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4.0 WASTE MANAGEMENT

4.1 INTRODUCTION

The Project will develop, establish and maintain a comprehensive Waste Management (WM) Program to implement the prevention, minimization, and the proper collection, handling, transport and disposal of the wastes produced by all phases of the project including construction, operation, maintenance and if necessary, decommissioning.

The Project will prepare a WM Plan that will serve as a guide to the implementation of the WM Program through coordination with the Technical and other Environmental Protection Programs through all phases of the Project. The Project will require the preparation of similar plans and procedures by contractors handling waste, oil, or other hazardous substances. In addition, compliance with approved procedures will be made a requirement of contractual agreements with Project contractors.

Project wastes will be managed separately under two broad categories:

- Liquid Waste Management
- Solid Waste Management

Oily and hazardous waste management is discussed separately under Section 5, Oil and Hazardous Substances Management. Wastes considered here do not include soil spoils or other unsuitable soil or rock material generated by construction. (addressed in TIS06 Spoil Disposal).

Liquid waste management encompasses two broad classes of materials, Point Source and Nonpoint Sources. Point Sources liquid discharges are generally regulated at the federal level under the U.S. Environmental Protection Agency Region 10 for Alaska (EPA) through the National Pollution Discharge Elimination System (NPDES) and at the state level by the ADEC. Typical point source discharges include:

- Wastewater Treatment Plant (WWTP) effluent
- Pipeline spread sanitary waste effluent
- Water Treatment Plant (WTP) effluent

Nonpoint source discharges have received considerable regulatory attention relative to the NPDES program over the past 20 years. In Alaska, nonpoint discharges (mostly storm water discharge related) may be generally classed into two broad categories:

- Construction Activity related
- Industrial Activity related

The construction phase of the Project may be considered under the existing Construction General Permit (CGP) issued by the EPA for Alaska. This would include issues such as pad runoff, construction phase activities and dewatering in excess of 500,000 gallons total outside a 3-mile radius of known or suspected contaminated areas. Material development (sand and gravel borrow sites) may also fall under the CGP. The EPA retains the authority to require a stand alone

Individual Permit separate from the CGP, this document is based on the Project falling under the existing CGP requirements.

The ADEC will require approval of the post construction phase Stormwater Pollution Prevention Plan (SWPPP) as part of the permitting process. The SWPPP defines the engineering (structural) and procedure (practices) the Project will adopt to control nonpoint source runoff.

Solid waste management regulations are promulgated from a federal level under the Resource Conservation and Recovery Act (RCRA). These RCRA Subtitle D standards establish minimum criteria for state of Alaska development and implementation State Solid Waste regulations under 18 AAC 60. The ADEC Solid Waste Regulations were developed to promote cost-effective, environmentally sound solid waste management and to ensure that landfills are designed, built, and operated to minimize health and safety threats, pollution, and nuisances. Solid waste typically includes:

- Garbage and refuse;
- Sludge from water or wastewater treatment plants;
- Non-hazardous industrial wastes; and
- Other discarded materials including solid, semi-solid, or contained gaseous materials.

Current solid waste management methods in the preferred order of preference are as follows:

- Source reduction (waste prevention)
- Recycling
- Combustion and energy recovery
- Landfilling

Solid waste management regulations essentially attempt to prevent the landfill disposal of substances that may pose a threat to human heath and the environment should these substances migrate beyond the confines of the solid water management unit and affect groundwater and other public resources. The management of solid waste dovetails into other programs such as provisions of the Clean air Act that regulates combustion activities, RCRA subtitle C that manage hazardous wastes segregated from a solid waste stream.

4.2 LIQUID WASTE CRITERIA

4.2.1 Federal Regulatory Criteria

In addition to the specific criteria related to liquid waste management that are discussed in these sections, other federal criteria that are generally applicable to the Project include:

- 18 CFR 380.12, “FERC’s Environmental Reports for Natural Gas Act Applications,” and FERC environmental policy guidelines thereunder;
- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.

- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized.

