Natural Resources Management Plan

for

Kodiak Launch Complex

Narrow Cape, Kodiak Island, Alaska

Approving authority: 

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NOTE

This PDF version of Natural Resources Management Plan for Kodiak Launch Complex, Narrow Cape, Kodiak Island, Alaska, was created in March 2001. Any small discrepancies from the original 1998 hardcopy version are due to translating the document from one program to another.

ERRATA

Table 4.1 on page 4-2 is mislabeled. It should read: “KLC operations phases lines of accountability, required documents, and chronology.”
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ACRONYMS

AADC  Alaska Aerospace Development Corporation
ADEC  Alaska Department of Environmental Conservation
ADFG  Alaska Department of Fish and Game
ADOT  Alaska Department of Transportation
AST   U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation
BMPs  Best Management Practices
CESQG Conditionally Exempt Small Quantity Generator
CFCs  Hydrochlorofluorocarbons
COE   U.S. Army Corps of Engineers
DGC   State of Alaska, Office of the Governor, Division of Governmental Coordination
EA    Environmental Assessment of the Kodiak Launch Complex, June 1996
ENRI  University of Alaska Anchorage’s Environment and Natural Resources Institute
EPA   U.S. Environmental Protection Agency
ESA   Endangered Species Act
KLC   Kodiak Launch Complex
NEPA  National Environmental Policy Act
NMFS  National Marine Fisheries Service
NRMP  Natural Resource Management Plan for the Kodiak Launch Complex
OSHA  Occupational Safety and Health Administration
PCB   Polychlorinated biphenyl
SHPO  State Historic Preservation Officer
SPCC  Spill Prevention, Control, and Countermeasures Plan
SPPP  Stormwater Pollution Prevention Plan
SQG   Small Quantity Generator
USFWS U.S. Fish and Wildlife Service
USCG  U.S. Coast Guard
FOREWORD

Introduction

In June 1996, the Alaska Aerospace Development Corporation (AADC) and the U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation (AST) completed the *Environmental Assessment of the Kodiak Launch Complex* (EA). The EA addresses the potential environmental affects of construction and operation of a commercial rocket launch facility on Kodiak Island, Alaska. It concludes that: (1) development and operation of the Kodiak Launch Complex (KLC) would produce little or no adverse impact to air, water, or soil quality in the area; (2) construction would disturb some vegetation and result in short-term, localized impacts to birds and mammals; (3) launch noise would temporarily disturb seabirds and mammals resting and feeding within a 6-mile radius of the site but produce no long-term impacts; and (4) site development would result in small impacts to recreation and visual resources.

As prime lease holder of the KLC site, AADC recognizes its obligation as a land steward and has developed this *Natural Resources Management Plan for KLC* (NRMP). The purpose of the NRMP is to minimize the identified impacts from KLC operations through employment of best management practices (BMPs) and to avoid or eliminate unintentional impacts. The NRMP is an integrating or reference document to other plans required for KLC construction and operation. It ensures that all environmental protection plans developed for KLC are followed by establishing a system of checklists, verification documentation, annual reporting, site observation, and oversight by a designated AADC Point of Contact.

The NRMP is a living document that is to be updated as necessary and appropriate. Updates to regulatory permits will be attached to the NRMP upon receipt. Updates needed to address changes in KLC operations as they relate to natural resources management will be attached to the NRMP, where appropriate, no less than 60 calendar days prior to a change. For example, if a noisier class of rocket motor were to be flown from KLC, the NRMP’s *Environmental Monitoring Plan* (Appendix B of this document) would be updated by attachment to Appendix B. The NRMP and other documents relating to KLC natural resources management will be on file at KLC for use by AADC and its contractors.

Commitment

The NRMP fulfills a commitment AADC made in the EA to establish sound land management practices and to ensure that responsible stewardship is practiced in the construction, operation, and demobilization of the KLC site. AADC has been committed to natural resources protection since beginning its statewide search for an appropriate commercial rocket launch facility site in Alaska, and it will continue to welcome new information relevant to natural resources management at KLC.

AADC included environmental protection factors in the criteria used for site selection and in the setting of design and operational plans for KLC. Some examples of design modifications made to protect the site’s natural resources are:

- The Payload Processing Facility site was repositioned to avoid a large wetlands area.
- The launch flame duct was directed away from the freshwater East and West Twin Lakes.
- The launch flame duct was designed and located to minimize vegetation scorching.
- The Launch Control and Management Center was moved to minimize overall wetlands impacts.
• The Fuel Storage Shed was designed to fully contain a “worst-case” spill of the liquid propellants used in small attitude control thrusters.

• An on-site concrete batch plant and borrow pit will be used to reduce off-site traffic and resulting dust.

• The facilities were sited on flat upland meadows to minimize loss of Sitka spruce and impacts to wetlands.

Objectives and Scope

The NRMP was developed and guided by the following supporting objectives:

• Clearly identify participants and their roles.

• Clearly state responsibilities of AADC and its contractors.

• Clearly state AADC’s expectations of construction and launch contractors and operators.

• Establish accountability for performance.

• Describe the public disclosure/involvement processes.

• Specify lines of communication.

• Develop and employ scientifically sound natural resource monitoring programs.

Establish measurable natural resource protection goals.

Goals

Natural resource management goals are included in the NRMP to set standards for performance and to provide a quantifiable measure of progress made in implementing the plan. Initial goals include:

Goal 1: No more than 1.5 acres of wetlands loss due to construction.

Goal 2: Minimal wetlands loss due to operation.

Goal 3: Minimal reportable spills of hazardous substances.

Goal 4: Minimal impacts on special status species as a result of construction and operations.

Goal 5: Protect fluvial and lacustrine environments from extensive sediment inputs during construction and operations.

Goal 6: Establish effective mitigation for natural resources where necessary and appropriate.
CHAPTER 1
INTRODUCTION

Overview

KLC is the first state-owned commercial rocket launch facility to be developed in the United States. Customers will use the facility to place small payloads (up to 5,000 pounds) into orbit using expendable solid-fuel launch vehicles. The complex is located on state-owned land at Narrow Cape on the eastern side of Kodiak Island, 20 air miles south-southeast of Kodiak, Alaska (Figure 1-1). Launch facilities and supporting structures occupy approximately 43 acres (or approximately 1 percent) of the 3,100-acre site. The NRMP applies to the entire 3,100-acre site (not just the area immediately surrounding the buildings) and to natural areas outside of the complex that may be affected by its operation (Figure 1-2).

The NRMP was developed for a wide audience: the public, cooperating natural resource management agencies, environmental interests, and AADC contractors. The Foreword describes the EA findings, AADC’s commitment to natural resource protection, and the goals and objectives of the NRMP. Chapter 1 provides information on key participants in the KLC environmental process, including roles of the natural resource management agencies; important plans and reports related to the NRMP; required documentation; and lines of communication. Chapter 2 describes the natural resources of Narrow Cape and the KLC site. Chapters 3 and 4 provide detailed directions to contractors and outline AADC’s expectations for contractor performance during the construction and operation phases of KLC. Chapter 5 briefly describes demobilization.

Key Participants

While AADC is the manager of planning, contractor oversight, and operations for KLC, many government agencies and other parties have provided input to the KLC environmental process and development of the NRMP. Key participants and their roles are briefly described below.

Alaska Aerospace Development Corporation (AADC) is a public corporation established by the Alaska legislature to develop a commercial rocket launch complex in Alaska. It is responsible for all aspects of KLC management.

Alaska Department of Environmental Conservation (ADEC) is the primary state environmental permitting agency for air and water quality related issues. It is also involved in the review and approval of environmental monitoring plans for KLC and mitigation actions taken to protect natural resources.

Alaska Department of Fish and Game (ADFG) is responsible for protection of fish, game, and habitat on and around KLC.

Alaska Department of Natural Resources (ADNR) is responsible for mineral and timber resources on state lands and has jurisdiction over the lands leased to AADC at Narrow Cape. It is also responsible for archaeological sites; and AADC contracted with its Division of History and Archaeology to determine whether or not cultural resources were present on the proposed KLC site. The Division is headed by the State Historic Preservation Officer (SHPO).

Alaska Department of Transportation (ADOT) has jurisdiction over Pasagshak Point Road and its right-of-way.

State of Alaska, Office of the Governor, Division of Governmental Coordination (DGC) coordinated the state’s review of the KLC project for consistency with the Alaska Coastal Zone Management Program.
Figure 1-1. KLC site location.
Figure 1-2. KLC vicinity.
The State of Alaska exclusively owns the area of KLC and leases the site to AADC through ADNR’s Division of Land.

U.S. Air Force provided an award to AADC and other firms across the United States to support development of competitive commercial spaceports. It has contracted with AADC for the first launch from KLC.

U.S. Army Corps of Engineers (COE) has primary permitting responsibility for dredge and fill operations in wetlands.

U.S. Coast Guard (USCG) is responsible for the LORAN C station located on the KLC property. The station consists of a 625-foot tall navigation transmitter station and associated buildings.

U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation (AST) is responsible for licensing determinations regarding AADC’s operation of KLC as a launch site. AST’s environmental review obligation is part of the licensing process for KLC.

U.S. Fish and Wildlife Service (USFWS) is responsible for designation and protection of special status species on and around KLC.

U.S. National Marine Fisheries Service (NMFS) is responsible for designation and protection of special status marine mammal species on and around KLC. It is the primary National Oceanic and Atmospheric Administration contact for the KLC project.

Brown & Root Environmental prepared the June 1996 EA for AADC and AST.

University of Alaska Anchorage’s Environment and Natural Resource Institute (ENRI) conducted baseline natural resource inventories of the Narrow Cape area in 1994 and 1997 and documented results in the Environmental Baseline of Narrow Cape, Kodiak Island, Alaska. ENRI also prepared the KLC Environmental Monitoring Plan (Appendix B).

