be bringing supplies when coho salmon are in the river, since the peak mobilization period is proposed to occur in the winter.

Although the barges be limited while pink salmon are spawning, they would pass over spawning areas while eggs and alevins are in the gravel. The eggs are laid in August and September and the young do not emerge until late April and May the next year, depending on water temperatures and other climatic factors (Groot and Margolis 1991). The disturbances to eggs in the gravel from the wakes or propeller thrust should be minimal because the barges should not be operating at full power. The barges would be moving slowly in the narrow and relatively shallow river and would be moving with the tides (Dan Lowry, DALO Marine, personal communication). Given the lower speeds, the thrust from the propellers should not disturb eggs in the gravel, which are buried an average of 8 to 12 inches below the surface (Groot and Margolis 1991). The barges will maintain at least a foot of clearance at the most shallow point. Groot and Margolis (1991) also report that high percentages of pink salmon eggs are lost naturally in the spawning process due to redd superimposition, egg retention, flow conditions, and other factors. The implication is that large numbers of eggs are laid to compensate for losses.

These actions would have no effect on juvenile salmonids that rear or migrate through this section of the river. Rearing habitat is limited because of the relative scarcity of aquatic vegetation and other complex habitat (Ken Hodges USFS, personal observations), so the numbers of rearing fish are expected to be low. Smolting fish, which are migrating to sea, would do so in late spring and early summer when barge traffic should be infrequent. The danger to juvenile and smolting fish from propellers would be minimal since the fish can swim away from the boats and as Killgore et al. (2001) found, blade contact is infrequent, and mortalities are high only for larval fish smaller than 10 mm (0.4 inch). The smallest salmonid in the area would be pink salmon fry, which are 28 to 35 mm (1.1 to 1.4 inch).

**Alternative 2** - Under this alternative, the ocean going barges would unload equipment about one-quarter mile up the Katalla River. The small barge would then travel another 1.25 miles up the Katalla River at high tides to unload equipment and supplies at the end of the old roadway. As described before, barge traffic would disturb and temporarily displace fish in the channel. The entire 0.5-mile section of pink salmon spawning area would be traveled over by the smaller barge. At the off-loading site where the barges would anchor, there is no spawning area, but there is a deep pool where migrating coho salmon congregate in August and September. These fish could be displaced during the unloading period, which could range from a few hours or up to a day, depending on the type of equipment being unloaded and whether they have to wait until the next tide cycle to leave.

One commenter expressed concern that the water rushing around the barge could scour the banks, causing erosion and sedimentation. This is a possibility, but the amount of increased erosion would probably be minimal and would be insignificant compared to the natural erosion occurring in the watershed. The bank at the site is eroding naturally as is practically every bank at a river bend in the valley. As stated earlier, aerial photographs taken in 1974 and 1993 show that large sections of the riverbank and valley floor have eroded and have been washed away. Since the spawning areas are not highly sedimented, it is felt that the river flows are sufficient to transport most of the fine materials out of the system. No effect is anticipated from barge activity.

**Alternative 3** - Under this alternative, the ocean-going large barge would unload equipment at the downstream equipment storage site, but the smaller vessels would only travel three-quarters of a mile upstream to offload equipment at a site about one-half mile downstream from the old roadway. This would eliminate disturbances to most of the pink salmon spawning area, reducing the effects to about 100 yards. The off-loading site would be adjacent to an area where pink salmon spawn but the eggs would not be in the deepest part of the channel where the barge would be anchored. Coho salmon could be holding in the deeper water, and could be temporarily displaced. At this site, the barges could operate at lower tide levels, which means the work could be spread out over more days with fewer barges per day. This would lessen the impact to some fish. As with Alternative 2, scouring of the bank caused by water moving around the barge is expected to be minimal and there is very little downstream spawning area that could be affected. No effect is anticipated from this activity.

**Alternative 4** - Smaller barges would travel from the downstream storage area to a gravel bar about 550 feet downstream from the end of the existing road. The barges would float over the downstream end of the gravel bar at high tides and lower the ramp onto the higher dry section of the bar. Equipment would be driven over the gravel bar and then up the riverbank. As the tide drops the barge would rest on the gravel bar. Since the gravel bar goes dry, there is no spawning there. The tail end of the barge could extend into the water, but the area downstream of the gravel bar is more sedimented than the main channel (since it is still somewhat of a depositional area) and no pink salmon were observed spawning there (Matt LaCroix ADF&G Habitat Division, personal communication). Thus, there should be no effect on spawning area at the landing site.

While the barge rests on the gravel bar there will be some water movement around the hull, but the flows should not cause significant scouring. The gravel bar is a depositional area so the currents there are slower than in the main channel of the river. Also, most of the water movement would be from the receding tide rather than the more forceful current of the river except at the higher flood flows. Since there is no spawning area where the barge will rest, there will be no scouring of eggs in the gravel. No effects are expected from barge activities.

### **Clearing of Staging/Storage Area on State of Alaska land**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under all of the action alternatives, a 2.5-acre storage area on a bluff above the Katalla River would be cleared of brush. There is already an airstrip in this area, a 150-foot dirt roadway leading from the river beach to the airstrip, an off-road vehicle trail, and other cleared sections. If the area were cleared of brush, some of the surface soil would be disturbed. The main concern to fish would be whether this soil could be carried into streams where it could affect fish habitat.

It is unlikely that sediment from the disturbed soil would affect fish habitat. The area is quite flat and appears to be well drained because the soil has sand and gravel, and the vegetation has species that prefer well-drained areas, such as beach strawberry (*Fragaria chiloensis*). Thus, it is unlikely that much water would collect or have much erosive power as it would if it were

flowing down a slope. The transport of sediments will also be lessened because a buffer strip of vegetation will be left around the site so that sediments are trapped in the vegetation if there is some surface flow. It is possible some water and sediment could flow down the surface of the 150-ft roadway that goes from the river to the airstrip. Waterbars or other methods to divert water into the vegetation would prevent the transport of sediments. This area is not on National Forest land, so State of Alaska officials would oversee the standards for clearing of the area.

The Katalla River does not have any spawning area this far downstream in the system, since this is more of a depositional area for all of the silts and sediments carried down the river. Thus, some small sediment input from this cleared area would have no effect. However, Irish Creek at the southwest end of the airstrip has pink salmon spawning area in the area where it runs closest to the airstrip. Sedimentation of this creek will be prevented by maintaining a 100-foot buffer between the cleared area and the creek.

### **Use and Maintenance of the Temporary Road**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under all of the action alternatives, the 2.5-mile old roadway would be cleared of vegetation and minor grading performed. Seven prefabricated bridges would be placed at stream crossings. Generally speaking, the main fish concerns involving roads are alteration of stream channels and flows, and sedimentation of streams from bank and road erosion.

Reopening the road would not affect fish habitat. The Plan of Operations states that the equipment for installing the bridges will not need to work in the streams, no new culverts will be placed, nor will any of the streambanks along the road need to be disturbed. Since the areas around the streams will not be disturbed, the channels and the flows would not be changed and sediment input would be negligible. Road surface erosion will also be minimal since the road is relatively flat with only short downhill segments, so large amounts of water do not collect on the road. Maintenance of ditches will be required in some places, however. Another mitigating factor is that most of the streams along the road do not have fish habitat and are too small to transport large amounts of sediments to fish bearing areas.

### **New Temporary Road Construction Including the Small Barge Access Ramp**

**Alternative 1 - No Action.** There would be no effects.

**Alternative 2** - Under this alternative, small barges would off load at a site near to the end of the old roadway. An area about 25 feet by 25 feet would be cleared for an access ramp to extend the old roadway down to the edge of the water. Some of the streamside vegetation would need to be cut and some soil would be disturbed, which could introduce some sediment into the river upstream from the pink salmon spawning area. Any disturbed surfaces other than the roadbed would be seeded with native plants to reduce erosion (USDA Forest Service, 1996). Rig matting would be used on the surface of the road bed where appropriate to protect the soil and reduce erosion. Water bars or other measures will be used to channel water away from the road surface

and reduce sediment input to the river. Even with this mitigation, some sedimentation could occur, but it would be temporary and not likely to affect water quality or fish habitat. The cut in the bank would only be temporary, lasting for the duration of the project, and then would be restored and revegetated.

The Alaska Department of Fish and Game Habitat Division had concerns about cutting into a bank that is at a river bend and that has some erosion taking place already. Matt LaCroix (ADF&G personal communication) felt that disturbances could destabilize the bank. The thought behind this alternative is that the height of the barge deck above the water, combined with the slope of the ramp from the barge, would place the cut area high on the bank. The ramp would also be placed where the bank is not actively eroding, as indicated by the vegetation growing there. The vegetation below the ramp would not have to be disturbed. The proposal submitted by CEC to the U.S. Army Corps of Engineers calls for cutting down five feet from the top of the bank. Brian Heinrichsen, USFS civil engineer, stated in a report that a barge could lay its ramp on the existing road without excavation on the proper tide. Depending on the type of barge that is decided on, it may be possible to lessen the depth of the cut. In any case, sedimentation should be minimal and would not affect the downstream spawning area. Sediment input from this disturbance would be negligible compared to the natural input. Just below the site there is a stretch of about 100 yards of collapsing riverbank. Upstream there are eroding banks at every meander. Apparently the flows in the river are capable of flushing the sediments out of the downstream spawning area and preserving the quality of the spawning substrate even though there is high natural sediment input.

A staging area up to 2.0 acres would be cleared along the existing road. Although this would cause soil disturbance, the area would be about 200 yards from the river. It is flat and has no streams that could carry sediments to the stream. Rig matting would be used where appropriate to lessen the soil disturbance.

**Alternative 3** - This alternative would require approximately 0.5 mile of new temporary road along the east side of the Katalla River, and 300 yards of new temporary road through the forest near the old roadway to avoid disturbances to a bald eagle nest (this is in addition to use and maintenance of the existing roadway). Except at the off loading site for the smaller barge, the road along the river would stay at least 100 feet from the Katalla River to avoid impacts to the riparian area.

The off loading site would require bank disturbance similar to Alternative 2 and would have the same types of mitigation, but again, the effect of sediment input would be negligible compared to existing natural levels. Sediment input from this site could affect a much smaller area - about 100 yards of downstream spawning area instead of 0.5 mile.