The Safe Drinking Water Act was developed to protect Underground Sources of Drinking Water (USDW). Section 144.3 of Title 40 of the Code of Federal Regulations defines a USDW as an aquifer or its portion that:

- Supplies any public water system; or
- Contains sufficient quantity of ground water to supply a public water system;
- Currently supplies drinking water for human consumption; or
- Contains fewer than 10,000 mg/l total dissolved solids; and is not an exempted aquifer.

Class V injection wells are typically shallow disposal systems that are used to transfer fluids to the subsurface. The EPA in Alaska regulates these injection wells through the Underground Injection Control (UIC) program. Class V wells may be a concern if these types of fluid disposal systems are used:

- Cesspools or other devices which have an open bottom or perforated sides excluding single family dwellings and non residential cesspools which have the capacity to serve less than 20 persons a day and receive solely sanitary wastes;
- Septic systems that inject effluent waste from a multiple dwelling, business establishment, community or regional business establishment septic tank;
- Drainage wells which drain surface fluid such as storm runoff into the subsurface;
- Dry wells used to inject wastes into the subsurface; and
- Waste disposal wells that receive or have received vehicle/equipment repair or maintenance activities.

Septic systems or drywells connected to floor drains may be subject to regulation under this standard. Generally Class V wells rely on gravity drainage. The EPA considers this type of well system to provide little or no protection against possible ground water contamination. Wells in this category specific to this project include:

- Drainage wells that can receive surface runoff contaminated with a variety of pollutants;
- Subsurface piping used in vehicle/equipment maintenance facilities that receive fluids from repair and maintenance, if such piping leaks.

All injection wells must be operated and closed in such a manner to prevent groundwater contamination above applicable drinking water standards or other accepted human health based limits. Class V injection wells are authorized by rule so no permit is required as long as the following two conditions are met:

- The injection well must be inventoried which requires submittal of a form to the UIC program including such items as owner/operator address, physical location of the injection well, type of fluid disposed, and number of injection wells used; and

- The injection well must be constructed, installed, operated, maintained and/or closed in a manner that protects groundwater quality.

The NPDES Permits Under The Clean Water Act Amendments of 1977, Public Law 95-217, provide the foundation for federal regulation of wastewater treatment and disposal. Section 301 of the Act requires that after July 1, 1977, a minimum of secondary treatment be achieved for discharges to navigable waters from publicly owned treatment works. Also, after that date the application of best practicable control technology is required for all other discharges to navigable waters. Section 402 of the Act requires that a NPDES permit be issued by the EPA or delegated state agencies for all direct discharges of wastewater to navigable waters. Section 404 of the Act authorizes the Corps of Engineers to issue a disposal permit for the discharge of dredge or spoil materials to specified areas in navigable waters. Section 401 of the Act requires State certification of all NPDES and 404 permits. The principal wastewater regulations issued pursuant to the Clean Water Act are:

- Water Quality Standards Clean Water Act § 303(c) (WQS) are rules or regulations that specify the desired water quality that a tribe wishes to achieve or maintain for surface waters (lakes, streams, rivers, wetlands, and other surface waters), protect the existing water quality from degradation, and govern how point and nonpoint discharges of pollutants are permitted in order to protect water quality. The United States Federal Clean Water Act (CWA) requires that states and authorized tribes adopt WQS to protect fish and other aquatic life (fishable goal) as well as humans who use the water for recreation, drink surface water, and eat aquatic life caught in surface waters (swimmable goal). Water quality standards consist of three required components:
- Designated uses are desired uses of the water specific to each water body. Designated uses can be based on how the water has actually been used since November 1975 (existing uses) or the designation can be based on a goal (goal use) that will be achieved in the future.
- Criteria are necessary to protect the uses. Water quality criteria describe the conditions necessary to support the designated uses. Criteria can be numeric limits for individual pollutants or narrative descriptions of desired conditions.
- The Antidegradation Policy is a policy to prevent or limit degradation of water quality based on three tiers of protection. The policy establishes procedures to follow when considering regulating an activity that might affect a particular water body.