The Public is a partner with AADC in managing the site’s natural resources. Public involvement in the proposal phase of KLC development was prescribed by legislation. AADC considers keeping the public informed of the status of the area’s natural resources to be a continuing responsibility. The annual Environmental Monitoring and Natural Resources Management Report will be made available to the public and to cognizant natural resource management agencies.

Related Plans and Reports

Briefly described below are the KLC-specific plans which, together with the NRMP, form the comprehensive set of documents that govern the management of natural resources and help ensure regulatory requirements are met. The KLC-specific plans are appended to the NRMP, and they will be revised periodically by attachment to accommodate changes in KLC operations.

Emergency Response Plan (Appendix A): This plan combines emergency response procedures with the contingency plan required by the state’s hazardous waste regulations and the site’s operational status as a small quantity generator. It establishes a KLC Emergency Coordinator responsible for coordinating emergency response measures and specifies proper waste handling and emergency response procedures. The plan is to be used by contractors as a training tool for their employees.

Environmental Monitoring Plan (Appendix B): The purpose of this plan is to detect if the KLC project has caused changes to the natural and human environments and to outline the steps required to develop and implement monitoring actions. This plan was developed with the participation of cognizant resource management agencies.
Revegetation Plan (Appendix C): This plan details how mitigation commitments made in the EA and NRMP will be implemented and describes the methods to be used to recover lands scarified during construction or operation. It includes direction on the management and disposal of excess excavated topsoil and revegetation practices, including planting methods and selection of species to be planted. The plan also provides a guide for developing vegetation mitigation impacts plans for AADC operations, should impacts to vegetation occur.

Safety Policy (Appendix D): This policy is modeled after the Wallops Flight Facility Range Safety Manual. It defines specific design requirements, restrictions, operational procedures, and support requirements.

Spill Prevention, Control, and Countermeasures Plan (SPCC) (Appendix E): This plan details the KLC construction and operation contractors’ proper response to an oil or hazardous substance spill. Highlights include spill-reporting procedures, an oil spill contingency plan, plan review and update procedures, tank inspection procedures, location and description of containment or diversionary structures, the name and title of the designated coordinator, and training procedures for all personnel involved with the management and handling of oil.

Stormwater Pollution Prevention Plan (SPPP) (Appendix F): This plan describes controls to be used to minimize pollutant discharges via stormwater and to minimize sediment loading to nearby surface waters during construction. Water quality in the KLC area will be protected during construction by erosion, sediment, and stormwater management controls and BMPs established in the plan.

The following report will provide an annual evaluation of success in implementing the above-mentioned plans and describe the status of KLC’s natural resources.

Environmental Monitoring and Natural Resources Management Report: This report will present a synthesis of monitoring and mitigation activities done in support of KLC operations. It will define the impacts, if any, of KLC operations on the environment and list any amendments made to the plan, its goals, processes, or objectives. If impacts beyond those described in the EA are identified, the report will outline agency consultations and any action measures taken. It will also describe where to find these changes in the NRMP. Data input to this report will also be provided from contractor close-out packages (see pages 3-3 and 4-3). AADC will distribute this report to the cognizant resource management agencies and make it available to the general public through normal distribution channels.

Supporting Documents

The following documents provide important background information on the natural resources in and around KLC and were major sources of input to the NRMP. They may be used to obtain more detail on the information presented in this document.

Alaska Coastal Zone Management Program (see Appendix H): This document establishes standards for the balanced use and protection of coastal lands and waters. It emphasizes that there is a higher priority for uses that are economically or physically dependent on a coastal location when compared to uses that do not require a coastal location. DGC has determined that the KLC project is in conformance with the Alaska Coastal Zone Management Program. If changes to the KLC project as proposed to ADEC are made during its siting, construction, or operation, AADC is required to contact ADEC immediately to determine if further review for consistency with the
Alaska Coastal Zone Management Program and additional approval of the project is necessary.

Environmental Assessment of the Kodiak Launch Complex: The June 1996 EA was prepared by AST and AADC, pursuant to an interagency agreement and in accordance with the National Environmental Policy Act (NEPA), to document the basis for determining whether KLC would have a significant impact on the environment. The assessment is a factor in AST’s determination regarding issuance of a license to operate the KLC launch site. The assessment concluded that construction and operation of the complex will not have a significant impact on the environment.

Environmental Baseline of Narrow Cape, Kodiak Island, Alaska: The February 1995 baseline and April 1998 update documents were prepared by ENRI under contract to AADC. They supported the EA process by providing a foundation of information for managing the biota of the KLC area and served as a basis for developing the Environmental Monitoring Plan (Appendix B).

Permits and Approvals

As lead agency for the development and operation of KLC, AADC is responsible for acquiring all necessary permits and approvals and for undertaking all consultation requirements. Table 1-1 lists permits obtained prior to construction.

AADC has effected agency consultation under applicable federal and state laws and regulations through completion of the NEPA process in conjunction with the EA. That process (and a later one done for the EA for the first scheduled launch from KLC) addresses management and coordination requirements under the federal Endangered Species Act, the Fish and Wildlife Coordination Act, and the Marine Mammal Protection Act (among others) and state requirements for coordinating through DGC.

Impact Mitigation

The NRMP includes specific actions to reduce or eliminate potential impacts to air, soil, water, recreation, visual, cultural, and archaeological resources during routine construction activities and throughout operations. It also includes actions to minimize potential impacts from hazardous waste and noise. These actions are listed as expectations of the contractor under “Resource Protection Requirements” in Chapters 3 and 4. Mitigation actions for construction activities are described in the SPCC and the Revegetation Plan. Implementation of all mitigation requirements will be verified visually by the designated AADC Point of Contact and formally documented by the contractor in construction or operations checklists.

The immediate impact to natural resources from a nonroutine incident, such as a petroleum spill or release of hazardous waste, is mitigated by actions prescribed in the site’s Emergency Response Plan. The contractor is required to immediately make notifications as prescribed in these plans. Goal 6 for natural resources protection requires AADC to follow up and develop and implement a mitigation action plan within two weeks after an impact has been identified. In the event of a rocket motor failure, the launch contractor is responsible for recovery and disposal of debris in accordance with applicable law.
Table 1-1. Permit, approvals, and consultation requirements.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Requirement</th>
<th>Basis</th>
<th>Authority</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLC operation</td>
<td>License and environmental review</td>
<td>Operation of commercial launch site</td>
<td>• Commercial Space Launch Act (49 USC Subtitle IX—, Commercial Space Transportation, Ch. 701, Commercial Space Launch Activities) • 14 CFR 143 • National Environmental Policy Act (42 USC 4321 et seq.) • 40 CFR 1500 et seq.</td>
<td>U.S. Department of Transportation, Federal Aviation Administration, Associate Administrator for Commercial Space Transportation</td>
</tr>
<tr>
<td>Launch Control Center construction and Pasagshak Point Road improvements</td>
<td>Permit</td>
<td>Activity affecting wetlands</td>
<td>• Clean Water Act Section 404 (33 USC 1344) • 33 CFR 323</td>
<td>U.S. Department of the Army, Corps of Engineers</td>
</tr>
<tr>
<td>KLC construction and operation</td>
<td>Consultation</td>
<td>Potential impact to threatened and endangered species</td>
<td>• Endangered Species Act Section 7 (16 USC 1536) • 50 CFR 402</td>
<td>U.S. Department of Interior, Fish and Wildlife Service</td>
</tr>
<tr>
<td>KLC construction and operation</td>
<td>Consultation</td>
<td>Potential impact to cultural resources</td>
<td>• National Historic Preservation Act Section 106 (16 USC 470f) • 36 CFR 800</td>
<td>State Historic Preservation Office</td>
</tr>
<tr>
<td>KLC construction and operation</td>
<td>Certification</td>
<td>Potential to affect state water quality standards</td>
<td>• Clean Water Act Section 401 (33 USC 1341)</td>
<td>Alaska Department of Environmental Conservation</td>
</tr>
<tr>
<td>KLC construction and operation</td>
<td>Consistency review</td>
<td>Activity within coastal area</td>
<td>• Coastal Zone Management Act (AS 46.40) • 6 AAC 50, 80, and 85</td>
<td>Alaska Office of the Governor</td>
</tr>
</tbody>
</table>
There may also be incidents during construction or operations when the contractor inadvertently injures or kills wildlife or has to kill a large mammal in defense of life or property. The NRMP requires the contractor to immediately notify AADC through a designated point of contact and to document such incidents on an appropriate checklist. It is the responsibility of the designated AADC Point of Contact to follow up and determine if mitigation actions are required and to contact appropriate agencies as necessary.

**Environmental Monitoring**

AADC considers monitoring the impacts of KLC construction and operation on surrounding natural resources to be a key oversight responsibility. Monitoring time frames, duration, and level of effort are described in the *Environmental Monitoring Plan* (Appendix B).

As indicated, the results of all monitoring efforts will be synthesized and made available to the public in the annual *Environmental Monitoring and Natural Resources Management Report*.

**Contractor Oversight**

An essential element of the implementation strategy for the NRMP is to develop a framework for cooperative oversight of the contractor. The first step is to provide the contractor with a set of clear requirements and expectations for performance. Secondly, an AADC Point of Contact will be assigned for the construction phase and for each launch. The designated AADC Point of Contact is responsible for working closely with the contractor to ensure the contractor receives and understands all necessary information to properly manage the site’s natural resources, answer any questions the contractor may have and obtain additional information if necessary.
needed, explain documentation requirements and ensure they are met, and conduct on-site inspections. The last part of the oversight framework is verification that requirements are met. This step is accomplished through the completion, review, and verification of contractor checklists and close-out documentation.

**CONTRACTOR CHECKLISTS AND CLOSE-OUT DOCUMENTATION**

These checklists assist the contractor in ensuring that all environmental requirements of the NRMP and other site-specific environmental plans are met. They also provide documentation of any unexpected incidents such as spills, problems with erosion, and archaeological finds. There are separate checklists for construction and operations.