The new temporary road along the river would need to cross two wetland areas and the upstream end of a slough, altering about 6,000 square feet (300 feet x 20 feet road width) or 0.14 acres of wetland. The slough could provide rearing habitat for juvenile coho salmon, although none have been documented there. Because a bridge long enough to span the 40-ft wide slough would be expensive, this alternative would build the road with multiple culverts. Using culverts will alter about 800 square feet (40 feet channel width x 20 feet road width) of rearing habitat. Given the

3.6 miles of similar small slough channel in the Katalla Slough watershed, this amount of area is negligible. The slough is a placid backwater and constriction of the channel by a culvert or bridge would not cause erosion or fish passage problems. Sedimentation from the fill would not be a problem because the silt would not be transported far and because there are no spawning areas that would be affected. The regional Forest Service handbook requires that road slopes or other disturbed soil be planted with native grass seed or other vegetation to reduce erosion (USDA Forest, Service 1996). The loss of habitat would be mitigated when the road is obliterated after the project is completed.

This alternative would require fill material to build the roads, so a quarry would be need to be developed or material would need to be barged in. The Plan of Operations states that no materials would be taken from National Forest land, so the rock would need to be taken from a site on the private land at Katalla or elsewhere. Using the road fill requirement estimates in USDI, Bureau of Land Management (1998), average soil depths to bedrock reported in Davidson and Harnish (1978), and a 30% hillside slope, approximately one-half acre might be needed for a quarry. This would vary depending on the actual slopes, layout, and soil depths.

Davidson and Harnish (1978) indicate, however, that the forested mountain slopes of the area have moderate inherent surface erosion hazard, high erosion hazard on road cut slopes, and moderate slump hazards on road cut slopes. Cutting a quarry into a hillside could trigger slumps or landslides. There are some places at the western end of the private land that are not directly adjacent to streams, but if slumps or erosion problems expand, sediments could be carried downhill to fish-bearing streams. A mitigation measure would be to barge in road fill material rather than opening a quarry.

The section of road in the forested area around the eagle nest would not affect fish habitat. There are no streams or wetlands that would be crossed (Milo Burcham USFS, personal communications). The sloping road banks would be vegetated with native grasses to reduce erosion. Any sediment from surface or road bank erosion would be trapped in the forest vegetation before reaching streams.

**Alternative 4** - This alternative would require running equipment along a gravel bar 150 to 200 feet before the road begins on the riverbank. Running equipment on the gravel bar will disturb the surface, and fine sediments that have been deposited there could be more easily washed into the river by rain, high flows, or tides. Matt LaCroix (ADF&G Habitat Division, personal communication) states that most of the gravel bar is dry except at the highest waters and the size of the gravels and cobbles will support the equipment without much displacement. Equipment would not be run on the gravel bar when it is flooded. Also, gravel bars are not static features and are naturally reformed to varying degrees during high flows. Disturbing the surface may increase the movement of some of the deeper substrate particles, but the overall input of sediment in the stream or effect on spawning would not increase significantly.

This alternative would also require a cleared 0.2-acre landing area on the riverbank where equipment can be unloaded. Rig matting would be placed on the ground to reduce disturbance of the soil and erosion. A 30 to 50 foot vegetation buffer would be maintained between the landing area and the river to trap any sediment that might wash down.



The new temporary road would be approximately 550 feet long and would run roughly parallel to the Katalla River on the east bank. Except at the barge landing site, the road would be about 100 feet from the Katalla River to avoid sedimentation or other effects to the river. The road would run 40 to 50 feet from the upper end of a backwater tributary to Katalla Slough. Although the buffer will not be as wide, sedimentation will not be a problem since the area is flat and vegetated, and the tributary is a beaver pond with no spawning area. Any sediment from the road would be trapped in the vegetation or would settle out in the pond. Disturbed soil along the road would be revegetated with native plants. Four bridges would be laid across some shallow, ephemeral channels. The channel banks would not be disturbed and no fill would be placed in the channels, so no sediments should be produced that could affect streams or fish habitat.

Rig matting would also be used to protect the soil for the entire length of the road. Over the last 150 feet, the road would cross a soft wetland area. Logs and brush or other fill would be needed under the matting for support. Brush from the cleared roadway could be used, but about 50 to 75 logs 8 to 12 inches in diameter would be needed (Brian Heinrichsen USFS road engineer, personal communication) and would have to be brought to the site. The use of rig matting and the log supports will lessen soil disturbance and reduce the chance of sediments being carried into the streams. The risk of sedimentation is minimal, since there are only a few small ephemeral streams that have limited ability to transport sediments. The area around the roadway is flat and vegetated so it is unlikely that sediments could be transported overland.

As in Alternative 2, a staging area up to 2.0 acres would be cleared along the existing road. Although this would cause soil disturbance, the area would be about 200 yards from the river. It is flat and has no streams that could carry sediments to the stream. Rig matting would be used to lessen the soil disturbance.

Although this alternative will include more disturbance and activity near the Katalla River, the use of buffers, rig matting, revegetation, and BMP's will reduce soil disturbance and sediment transport. There should be minimal input of sediments into the streams and negligible effects on fish habitat.

### **Fuel Spills or Accidents involving Other Hazardous Materials**

**Alternative 1 No action.** There would be no effects.

**Alternatives 2, 3, and 4** - Given the possibility for natural hazards, human error, shipping or other transport mishaps, and equipment failure, there is no guarantee that there will be no spills or accidents involving hazardous materials. If any toxic or hazardous material associated with the operations is not properly contained, it could contaminate the soil, groundwater, or surface water, and potentially harm aquatic organisms. The effects will depend to a large degree on the type and amount of material involved and where it is spilled. To harm fish or other aquatic life, a substance would have to be spilled directly into the water or transported indirectly by surface flow or groundwater to the streams.

The Plan of Operations and permits from state and federal agencies will be used to ensure that hazardous materials are handled and stored safely. During transport, the hazardous substances would be in containers approved by the Department of Transportation that can withstand dropping or other common handling mishaps. The Plan of Operations states that all hazardous materials will be stored in lined, diked storage areas so materials do not contaminate the soils or spread beyond the storage area. Storage areas would be located away from streams and wetlands. Emergency spill plans and equipment will be a part of the requirements in the permits.

The Oil Discharge Prevention and Contingency Plan presents a more detailed discussions of how CEC would respond to oil spills of varying sizes, with scenarios including the spill of fuel from a tank truck accident, rupture of a fuel storage tank, and an oil well blowout. Spill containment equipment will be located in the drilling area and also at a site on the Katalla River. The equipment on the Katalla River will address the concern brought up during the comment period that the equipment at the camp would be too far from a spill on the river. The Katalla equipment will include a small skiff that could operate in shallow waters at low tides and booms to help prevent spilled materials from being washed out to the ocean, which was another public concern. State inspectors will be responsible that the plans and regulations are being followed. Fueling or maintaining vehicles or equipment adjacent to streams or on National Forest land would not be allowed.

Commenters also asked that the effects of an oil spill be described. It should be noted here that the proposed activities do not include the building of oil pipelines, large oil storage facilities, or transporting oil in tankers. Within the scope of the proposed action, major (greater than 1,000 barrels – or 42,000 gallons) spills of crude oil would only occur if there were a well blowout. This could occur if the drills hit high pressure pockets of gas and/or oil and the pressure could not be controlled through the hydrostatic pressure of the drilling muds, through the blowout prevention equipment, or other means. The detailed description of how these measures work and the responses that would be taken are discussed in detail in the discharge prevention and contingency plan. A Canadian environmental effects assessment estimated the possibility of a major blowout as one in 2,600 annually (Husky Oil Operations Limited, 2001). The Alaska Department of Natural Resources Division of Oil and Gas (2000) reports, “There has never been an oil spill from a platform blowout in Alaska.” There have been blowouts that only produced gas.

The impacts of a blowout would depend to a large degree on the amount of liquid oil and its dispersal. The Oil Discharge Prevention and Contingency Plan indicates that some blowouts are mostly gas: “Several blowouts have occurred in southcentral Alaska in the past 20 years; both were at offshore platforms in the Cook Inlet area, were a result of encountering shallow, high-pressure gas, and did not include the release of significant quantities of liquid hydrocarbons.” Belore, et al. (1997) present a model on aerial dispersion of oil that factors oil flow rate, size of pipe, gas to oil ratio, and oil droplet size (varying wind speed tends to cancel its own effects). The Oil Discharge Prevention and Contingency Plan uses this model to conclude that nearly all of the oil would fall to the ground within 6,000 feet, which is about the distance from the drill site to the open ocean at its nearest point. Thus, most of the oil would fall on land or inland waters. Within this radius, about 58% of the area is in the Katalla Slough drainage (1,500 acres), with the remaining area in the Redwood Bay and Strawberry Harbor drainages (1,100 acres).

The hills to the north, east, and south could help to contain the oil within the Katalla Slough drainage.

Perhaps one of the greatest concerns would be whether the oil could be contained so it would not contaminate fish habitat or flow into the ocean where it could affect the commercial fisheries, the Copper River Delta and the State Critical Habitat area, Bering River to the east, or, as one commenter mentioned, the Yakataga State Game Refuge to the east.

Absorbent booms, skimmers, and pumps would be used to contain oil that enters the streams. Several small skiffs, booms, and other equipment will be staged at the downstream landing site for deployment in Katalla Slough. Materials and equipment for Redwood Creek and other streams outside of the Katalla Slough watershed would need to be flown by helicopter to the sites. Most of the streams in these areas flow into protected, relatively placid estuarine channels, which could make oil recovery more efficient, although this is very sensitive and biologically productive habitat.

Actual impacts would depend on spill size, time of year, weather (for dispersal or ability to respond), and a number of other factors. Trying to predict all of the impacts would be impossible and speculative, but given that most of the spill would be on land and in the Katalla Slough drainage, and that the oil may be more easily contained in the estuarine channels, some of the impacts of a spill over the full 6,000-foot radius could include the following.