A fourth optional component of WQS includes general policies that give the state or tribe the flexibility to adjust designated uses or criteria on a site-specific basis (e.g., mixing zone policy, variance policy, site-specific criteria procedures).

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects, infrastructure development, and conversion of wetlands to uplands. The basic premise of the program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. A permit review process controls regulated activities. An individual

permit is usually required for potentially significant impacts. However, the U. S. Army Corps of Engineers grants up-front general permits. These may be issued on a nationwide, regional, or state basis for particular categories of activities as a means to expedite the permitting process.

4.2.2 Agency Programs

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the issue of how to safely manage and dispose of the huge volumes of municipal and industrial waste generated nationwide. EPA's Office of Solid Waste (OSW) administers the RCRA program. Subtitles C and D of RCRA set forth the framework for EPA's comprehensive waste management program:

- RCRA Subtitle C establishes the regulatory structure for managing hazardous waste from the time it is generated until its ultimate disposal.
- RCRA Subtitle D establishes a system for managing solid (primarily non-hazardous) waste, such as household waste.
- RCRA liquid wastes, if generated, would be managed according to the Oil and Hazardous Substances Program (see Section 5).

The Clean Water Act (CWA) has five main elements:

- a system of minimum national effluent standards for each industry;
- water quality standards;
- a discharge permit program that translates these standards into enforceable limits;
- provisions for special problems such as toxic chemicals and oil spills; and
- a revolving construction loan program (formerly a grant program) for publicly-owned treatment works (POTWs).

The CWA requires the EPA to establish effluent limitations for the amounts of specific pollutants that may be discharged by municipal sewage plants and industrial facilities. The two-step approach to setting the standards includes:

- establishing a nationwide, base-level treatment through an assessment of what is technologically and economically achievable for a particular industry, and
- requiring more stringent levels of treatment for specific plants if necessary to achieve water quality objectives for the particular body of water into which that plant discharges.

For example, EPA sets limits based on water quality to control pollution in waters designated by the states for drinking, swimming, or fishing.

The primary method by which the act imposes limitations on pollutant discharges is the nationwide permit program established under Section 402 and referred to as the NPDES. Under the NPDES program any person responsible for the discharge of a pollutant or pollutants into any waters of the United States from any point source must apply for and obtain a permit.

The State Regulatory Criteria enabling legislation for the ADEC is cited in the Alaska Statutes Title 46. The ADEC, pursuant to the statutes, has the authorization to regulate water quality for the state and to promulgate regulations for wastewater collection, treatment and disposal. The ADEC is the prime regulatory agency for this project's environmental permits. ADEC is expected to have primacy over:

- water quality standards
- sanitary wastewater system design approval and discharge
- drinking water standards
- stormwater pollution prevention planning
- contaminated sites issues
- solid waste disposal

These items are addressed in detail in Sections 4 and 5 of this document. In addition the ADEC is expected to have primacy on issues such as:

- air quality
- food inspection
- community right-to-know

These and other ADEC primacy items are addressed under other sections of this document.

Alaska Department of Fish and Game Regulations pertaining to the protection of water containing anadromous fish are contained in Title 16 of the Alaska Statutes. It is stated in AS 16.05.870 that the Commissioner of the Alaska Department of Fish and Game (ADF&G) has the discretion to require the submittal of plans and specifications for fish and game protection, when construction activities are proposed in streams identified by ADF&G as anadromous waters. The potential for construction to pollute anadromous water is one of several effects that the statute directs ADF&G to consider in a Title 16 review. This is the Title 16 requirement that pertains to Liquid Waste Management.

Alaska Department of Labor Occupational Safety and Health Standards promulgated by the Alaska Department of Labor are cited in 8 AAC 02.0. These standards are applicable to places of employment and labor camps that house worksite residents provided by an employer. The standards specify the sanitary facilities and conditions that must be provided, including the number of toilet and lavatory facilities per capita. Nuisance conditions and sewage disposal methods that endanger the health of employees are prohibited. Worker Right-to-Know regulations specify the need for Material Safety Data Sheets, specific training and personal protection for workers using or exposed to hazardous substances.