Close-out documentation is an oversight tool that provides AADC with verification that the contractor has met all requirements of the NRMP. For the construction phase, close-out documentation includes start-up and construction checklists, verification of waste disposal, shipping manifests, and chemical inventory. At the completion of each launch operation, the contractor is required to submit to AADC verification of waste disposal, shipping manifests, chemical inventory, site clean-up verification, tank inspections, training records, and any incident reports.
CHAPTER 2
KODIAK LAUNCH COMPLEX NATURAL RESOURCES

Introduction

This chapter of the NRMP describes the natural resources of Narrow Cape and the KLC site. It is based on the 1996 EA and the ENRI environmental baseline surveys conducted in 1994 and 1997.

Air Resources

The area can be characterized as having a maritime climate, with long, mild winters and short, cool summers. The average annual wind speed is 4.9 meters per second (10.9 miles per hour), and the prevailing wind direction is from the northwest. Kodiak Island is a class II attainment area in relation to the National Ambient Air Quality Standards. Wind-blown volcanic dust is the primary air contaminant on the island.

Water Resources

Streams draining the area are generally less than 3.2 kilometers (2 miles) in length and have an average discharge of less than 1.3 cubic meters per second (46 cubic feet per second). Several lakes are located on the KLC site: West and East Twin Lakes are freshwater lakes, and Triple Lakes and Barry Lagoon are considered to be saltwater-influenced lagoons (Figure 2-1).

East Twin Lake is approximately 490 meters long and 60 meters wide (1,600 feet long and 200 feet wide) and is twice the size in area of the adjacent West Twin Lake. Each of these lakes drains through a berm of sand and gravel that separates the lakes from the beach and extends an estimated 1.5 to 4.6 meters (5 to 15 feet) above the surf zone. The depths of East Twin Lake range from less than approximately 0.9 meters (3 feet) at the bermend end near the beach to an unknown deeper depth at the opposite northeast end (the bottom of the lake cannot be seen).

West Twin Lake is approximately 1 meter (3 feet) in depth.

In 1994, ENRI sampled a number of freshwater streams in the area, as well as West and East Twin Lakes, Triple Lakes, and Barry Lagoon. The conductivity, pH, dissolved oxygen, and alkalinity measurements of KLC water bodies were typical of those in streams and lakes in other parts of Kodiak Island. The pH and dissolved oxygen content of surface waters near KLC is suitable for a range of aquatic organisms. In addition, biological toxicity testing of sediments collected during the surface water sampling indicates that the sediments have no potential toxicity. Alkalinity was found to be low, but it is apparently adequate for maintaining pH at a near neutral level.

Water samples from East Twin Lake and Triple Lakes revealed cadmium levels of 0.1 micrograms per liter in both lakes and beryllium levels of 0.9 micrograms per liter in Triple Lakes. These levels are below national water quality criteria for the protection of aquatic organisms set by the U.S. Environmental Protection Agency (EPA) and the maximum contaminant levels established under the Federal Safe Drinking Water Act and State of Alaska Drinking Water Regulations. In the absence of any anthropogenic source, it is assumed that the presence of cadmium and beryllium is attributable to natural sources. Coliform bacteria levels for the two lakes exceeded the "no detect" criteria of the State of Alaska Drinking Water Regulations and would require pretreatment for use as drinking water. The suspected sources of the coliform bacteria are the bison, cattle, and horses that are raised on the Burton Ranch.
Figure 2-1. Water bodies in the vicinity of KLC.
Geology and Soil Resources

The surface topography of KLC is relatively flat and low lying. The coastal plateau of the site is not a floodplain. It can be characterized as a series of gently undulating, northeast-southwest trending ridges approximately 43 to 110 meters (140 to 350 feet) in elevation with broad, relatively level ridge tops. A northeast to southwest trending fault is located approximately one mile west of KLC and is part of a major system that crosses the southeast coast of Kodiak Island. The area is seismically active with low intensity earthquakes frequently recorded.

Two primary soil types occur on the site: Upland and Saltery. Upland soils, developed from the weathered sandstone bedrock and covered with a layer of volcanic ash and a surface litter of partly decayed vegetation that has accumulated on the volcanic ash, predominate in the vicinity of KLC. Upland soils are well drained but always moist due to frequent rains. Soils in the valleys near KLC are a combination of Saltery peat and Ugak silt loam. The access road at KLC crosses these valley soils at several points. Saltery soils occur where the water table is always at or near the surface and have a deep layer of peat overlain by a layer of volcanic ash and a new layer of peat at the surface. Ugak soils have a thin layer of peat beneath a layer of volcanic ash and occur in poorly drained areas.

Terrestrial Biota

The KLC site is in an area of transition between the Hudsonian life zone and the Arctic life zone. Vegetation covers 88 percent of the 13-square kilometer (3,100-acre) site and is predominately grass-forb meadows, shrublands of alder and willow, wetlands, and intermittent spruce stands. The remaining 12 percent is open water. The distribution and abundance of plants has been affected by use of the area for grazing. Wetlands cover 3.2 square kilometers (790 acres) of KLC. These vegetated wetlands include semi-permanently flooded areas, saturated emergent wetlands, and marshes. (A list of plant species found on KLC is presented in the 1995 ENRI environmental baseline report.)

Habitats available on and around Narrow Cape support a broad assemblage of avian species. The KLC site provides seasonal habitat for approximately 143 species of terrestrial and marine-oriented birds. The Narrow Cape area supports 12 species of mammals—6 native and 6 introduced. During a 1994 ENRI survey, 11 of these mammal species were observed on the KLC site. Mountain goats were not seen during the survey, but they have been reported some 4.0 kilometers (2.5 miles) northwest of the site boundary. (A list of avian and terrestrial mammalian species is presented in the 1995 ENRI environmental baseline report.)

Aquatic and Semi-Aquatic Biota

Fisheries resources on and adjacent to the KLC site include freshwater, anadromous, and marine species. Because streams and lakes on the site are relatively small and shallow, freshwater fishery resources are limited. Dolly Varden, coho salmon, sculpin, and stickleback have been captured or observed in streams draining the site. ADFG stocks rainbow trout in East Twin Lake.

Fish inhabiting waters in the immediate area of KLC are typical of those in the waters of Kodiak Island as a whole. The most common marine fish are flounder, sole, pollock, skate, cod, and halibut. Other marine organisms that inhabit the shallow continental shelf water around Kodiak Island are crabs (king, tanner, Dungeness, kelp, rock, and hermit), scallops, octopus, shrimp, cockles, razor and butter clams, sea anemones, chitons, jellyfish, sea urchins, limpets, snails, mussels, sea cucumber, starfish, and barnacles.

ENRI observed 38 species of marine birds using the nearshore and offshore area adjacent to the KLC site in 1994. No seabird colonies were found on the KLC site or on Ugak Island. Species known to winter in the area include harlequin duck, black-legged kittiwake, common murre, pigeon guillemot, Steller’s eider.
oldsquaw, black scoter, surf scoter, and white-winged scoter.

As many as 7 species of large cetaceans, 12 species of medium to small cetaceans, 6 species of pinniped, and 1 species of marine mustelid occur in the Gulf of Alaska. These mammals use the Gulf for a number of activities, such as migration and summer feeding or as year-round range. The species common to the KLC area include three pinnipeds: Steller sea lion, harbor seal, and Northern fur seal. Sea otter is found in the KLC area in all months of the year. Seven of the nine Pacific species of great whales, killer whale, and several smaller cetacean species seasonally range in the waters off Kodiak Island. Cetacean species found year-round in the water surrounding Kodiak Island are killer whale, Dall’s porpoise, and harbor porpoise.

Pacific white-sided dolphin, Risso’s dolphin, northern right whale dolphin, pilot whale, and several species of beaked whale also reportedly occur but are rarely seen because they tend to occur offshore. A number of other cetacean species occur in the northern Gulf of Alaska but are not commonly found in the nearshore waters and embayments along Kodiak Island. These species include the Sei whale and northern right whale. Sperm whale and blue whale occur in the Kodiak Island area but are primarily pelagic (i.e., open-water species).

### Special Status Species

Four species of animals protected under the Endangered Species Act (ESA) of 1973, as amended, have been documented as occurring in the vicinity of the KLC site. Table 2-1 identifies these species and their status under the ESA. The bald eagle is also identified, because it is afforded protection under the Bald Eagle Protection Act.

### Land Use

The 3,100 acres of state land leased to AADC for KLC are under jurisdiction of the ADNR Division of Land. Traditional and current uses of the area have primarily been ranching and recreation. Grazing rights have been and are leased for cattle, horses, and buffalo. USCG maintains a LORAN C navigation transmitter and a 190-meter (625-foot) tall radio tower on the site. A small number of ranch-related structures and a summer church camp are located in the vicinity of the KLC site. The Pasagshak State Recreation Area is a small park approximately 10 kilometers (6 miles) from Narrow Cape; it includes seven campsites, picnic areas, potable water, and latrines. The Pasagshak State Recreation Area is located on the Pasagshak Point Road on the way to Narrow Cape from Kodiak.

### Recreation

Narrow Cape is easily accessible by the island’s road system and offers a variety of recreational activities such as hunting, hiking, birdwatching, fishing, fossil collecting, and whale watching. A brochure published by the Alaska Natural History Association identifies two hiking trails in the vicinity of KLC, the Narrow Cape Trail (Trail 18) and the Burton Ranch Trail (Trail 17). Portions of these trails were used by jeeps during World War II, but they are not maintained and only portions remain visible. Most of the KLC site will remain available for public use except on launch days.