1. Oil contamination of 2,600 acres with decreasing contamination toward the perimeter. About 70% of the contaminated land area would be forested hill slope and the rest sphagnum and sedge wetlands.
2. Direct loss of wildlife and fish in affected areas. Numbers dependent on season, amount of contamination, and other factors.
3. Minimal impact on habitat and populations in Katalla River drainage, depending on success of containment in Katalla Slough. Otherwise, effect limited to tidally influenced area in lower 1.75 miles of river.
4. Loss of waterfowl habitat in wetland areas for an indeterminate period of time, depending on the degree of contamination and long-term effect on vegetation.
5. Loss of other wildlife habitat in forested regions.
6. Contamination of most of the 12.9 miles of stream in the Katalla Slough drainage, about 2.5 miles in the Redwood Bay area, and about one mile in the Strawberry Harbor area. Contamination would be highest in the Katalla Slough drainage as the other areas are farther from the drill site.
7. Loss of fish habitat for an indeterminate period depending on how long contaminants continue to be carried into the streams from the land, and how long contaminants persist in ponds, substrate, and other areas that aren't flushed by currents.
8. Some limited direct contamination of ocean water, other contamination depending on the ability of booms and pumps to contain spills in creeks.
9. Some loss of guided hunting and fishing clients. Spill is unlikely to directly contaminate the cabin area and may have minimal effects on the Katalla River fish populations and wildlife populations outside of affected area, but clients may not travel to an area near a major spill.

10. Commercial fisheries probably unaffected unless significant amounts of oil escape containment areas. Possible damage to reputation of Alaska salmon.
11. Effect to Copper River Delta unlikely unless significant amounts of oil escape containment. Prevailing currents would carry oil west, toward this area.
12. Bering River and Yakataga State Game Reserve are to the east. Prevailing currents would carry oil west, away from these areas.
13. Historic artifacts around drill site could be covered with oil, although undamaged. Some undocumented artifacts could be disturbed by oil removal equipment if State Historic Preservation Office does allow clean up in the general area.

**Alternative 2** - One area where direct contamination of water could occur would be at the off loading site when supplies are being transferred from the barges to the trucks. A spill of hazardous material at the off loading site at the end of the old roadway could contaminate the 1.5 miles of the Katalla River downstream from the site, and perhaps another one-quarter mile or so upstream, which is the extent of the tidal influence. A major pink salmon spawning area begins about 100 yards downstream from the site and could be contaminated within a short time if the tide is going out. Other tidally influenced areas, such as Katalla Slough and the first 100 feet of the mouth of Irish Creek (on the west side of the Katalla River next to the airstrip) could be affected if contaminants were not cleaned up or contained. The tidally influenced areas of Katalla Slough would have some pink salmon spawning area and rearing area for juvenile coho salmon.

**Alternative 3** - A spill at the downstream off loading site under Alternative 3 could affect pink salmon spawning area more than it would under Alternative 2 since the downstream site is directly adjacent to the spawning grounds. Contaminants may not be as diluted before they reach the spawning area. A spill at this site would also work its influence throughout the tidally affected areas if large enough and not contained. Since the proposed road would cross two wetland meadows and a slough, truck accidents at these points could release contaminants directly into water. Contaminants in water may be diluted, but they would also be more difficult to clean up and may be carried to fish habitat more easily.

**Alternative 4** - Since the unloading would take place on a gravel bar, a spill would not go directly into the water and so would not disperse as quickly. However, contaminants could reach the water table quickly. The gravel bar is directly adjacent to pink salmon spawning area. As with the other sites, contaminants could be dispersed throughout the tidally influenced area if the spill is not contained.

### **Use of Water from Arvesta Creek**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - The Plan of Operations calls for gradually filling a 12,600-gallon tank with water from the west fork of Arvesta Creek to supply the camp and drilling operations needs. Other tanks of unspecified sizes at the camp and at the drill site would be filled from the first tank. The purpose of the large storage tank is that short periods of high water consumption will not cause major fluctuations in the creek levels.

If too much water is taken out of the creek, fish habitat area will decrease, fish eggs in the gravels may not be sufficiently oxygenated, there may not be sufficient intergravel flow to carry metabolic wastes away from the eggs, pools or other sections of the creek may be more susceptible to freezing (along with any organisms), water temperatures could increase, habitat for aquatic invertebrates (a food source for fish) will decrease, and so forth.

The average annual flow of water in the creek is estimated at 1.7 cubic feet per second (cfs) based on a watershed area of 120 acres above the water intake site and an estimate of 9 cfs of runoff per square mile in this area (USDA Forest Service, 1983). Seasonal flows could vary considerably. The Plan of Operations calls for using 31,700 gallons/day or about 1,310 gallons/hour. If this use were spread evenly over the day, the use would only be about 0.05 cfs. However, use may be much higher or lower depending on the activity, and the tank may need to be refilled more quickly. Filling the 12,600-gallon tank would take 9.4 hours at 0.05 cfs. The Alaska State Department of Natural Resources is responsible for issuing a water use permit and will set standards for the minimum flow levels that must be maintained in the creek and, in turn, the rate at which water can be taken from the creek to fill the tanks.

The Forest Service has documented the presence of juvenile coho salmon and Dolly Varden char in the creek and has submitted this information to the Alaska Department of Fish and Game for inclusion in the Alaska Anadromous Waters Catalog. This will be considered in the issuance of the permit.

Matthew Eagleton of the National Marine Fisheries Service (personal communication) said that the standards and mitigations set by the Department of Natural Resources in the permit will meet the requirement that there are no adverse effects to fish or essential fish habitat as mandated by the Magnuson - Stevens Act.

### **Effects on Wildlife (Non-TES Species)**

Effects on wildlife may stem from disturbances by the presence or activities of humans, alteration of habitat, increased presence of humans leading to greater hunting or trapping, and for bears, attraction to human foods or garbage and possible taking of bears under Defense of Life or Property provisions. During the public involvement process, commenters specifically expressed concern for bears, bald eagles, shorebirds, and other migratory birds.

Public comments on the original EA also expressed concern about drilling workers hunting bears and harming the local population. The harvest of bears increased in the 1980s when another drilling operation was going on. William Stevens, president of CEC, had discussed the issue with Dave Crowley, the area wildlife manager with ADF&G. Mr. Stevens (personal communication) wrote: "Since that conversation we have determined that no bear hunting will be allowed by employees, while staying at our camp and, as on any drill site, no unauthorized firearms will be allowed." Mr. Stevens also said that the only firearms that would be authorized would be for bear protection, with only designated people authorized to use them.

### **Human Disturbance**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - All of the action alternatives would have similar effects on wildlife in regard to human disturbances except in the case of bald eagles. Human activity would cause most species to leave the immediate area when there are encounters and possibly move out of areas affected by noise, road traffic, or barge operations. Most of the mammalian species - wolf, lynx, wolverine, moose - are only thought to be present in low densities, so the encounters would be infrequent, if any, and the effects would be negligible<sup>14</sup>. Of the avian species, goshawks and ospreys are not known to be in the area. Shorebirds use the intertidal areas, but their presence is temporary. Other migratory birds may choose to use areas away from the roads and other activity centers for nesting and feeding. Although wildlife may be displaced, there are large amounts of similar, undisturbed habitat in nearby areas, so there would be little overall effect.

**Alternative 2 and 4** - Bald eagles. An active bald eagle nest was found along the old roadway in 2001. If nesting bald eagles are disturbed, they may abandon the nest or leave eggs or unfeathered eaglets exposed and susceptible to cold. Sometimes eaglets can be frightened and may attempt to fly before they are fully able, with adverse results. Since the temporary road is within 330 feet of the nest, the terms of the MOU between the U.S. Fish and Wildlife Service and the Forest Service on eagle management will apply. Since the original EA was written, a variance has been granted to use the existing road within 330 feet of the nest tree. The variance stipulates that a biologist or other person familiar with eagle behavior monitor the nest site to determine its use. Vehicles should maintain normal operating speed within 330 feet of the nest tree and not stop or markedly slow down in that area (Mike Jacobson USFWS eagle management specialist, letter May 10, 2002).

**Alternative 3** - Bald Eagles. Under this alternative a 300-yard long detour route away from the old alignment would be built so that truck traffic would be at least 330 feet from the nest. Building this new section of temporary road would require felling trees along the route, pulling the stumps, making the roadbed, and other activities. Although this activity would be 330 feet from the nest, it is thought that noise from the tree falling and other construction work could also be disruptive. Constructing the detour in the fall or winter when eagles are not present could mitigate this. Removing a swath of trees could make the remaining trees more susceptible to blowing down, which could endanger the nest tree itself. Mike Jacobson, USFWS eagle management specialist, stated in a letter granting a variance, that using the existing road would be preferable to constructing a new detour.

### **Alteration of Habitat**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under all of these alternatives, a 2.5-acre storage area would be cleared of brush near the existing airstrip. This area appears to have been a former floodplain uplifted by the 1964 earthquake, so the vegetation and habitat is still in a successional stage. The

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<sup>14</sup> Defined as no species of concern are present, no/minor impacts are expected. Minor impacts that do occur have no secondary (long-term or population) effects (Burcham 2002).

area has thickets of young small diameter Sitka spruce, alder, and willow, while the open areas have beach strawberry, beach rye grass, fireweed (*Epilobium augustifolium*), nagoonberries (*Rubus arcticus*), beach pea, and yarrow (*Achillea borealis*). Since this area is close to the cabins and human activity, it is unlikely that the larger mammals would be using the area. The primary wildlife inhabitants of this area would be migratory birds, which would nest in the brush thickets. The U.S. Fish and Wildlife Service stated that migratory bird nests, eggs, and young could be harmed by brush clearing during nesting season, approximately April 15 to July 15. Depending on the timing of the Plan of Operations and permits, CEC proposes to begin work in the winter of 2002-2003, which would prevent adverse effects to nesting migratory birds. Thus, nesting birds would not be affected. The loss of this brush for habitat would have no effect since this type of habitat is abundant in the area. The loss of brush would also be temporary and would grow back once the project has ended.

Habitat could also be altered by the introduction of non-native plants that could compete with existing species. One of the interesting results of the plant surveys was that no non-native species were found in the survey area. Forest Service policy on weeds is described in FSM 2080. Of particular note is 2080.1 item 4 of this policy which states: "Use contract and permit clauses to prevent the introduction or spread of noxious weeds by contractors and permittees. For example, where determined to be appropriate, use clauses requiring contractors or permittees to clean their equipment prior to entering National Forest System lands." Since the Katalla area is believed to be free of non-native species, and since the most probable manner of spreading exotics would be from soil or vegetation on equipment, the special use permit will require that the equipment will be cleaned prior to transport to the Katalla area. This should prevent transport of seeds, roots, or other non-native plant parts to the area.