Regulations for the treatment and disposal of wastewater are contained in 18 AAC 72. As evidenced in the preceding subsections, the EPA and the ADEC are the agencies most directly engaged in permitting wastewater discharges. The EPA administers permits for direct discharges to navigable water. The ADEC's permitting and approval authority extends to a broader category of discharge situations that includes land disposal, and can be manifested in a variety of agency actions not simply limited to singular wastewater permits. The various aspects of EPA and ADEC wastewater permitting are indicated in Table 3-2, together with brief notes as to the type

of information required of applicants, and permit lead times. The Project's approach to wastewater permitting is based on this range of agency actions, and assumes that the agencies will delegate to the field the authority to issue final approvals for the majority of small-scale permit situations.

The Water and Wastewater Operator Certification and Training (18 AAC 74) requirements for operator training and certification are detailed in Section 18 AAC 74. Section 18 AAC 74.010 states that all water supply and wastewater systems, whether publicly or privately owned, which serve 100 or more service connections or are used or intended for use by 500 or more persons per day, must be under the supervision of an operator certified by ADEC. A classification rating system for water and wastewater treatment systems is presented; in general, the larger or more complex the system, the higher the grade of operator required.

In the application for Department Approval for Wastewater Treatment and Disposal (18 AAC 72.600), the ADEC will require review and approval of a project-wide Stormwater Pollution Prevention Plan (SWPPP) as authorized under federal statues (FR Vol. 63, No. 31). The SWPPP will detail project and element specific structural controls and management practices to control nonpoint source stormwater runoff during construction and the post-construction methods for long-term nonpoint source sediment runoff control.

For Water Quality Standards (18 AAC 70), the ADEC has statutory authority for assuring compliance with water quality standards under 18 AAC 70 for this project. Drinking Water Standards (18AAC 80) and Section 18 AAC 80.020 states that no person may cause pollution or contamination to enter a public water system. This section states various requirements for water wells, including minimum horizontal distances to be maintained between public water systems and wastewater collection, treatment, and disposal facilities. An isolation distance of 200 feet will be required for source protection of water supply wells and infiltration galleries.

A primary concern for protection of drinking water sources is contamination of aquifers. The primary area of concern is through underground injection as discussed above. In Alaska, there is no "Ground Water Protection Act" and ground water is subject to regulations from several different ADEC media programs (e.g. water, air, solid waste, storage tanks, pesticides, etc.). A major goal of a Comprehensive State Ground Water Protection Plan is to determine what aspects of ground water are subject to regulation under what environmental media program. The following is a description of the major Alaska regulations that address ground water quality:

The proposed 18 AAC 70.007(f) excludes cleanups of oil and hazardous substances under Article 3 of Chapter 75 and cleanups of storage tanks under Chapter 78 from the water quality standards for ground waters. Both sets of regulations use the ground water cleanup standards of the proposed 18 AAC 75.340 Table B rather than the numerical water quality standards for cleanups of oil and hazardous substances. The ground water cleanup standards differ from the water quality standards in that they set the level to which contaminated ground waters must be cleaned up, whereas the water quality standards set the level beyond which ground water quality cannot be degraded. In many instances the levels are the same, but not in all.

The anti-degradation policy (18 AAC 70.015) in essence says that existing water quality is to be maintained whenever possible and prudent. Under 18 AAC 70.050(a)(2) all ground waters in Alaska are protected for use as fresh water-water supply. 18 AAC 70.020(a) lists the designated uses of fresh water-water supply as:

- drinking, culinary, and food processing;
- agriculture, including irrigation and stock watering;
- aquaculture; and
- industrial.