### Visual Resources

Scenic values in the Narrow Cape area are classified as high, and natural values dominate. The area ranges from grass-covered mountains to a low plateau. Scattered stands of spruce occur near the cape. Built structures at the site were previously described under “Land Use.”
Table 2-1. Special status species of the KLC area.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steller sea lion</td>
<td><em>Eumetopias jubatus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Fin whale</td>
<td><em>Balaenoptera physalus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Humpback whale</td>
<td><em>Megaptera novaeangliae</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Steller’s eider</td>
<td><em>Polysticta stelleri</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Bald eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Protected</td>
</tr>
</tbody>
</table>

Cultural Resources

The Alaska State Office of History and Archaeology conducted an archaeological and historic resource survey of the Narrow Cape area for AADC in 1994. Two archaeological sites (KOD-081 and KOD-441) and one historic World War II-era bunker complex (KOD-456) lie within approximately 1.6 kilometers (1 mile) of the KLC construction site. The two archaeology sites are known and have been catalogued by the SHPO, but their exact location and nature are maintained as confidential to prevent looting or unauthorized excavation. The historic site consists of reinforced concrete bunkers used as lookout posts during World War II.

Documentation of the SHPO’s position is found in the 1995 ENRI environmental baseline report.

Subsistence

Subsistence is an aspect of social, cultural, and economic life on Kodiak Island. Although residents of Old Harbor, an isolated traditional village, used the area immediately offshore of Narrow Cape for subsistence purposes in the past, this no longer occurs. Today, Kodiak Island residents living in the island’s road-connected areas use the Narrow Cape area for harvesting deer, freshwater fish, salmon, marine fish, waterfowl, and plants.
CHAPTER 3
NATURAL RESOURCES MANAGEMENT CONSTRUCTION PHASES

Introduction

This chapter provides the site-specific environmental requirements that AADC expects construction contractors to follow before, during, and upon completion of KLC construction. They apply to the facility’s initial construction and to any future construction that may occur during KLC’s operational life. This chapter describes AADC’s approach to construction oversight, establishes a point of contact liaison between AADC and its contractors, identifies supporting plans that contain environmental requirements and procedures, and includes mitigation actions to protect natural resources. Contractors are expected to train their managers and workers using the information provided in this section.

Oversight

The AADC Project Manager will appoint an AADC Construction Point of Contact prior to the start of construction (Table 3-1). This person will be responsible for establishing an open, cooperative line of communication with the contractor and for supplying the contractor with copies of the EA, NRMP, and suggested BMPs. These documents are to be used to guide development of specific mitigation-related plans (e.g., SPPP and SPCC). The AADC Construction Point of Contact will work with the contractor to ensure that all mitigation commitments made in the EA and permit requirements are included in these plans. The contractor must submit all plans to the AADC Construction Point of Contact for approval prior to start-up of construction. Time frames for submittal of required documentation will be specified in construction contracts.

The contractor is responsible for immediately reporting to the AADC Construction Point of Contact (1) any activity that deviates from requirements of the NRMP, work plans, or contractual agreements with AADC and (2) any changes in the project’s scope. The AADC Construction Point of Contact will determine what, if any, notifications need to be made to the permitting agencies.

The AADC Construction Point of Contact will oversee construction through:

- Routine phone calls to check on progress, answer questions, and clarify requirements and expectations.
- Scheduled on-site visits to verify success of erosion-control practices and to check on impacts to wetlands.
- Unannounced inspections.
- Review of checklists and close-out packages to verify compliance and plan implementation.

Effective implementation of the NRMP requires the construction contractor to assume the following responsibilities:

- Read and understand the NRMP and supporting plans.
- Maintain full compliance with state and federal regulations.
- Maintain routine contact with the AADC Construction Point of Contact.
- Use BMPs.
- Employ pollution prevention and waste minimization practices.
- Complete start-up and construction documentation.
Table 3-1. KLC construction phases lines of accountability, required documents, and chronology.

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible Party</th>
<th>Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation and contractor notification of the AADC Point of Contact and Alternate</td>
<td>AADC Manager</td>
<td>Per contract, prior to the start of construction</td>
</tr>
<tr>
<td>Contractor receives site environmental plans, permits, and other needed information</td>
<td>AADC Point of Contact</td>
<td>Per contract, prior to the start of construction</td>
</tr>
<tr>
<td>Contractor submits SPPP to AADC Point of Contact for review and approval</td>
<td>Contractor</td>
<td>Per contract, prior to the start of construction</td>
</tr>
<tr>
<td>Contractor submits start-up construction checklist and information to AADC Point of Contact</td>
<td>Contractor</td>
<td>Per contract, prior to construction</td>
</tr>
<tr>
<td>Complete Construction Checklists</td>
<td>Contractor</td>
<td>Throughout construction</td>
</tr>
<tr>
<td>Submit Close-out Package to AADC Point of Contact</td>
<td>Contractor</td>
<td>Per contract, following completion of construction</td>
</tr>
</tbody>
</table>

- Complete close-out package.

These requirements are in addition to specifications in contracts with AADC, internal contractor company procedures, or other construction requirements.

**Construction Permits**

AADC has obtained the environmental permits necessary to construct KLC (Table 1-1, page 1-7); copies of key permits and related documents are provided in Appendix H. If there is a change in project scope, AADC is responsible for contacting the permitting agency and obtaining any necessary permit modifications. The contractor is responsible for following all permit requirements and for immediately notifying the AADC Construction Point of Contact of any unexpected events such as unplanned impacts to wetlands, erosion and sediment control failures, hazardous waste spills, or accidents.

**Applicable Plans**

In addition to following all permit requirements, contractors are expected to be thoroughly familiar with those of the NRMP and the following KLC-specific plans:

- *SPCC* (Appendix E).
- *SPPP* (Appendix F).

The contractor will train its employees on the contents of these plans and work closely with the AADC Construction Point of Contact to ensure that all associated requirements are met.

**Start-up and Construction Checklist**

The construction checklist (Appendix G) serves as a general guide to the contractor on the environmental requirements of KLC and, once completed, provides verification that requirements were met. The start-up construction checklist should be completed by the contractor and sent to the AADC Construction Point of Contact for review prior to...
the start of land clearing in the time period specified in the contract. Some examples of items required to complete the start-up construction checklist follow:

- A copy of the SPPP.
- Chemical inventory (including hazardous materials and petroleum products).
- Planned pollution prevention/waste minimization efforts.
- Training documentation.
- Waste management strategies.

The construction portion of the natural resources management checklist emphasizes inspections of erosion and sediment control structures and documentation of impacts.

**Close-out Package**

The close-out package is presented to the AADC Construction Point of Contact by the contractor following the end of construction in the time frame specified in the contract. It provides the contractor with a mechanism for documenting that operations were performed in accordance with all environmental requirements, evidence of performance to AADC, and data input to the annual *Environmental Monitoring and Natural Resources Management Report*. The close-out package will include:

- Start-up and Construction Checklists.
- Verification of waste disposal shipping manifests.
- Verification of effectiveness of erosion and sediment control activities.
- Description of pollution prevention/waste minimization activities.
- Chemical inventory.
- All documentation required by supporting environmental management plans.

**Resource Protection Requirements**

The requirements and mitigation actions described in this section are drawn from the EA and the permits and related documents provided in Appendix H. The NRMP adheres to federal and state regulations applying to construction. The contractor is ultimately responsible for regulatory compliance but should use the AADC Construction Point of Contact as a resource to contact regulators if any questions arise.

**AIR RESOURCES**

Construction activities that may impact air quality include clearing land, excavation, operating heavy construction equipment and generators, and temporary operation of the concrete batch plant. The EA concluded that air quality impacts due to construction will be localized and short term. The requirements listed below reflect this conclusion.

**Temporary Concrete Batch Plant**: At a minimum, particulate controls are expected to include enclosure of conveyors, filters on storage bin vents, and use of water sprays.

**Dust Suppression**: Roads will be watered to suppress dust. The contractor is expected to exercise discretion and use dust suppression as needed.

**Construction Equipment**: Equipment will be fitted with fugitive dust controls. An inspection/maintenance program will be required to optimize engine performance and fuel efficiency.

**Diesel Generators**: Log the time in use on the construction checklist.

**Burning of Scrub**: The AADC Construction Point of Contact will be notified before open burning in case public concerns or complaints arise. The contractor is responsible for on-site
management of the burn in compliance with federal and state regulations.

Transportation Emissions: Contractors are encouraged to develop a shuttle or car-pool system between Kodiak and KLC to minimize traffic and subsequent emissions, noise, and dust disturbance.

WATER RESOURCES

Construction activities that may impact water resources include upgrading Pasagshak Road and installing in-ground electric and other utilities. If properly implemented, these activities should cause only slight impacts to water quality in the project area. (Erosion and sediment control measures are discussed later under the heading “Soil Resources Protection.”)

The contractor is responsible for the contents of the SPPP. Water quality in the KLC area will be protected during construction by erosion and sediment controls established in the NRMP and the Revegetation Plan (Appendix C). The controls indicated below are in addition to those outlined in the SPPP.

General: Methods must be implemented to filter or settle out suspended sediments from all construction-related wastewater prior to its direct or indirect discharge into any natural body of water to protect against water quality degradation.

Facility construction: KLC is permitted by the COE to fill 0.19 acres of wetlands during construction of buildings. AADC will provide close oversight during this period to ensure this limit is not exceeded. Mesh and silt fences should be used on all slopes as an additional preventative measure.

Toilet facilities: Portable toilets will be used to protect water quality. Collected sewage will be transported off site for disposal in Kodiak’s wastewater treatment plant. The contractor will arrange for sewage collection and disposal and for toilet maintenance.

Drinking water: Groundwater resources may not be available for drinking water during construction. The contractor is responsible for ensuring that potable drinking water is available at the site.

Process water: The contractor is responsible for sufficient water being available for operation of the temporary concrete batch plant and for use in fire protection. If it becomes necessary to use water from East Twin Lake, the pump intake will be fitted and maintained with a screened intake at all times. The effective screen opening will not exceed 0.04 inch, and the velocity at the water surface screen interface will not exceed 0.5 feet per second. Any discharge of process water must comply with federal and state laws. In accordance with the permit to appropriate state water, AADC or its contractors may take up to 3,450 gallons of water per day.