**Alternative 2** - Under this alternative up to 2.0 acres of Sitka spruce forest could be cleared for a staging area along the old roadway about 200 yards from the Katalla River. This type of habitat is used by bears, bald eagles, and goshawks (although none were found in this area). The geographic information system (GIS) vegetation layer lists 846 acres of Sitka spruce forest in the project area defined in the wildlife specialist report, so the amount of habitat lost is relatively small compared to the amount in the area. The only other alteration would be the extension of the old roadway in construction of the access ramp about 25 feet to the edge of the Katalla River. About 625 square feet (0.014 acres) of riparian vegetation would be removed, mostly Sitka, alder, willow, salmonberry, and young Sitka spruce. This type of habitat is used by bears and passerine bird species, including sparrows, chickadees, and warblers. This type of habitat is abundant in the area (460 acres) and the loss of this limited amount of habitat would have no effect on the species that utilize it. Since the roads and staging area are temporary, the vegetation would return after the roads and staging area are obliterated. As mentioned previously, there would be no effects to nesting migratory birds if brush clearing occurs outside April 15 to July 15.

**Alternative 3** - The proposed new temporary roads and staging area in Alternative 3 would alter up to 3.7 acres of habitat. The detour around the eagle nest would affect about 0.46 acres of old-growth Sitka spruce forest, which, again, is used by bears and other mammals, bald eagles, and goshawks. The road along the Katalla River would remove approximately 1.24 acres of habitat, including 0.6 acres of young Sitka spruce, 0.4 acres of beach rye grass/lupine, 0.14 acres of

sedge meadow and other wetland, and 0.1 acres of Sitka alder, willow, and other brush. The staging area would be located next to the off-loading site, one-half mile downstream from the old roadway. This would alter up to 2.0 acres of the beach rye grass/lupine area. These areas are used mostly by various passerine bird species. As stated previously, the Sitka spruce and brush habitats are abundant in the area (846 and 460 acres respectively). The GIS vegetation layer does not differentiate between beach rye grass, other grasses, and sedge, so the total areas for these particular habitats are not known. A rough estimate of the beach rye grass habitat would be 500 acres, based on personal observations (Ken Hodges USFS), roughly delineating those areas on a GIS layer with the aid of aerial photographs, and calculating the area. Thus, this type of habitat is also abundant. There would be no effect to nesting migratory birds if brush clearing occurs outside April 15 to July 15.

Since the roads and staging area are temporary, the vegetation would return after the roads and staging area are obliterated.

As described in the fish section, a source for road fill would be needed, and possibly one-half acre of hillside on private land on the west end of the private land could be used for a quarry. The hillslopes in this area are generally covered with Sitka spruce/western hemlock forests. Blueberries (*Vaccinium spp*) are often the understory vegetation, and so, such areas could be used by bears and birds. The loss of one-half acre of this type of habitat would be negligible given the extensive forests in the area. A mitigation measure would be to barge in fill from outside sources or use rig matting for the entire distance. Rig matting is expensive and may not be economically justified compared to importing fill.

**Alternative 4** - This alternative would require clearing up to 2.0 acres of old Sitka spruce for a staging area as described for Alternative 2. Due to the abundance of this type of habitat, no effect is foreseen. This alternative would also require clearing about 0.2 acres of young Sitka alder, 0.2 acres of young Sitka spruce, and 0.1 acre of wetland with sphagnum moss and scattered Sitka spruce, alder, and willow. As stated in the other alternatives, all of these habitat types are abundant in the area. The total area affected is minimal – about one-half acre for the road and 2.0 acres for a staging area. All species of wildlife could find similar habitat elsewhere. Nesting migratory birds would not be affected if the clearing of vegetation occurs outside of the nesting period, approximately April 15 to July 15.

### **Increased Human Presence - Greater Hunting and Trapping**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - As mentioned in the introduction to the wildlife effects section, William Stevens has stated that he would not allow bear hunting by workers staying at the camp and that no unauthorized firearms would be allowed. The only authorized firearms would be those used for bear protection. Mr. Stevens has also said that he would not provide freezer space for fish, and presumably this would apply to game meat. Given these restrictions, it is unlikely that there would be any hunting by drilling workers. Mr. Stevens said the workers could go with the local guides if they wanted.



It is possible that some workers might wish to trap in the area, although workers will have long shifts (William Stevens, president CEC, personal communication) and may not have much spare time. At the present time there is no known trapping, because there are no residents in the area during the winter. Any trapping by oil workers would not interfere with existing endeavors. The furbearer populations are probably healthy because of the lack of trapping and could stand some harvest. The trapping regulations are intended to provide sustainable harvests, although it is possible that populations in the immediate area could be reduced. The trapping pressure would end when the project is finished.

## **Defense of Life and Property**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - The potential effects would be the same under all action alternatives. Human garbage at a remote camp such as Katalla would have the potential to draw bears from a large area, and could result in increased human/bear interactions and potential Defense of Life or Property takings of bears. The Plan of Operations calls for garbage to be incinerated on site. Incineration and temporary storage of garbage in bear-proof containers would insure that bears would not be attracted to the area and human/bear conflicts at the site would be negligible or low. No disposal of incinerated waste would be allowed on National Forest land. Dave Crowley, ADF&G area wildlife biologist, wrote in his comments that he is satisfied with the bear plan for the camp.

## **Effects on TES Species**

As mentioned earlier, there are no known TES plant species in the project area, and of the animal species, only three sensitive species would be likely to be in the area, trumpeter swans, dusky Canada geese, and ospreys. Trumpeter swans are known to be in the area, but the other species have not been documented in the area.

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under all of these alternatives, a 2.5-acre storage area would be cleared of brush near the existing airstrip. Since this is not a wetland area, dusky Canada geese and trumpeter swans would not be present. Osprey nests would not be found at this site because there are no large trees for nests, only small Sitka spruce that have colonized the area since the 1964 earthquake. There are larger trees inland from this area, but that is where the cabins are located along with the associated human activities and disturbances. Ospreys would not be likely to nest where there would be disturbances. Since these species are unlikely to be in the area, there will be no effect.

**Alternative 2** - Trumpeter swans and dusky Canada geese could be present in the lower Katalla River and Katalla Slough area. They would nest in the freshwater wetlands away from the river, rather than in the tidal areas. The nests would be screened from the barge traffic by the banks and shoreline vegetation, so there would be no disturbance. The one known swan nest is one-half mile to the west of the river. It is possible that geese could feed on grasses along the lower river and be disturbed by passing barges, causing the birds to fly to other nearby areas to feed.

The disturbance would be temporary, would not alter habitat or the food source, and would not prevent the geese from returning there to feed. Thus, this would have a negligible effect.

Ospreys use forested areas for nesting, but none have been observed in the area. The old roadway goes through a forested area, and up to 2.0 acres could be cleared for a staging area. Since ospreys are not known to be in the area, there would be no effects. If ospreys did migrate into the area, mitigation could be needed depending on whether the birds were nesting and where the nest sites were located.

The 25-foot extension of the old roadway to the river for the access ramp would require the removal of 625 square feet of alder, salmonberry, and young Sitka spruce. This type of habitat is not used by these species and would have no effect.

**Alternative 3** - Under this alternative an additional 0.5-mile temporary road would be constructed along the east bank of the Katalla River. Trucks and other activity on top of the bank would be more visible to birds in the wetlands to the east, however, the only known swan nest is to the west. More than half of the road would be in a stand of young Sitka spruce where the traffic would be hidden by the trees. The road would also cross the upper end of a 40-foot wide slough, which has suitable habitat for swans or geese. Since this is a small amount of area being disturbed and no swans or geese are known to use that specific site, the effects would be negligible. Ospreys would not use any of the habitat affected by the road. Up to 2.0 acres of beach rye grass/lupine habitat could be cleared for a staging area and another 0.4 acre for the road. This type of habitat is not used by these species, and the clearing of this area would have no effect.

As described in Alternative 2, it is possible that geese could feed along the lower river and be disturbed by passing barges, causing the birds to fly to other nearby areas to feed. The disturbance would be temporary, would not alter habitat or the food source, and would not prevent the geese from returning there to feed. Thus, this would have a negligible effect.

This alternative would also create a 300-yard detour around an eagle nest in the forest along the old roadway, and would require a one-half acre quarry. Approximately one-half acre of Sitka spruce forest would be removed by the road, and one-half acre of western hemlock or hemlock/spruce forest would be removed by the quarry. There are approximately 846 acres of Sitka spruce habitat in the area and another 428 acres of western hemlock or hemlock/spruce forest. Again, ospreys use forested areas for nesting, but since no ospreys are known to be in the area and only about one acre of forest habitat would be cleared, no effects on ospreys are anticipated.

**Alternative 4** - The effects on TES species would be similar to those described under Alternatives 2 and 3. Barges would travel up the river to a landing site 550 feet downstream from the existing road. As with Alternative 2, there would be negligible effects to geese and swans from barge traffic since nesting areas would be screened by the banks and vegetation, and individuals along the river would only have short, temporary disturbances. The road from the landing area to the existing road would also be screened by vegetation, so there should be no

disturbances to nesting birds in wetlands to the east. No swans or geese are known to nest near the road corridor.

As in Alternative 2, a staging area up to 2.0 acres could be cleared in an old-growth Sitka spruce forest. Ospreys use large trees for nesting, but since ospreys are not known to be in the area, there would be no effects. If ospreys did migrate into the area, mitigation could be needed depending on whether the birds were nesting and where the nest sites were located. The other habitats that would be altered are young Sitka spruce, Sitka alder, and sphagnum moss wetland with scattered alder, willow, and Sitka spruce. These areas would not provide habitat for TES species.

Thus, there would be no effects to TES species except for the negligible temporary disturbance of swans and geese if they were feeding along the river.

## **Effects on Historic Resources**

The Katalla area is rich in historical artifacts from the oil and gas production activity in the early 1900's - mainly old machinery, pipes, pumps, and other equipment that are still lying in the bushes. Shaw (2001) notes, however, that the probability of finding material from Native American cultures is low.

**Alternative 1: No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - Shaw (2001) conducted a historic field survey to document existing historic and cultural artifacts and to ascertain the effects the proposed actions would have on these resources. He recommended a "no adverse effect" determination regarding historic properties for the proposed use of the old roadway and for the exploratory drilling activities under all action alternatives. This recommendation was made with the following stipulation: "The agreement should contain provisions for activities of the undertaking to occur only on Clearings 1-3 of the 1985 developed area within Claim No.1, and restrict personnel to the developed footprint of the three clearings and their connecting roads." Since there are old wellheads near Clearing 3 at the east end of the development, "... lateral expansion should only be allowed in areas well away from these site features."