4.2.3 Liquid Waste Design Criteria

As defined in Section 18 AAC 70.110(33) of the ADEC Regulations, point sources are any discernible, confined and discrete conveyance (pipe, ditch, channel, etc.) from which pollutants are or may be discharged. Nonpoint sources (such as stormwater snowmelt runoff) are defined as any source of pollution other than a point source, [18 AAC 70.110(30)] and are typically intermittent and generated in a non-discrete fashion. Both point and nonpoint sources of liquid wastes are listed in Table 4-1. Liquid waste quantities and quality characterizations are summarized in Tables 4-2 and 4-3, respectively.

4.2.4 Point Source Discharges

The sewage from the construction camp will be domestic wastewater generated from food processing, personal hygiene activities, laundry, and facility maintenance. The high percentage of shower and laundry wastewater, together with short residence times in heat-traced collection lines, will result in high influent wastewater temperatures. Grease traps will be provided in the kitchens, where they are most effective. However, influent wastewater will still contain oil and grease. Sludge from operation of wastewater treatment plants at pipeline construction camps will be disposed of in one of the following ways:

- Stabilized with lime, placed on drying beds and subsequently landfilled; or
- Dewatered either mechanically or chemically and landfilled or incinerated.
- Estimated quantities and characteristics of sanitary wastewater and steam cleaning are shown in Table 4-4.

4.2.5 Pipeline Construction Spreads

It is estimated that 85 to 90 percent of a construction camp's population will require field toilet facilities during working hours. This includes the workers at material sites (10-15 workers per site) and pipe storage yards (7-20 workers per site, plus up to 40 workers at the Fairbanks pipe storage yard). Three types of field toilet facilities are under consideration to serve pipeline construction personnel.

- incinerator toilets
- chemical toilets, and
- self-contained sanitary module

Incinerator toilets are under consideration for instances of small groups working at remote stationary locations - for example, pipe storage yard. Chemical toilets serviced by vacuum trucks

are likely to predominate among the types of field units in service. The self-contained sanitary module consists of trailers with heated insulated water and wastewater storage tanks.

Incinerator toilets accomplish final disposal within the unit, with the exception of incinerator inert ash, which must be taken to solid waste landfills. Chemical toilets and self-contained sanitary modules serve as collection apparatus for wastewater treatment and disposal that occurs in facilities located elsewhere. Accordingly, it is important to correctly estimate the quantity and quality characteristics of wastewater to be removed from these two types of units so that the transfer equipment and the treatment and disposal facilities to which the wastes are to be taken can reliably accommodate them. The daily per capita flow basis to be used for chemical and self-contained sanitary modules is presented in Table 4-4.

At 0.38 gpcd and for illustrative purposes assuming 70 percent of the residents of a 1,000-man camp spent their working hours along the right-of-way, the daily generation of chemical toilet waste from that camps work force would be on the order of 270 gallons. Where self-contained sanitary modules are used the flow generation would be expected to increase by a multiple between 3 and 7.5.

In addition to being high in organic strength and solids, chemical toilet wastes may contain bateriostats to inhibit decomposition, surfactants for tank cleaning and waste consolidation, as well as dyes and masking agents to limit offensive odors.

Chemicals used in these field sanitary systems are biodegradable and, when properly introduced, are compatible with biological treatment.

4.2.6 Permanent Facilities

4.2.6.1 Compressor Stations

Point source liquid waste generated at compressor stations will include sewage (from vacuum, low volume flush toilets, urinals, showers, wash basins, and sinks), vehicle wash water and steam cleaning effluent at the stations designated to be maintenance centers and discharges from dewatering fuel containment areas. The sewage will be of greater strength than that generated at construction camps and lesser flow per capita. The characteristics of the other wastewaters are expected to be comparable to their construction camp counterparts in all respects except flow.

4.2.6.2 Metering Stations

The proposed metering station at the Canadian Border may not be manned, but a field toilet(s) of a type yet to be determined will be provided for the use of maintenance personnel occasionally on site.

A full-time office staff will be employed at Headquarters in Fairbanks. This staff will generate wastewater to the Fairbanks sewer system at an estimated rate of 15 gpcd, with a Biochemical Oxygen Demand (BOD5) of about 250 mg/1, and a suspended solids concentration of about 300 mg/1.