SOIL RESOURCES

GENERAL REQUIREMENTS

The Revegetation Plan (Appendix C) identifies measures the contractor will take to ensure land-clearing practices do not impact KLC’s natural resources beyond what was projected in the EA. Figure 3-1 shows the major Narrow Cape vegetation communities and their distribution. Once construction begins, the Revegetation Plan should be referred to for managing laydown areas and topsoil piles. After construction, the Revegetation Plan will provide direction on the disposition of excess topsoil and the selection of plants for revegetation.

Erosion and sediment control practices will be necessary during construction and utility installation. These practices are particularly important on slopes of 7 percent and greater, which may be encountered near the edge of soil-grading activities. The measures listed below are described in greater detail in the SPPP.

Erosion and Sediment Control: The following are examples of erosion and sediment control
Figure 3-1. Major vegetation communities of Narrow Cape.
measures that will be applied as necessary by the contractor.

- Vegetation adjacent to the KLC facility and related utility footprints will be protected carefully during site preparation; topsoil will be stockpiled; temporary gravel driveways will be built to enter and exit construction sites; and dust will be controlled.

- Scarified surfaces will be stabilized by temporary and permanent seeding treatments and by use of mulches and fabric and gravel blankets.

- Disturbances will be limited to areas essential to the project.

- Runoff control and conveyance measures (such as installation of diversions, dikes, grassed waterways, and temporary slope drains) will be used.

- Sediment barriers (such as straw bales, sediment fences, and rock barriers) will be used.

- Sediment traps and basins will be emplaced.

- Streams will be protected through use of temporary stream crossings and stream-bank stabilization, which will be done in coordination with ADFG where necessary.

- Soil and fill storage piles will be contoured and seeded or diked to control erosion.

- Mesh erosion devices will be used to protect slopes.

- Silt fences will be used at the toe of cut and fill slopes adjacent to wetlands.

- Roadway slope angles will be reduced by cut and fill to reduce erosion potential.

The specific control measures employed by the contractor must be documented on the construction checklist (Appendix G).

Storage of Topsoil: The storage, use, and management of excavated topsoil will be detailed in the SPPP (Appendix F) and the Revegetation Plan (Appendix C).

Laydown Areas: Laydown areas will be managed to minimize erosion and relandscaped (see Revegetation Plan, Appendix C).

Pasagshak Road: AADC has received a permit from COE (Appendix H) to discharge approximately 3,490 cubic yards of fill into 1.53 acres of wetlands and excavate approximately 1,131 cubic yards of wetlands substrates to improve the road. AADC is responsible for ensuring the COE permit is displayed as required. The AADC Construction Point of Contact will be on site during road construction to closely monitor the fill and excavation of wetlands.

The contractor is, at a minimum, expected to follow the general precautions listed below as the road is widened.

- A silt fence must be installed prior to construction on a line parallel to and within 5 feet of the proposed roadway toe slope within all areas of the wetlands containing standing water that is connected to any natural body of water. This structure must be installed and maintained to impede sediment- or silt-laden water from entering the water body. It must remain in place until the roadway side slope has been stabilized against erosion (Figure 3-2).

- Excavate and replace culverts and raise the roadbed with fill above the new, larger (24-inch) culverts.

- Cut and fill to reduce some grades; cut and fill to increase toe width and slope angles.

- Place mesh erosion protection on slopes and silt fences at the toes of fill slopes adjacent to wetlands.
Figure 3-2. Pasagshak Point Road typical cross section.
In addition, the following specific actions will be taken by the contractor.

- The culvert will be installed so that at least one-fifth of its diameter (i.e., 4.8 inches) at both the inlet and outlet is buried below the streambed elevation.

- The effective slope of the culvert at any point along its length must not exceed 1.0 percent.

- The culvert will be designed, installed, and maintained so that water velocity flow and any resulting drops in the water surface profile at any point within the culvert’s influence will not impede the efficient passage of the slowest swimming fish group that occurs at the location of the proposed culvert installation. In order to meet this velocity requirement, the culvert will be designed, installed, and maintained in such a manner that the mean barrel velocities do not exceed 9.0 feet per second during a mean annual flood with a two-day duration.

- The culverts will be installed on a firm substrate. If necessary to obtain a solid foundation, peat or other unsuitable material will be excavated to a solid substrate and the area backfilled with clean gravel prior to culvert placement.

- During installation, the streambed located downstream of the culvert will not be dewatered. Water from upstream of the road will be pumped, flumed, or otherwise moved in a steady flow of sufficient volume to maintain live fish occurring in downstream locations.

- Each bank cut, slope, fill, and exposed earth work attributable to culvert installation and road-building activities must be stabilized to prevent erosion both during and after project construction.

**NOISE CONTROL**

Noise generated during the 12 to 18 month KLC construction period will come from excavation and leveling, digging and pouring foundations, assembly of buildings, road and utility construction, and related traffic. As stated in the EA, noise from these activities is not expected to adversely impact birds and mammals in the KLC area. Therefore, no additional mitigation actions are needed beyond those required to meet the Occupational Safety and Health Administration noise limits.

**ECOLOGICAL RESOURCES**

**Vegetation Control:** Actions to mitigate construction impacts on vegetation were discussed above under “Soil Resource Protection” and “Water Resource Protection.”

**Birds:** The EA concluded that impacts to land birds will be limited to minor habitat loss (shrub thicket and spruce trees), and that marine birds will not be affected by construction activities. The EA explicitly concluded that impacts to birds from construction will not be appreciable. The contractor is, therefore, not required to take specific actions to mitigate impacts.

**Mammals:** The EA concluded that impacts on land mammal populations from noise and habitat loss resulting from construction activities will be small and localized. The contractor is, therefore, not required to take specific actions to mitigate impacts.

**Fish:** Freshwater and marine fish will not be affected by construction activities if the actions described under “Water Resource Protection” and “Soil Water Resource Protection” are taken. The contractor is, therefore, not required to take additional actions to mitigate impacts.

**Special Status:** No federally listed (endangered or threatened) species occur on the 3,100-acre KLC site; one special status species—the bald eagle—does.
Bald eagle: The Bald Eagle Protection Act prohibits anyone (except under permits authorized by the Secretary of the Interior) from “taking” bald eagles, their eggs, nests, or any part of these birds. The legislation further defines “taking” as “to pursue, shoot at, poison, wound, kill, capture, trap, kill, collect, molest, or disturb.” Eagles have historically nested on the KLC property, and it is imperative that the contractor respect nesting eagles and not disturb them. There is currently one active nest site on the bluffs at Narrow Cape, which is more than a mile from any potential ground-disturbing activities.

Any indication of disturbance to eagle nesting or nesting behavior (such as flushing) will be reported immediately to the AADC Construction Point of Contact. The disrupting activity will be halted until an assessment can be made by AADC and USFWS, the cognizant resource management agency.

RECREATION

Narrow Cape recreation activities should not be substantially impacted by KLC construction activities. The contractor will coordinate with ADOT and USCG whenever access to the site must be restricted. The contractor is not required to take any additional actions to mitigate impacts.

VISUAL RESOURCES

KLC construction will affect the visual resources of Narrow Cape by placing five new man-made structures in a relatively isolated area. Every effort will be made during and after construction to return areas adjacent to the structures and site access roads to their preconstruction condition. This will limit the visual impacts to the immediate vicinity of the structure. Implementation of erosion and sediment controls detailed in the SPPP will help mitigate the visual impact of construction activities on the environment.

CULTURAL RESOURCES

No cultural resources were identified in the footprint of construction (see the 1995 ENRI environmental baseline report). Two archaeological sites and a complex of World War II-era facilities are in the vicinity, but construction activities will have no impact on them. In the unlikely event new archaeological resources are discovered or even suspected during construction, the activity impacting the resource will be halted until a proper review has been completed. The contractor will immediately contact the AADC Construction Point of Contact, and AADC will work with the SHPO to evaluate the find and mitigate impacts.

Hazardous Materials Management

KLC construction will require the use of small quantities of hazardous materials common to construction activities. These include:

- Number 2 diesel fuel.
- Antifreeze.
- Hydraulic fluids.
- Lubricating oils.
- Welding gases.
- Paints, paint thinners, and adhesives.
- Batteries.
- Aerosol cans.
- Fluorescent lights.

A complete list of hazardous materials to be brought on site must be included in the start-up documentation. An inventory of these materials must be available at all times and should include use, quantity, location, and management procedures. The inventory should be updated upon completion of the operations to include treatment/disposal methods. This information will be included in the close-out package. The hazardous materials inventory may be as simple as the sample one provided in Table 3-2.

The contractor should contact the AADC Construction Point of Contact for assistance in identifying hazardous materials or to seek recommendations for their disposal.
Table 3-2. KLC construction phases hazardous materials inventory sample.

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Use</th>
<th>Estimated Quantity/Location</th>
<th>Management</th>
<th>Method of Treatment/Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antifreeze</td>
<td>Construction equipment</td>
<td>4 gal./ Material Staging Area</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td>Shipped to John Doe’s Energy Recovery Co.</td>
</tr>
<tr>
<td>Hydraulic fluid and lubrication oils</td>
<td>Construction equipment</td>
<td>5 gal./ Material Staging Area</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td>Shipped to John Doe’s Energy Recovery Co.</td>
</tr>
<tr>
<td>Welding gases*</td>
<td>Welding building structures</td>
<td>2 cylinders</td>
<td>Stored in approved containers</td>
<td>Contractors remove all cylinders</td>
</tr>
</tbody>
</table>

*Note that welding rods, while not a hazardous material, become a hazardous waste if thrown away. Welding rods should be recycled as scrap metal.

The following hazardous materials management techniques will be employed by the contractor to minimize (1) the amount of hazardous materials stored, (2) the threat of their accidental and unplanned release into the environment, and (3) the quantity of hazardous waste generated.

- Structures will be prefabricated by manufacturers and shipped for final assembly at the site using bolts to minimize the need for welding, painting, and other activities involving hazardous materials.

- Bulk hazardous materials will be stored in approved containers that meet industrial fire protection codes and required containment systems.