After Shaw had completed his survey work, Cassandra Energy Corporation proposed clearing a 2.5 -acre storage area on State of Alaska land near the Katalla airstrip. The proposal states that, "Some brush clearing may be required to remove recent growth from both the storage area and airstrip." Some of the area is already disturbed from the construction of the airstrip, but depending on the boundaries of the proposed area and the ground disturbance required to clear the brush, there could be potential effects to historic resources. An archaeologist will visit the site prior to any activity to determine whether there will be any effect, whether surveys are required, or whether any mitigation is necessary.

If an oil well blowout were to occur, historic artifacts in the area could be oiled. Efforts to remove oiled vegetation and soil could also disturb buried or other undocumented artifacts. The

current Oil Discharge Prevention and Contingency Plan states that the Alaska Office of History and Archaeology would be consulted to obtain permits for containment activities at or near historically sensitive areas. The Alaska Department of Environmental Conservation has requested that containment plans in the historic areas be specified and permits obtained prior to operations.

**Alternative 2** - The proposed actions in Alternative 2 are mostly addressed above. Shaw (2001) did not directly address, however, the proposal for a staging site up to two acres along the west end of the old roadway. This area is about two miles west of the main drilling and refining activity area, and there are no known wells in the vicinity (Huber 2002). Shaw does cite a report by a USFS archaeologist, Charles Diter, who concluded that the establishment of the 1985 road would have no adverse effect on historic properties. Shaw also walked the roadway, and while he did not examine a site for a staging area, he did not report any artifacts in the west end area. Given the lack of documented activity in the area and Diter's conclusion that bulldozing a road in the area would have no adverse effect, there would be no effect if the road were widened to make a staging area. If artifacts are uncovered, work will stop until an archaeologist can be consulted.

**Alternative 3** - Under this alternative a new temporary road would be constructed on the east bank of the Katalla River along with a staging area up to two acres. Shaw (2001) states, "If the New Road is actually constructed, no additional survey is recommended because it is in a low probability area for National Register sites." Thus, the road and staging area would not have adverse effects on historic artifacts. If artifacts are uncovered, work will stop until an archaeologist can be consulted.

Construction of the new temporary road would also require fill material, so a quarry on private land in the Claim #1 area or some other source of material would be needed. Although Shaw addressed the possibility of a new road, a possible quarry site was not mentioned. The old wells, bunkhouses, and other artifacts mentioned in the report are in the eastern and southern sections of the area. There is a hillside to the west that could be a possible site since it is away from documented well sites. A survey would be needed since this is an area with a greater probability of having historic artifacts. Disturbances to artifacts could be mitigated by requiring road fill material to be barged in from another site rather than developing a quarry.

**Alternative 4** - As in Alternative 3, a road would be built along the east bank of the Katalla River, except that it would be only 550 feet long. As stated in the report by Shaw (2001), "... no additional survey is recommended because it is in a low probability area for National Register sites." This alternative would also require a staging area up to 2.0 acres at the same site as described in Alternative 2. Again, no artifacts have been found in this area, and clearing a site would be unlikely to affect historical resources. If artifacts are uncovered, work will stop until an archaeologist can be consulted.

**Issue 2: Risk of natural hazards of earthquakes and storms with respect to spills of drilling materials, fuel, any produced water or oil. How will drilling fluids, cuttings or hazardous materials be disposed of?**

## Weather Related Hazards

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3 and 4** - During the public comments, some people expressed concern that the frequent storms could endanger ships associated with the operations, leading to the danger of shipwrecks and spills. The winter weather in the Gulf of Alaska is characterized by the passage of intense storms, which typically have low sea level barometric pressure and associated cold fronts. From October through April, an average of one storm every four to five days crosses the Gulf, generally from west to east. These storms often have 80-knot winds that generate waves up to 65 feet high and can drop up to 300 inches of precipitation annually in the coastal mountains.

The current operations only call for exploratory drilling, not production, so there will be no oil tankers or other vessels carrying large amounts of crude oil. There will be supply ships that will carry fuel to run the camp, some hazardous materials listed in the Plan of Operations (drilling mud additives, lubricants), and the fuel in the ship's fuel tanks. Although any spill could have adverse effects, the quantities of supplies involved for this project are relatively small (7,500 barrels of fuel total). Onsite storage is estimated at 20,000 to 30,000 gallons (476 to 714 42-gallon barrels), with 1,500 gallons (36 barrels) used daily when operating, so the barges would only be transporting as much as can be stored at any given time. Shipwrecks and the adverse effects are always possible, but the quantities of material being shipped reduce the overall danger from storms and shipwrecks.

There will be times when supply ships will not be able reach the Katalla area. A form of mitigation would be to not travel during severe weather, however, the decision to travel would be left to the captain of the ship who has the experience to judge the safety of the conditions.

**Geohazards** - Geohazards data were collected by the petroleum industry and the U.S. Geological Survey to study the safety of siting oil and gas exploration and production platforms and pipelines. Seafloor hazards include ground shaking from earthquakes, surface faults, gas-charged sediments, submarine slides, and sediment gravity flows. Detailed studies have been done by Chase et al. (1970), Woodward-Clyde Consultants (1976), Molnia and Sangrey (1979), Atwood et al. (1981), Carlson et al. (1985), Hood and Zimmerman (1986), and Schwab et al. (1987).

The collision of the Pacific plate and the North American plate produced the Chugach and Coast Mountain ranges onshore and the structurally complex sedimentary basins found off shore. The influence of the warm Alaska current and the progressive uplift of these coastal mountain ranges brought about coastal marine glaciation. Glacial and glaciofluvial processes eroded large quantities of rock and transported the sediment to the continental shelf. These rapidly deposited sediments are typically underconsolidated and exhibit high pore pressure. Off shore, earthquakes, crustal deformation, and intense winter storm activity have destabilized parts of the Holocene glacial marine and normal marine section, producing submarine slides. The area of proposed drilling would be unlikely to be affected by such an event.

**Earthquakes** - Earthquake hazards may be either direct by ground shaking, fault displacement, or tectonic warping, or indirect through ground failure or generation of tsunami waves. Recent tectonism in the Gulf of Alaska is indicated by mountain ranges, raised beach terraces, and numerous active faults. Raised beach terraces are visible in the Katalla River valley. Historic records of seismicity are used to estimate the location, size, and frequency of future earthquakes in a region. In the Gulf of Alaska, data are available for the past 100 to 200 years, which is a relatively short record.

Nishenko and Jacob (1990) subdivided the Queen Charlotte-Alaska-Aleutian seismic zone into subsections based on historical records; damage and intensities of seismic events; and the positions of great earthquakes. The Katalla project area is within one of the segments delineated by the Prince William Sound earthquake of 1964. Since this segment ruptured in a great event within the last 40 years, it has a low probability of rupture from a similar large earthquake within the next few decades (McCann et al., 1980). However, the occurrence of a large magnitude event does not rule out the likelihood of a lesser magnitude event. In contrast to the project area, the Yakataga “seismic gap” is an area having a high probability for a large earthquake within the next 20 years. The project area lies in the low probability area but is near the edge of it and therefore might be affected by a large event in the Yakataga “seismic gap”.

While the frequency of movement along faults in the Gulf of Alaska suggests that an earthquake could occur during the life of an offshore production platform, earthquakes are far less likely to occur during the shorter time period needed to drill an exploratory well at Katalla. No pipelines or large offshore structures will be constructed for this exploratory drilling operation, which minimizes the amount of hazardous materials that could be affected.

**Tsunamis and Seiches** - Tsunamis are waves produced by the sudden displacement of a large volume of water by the rapid upward or downward movement of the ocean floor during a strong earthquake. Seiches are large waves generated in closed or semiconfined bays from subaqueous slumps and landslides related to ground shaking during earthquakes. Both types of waves may cause extensive damage to near shore facilities. The proposed project area (camp, road, and drill pad) is more than a mile from the shoreline, is at an elevation of about 50 feet, and is partly protected by topography. It is unlikely to be affected by tsunamis. The bay at Katalla is neither enclosed nor deep enough to create hazardous seiches.

**Toxic or Hazardous Materials** - Given the possibility for natural hazards such as earthquakes or storms, human error, shipping or other transport mishaps, and equipment failure, there is no guarantee that there will be no spills or accidents involving hazardous materials. The effects will depend on the type and amount of material, location, circumstances and conditions, but also upon the contingency plans and other precautionary measures that have been taken. If toxic or hazardous materials associated with the operations are not properly contained or stored, they could contaminate the soil, groundwater, or surface water, and potentially harm aquatic and terrestrial organisms.

The Plan of Operations and permits from state and federal agencies will be used to ensure that hazardous materials are handled, transported, and stored safely. The plan states that hazardous materials will be stored in a lined, diked storage area and segregated to hazard type. The drilling

pad is required to have a liner to prevent contamination of the soil if any leaks occur (Kyle Monkeliën, petroleum engineer, USDI Bureau of Land Management, personal communication). Equipment refueling or maintenance will not be allowed adjacent to streams or other bodies of water (USDA Forest Service, 1996). Emergency spill plans and equipment will be a part of the requirements in the permits (USDA Forest Service, 1996). An Oil Discharge Prevention and Contingency Plan has been developed detailing the actions that will be taken in the event of a spill or blowout, the equipment that will be used, the blowout prevention equipment, three hypothetical scenarios, and other information relevant to preventing and containing spills. This plan is currently being reviewed by the Alaska Department of Environmental Conservation, which will ensure that the plan, including the equipment and safety measures, meets State standards and other regulations. State inspectors will be responsible for ensuring that the plans and regulations are being followed.

The Katalla area is seismically active and it is always possible that an earthquake could occur. Possible problems that could occur during an earthquake include the breaking of pipes at the drilling rig and breaking of containers holding hazardous materials. The drilling pad and hazardous storage area will have liners and dikes to contain spills or leaks if pipes or containers are broken.

The action alternatives are the same except that under Alternative 2, the off loading of the barges would occur upstream at the end of the old roadway, while under Alternative 3 the off loading site would be 0.5 mile downstream and would require trucking supplies another 0.5 mile.