4.2.7 Pipeline Hydrostatic Testing

Hydrostatic testing of the pipeline will be in accordance with procedures in a separate hydrostatic test plan. Results of an extensive study conducted on gas pipeline hydrostatic test water effluents have shown that the hydrostatic test water from pipelines may in general contain high Chemical Oxygen Demand (COD) and iron concentrations. However, it was noted that neither of these parameters should pose a problem for disposal of testing water from new pipelines, particularly if the line has been internally coated. In such cases, the COD of the used hydrostatic test water was found to be about 20 ppm, which approximates the COD of the test source water. Similarly, in new lines 75 percent of tests for iron have shown an average concentration of less than 5 ppm. Dissolved oxygen content of the test water discharge should not be measurably different from that of the source water. Temperature of the effluent may vary from the temperature of the source water.

Suspended matter and coarse particulates may be present in minimal concentrations in the hydrostatic test water effluent. This material will largely be made up of construction debris, and should be rather inert.

Quantities of hydrostatic test water requiring disposal are not accurately predictable at this time. Test sections may vary in length from one mile to twenty miles, which represent test water disposal quantities of from 2,000,000 to 10,000,000 gallons. An average test section will be five to ten miles in length, based on 48 to 52-inch diameter pipeline.

Depending upon final engineering design, after hydrostatic test water has been removed from a section of line, a slug of hygroscopic fluid may be passed through the section to take up any residual water. This slug may be on the order of a few hundred gallons of fluid per mile of pipeline, and will be contained between two "pigs". A commonly used drying agent is methanol (CH3OH), an alcohol with a boiling point of 65°C. During the final phase of construction of a natural gas pipeline in the Lower 48, a 99 percent concentration of methanol solution was introduced into the completed pipeline in segments and in varying quantities up to 5,000 gallons. As a result of high evaporative losses in the line, the quantity of methanol actually reaching the end of the segment being dried was minimal, typically ranging from less than 2 percent to 50 percent or more. If the methanol captured at the end of the test segment was of sufficient concentration (generally greater than 30 percent) it may be reused in subsequent drying operations. Otherwise, the solution was transferred from the pipeline into tanker trucks and hauled to a reclamation facility.

This experience is considered to be representative of the manner in which hygroscopic fluid would be used for the Alaska segment; except that it is yet to be determined that a reconstitution facility will be available in Alaska. Should this alternative not be available, used methanol will be transported from the field to an approved disposal facility. Methanol is designated in 49 CFR 172 as hazardous material, subject to Federal DOT regulations on labeling, packaging, transport and record keeping. See Section 5.0 Oil and Hazardous Substances for reference to applicable DOT hazardous material regulations.

Methanol in concentrated form is also on the EPA lists of hazardous wastes, due to its ignitability characteristics (40 CFR 261-262). However, methanol diluted by water taken up from the pipeline may not exhibit the low flash point (60°C) behavior established in the regulations as an ignitability criterion. If the spent drying agent is found to be a hazardous waste, the handling,

transport, and disposal must comply with 40 CFR 262 (Standards Applicable to Hazardous Waste) and 40 CFR 263 (Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities).

If methanol is determined to meet the threshold requirements for hazardous waste and it cannot be handled through a local reclamation facility, it will require manifest and transport to permitted hazardous waste disposal facilities outside Alaska. In any event, the status and intended method of disposal for spent methanol will be closely coordinated with the EPA and ADEC.

Dewatering activities are expected along portions of the Project for pipe trench excavation, general foundation excavation and at isolated areas within material processing sites. Dewatering rates and volumes are expected to be highly variable in terms of location and time. Construction phase dewatering is expected to be covered under the Construction General Permit or, if necessary, a project specific Individual Permit for this project, except for dewatering within a 3-mile radius of known or suspect contaminated sites, which will require special hydrogeologic and geo-environmental assessments prior to commencing dewatering actions.