- Spill response materials (e.g., sorbents, drain covers, mops, brooms, shovels, drum repair materials and tools, warning signs and tapes, and personal protective equipment) will be provided by the contractor in appropriate quantities and stored on site for quick use in the event of an unplanned release.

- Hazardous materials will be inspected by the contractor before accepting a shipment (to validate container integrity, expiration date, etc.).

- Hazardous materials will be purchased by the contractor in appropriately sized containers (e.g., if the material is used by the can, it will be purchased by the can rather than in bulk-sized containers).

- Overpurchasing of hazardous materials will be avoided.

- Hazardous material containers will be appropriately labeled and stored.

At the completion of the construction period, contractors are responsible for safely removing hazardous materials from the site.

**Hazardous Waste Management**

AADC has authority to construct KLC as a Conditionally Exempt Small Quantity Generator (CESQG) under the Alaska Hazardous Waste Management Regulations (Alaska Administrative Code, Title 18-Environmental Conservation, Chapter 62). Designation as a CESQG allows KLC to produce no more than 220 pounds of hazardous waste per month. Using water (not a hazardous waste) as an example, 220 pounds of water would be slightly less than one-half of a 55-gallon drum (not including drum weight). If waste generation exceeds or is expected to exceed this level, the contractor must immediately notify the AADC Construction Point of Contact. The contractor is expected to be thoroughly familiar with the emergency response procedures.
described in the *Emergency Response Plan* (Appendix A).

Generated hazardous waste will be stored in a designated storage area near the point of generation until shipment. The contractor is responsible for:

- Hazardous waste identification.
- Proper container labeling.
- Safe waste storage.
- Maintaining a hazardous waste inventory.
- Employee training.
- Obtaining an EPA identification number if one is required for shipment.

The hazardous waste inventory must list each waste stream separately and may be as simple as the sample one provided in Table 3-3. The contractor is also responsible for determining the most environmentally sound treatment/disposal option, arranging for shipment, and shipping the waste off site prior to leaving the site. Since the identification and management of hazardous waste can be highly technical and the consequences of noncompliance costly, the contractor is expected to coordinate closely with the AADC Construction Point of Contact.

Federal law states that hazardous waste may be stored on site for up to 270 days if the waste must be transported 200 miles or more to a treatment, storage, or disposal facility. No permitted hazardous waste treatment or disposal facilities exist on Kodiak Island, so all hazardous waste will be shipped off site for appropriate treatment or disposal. Only licensed hazardous waste transporters may transport hazardous wastes off site. The contractor is responsible for preparing and signing proper shipping manifests.

**Nonhazardous Waste Management**

The volume of nonhazardous construction waste is expected to be small. As indicated previously, sewage generated during construction activities (e.g., from portable toilets) will be removed for appropriate off-site treatment and/or disposal.

The contractor is responsible for making arrangements for routine portable toilet maintenance.

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**Table 3-3.** KLC construction phases hazardous waste inventory sample.

<table>
<thead>
<tr>
<th>Hazardous Waste Stream</th>
<th>Use</th>
<th>Estimated Quantity</th>
<th>Management</th>
<th>Start Accumulation Date</th>
<th>Method of Treatment/Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent solvents (F001)</td>
<td>Painting clean-up</td>
<td>10 gal. solvent</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td></td>
<td>Picked up by John Doe’s Recycling of Alaska</td>
</tr>
<tr>
<td>Leftover paint (F001)</td>
<td>Painting buildings</td>
<td>10 gal. waste paint</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td></td>
<td>Picked up by John Doe’s Recycling of Alaska</td>
</tr>
<tr>
<td>Lead acid batteries (D008)</td>
<td>Construction equipment</td>
<td>2 lead acid batteries</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td></td>
<td>Picked up by John Doe’s Recycling of Alaska</td>
</tr>
</tbody>
</table>
Debris resulting from site preparation (such as tree stumps) will be burned, and the soil excavated during construction activities will be stockpiled for future on-site use.

Additional measures include:

- Litter prevention.
- Storage of food wastes in bear-proof containers until removal from the site.
- Containerization of all other wastes to prevent discharges of waste or leachate.
- Prohibiting workers from feeding wildlife.
- Keeping premises free of solid waste.
- Using BMPs for control and prevention of runoff and erosion.

With the exception of cleared vegetation (burned or unburned), solid waste may not be buried on site under any circumstances. Contractors are responsible for ensuring that transporters of solid waste contain the waste during transport, promptly remove any spilled waste, and clean the affected areas.
CHAPTER 4
NATURAL RESOURCE MANAGEMENT OPERATIONS PHASES

Introduction

This chapter provides the site-specific environmental requirements that AADC expects the launch contractor to follow before, during, and after a KLC launch. It describes AADC’s approach to project oversight, establishes a point of contact liaison, identifies supporting plans that contain environmental requirements and procedures, and includes mitigation actions to protect natural resources. Contractors are expected to train their managers and workers using the information provided in this section.

Oversight

AADC will appoint an AADC Launch Point of Contact and an alternate (including addresses and phone numbers) at least six weeks prior to a scheduled launch (Table 4-1). The AADC Launch Point of Contact is responsible for establishing an open, cooperative line of communication with the launch contractor and for ensuring the contractor is aware of and following all NRMP and supporting plan requirements. The AADC Launch Point of Contact will provide the launch contractor with all KLC-specific environmental plans and documents at least four weeks prior to site occupation by the launch contractor. This will allow sufficient time for the contractor to review the documents and train staff on environmental requirements.

The launch contractor is responsible for immediately reporting to the AADC Launch Point of Contact (1) any activity that deviates from requirements of the NRMP, work plans, or contractual agreements with AADC and (2) any changes in the project’s scope. The AADC Launch Point of Contact will determine what, if any, notifications need to be made to the permitting agencies.

The AADC Launch Point of Contact will oversee launch operations through:

- Routine phone calls to check on progress, answer questions, and clarify requirements and expectations.
- Scheduled on-site visits to check on progress.
- Unannounced inspections.
- Verification of compliance and plan implementation through checklists and the close-out package.

Effective implementation of this plan requires the launch contractor to assume the following responsibilities:

- Read and understand the NRMP and supporting plans.
- Maintain full compliance with state and federal regulations.
- Maintain routine contact with the AADC Launch Point of Contact.
- Employ pollution prevention and waste minimization practices.
- Use BMPs.
- Report nonroutine conditions.
- Complete pre-site occupancy and launch checklists and provide supporting documentation.
- Complete close-out package.
These requirements are in addition to specifications set out in launch-related contracts with AADC, environmental requirements contained in individual launch permits, a contractor’s internal procedures, or other launch requirements.

### Operating Permits

AADC has obtained the environmental permits necessary to operate KLC (see Table 1-1, page 1-7). The contractor is not required to obtain additional environmental permits for general site operations. However, launch contractors are responsible for obtaining individual launch licenses from AST for launches from KLC. Such licenses might contain environmental requirements that are not included in the NRMP.

If there is a change in project scope, AADC is responsible for contacting all cognizant permitting agencies and obtaining any necessary permit modifications. The permit requirements for general site operations are listed in this section, and copies of key permits and related documents are provided in Appendix H. The launch contractor is responsible for meeting all permit requirements and for immediately notifying the AADC Launch Point of Contact of any unexpected events such as impacts to wetlands, erosion and sediment control failures, hazardous materials spills, or accidents.

### Applicable Plans

In addition to following all permit requirements, the launch contractor is expected to be thoroughly familiar with those of the NRMP and the following KLC-specific plans:


The launch contractor will train its employees on the contents of these plans and work closely with the AADC Launch Point of Contact to ensure that all associated requirements are met.

### Pre-site Occupancy and Operations Documentation

Prior to site occupation, the launch contractor is expected to understand the requirements of the NRMP and the plans noted above. The contractor will provide pre-site occupancy and operations checklists to AADC. Once completed, they will provide verification that all requirements were met. The pre-site occupancy portion of the checklist will be completed and sent to the AADC Launch Point of Contact for review prior to the contractor’s arrival on site in accordance with time frames specified in the

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**Table 4-1.** KLC construction phases lines of accountability, required documents, and chronology.

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible Party</th>
<th>Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation and contractor notification of the AADC Point of Contact and Alternate</td>
<td>AADC Manager</td>
<td>Per contract, prior to launch contractor site occupancy</td>
</tr>
<tr>
<td>Contractor receives site environmental plans</td>
<td>AADC Point of Contact</td>
<td>Per contract, prior to site occupancy</td>
</tr>
<tr>
<td>Contractor submits pre-site occupancy information to AADC Point of Contact</td>
<td>Contractor</td>
<td>Per contract, prior to site occupancy</td>
</tr>
<tr>
<td>Complete Operations Checklists</td>
<td>Contractor</td>
<td>Throughout operations</td>
</tr>
<tr>
<td>Submit Close-out Package to AADC Point of Contact</td>
<td>Contractor</td>
<td>Per contract, following contractor leaving the site</td>
</tr>
</tbody>
</table>
contract. Examples of information required to complete the pre-site occupancy checklist are:

- Chemical inventory (including hazardous materials and petroleum products).
- Planned pollution prevention/waste minimization efforts.
- Training documentation.
- Waste management strategies.
- Specifics on environmental effects of transporting launch vehicle rocket components and launch and track payloads.
- Environmental requirements included in the individual launch permit obtained by the contractor.
- Precautions to be taken during hydrazine fueling activities.

In addition, the launch contractor is required to notify AADC of the transportation routes and modes (railway, highway, container ship, or airplane) to be used for launch vehicle rocket components, payloads and associated parts, and hardware. This notification will include describing the potential environmental impacts and identifying any hazardous materials (e.g., upper-stage motors and associated liquid propellants). AADC is responsible for notifying the proper authorities of such hazardous materials.

The operations checklists will document routine inspections required by this and related plans (such as tank inspections, checking erosion and sediment controls, and daily inspection of the Fuel Storage Shed), nonroutine occurrences (such as hazardous materials spills and leaks), and other observations relevant to the management of the site’s natural resources.