**Alternative 2** - The Katalla River is a bit more shallow and narrow farther upstream toward the upstream off-loading site, but there would be little additional danger in shipping the supplies to the upstream site. The Katalla River in this section has a sand/gravel substrate with no boulders or bedrock. If the barge did run aground in the more shallow water, the hull and fuel tanks would not be likely to rupture. The boats are designed so they can go dry at low tides (Dan Lowry DALO Marine, personal communication). If there was a spill at the off loading site, the material could contaminate the 1.5 miles of the Katalla River downstream from the site, and perhaps another one-quarter mile or so upstream, which is the extent of the tidal influence.

**Alternative 3** - A spill at this off loading site would be more likely to affect pink salmon since it is immediately adjacent to the spawning area. Contaminants could spread throughout the tidal area if not contained. Since the new temporary road proposed in this alternative would cross two wetland meadows and a slough, truck accidents at these points could release contaminants into water, which could disperse the contamination more than if there were spills on dry ground.

**Alternative 4** -The off-loading site under this alternative would be on a gravel bar. Thus, if there were a spill, it would probably not be directly into the water and the contaminant would not disperse as quickly. The contaminant could flow through the gravels and hit groundwater quickly, but the flows would be slower than in the river itself. An accident along the proposed 550 feet of road could contaminate wetland areas or the four ephemeral stream channels. If water is in these channels at the time of the accident, contaminants could spread to fish bearing areas if not contained in time. The flows, however, are minimal, so dispersal would be slower and easier to contain than in larger streams.

## **Disposal of Wastes**

Under all action alternatives, an estimated 1,958 barrels of drilling cuttings will be generated. The cuttings will be stored in a hazardous waste storage area on the private land and then would either be ground up and reinjected at the drill site, incinerated for decontamination, or solidified. About 72 barrels of used oil or diesel-contaminated material are expected to be generated. Garbage and most wastes will be incinerated. Those wastes that cannot be incinerated will be stored and shipped to an appropriate disposal facility. No disposal of waste, cuttings, or contaminated materials will be allowed on National Forest system lands.

## **Issue 3: Effects on recreational users.**

The effects of this project on recreation users stem from disturbances from truck and barge activity, noise, competition for fishing areas with drilling workers, and changes in the visual quality. These effects, or the anticipation of these effects, may also affect the business of those catering to the recreational users - the cabin owners/outfitter-guides.

### **Effects of Truck and Barge Activity**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - An ocean going barge would make approximately 20 to 25 round trips to off load equipment and supplies at a site on the west side of the Katalla River on State of Alaska land near the airstrip (see Appendix A, Map 2). Up to 2.5 acres of storage area may be required to temporarily store equipment and supplies until it can be hauled up the Katalla River by a shallow draft small barge. Brush clearing will be required to remove small diameter recent growth from the storage area. Occasional helicopter and/or small plane flights will provide for personnel access, and deliver equipment and supplies to an existing airstrip located on State of Alaska land near Katalla (see Appendix A, Map 2).

Drilling equipment, materials, supplies and personnel will be transported from the storage area by shallow draft barge upstream about 1.5 miles at high tide (12-foot or higher) and off loaded at an access ramp or road constructed on National Forest System lands. Under all action alternatives approximately 50 to 60 barge loads of equipment and supplies would be landed during the initial mobilization period. Barges would be in the river for a few hours around the high tides, but since not all days have sufficiently high tides, there would be no barge traffic on some days. The mobilization period is expected to take two months. This would require 50 to 100 truck trips to carry the material from the barge off loading area to the operations site. About two to three barges per week would bring supplies after that.

The proposed 2.5-acre storage area near the airstrip would bring truck traffic to within a few hundred yards of the cabins. The Recreation Opportunity Spectrum (ROS) for the East Delta as identified in the Revised Forest Plan is Primitive II. Upon initiation of activity associated with rights reserved under the 1982 CNI Settlement Agreement, the 521 Minerals Management Prescription applies to the project area (Revised Forest Plan Record of Decision, page 13;



Revised Forest Plan, Chapter 4, page 4-84). The ROS for the project area is Roaded Natural (RN). The characteristics of a RN classification are:

- Access: Snowmachines, OHVs, developed trails, foot, bicycles, on designated routes only. Roads may be present. Roads maintained for high clearance vehicles only.
- Remoteness: Nearby sights and sounds of human activity may be present. Distant sounds may be heard.
- Social Encounters: Users should expect to encounter other groups.
- Visitor Impacts: Use noticeable but not degrading to resources. Rustic facilities may be constructed for users.
- Visual: Alterations away from travel corridors are few and subordinate to landscape.

Generally, noise from human activity will increase, visual evidence of activity will increase, and more people will be seen either working or recreating. The equipment storage area is relatively close to the private lodge and would be a visual intrusion into the area. When the barges are unloading, noise from trucks and equipment would be expected. The barges and trucks would also be visible from various sites. Moderate levels of human interaction may occur if groups of drilling workers come to fish at the river after work. These effects would last for the duration of the project. Upon completion of the project the area will gradually return to its previous “Very High Integrity”.

If these activities were to occur during the fishing and hunting seasons, there would be adverse effects for the guides and their clients. The clients come to the Katalla area because of the remote wilderness like quality<sup>15</sup> (Kirk Ellis, Steve Ranney, Todd Rogers, personal communications). Activity that is more typical of an industrial setting would degrade the experience the clients are paying for. Kirk Ellis, a hunting guide, said that he would not use some of the areas where he normally hunts and would use more remote sites to avoid the people and the activity (personal communication). The main fishing area for the anglers, however, is the lower Katalla River, especially in the early part of the run before the fish move upstream. The anglers would be using the same areas where the barges and trucks are operating, so there would be direct exposure to the work activity.

After the original EA was written, ADF&G biologist Matt LaCroix has stated that barge traffic would not be permitted during the time pink salmon are spawning in the river. This is approximately from the beginning of August until mid-September. This coincides, for the most part, with the coho salmon fishing season, which runs for the months of August and September. Thus, truck and barge traffic would only affect the sportfishing for the last few weeks of September. Additionally, CEC has stated that if the Plan of Operations and permits are approved, the mobilization period when the most activity would take place could occur during the winter months of 2002 - 2003. This would mean that the barge activity in September would be at the reduced level of two to three barges per week. While this would cause some disturbance, it would be much less than previously anticipated.

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<sup>15</sup> The area is not within a designated Wilderness Area.

**Alternative 2** - Under this alternative, barges would off load at a site near the end of the old roadway. Todd Rogers, lodge owner, said that the pool at that site is where the coho salmon congregate before migrating upstream and having barges anchored at that site would take away the best fishing spot for his clients. It is assumed that anglers paying for a remote Alaskan fishing experience would not enjoy fishing beneath a barge hauling oil derricks, drilling pipe, and other industrial equipment. This area would be unusable for the length of the unloading period, which could range from a few hours or up to a day, depending on the type of equipment being unloaded and whether they have to let the barge go dry and wait until the next tide cycle. Passing barges would also interrupt anglers fishing downstream since the river is relatively narrow (50-150 feet), and the fish would be holding in the deeper, narrow channel where the barge would be passing. The interruption would last for several minutes while the barges pass and another several minutes while the fish calm down from being disturbed. The sense of natural serenity and wilderness like quality that people seek in the outdoors would temporarily be lost.

As described above, only two to three barges per week are anticipated during the last two weeks of the coho season. Even if some of the barges have to stay an extra tide cycle, probably more than half the days will not have barge traffic.

If barges were in the river, it would be possible at that time of year for anglers to go farther upstream to fish. In the early part of the season, most of the coho salmon are in the lower river, but by the end of September many of the fish will have moved farther upstream. Anglers will have to travel farther than before (probably more than a mile) to escape disturbances from barges, but there will still be the opportunity for good fishing without interruptions.

Disturbance from truck traffic would be caused mainly by the noise, which, again, would detract from the sense of serenity and remoteness of the area. The noise would be restricted to the area near the unloading site, since the old roadway leads directly away from the river.

**Alternative 3** - By off loading at a site 0.5 mile downstream, encounters between barges and anglers would be reduced in the upper section of the river, but there would be greater disturbance from the sound of trucks running parallel to the river. Trucks produce moderately loud noise, about 60 decibels (A-weighted, dBA) at 800 feet, (Aspen Environmental Group 1998) so anglers along the river would hear the trucks. Trucks would also be visible for the first 400 yards of the road until they enter a wooded area. At the lower site, barges would be able to use the river at lower tides, so truck traffic could be spread out over a greater number of days.

Barges off-loading at the downstream site would be able to travel upriver at an 11-foot tide and would have longer working periods. The work could then be spread over more days, lowering the intensity of traffic on some days. Being able to work longer may also reduce the need for barges to go dry and remain at the site until the next tide, which would reduce the visual impact. As stated in Alternative 2, however, there should be only two to three barges per week (and about two truckloads per barge) so the disturbance would not be constant or very frequent.

Having a road adjacent to the Katalla River could also increase competition for fishing areas between guided anglers and drilling site employees. For anglers coming from the drilling site,

the road would make more of the river easily accessible and expand the area these anglers would use. Encounters along the river between drill site employees and guided anglers would increase. Use of the road by vehicles and people on foot would detract from the solitude and wild character of the area.

**Alternative 4** - Under this alternative the barges would unload on a gravel bar 550 feet downstream from the popular fishing pool described in alternative 2. Anglers walk along this gravel bar on their way upstream and could fish in the channel there, so there may be some displacement by the unloading activity. Unloading noises could be heard upstream at the pool. As described in Alternative 2, the number of barges should be reduced at this time, so the disturbances would be somewhat infrequent. Anglers could also travel farther upstream at this time of year to reduce the disturbances.

## Noise

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - Noises from the drilling operations could reach the river and cabin area. The drilling site is approximately 2.5 miles from the river and cabins. The drill site is partially screened by tall trees, so some sounds could be muffled. Sound is affected by wind, which could reduce the noise levels or carry the sounds. Kirk Ellis, a cabin owner and guide in the area, said that noise from past drilling activity could be heard at the cabins when there was an east wind blowing.

The noise level of a conventional drilling rig is 55 dBA at 1,300 feet (US Department of Energy, 1993). Since sound levels decrease by 6 dBA when distance is doubled, the noise level at 2.5 miles would be about 35 dBA, which is about the level of a library or other quiet room (Minnesota Pollution Control Agency, 2002). Given the screening by the trees and some wind, noises may be audible, but not loud.