Fuel containment area dewatering is expected to be a seasonal maintenance issue for removal of snow and ice melt and stormwater from fuel containment dikes. Water from fuel dikes is expected to have either free of dissolved refined petroleum hydrocarbons or as such will be subject to specific transfer, treatment and discharge requirements.

The construction camps will use a variety of cleaning agents, detergents and disinfectants to maintain camp sanitary conditions and assure food preparation zones meet regulatory compliance. Spent cleansing agents will be collected and treated in the camp wastewater treatment system. Final selection of cleansing agents will be conducted to reduce wastewater treatment system loading while maintaining camp sanitary conditions.

EPA's Construction General Permit (CGP) is valid in the Pacific Northwest where EPA-Region 10 is the NPDES-permitting authority. This includes all areas of Idaho and Alaska; all tribal lands in Oregon; and all federal and tribal lands in Washington. The CGP for Alaska expires November 30, 2003 (Permit Number 9940-DB002). The CGP authorizes storm water discharges from construction activities that disturb 5 or more acres of waters of the United States. The goal of this permit is to prevent soil and other pollutants from moving offsite during construction; after construction has ended; the goal is to stabilize the site with vegetation and other permanent measures. This permit generally applies to all types of construction activity as described below.

The CGP is required prior to any grading, clearing, excavation, or other earth moving activities planned for your construction project. Application for coverage under EPA's Construction General Permit is required by the owner/operator of any construction activity that will:

disturb five or more acres of land, (or will disturb less than five acres, but is part of a larger common plan of development or sale that in total is five acres or greater);

- potentially discharge storm water runoff from the construction site into surface waters of the United States, or to a municipal separate storm water sewer system.

The Owner/Operator of the construction site must apply for coverage under the permit. An owner/operator" is defined as having:

- operational control over construction project plans and specifications, including the ability to make modifications to those plans and specifications;

- day-to-day operational controls over those activities at a project that are necessary to ensure compliance with the storm water pollution prevention plan for the site or other permit conditions.

Stormwater runoff quantities from facilities pads are directly related to precipitation intensity and duration. As previously indicated, average annual precipitation varies from 5.4 to 14.5 inches along the Alaska Segment. Stormwater runoff quality will vary widely depending on a variety of factors, including precipitation intensity and duration, the materials used to construct the pad, site grading and the activities occurring in various sectors of the pad. Inert suspended solids and hydrocarbons may be present in the runoff from areas subjected to vehicular traffic or where equipment maintenance occurs.

This project is expected to fall under Phase I SWPPP protocols and as such a range of SWPPP controls are anticipated, including structural and procedural methods. SWPPP are not considered as part of this submittal, but several key design issues are viewed as important such as critical rainfall events (2-hour, 2-year design event). Owning to the size of this project, SWPPP design events of this level of detail will be addressed under subsequent documents once area and site specific construction and permanent phase operations are finalized.

4.2.8 Dewatering Activities

The following project activities are anticipated to involve some degree of dewatering effort:

general construction dewatering, including pipeline ditch dewatering - compressor station excavation dewatering - bridge abutment and pier construction dewatering - pipeline valve excavation dewatering - settling basin dewatering - pit dewatering at material sites - dewatering of harmed enclosures - fuel containment facilities.

The rate of anticipated flow ranges of groundwater into an excavation is a function of both local soil conditions and the hydrostatic head of the groundwater, and is expected to show extreme variation along the pipeline corridor. Rates of pumpage from pipe ditches in high groundwater areas can be expected to be normally less than 5-gpm per lineal foot of trench, but may occasionally exceed 25-gpm per lineal foot.

The rate of flow of surface water is a function of rainfall intensity and duration, and snowfall accumulation and melt rate. Rate of pumpage from the pipeline ditch due to surface water inflow will vary widely but in most cases can be controlled through effective erosion control and upslope drainage structures are in keeping water out of the ditch. The major emphasis will be to intercept and divert surface water flows away from the pipeline ditch. Dewatering low flow rates generated at other construction operations requiring excavation, such as concrete bridge abutment and pier construction will also vary widely depending on local conditions. An important element of discharge control is the use of silt filtration techniques at the pump intakes, e.g. sand packs.