**Close-Out Package**

The close-out package should be presented to the AADC Launch Point of Contact by the launch contractor no later than two weeks following the end of a launch operation. The package provides the contractor with a mechanism to verify operations were performed in accordance with all environmental requirements and evidence of that performance to AADC. It also provides data for input to the annual *Environmental Monitoring and Natural Resources Management Report.*

The close-out package should include:

- Pre-site occupation and operations checklists.
- Verification of waste disposal, with copies of all shipping manifests.
- Verification of effectiveness of erosion and sediment control activities.
- Description of pollution prevention/waste minimization activities.
- Chemical inventory.
- Verification of compliance with environmental requirements included in individual launch permits.
- Documentation required by supporting environmental management plans.
- Site clean-up.
- Turnover of documentation to AADC.
- AADC approval of project completion.

**Facility Components**

Listed below are the facility components that could potentially affect the natural resources of the KLC area, should they fail to operate properly (Figure 4-1). Some are listed for awareness purposes only and do not require routine monitoring by launch contractors (e.g.,
Figure 4-1. KLC site layout.
transformer, septic tanks), while others require rigorous monitoring (e.g., fuel tanks) according to KLC-specific environmental plans such as the SPCC. This list does not include items brought on site by the launch contractor.

**LAUNCH CONTROL AND MANAGEMENT CENTER**

- One 200-kilowatt diesel generator.
- One transformer (non-PCB).
- One 9,500-gallon storage tank of Number 2 diesel fuel.
- One buried 3,000-gallon septic tank.

**PAYLOAD PROCESSING FACILITY**

- One fuel storage shed.
- One 500-kilowatt diesel generator.
- One 2,500-gallon storage tank for number 2 diesel fuel.
- One buried 1,250-gallon septic tank.
- One Water Treatment Building.

**INTEGRATION AND PROCESSING FACILITY**

- One 500-kilowatt diesel generator.
- One 2,500-gallon storage tank for diesel fuel.
- One 625-square foot, 6-foot-high mounded absorption bed (1,250-gallon buried septic tank).

**SPACECRAFT ASSEMBLIES TRANSFER FACILITY**

This facility does not include equipment that could affect the environment.

**LAUNCH PAD AND SERVICE STRUCTURE**

This facility does not include equipment that could affect the environment.

**WATER SUPPLY SYSTEM**

This system does not include equipment that could affect the environment.

**Resource Protection Requirements**

The requirements and mitigation actions described in this chapter are drawn from the EA and the permits provided in Appendix H. The NRMP covers all federal and state regulations likely to be needed during operations. The launch contractor is ultimately responsible for regulatory compliance and should use the AADC Launch Point of Contact as a resource to contact regulators if any questions arise.

**AIR RESOURCES**

Sources of gas and particulate air emissions resulting from KLC operations will include the rocket-motor exhaust plume emitted during launch, emissions from the diesel generators, and the possible occasional release of minor amounts of liquid propellant during handling and storage. The EA concluded that no adverse air quality impacts are expected due to rocket launch operations.

Hydrochlorofluorocarbons (CFCs): The contractor will identify any CFCs used in the prelaunch checklist. (This does not include CFCs in refrigeration equipment.) The contractor will monitor all CFC sources for leaks and promptly repair them in accordance with federal regulations.

Diesel Generators: The contractor will log the time in use of such generators on the operations checklist.
WATER RESOURCES

The primary source of water quality impacts during operations will be from the deposition of launch combustion products on nearby surface waters. As noted in the EA, atmospheric deposition of hydrogen chloride could produce small, transitory pH changes in local streams and lakes. Cumulative impacts on the water quality of area streams and lakes from this were deemed unlikely in the EA process. Water quality will be monitored to verify this conclusion (see Appendix B).

Toilet Facilities: The use of mounded septic systems and transportation of collected sewage off site for disposal will protect domestic sewage from leaking into the groundwater. AADC is responsible for monitoring and maintaining septic systems.

SOIL RESOURCES

The deposition of rocket motor combustion products is the operational activity with the highest potential to impact KLC area soils. However, the only product of concern is hydrochloric acid that, as indicated in the EA process, is not expected to produce long-term changes to soil pH. Sediments will be monitored to verify this conclusion (see Appendix B).

Erosion and Sediment Control: The SPPP (Appendix F) provides information on the management of runoff on KLC. Periodic inspections will be made of the facility and surrounding areas by a designee of AADC to check erosion and sediment control structures and to check for runoff impacts. These will be conducted to ensure that the permanent control measures undertaken during construction (e.g., culverts, ditches, and revegetation) retain their effectiveness.

NOISE CONTROL

The EA concluded that, given the infrequency and short duration (1 to 2 minutes) of audible sounds from launches, adverse public impacts from launch noise will be minimal. Sonic booms (a sound resembling thunder that results from the launch vehicle going faster than the speed of sound) will not occur over land.

ECOLOGICAL RESOURCES

Vegetation Control: Indirect effects on vegetation due to acid deposition and changes in soil chemistry were not predicted in the EA. The launch-pad flame duct was designed and located to minimize vegetation scorching. If it is necessary to replace plants damaged or destroyed by acid deposition, this will be done with acid-tolerant plants; indigenous acid-tolerant species will be used if available. If any obvious damage to vegetation is observed beyond the immediate launch pad area, this will be noted by the launch contractor on the appropriate checklist and brought to the attention of the AADC Launch Point of Contact. Major vegetation communities in relation to the four facilities on KLC are provided in Figure 4-2.

Birds: No long-term impacts to birds from launch-related noise and vehicle launch emissions were predicted in the EA process. However, AADC has agreed to monitor the effects of rocket launches on certain special status species (see below).

Mammals: The EA concluded that launch-related noise, sonic booms, and vehicle launch emissions will not have a substantial impact on land-based mammals. Sonic booms from vehicles should have no effect on marine mammals. However, AADC has agreed to monitor the effects of rocket launches on Steller sea lions, a special status species. For additional information on mammal monitoring see Appendix B.

Fish: Freshwater and marine fish will not be affected by KLC operation if the erosion and sedimentation controls established retain their effectiveness. The operations checklist directs the contractor to inspect existing erosion and sediment control structures periodically to ensure their continued effectiveness.
Figure 4-2. Major vegetation communities in relation to KLC buildings and Pasagshak Point Road.
**Special Status Species:** The effects of rocket motor noise on the Steller sea lion, Steller’s eider, bald eagle, and other marine-associated birds are to be monitored in accordance with the EA. This will include visual observation of startle effects and noise-signature recording. The startle-effects monitoring will be done using procedures found in the *Environmental Monitoring Plan* (Appendix B). Any deviations from the *Environmental Monitoring Plan* must be done in coordination with AADC and the cognizant management agency (NMFS for Steller sea lion and USFWS for the other special status species).

**RECREATION**

Recreation activities at Narrow Cape will not be substantially impacted by KLC operations. The site will be closed to the public for hour-long periods during payload transfers to the launch areas and for a full-day on launch days (up to nine per year). Hiking, shelling, bird and whale watching on Narrow Cape near the launch area and fishing at East Twin Lake will be curtailed on these days. AADC safety personnel will be responsible for restricting public access to the site during these times. No restrictions will be imposed by AADC on sport or commercial fishing vessels operating in the marine environment offshore of Narrow Cape.

**VISUAL RESOURCES**

The EA concluded that visual impacts will not be significant, and no mitigation is required.

**CULTURAL RESOURCES**

No cultural resources were identified on the KLC site in the EA. Two archaeological sites and a complex of World War II-era facilities are located in the vicinity of the site, but operational activities will not impact them. The contractor is, therefore, not required to take additional actions to mitigate impacts.

**Hazardous Materials Management**

The handling and use of hazardous and toxic materials at the launch site is expected to be limited during operations. Examples of hazardous materials that might be used are:

- Number 2 diesel fuel.
- Antifreeze.
- Hydraulic fluid.
- Welding gases.
- Paints, thinners, and adhesives.
- Batteries.
- Aerosol cans.
- Fluorescent lights.
- Hydrazine propellants.

A complete list of hazardous materials to be brought on site must be included in the prelaunch documentation. An inventory of these materials must be available at all times and should identify their use, quantity, location, and management. The inventory should be updated upon completion of the operations to include the selected treatment/disposal option. The inventory will be included in the close-out package described above. The hazardous materials inventory can be as simple as the sample one provided in Table 4-2.

The contractor should contact the AADC Launch Point of Contact for assistance in identifying hazardous materials or for disposal recommendations.

The following hazardous materials management techniques will be employed by the contractor to minimize (1) the amount of hazardous materials stored, (2) the threat of their accidental and unplanned release into the environment, and (3) the quantity of hazardous waste generated.

- Diesel fuel will be stored in above-ground storage tanks with secondary containment and inspected daily in accordance with provisions of the SPCC. The contractor is responsible for documenting these inspections.
Table 4-2. KLC operations phases hazardous materials inventory sample.