During the 1985 to 1986, drilling operations, there was a major increase in helicopter traffic and noise (Steve Ranney, personal communication). Noise from helicopters flying along the coast about one mile from the main fishing areas could be expected to be moderately loud - about 64 to 69 dBA for a Eurocopter A-star and 66 dBA for a Bell Jet 2-A - under calm wind conditions (USDA Forest Service, 1999). The cabins are about one-half mile from the coast and the noise would be expected to be 6 dBA higher there, although some sound would be muffled by the trees. Some of the disturbance will be mitigated by directing helicopter flights along the coast before turning inland to the drilling site, rather than flying directly over the cabins or fishing area. However, unless the helicopters make a long detour out to sea, the noise will still be loud.

Noises from barges are difficult to quantify because of the many different kinds of motors and the uncertainty as to whether the barges would be operating at full throttle in the river. It is assumed that the barges would be heard along the river, but it is uncertain whether they would be heard at the cabins. As mentioned earlier, truck noises along the river will be easily heard, but the two action alternatives would have somewhat different effects from truck noise at the cabins.

Again, wind and the screening effect of the trees around the cabins could help to muffle the sounds.

The truck noises at the proposed 2.5-acre equipment storage area near the airstrip would be much more audible, since the site would be within one-eighth to one-quarter mile of the cabins. The noise level would be about 54 to 60 dBA, which is in the range of normal conversation (Minnesota Pollution Control Agency, 2002).

**Alternative 2** - If the barges were unloaded at the farthest upstream site, truck noises at the cabins one mile away would be about 42 dBA, which is in the quiet range, but still audible. Since the road leads directly away from the river and the cabins, the noise would diminish quickly.

**Alternative 3** - The cabins are about one-half mile from the lower unloading site, so the potential noise level could be about 48 dBA, which is still not loud. The road would also lead away from the cabins, so the sounds would diminish quickly.

**Alternative 4** - The landing site at the gravel bar is 550 feet closer to the cabins than in Alternative 2, so the effects would be similar. The proposed road also leads away from the cabins, so truck noises should diminish quickly.

### **Crowding of Hunting and Fishing Areas**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - One of the main concerns of the guides was that large numbers of drilling workers could be fishing and hunting in the areas that their clients use. Fishing clients may number from 14 to 20 in camp at any one time. In 1985 to 1986, when drilling was going on, 10 to 20 workers would fish at the river (Steve Ranney, personal communication). The number of hunters is not known, but generally the guided hunters are flown or boated to more remote areas in the valley to hunt. Since the workers would not have transportation, there wouldn't be as many conflicts with hunting.

Public comments on the original EA also expressed concern about drilling workers hunting bears and harming the local population. The harvest of bears increased in the 1980's when another drilling operation was going on. William Stevens, president of CEC, had discussed the issue with Dave Crowley, the area wildlife manager with ADF&G. Mr. Stevens (personal communication) wrote: "Since that conversation we have determined that no bear hunting will be allowed by employees, while staying at our camp and, as on any drill site, no unauthorized firearms will be allowed." Mr. Stevens also said that the only firearms that would be authorized would be for bear protection, with only designated people authorized to use them. With the restrictions on bear hunting and firearms, there should be little or no hunting by the drilling workers.

The effects on the fishing clients depend on a number of subjective factors and the clients' expectations. Some people who have experienced shoulder-to-shoulder fishing on the Kenai River may find it acceptable to have several people fishing a pool. Others who are expecting more pristine conditions may not wish to have anyone in sight. Since the clients are paying the

expense of flying into a remote area and staying at the lodges, their expectations for more pristine fishing conditions are probably fairly high. During the early part of the coho salmon run, when the fish have not yet moved up the river, there is about a mile of river to fish, but the fish would be concentrated in the pools. Twenty to 40 anglers would make the lower river area fairly crowded, and the experience would probably not please all of the clients. Later in the season anglers could spread up river, but they may have to go a long way to find solitude. Mitigation under all alternatives will include permitting motorized use along the road for work-related activity only, which would reduce the number of anglers traveling from the drilling site and would reduce the vehicular noise.

Mr. Stevens has proposed voluntarily limiting the number of drilling workers fishing on the river at any one time. This probably cannot be included as part of the permit requirements, since it would be beyond the authority of the federal government to regulate sportfishing normally regulated by the state or to restrict one individual's right to fish while permitting guided anglers to fish. Mr. Stevens has also said that freezer space would not be provided for workers' fishing activities, which would limit harvest.

### **Changes in Visual Quality**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3, and 4** - Under these alternatives, a 2.5-acre temporary storage area would be developed near the airstrip. This area could be screened from view by leaving a buffer of vegetation around the site, but the equipment stored there would still be visible to people arriving and departing by airplane, and people walking from the cabins to the lower river area.

**Alternative 2** - Under this alternative one change would be the extension of the old roadway 25 feet to the river (the access ramp) where there would be the off-loading site for the barges. People fishing at that spot on the river would notice the cleared bank and the area could be seen from the air, but the change would be minimal. The only other change could be clearing up to 2.0 acres in the forested area for a staging site. The exact shape of the site has not been determined. If it were made as a long relatively narrow widening of the old roadway, then the change would not be as evident from the air as would a large square. Currently the old roadway is not readily apparent from the air because of the tall trees surrounding it. People on the ground would not see the clearing because it would be surrounded by trees.

If there is no activity after this project (no oil is found), the bank could be returned to its natural looking state by refilling the cut and revegetating the area. The cleared site would regenerate naturally, but the younger stand of trees would be evident for some time.

**Alternative 3** - Under this alternative a 0.5 - mile road would be constructed along the east bank of the Katalla River. The first 400 yards would be visible to those people on the ground since the road would cross a flat grassy area. A two-acre staging site and anything on it would also be visible from the ground. The staging area, however, is not a storage area, so equipment there would be moved within a short time after it is unloaded. All of the road and staging area would be visible from the air. Since most people fly into the area, the road would be readily apparent.

This would affect the Scenic Integrity Objective to some degree. As in Alternative 2, a section of bank would be cleared for the landing site.

If the road were no longer used after this project, it would still be apparent for an indefinite period until the fill were removed to the level of the surrounding surfaces. After that the surfaces would revegetate quickly. In the section where the road would cut through the young Sitka spruce stand, the young trees would close the canopy over the open space as they grow.

**Alternative 4** - Having the barges unload on a gravel bar, would make the operations more visible to those on the river. The road up the riverbank would also be visible. The 0.2-acre clearing on the bank should be screened from view by the vegetation buffer that would be left along the river. The road itself would be about 100 feet inland and would not be visible from the river. All of the development would be visible from the air. If the road were no longer used after this project, it would still be apparent for an indefinite period until the brush and logs placed under the rig matting were removed. After that the surfaces would revegetate quickly. In the section where the road would cut through the young Sitka spruce stand, the young trees would close the canopy over the open space as they grow.

### **Effects to Cabin Owner/Outfitter-Guide Business**

**Alternative 1 - No Action.** There would be no effects.

**Alternatives 2, 3 and 4** - Cabin owners/guides have expressed concern that the remote recreation experience they offer their clients would be degraded if project operations were to occur during the coho salmon fishing season and hunting season. If this were the case, the guides would probably lose some business (Kirk Ellis, Steve Ranney, personal communication). Mr. Ranney said that he would inform potential clients about the situation and that he wouldn't want to book clients if there will be a lot of barge activity or drilling workers competing for the fishing areas. Todd Rogers said that operations before August or after September would not hurt his business; but the unloading activity, presence of barges, and helicopter flights would be disruptive during the coho salmon season. The downstream unloading site proposed in Alternative 3 may be somewhat less disruptive to anglers, but overall, the combination of noise, traffic, and the loss of the ambience of a wild setting will diminish the recreational experience under the action alternatives. Mr. Ellis said that he would fly his hunting clients to more remote areas, but while they were in camp, the experience would be diminished.

As mentioned earlier, the ADF&G Habitat Division intends to prohibit barge traffic in the river when pink salmon are spawning. This will eliminate barge and truck disturbances for about six of the eight-week coho salmon fishing season. During the last two weeks, there are fewer clients, and the number of barges are expected to be only two to three per week. While this would not eliminate all of the disturbances to clients from barge and truck traffic, the effect will be smaller than originally anticipated. Some clients may feel that any barges or signs of development are not a part of the wilderness like experience, which could cost the guides some business. Increases in the number of people fishing, augmented by the drilling workers, could also deter clients. Hunting clients would be less affected by activity around the river if they are

flown to more remote areas for the actual hunts. The effect on hunting guides should be minimal except for the additional costs of flying clients that could have hunted near the Katalla camp.

The project could have some positive effects for the lodge and landowners. During the mobilization period before the camp at the drilling area is set up, workers will need accommodations. They could be lodged at the existing cabins, which would be a source of income for the owners in a season when they do not normally have clients. Government agency employees have already rented cabins while conducting surveys and other business. If full oil development were to occur, it is possible that the cabins could be used for lodging industry personnel or regulatory agency employees. The private lands could be leased for access, storage, or other purposes.

### **Economic Effects to Native Corporations, Local Economy**

**Alternative 1** - The economic effect of the No Action Alternative would include the loss of any possible gas and oil royalties CAC, its shareholders, and other Native Corporations could receive if payable quantities are found and further development is pursued. Since it is not known whether these quantities exist, no specific amounts can be calculated.

For the scope of the proposed activities, the No Action alternative would preclude the employment of up to 66 workers (two shifts of 66 workers) at peak times and 44 to 48 workers at other times. These would be full time positions for the duration of the project (William Stevens, president CEC, personal communication). Mr. Stevens said he hopes to hire at least 10% CAC shareholders, some of whom would presumably be “local” residents of Cordova, Tatitlek, and Chenega.

The No Action Alternative would also preclude whatever services and supplies the proposed activities would purchase locally. Mr. Stevens states that the local air services and some boats would be used to transport workers and equipment. Workers flying to and from Katalla would be expected to stay at Cordova hotels on occasion when crews are being switched and when flights are delayed, etc. Some supplies would be purchased in Cordova.

If payable quantities of oil and gas are found, additional jobs could be expected to be created in the local and regional economy. One commenter suggested that local businesses would become more efficient through economy of scale, reducing local prices for goods and services. This scenario is dependent on finding payable quantities of oil and gas. The No Action Alternative would not permit the exploration necessary to find out.

The possible positive benefits to land and lodge owners in the Katalla area described in the previous section would also be precluded by the No Action Alternative.

The No Action Alternative would preserve the present benefits the local (Cordova) economy derives from guided clients flying to and from the Katalla area, staying in local lodging establishments, making purchases of sports equipment and other items, renting cars etc. There are about 80 guided fisherman and unknown number of hunters per season, but it is not known how many stay in town before and after their trips. Presumably a certain number stay when

weather keeps them from flying to Katalla, but there is no data available. Approximately 14 seasonal jobs are created directly by the guiding services.

**Alternatives 2, 3, and 4** - The action alternatives would do the opposite of the No Action Alternative. It would permit the proposed drilling activities that could provide the employment and other economic benefits previously described. As described in the section on the effects to the guiding businesses, the drilling activities could lead to the loss of some clients that would prefer a more pristine setting. We cannot estimate how many clients that would be or whether that would result in the loss of employment.

#### **Issue 4: Consider the proposal in the context of the Roadless Area Conservation Rule.**

The Roadless Area Conservation Rule of January 12, 2002, prohibits road construction and reconstruction activities (including temporary road construction) within inventoried roadless areas of the National Forest System. The Roadless Rule is enjoined from being implemented by a lawsuit filed in Idaho Federal District Court. The proposed action constitutes a prior existing reserved right (CNI Settlement Agreement 1982), and as such is unaffected by the proposed Roadless Rule. Recent interim direction by the Chief of the Forest Service has reserved authority for allowing activities within roadless areas to the Regional Forester when road access is needed for a reserved right, such as the CNI settlement agreement.

**Alternative 1. No Action.** There would be no effects.

**Alternative 2** - The Bering Lake Roadless Area would be temporarily reduced by 742 acres (0.077%) over the life of the project. This is calculated on 2.5 miles of road with a 0.25-mile influence zone on either side of the road. The temporarily presence of heavy drilling equipment and approximately 66 people coming and going would reduce the natural integrity and opportunity for solitude along the road. The temporarily sounds of heavy trucks and drilling equipment would be noticeable along the road and in the vicinity of the private land where the drilling would take place.

**Alternative 3** - The Bering Lake Roadless Area would be temporarily reduced by 1,045 acres (0.108%) over the life of the project. The temporarily presence of heavy drilling equipment and approximately 66 people coming and going would reduce the natural integrity and opportunity for solitude along the road. The temporarily sounds of heavy trucks and drilling equipment would be noticeable along the road and in the vicinity of the private land where the drilling would take place for the life of the project.

**Alternative 4** - The Bering Lake Roadless Area would be temporarily reduced by 833 acres (0.092%) over the life of the project. The temporarily presence of heavy drilling equipment and up to 66 people coming and going would reduce the natural integrity and opportunity for solitude along the road. The temporarily sounds of heavy trucks and drilling equipment would be noticeable along the road and in the vicinity of the private land where the drilling would take place for the life of the project.



## **Issue 5: Monitoring: both of resources, e.g. water quality and oversight of operations.**

Under all action alternatives the old roadway will be reopened, barges will travel over areas of pink salmon spawning habitat, and drilling workers would be expected to do some sportfishing on the Katalla River. The Forest Service will monitor these activities. Oversight of the drilling operations on private land will be conducted by the State of Alaska, since the state will be issuing permits for these activities and would be responsible for seeing that the terms of the permits are being met.

A Forest Service inspector will oversee the use and maintenance of the temporary road on National Forest land to make sure that it meets safety standards and to see that the bridges at the stream crossings are installed as proposed in the Plan of Operations. The plan states that there will be no need to use heavy equipment in the streams to install the bridges and that the streambanks will not be disturbed. This will protect fish habitat from sedimentation.

In this analysis it is assumed that pink salmon eggs in the gravel will not be disturbed by barges passing over them. A Forest Service biologist will monitor the effects of the propellers on the gravels to see if there is any disturbance. If there is any displacement of gravel and eggs, barges will need to travel at higher tides or carry less weight to increase the distance between the propeller and the gravel.

It would be expensive and logistically difficult to maintain a person on site at the Katalla River to conduct a creel census to determine the harvest of coho salmon. However, the Forest Service will ask for voluntary harvest reporting by the guided clients and the drilling workers. Occasional site trips will be made to corroborate the results. Visual escapement counts on the ground will be made if there are concerns about overharvesting.

Under Alternatives 2 and 4, a staging area up to 2.0 acres will need to be constructed along the old roadway. Forest Service personnel will conduct a sensitive plant survey prior to clearing to determine whether any sensitive species are present and whether the site would need to be moved. No sensitive plants have been found in nearby areas with similar habitats.

Under Alternative 3, a Forest Service inspector would oversee the construction of the new temporary road along the river and the detour around the eagle nest tree. Again, this person would ensure that the roads meet construction and safety standards. A staging area up to 2.0 acres will need to be located near the unloading area. Forest Service personnel will conduct a sensitive plant survey prior to clearing to determine whether any sensitive species are present and whether the site would need to be moved. No sensitive plants have been found in nearby areas with similar habitats. A sensitive plant survey would also be conducted for the detour road. Again, no sensitive species have been found in the nearby areas.

## **Cumulative Effects**

Cumulative effects are the combined effects of past, present, and reasonably foreseeable future actions. As explained in the section on the existing conditions, the effects of past activities have been generally negated by the passage of time. The main existing effects are from the drilling activities on private land from 1985 to 1986: the 7.0 acres cleared for the operations site, the reserve pit, and the equipment that was left there. Forest Service employees had looked at the site when examining the old roadway in 1992 and noted that there were broken sacks of lime and concrete, but did not note any other spillage or contamination. Neither lime nor concrete are listed as hazardous materials. The current lodges and guiding services are not thought to be causing adverse effects. If oil and gas are found in production quantities during this exploratory drilling project, field development could follow which is outside the scope of this decision and would require additional approvals and review under the National Environmental Policy Act. Finding these quantities of oil is unlikely and would require an extensive separate analysis and approval of many components by many agencies (see Chapter 1, page 20 - 23 for information and additional approval and NEPA requirements for field development).

A possible future activity includes Chugach Alaska Corporation utilizing their easement and constructing the Carbon Mountain Road from the Copper River Highway to the Carbon Mountain area as shown on Map #1. Additional future activity includes an exercise of a road right-of-way from the Carbon Mountain area to the Point Martin and Strawberry Point on the coast as shown on Map #1. Chugach Alaska Corporation has a right of access from the private land to the coast as defined in Section 8A of the CNI 1982 Settlement Agreement. Although these actions are possible in the future, they are not considered reasonably foreseeable because CAC has not given any indication they intend to build these roads or applied for an easement to the Strawberry Point area. There would be no overlap of effects from these possible roads during the life of the proposed action.

The only presently foreseeable cumulative effect is the possibility of increased fishing pressure on the coho salmon population discussed below. The other effects of the proposed actions are all direct or indirect effects that have been disclosed in the previous effects sections.

### **Harvest of Fish by Fishing Guide Clients and Drilling Workers**

**Alternative 1 - No action.** There would be no effects.

**Alternatives 2, 3, and 4** - One concern is that an increased number of people in the area will lead to overharvesting of the coho salmon population. Under the existing conditions, there are about 80 clients per season staying at the cabins and fishing the Katalla River. There are no statistics available on the number of fish harvested by the clients. It is estimated that as many as 66 employees may be at the camp at various times, and presumably some will want to sportfish after work hours. One cabin owner/guide said that when the camp was in operation in 1985-1986, 10 to 20 workers would fish at the Katalla River and would generally keep their limits (Steve Ranney, personal communication).

The effect on the coho salmon population could be substantial if large numbers of anglers kept their limit of six fish a day regularly over the course of a season. It is possible that there would not be sufficient coho salmon spawning in the system to sustain production if the 80 guided

clients and 66 workers all kept a few limits (146 anglers x 2 limits (12 fish) = 1,752 fish harvested). This is a high estimate – obviously not all of the workers would care to fish or keep fish and not all of the clients keep fish - but this does indicate the need for monitoring of the harvest.

The actual number of coho salmon returning to the system is not known. The aerial survey index numbers have averaged around 4,600 from 1992 to 2001, but the last three years have been lower, averaging 2,900. The projected time line of the project could affect two fishing seasons (fall 2003, to the end of 2004), which would be half of the entire population, since coho salmon in this area generally have a four-year life cycle.

The ADF&G Sportfish and Commercial Divisions can make emergency closures or reduce limits if there is concern about overharvesting. However, it is difficult to monitor harvest in a remote area such as Katalla. The Forest Service will work with the employees, guides, and clients to persuade them to keep only as many as they can realistically eat and to practice catch and release. One guide says that he encourages his clients to practice catch and release, and they only keep them when there are lots of fish in the river (Todd Rogers, personal communication). Education on catch and release techniques and the reason behind it will help to protect the resource. Monitoring of the harvest will be conducted to establish whether a problem develops or not.

William Stevens, president of CEC, has proposed voluntarily limiting the number of drilling workers fishing on the river at any one time and has stated that he would not permit workers to use the freezers to store fish (which would disrupt camp operations). Workers could bring their catch to the camp cook for immediate consumption. These proposals should reduce the number of people fishing and the number of fish harvested.

## **Unavoidable Adverse Effects**

Under all action alternatives the barging and unloading of supplies and storage of equipment will be visible and audible to those people using the area. If anglers are present, their fishing would be disrupted. Helicopter and small plane flights will also be needed, which will increase the noise levels. These activities would degrade the remote and wild experience that the anglers and hunters expect when they come to the Katalla area, and may affect the businesses of the cabin owners and outfitter/guides who are offering this experience during the hunting/fishing seasons during 2003 and 2004.

If the Plan of Operations and permits are approved in the near future, the main mobilization could be conducted in the winter of 2002 to 2003, which would reduce the effects on the other users in the area. However, an estimated two to three barges per week will still be needed to bring supplies as long as the operations continue, which could be until the end of 2004. Thus, some conflicts may arise in 2003 and 2004, although the effects would be lessened with the reduced number of barges.

Under all action alternatives there would be the loss of some habitat for wildlife, and in Alternative 3, a small section of slough that could provide coho salmon rearing habitat. The areas of the habitats involved are minimal, however, and would not harm the populations.

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