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Use</th>
<th>Estimated Quantity/ Location</th>
<th>Management</th>
<th>Method of Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antifreeze</td>
<td>Heavy equipment</td>
<td>4 gals./ Repair Shop</td>
<td>Stored on impervious surface with spill materials available</td>
<td>Shipped to John Doe’s Energy Recovery</td>
</tr>
<tr>
<td>Hydraulic fluid and lubrication oils</td>
<td>Heavy equipment</td>
<td>1.55 gal. drum/Repair Shop</td>
<td>Stored on impervious surface with spill materials available</td>
<td>Shipped to John Doe’s Energy Recovery</td>
</tr>
<tr>
<td>Welding gases</td>
<td>Welding building structures</td>
<td>2 cylinders/ Repair Shop</td>
<td>Welding of structures at a minimum due to pre-fabrication/ bolting</td>
<td>Removed from site by contractor</td>
</tr>
<tr>
<td>Number 2 diesel fuel</td>
<td>Fuel for emergency diesel generator</td>
<td>9,500/Launch Control Mgmt. Cntr. 2,500/Payload Proces. Fac. 2,500/Integra. &amp; Proces. Fac.</td>
<td>Stored in above ground storage tanks with secondary containment and inspected daily</td>
<td>Not scheduled to be removed from site</td>
</tr>
<tr>
<td>Paints, thinners, solvents, cleaning fluids, adhesives, lubricants, batteries, etc.</td>
<td>Groundkeeping services and maintenance activities on backup generators, heating and cooling system, communication system, etc.</td>
<td>Less than 1 gal. of each substance/ Mat. Cnrt. Bldg. Payload Proces.</td>
<td>Stored in approved containers that meet fire protection codes</td>
<td>Excess paints, thinners, solvents, and lubricants shipped to John Doe’s Energy Recovery; spent lead batteries shipped to John Doe’s Recyclers; unused materials removed by contractor</td>
</tr>
<tr>
<td>Hydrochlorofluorocarbons</td>
<td>Cooling and fire suppression</td>
<td>10 gallons/ Launch Cntrl. Mgmt. Cntr.</td>
<td>No venting of systems are planned</td>
<td>Not scheduled for removal from site</td>
</tr>
<tr>
<td>Solid rocket fuel</td>
<td>Fuel for launch vehicles</td>
<td>250 gal./ Launch Cntr.</td>
<td>Fuel brought to site sealed within rocket motor</td>
<td>Removed by contractor at the end of launch</td>
</tr>
<tr>
<td>Compressed gaseous helium and nitrogen</td>
<td>Evacuate atmospheric oxygen during transfer of propellants into payloads.</td>
<td>4 cylinders/ Payload Processing</td>
<td>Stored in approved containers</td>
<td>Removed from site by contractor</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>Wipe clean dust-sensitive payloads and for flushing liquid propellant from transfer carts</td>
<td>&lt; 10 gal./ Payload Proces.</td>
<td>Stored on impervious surface with spill materials available</td>
<td>Removed from site by contractor</td>
</tr>
<tr>
<td>Hydrazine propellants</td>
<td>Payload propellant for postlaunch steering</td>
<td>80 gal./Launch Cntr. Cntr.</td>
<td>Stored on impervious surface with spill materials available</td>
<td>Removed by contractor</td>
</tr>
<tr>
<td>H₂O₂ and Ca(OCl)₂</td>
<td>Neutralizing water mixed with aspirated propellant during payload fueling</td>
<td>200 gal./ Payload Proces.</td>
<td>Temporarily stored or transferred from specialized shipping containers by trained personnel</td>
<td>Removed by contractor</td>
</tr>
</tbody>
</table>
• Bulk hazardous materials will be stored in approved containers that meet industrial fire protection codes and required containment systems.

• Spill response materials (e.g., sorbents, drain covers, mops, brooms, shovels, drum repair materials and tools, warning signs and tapes, and personal protective equipment) will be provided by the contractor in appropriate quantities for quick use in the event of an unplanned release.

• Hazardous materials will be inspected by the contractor before accepting a shipment (to validate container integrity, expiration date, etc.).

• Hazardous materials will be purchased by the contractor in appropriately sized containers (e.g., if the material is used by the can, it will be purchased by the can rather than in bulk-sized containers).

• Overpurchasing of hazardous materials will be avoided.

• Hazardous material containers will be labeled appropriately.

At the completion of operations, the launch contractor is responsible for the safe removal and proper disposal of any unused amounts of hazardous materials.

Hazardous Waste Management

AADC has authority to operate KLC as a Small Quantity Generator (SQG) under the Alaska Hazardous Waste Management Regulations (Alaska Administrative Code, Title 18-Environmental Conservation, Chapter 62). Designation as an SQG allows KLC to produce no more than 2,220 pounds of hazardous waste per month. Using water (not a hazardous waste) as an example, 2,220 pounds of water would be slightly less than five drums per month (not including drum weight). If waste generation exceeds or is expected to exceed this level, the contractor must immediately notify the designated AADC Launch Point of Contact. The contractor is expected to be thoroughly familiar with the emergency response procedures described in the Emergency Response Plan (Appendix A), which will be posted in the Launch Control and Management Center.

Generated hazardous waste will be stored until shipment in a designated staging area near the point of generation. The contractor is responsible for:

• Hazardous waste identification.
• Proper container labeling.
• Safe waste storage.
• Maintaining a hazardous waste inventory.
• Monitoring the amount of hazardous waste generated.
• Employee training.

Hazardous waste generated will be stored until shipment in a designated central staging area near the Payload Processing Facility. The launch contractor is responsible for maintaining a hazardous waste inventory and monitoring the amount of hazardous waste generated. The hazardous waste inventory must list each waste stream separately, and it may be as simple as the sample one provided in Table 4-3. The contractor is also responsible for determining the most environmentally sound treatment or disposal option, arranging for shipment, signing the manifest, and actually shipping the waste prior to leaving the site.

Since the identification and management of hazardous waste can be highly technical and the consequences of noncompliance costly, the launch contractor is expected to coordinate closely with the AADC Launch Point of Contact. Federal law states that hazardous waste may be stored on site for up to 270 days if the waste must be transported 200 miles or more to a...
treatment, storage, or disposal facility. No permitted hazardous waste treatment or disposal facilities exist on Kodiak Island, so all hazardous waste will be shipped off site for appropriate treatment or disposal. Only licensed hazardous waste transporters may transport hazardous wastes off site. The launch contractor is responsible for preparing and signing the proper shipping manifests.

### Nonhazardous Waste Management

The volume of nonhazardous operations waste is expected to be small. Sewage from toilets, showers, and sinks will be collected in septic tanks at each facility. AADC is responsible for making arrangements to remove sewage wastes.

- The amount of nonrecyclable waste is expected to be small. Nonhazardous waste will be stored on site for no more than 30 days before transporting it to the Kodiak Island Borough’s permitted landfill facility. The contractor is responsible for contacting the landfill facility and making disposal arrangements. If for any reason the landfill cannot accept nonhazardous waste generated during KLC operations, the launch contractor will make arrangements to have it transported to the Alaska mainland for proper disposal. No waste can be buried on site under any circumstances. Call the AADC Launch Point of Contact for assistance.

#### Table 4-3. KLC operations phases hazardous waste inventory sample.

<table>
<thead>
<tr>
<th>Hazardous Waste</th>
<th>Use</th>
<th>Estimated Quantity</th>
<th>Management</th>
<th>Start Accumulation Date</th>
<th>Method of Disposal/Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent solvents (F001)</td>
<td>Maintenance, parts washing</td>
<td>10 gal.</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td></td>
<td>Picked up by John Doe’s Recycling of Alaska</td>
</tr>
<tr>
<td>Lead acid batteries (D008)</td>
<td>Heavy equipment</td>
<td>1 lead acid battery</td>
<td>Stored on impervious surface with spill materials available and removed when construction complete</td>
<td></td>
<td>Picked up by John Doe’s Recycling of Alaska</td>
</tr>
<tr>
<td>Diluted washdown water and isopropanol (F001)</td>
<td>Wash down from the transfer of liquid propellants into payloads</td>
<td>25 gal.</td>
<td>Removed for appropriate off-site disposal after each launch (expected rates of hazardous waste generation range from 91 to 1,020 kilograms [200 to 2,250 pounds] per year during operations)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On-site nonhazardous waste management practices will include:

- Storage of food wastes in bear-proof containers until removed from the site.
- Containerizing of waste to prevent discharges of waste or leachate.
- Litter prevention.
- Prohibiting workers from feeding wildlife.
- Keeping premises free of solid waste.
• Using BMPs for control and prevention of runoff and erosion.

Launch contractors are responsible for ensuring that transporters of solid waste contain it during transport, promptly remove any spilled waste, and clean the affected areas. Contractors are expected to verify that these practices were followed as part of the close-out package.

**Postlaunch Actions**

In the event of a catastrophic failure of a rocket motor, it is the launch contractor’s assigned responsibility to recover and dispose of debris in accordance with applicable law. AADC will provide security, routine maintenance, and groundkeeping services between KLC launches. In addition, AADC is responsible and committed to monitoring the natural resources on and around KLC (see Appendix B). The data collected during such monitoring will help to determine impacts, if any, of individual launches and allow for timely mitigation. They will also provide input to the annual *Environmental Monitoring and Natural Resources Management Report*.

AADC commits to the following activities after each launch.

• Scorched areas of the Launch Service Structure will be repainted. Preparatory to the next scheduled launch, AADC will undertake internal modification (if any) to support configuration of the next launch vehicle.

• AADC will review contractor logs to ensure the cumulative hourly use of diesel generators does not exceed 250 hours per year.

• The effectiveness of revegetation efforts will be evaluated after the first year, and if efforts prove unsuccessful, a plan will be devised and effected to rectify the problem.

• The KLC site (particularly the area around the launch pad) will be visually checked for vegetation damaged by acid deposition. If damage is identified, acid-tolerant native species will be used, if available, to re-establish ground cover.

• Although significant impacts to species of concern in the Narrow Cape area are not anticipated, AADC will coordinate with the natural resource management agencies for postlaunch monitoring as required.

• The area where the facility and supporting structures reside will be walked down to check for erosion and wetlands impacts.

• The culverts on Pasagshak Road will be checked to ensure they are maintained within the requirements of the Fish Habitat Permit (Appendix H).

• Postlaunch soil and water monitoring will be conducted, as required, to detect changes in the existing soil/water and the results will be sent to ADEC.
CHAPTER 5
DEMOBILIZATION

AADC holds a 30-year renewable interagency land management assignment from the Alaska Division of Land. Upon closure of the site, the first option for KLC facilities and equipment will be for other governmental purposes including being sold as government surplus. Beginning with the first launch, a portion of the fees from each launch will be set aside and a fund established for site maintenance and improvements. Money remaining in this fund following the KLC operational phase will be available for any necessary site restoration. AADC will return the land to the Alaska Division of Land in a condition acceptable to the Director of that agency; this may require rehabilitation.