Since virtually all of the ancillary facilities (camps, access roads, workpads, etc.) involve overlay construction, these areas of the Project are not anticipated to involve dewatering operations, except in isolated instances involving exceptional site conditions. Standard culvert placement and buried pipeline stream crossing construction are not anticipated to require excavation dewatering.

Pit dewatering may be required at some of the material sites, where pits are excavated using conventional excavating equipment. In order to dewater a material site, a contractor might be expected to pump up to 10,000 gpm. If pumping at a rate greater than 10,000 gpm is required, the gravel excavation would in all likelihood be performed by a dragline/bailing operation. In such cases, no pumping of the pit would be required.

It is necessary to remove water or snow and ice impounded within fuel containment structures because significant amounts can reduce the intended capacity of the enclosure to retain fuel spills, interfere with normal operation of the facility, and later cause detrimental ice buildup around the base of tanks or bladders, pipe, and valving. Fuel containment structures generally require dewatering at least two times per year, after breakup to remove snowmelt, and again in early fall to remove water accumulated from seasonal rainstorms. The average annual precipitation in the pipeline corridor ranges from 5.4 to 14.5 inches. The local precipitation, less evaporation, would approximate the depth of water to be removed from a given berm enclosure and when factored by the area enclosed yields total volume.

4.2.8.1 Estimated Frequency and Duration of Discharges

Dewatering of work sites will generally be required during the 4-5 month summer construction season, but may extend into winter construction where excavation is required below seasonal frost (e.g. concrete bridge abutment construction).

The pipeline ditch may normally be open for a period of up to two weeks at any one location. Applicable erosion control measures will be required under the Stormwater Pollution Prevention Plan (SWPPP). In flat terrain, dewatering may only be required at pipe tie-ins, which are expected to occur on the average of event per mile. In rolling terrain, dewatering may be required at low points along the ditch length. Areas known to have high groundwater conditions may be scheduled for months when ambient freezing temperatures can be expected to avoid ditch slope stability problems, and thus may reduce dewatering volumes and/or rates.

Excavation required for foundation and station piping at permanent facilities is anticipated to be open from several days to two weeks. Normally, dewatering would be required only during the actual erection of forms, placement of concrete, or placement of yard piping.

Dewatering required for concrete bridge abutment and pier construction is anticipated only at larger proposed river crossings, and for a period of approximately one month during construction. Pipeline aerial crossings of small streams are being considered where buried pipeline crossing is not feasible. Crossings of small streams are not anticipated to be a significant source of dewatering discharges.

Timber bridges may be constructed for some streams to accommodate construction traffic. This type of bridge requires little excavation, and no dewatering. Preliminary estimates are for placement of mainline valves. Excavation of valves will be several feet deeper than the pipeline ditch, and may be open during summer construction for a period of up to three weeks. To facilitate installation, scheduling may be adjusted to minimize dewatering requirements.

If dewatering is required at material sites, pumping is anticipated to occur during material extraction. The frequency and duration under which fuel storage containment structures would have to be dewatered are discussed in the previous subsection.

4.2.8.2 Chemical/Physical Water Quality Characteristics

In most instances, the water quality of dewatering discharges from construction activity is not expected to differ significantly from local background groundwater or surface water quality except for sediment, turbidity, color, and temperature. This of course may not hold true for dewatering of fuel containment structures if oil or fuel sheens are present. In some cases, water from excavations may have a high biochemical oxygen demand (BOD) attributable to accumulated biomass or organic debris. This and any other isolated effects must be considered when evaluating the various methods and procedures for disposal of the water. All of the "raw" wastewaters generated from general construction and material site dewatering operations are expected to be of roughly the same generic water quality, i.e., "silty." Chemical characteristics of such discharges are expected to be as shown in Table 4-5.

Camp Pad Stormwater Runoff. Construction camp pad stormwater runoff is expected to be either sheet flow (heavy rainfall event) or leaching at pad fill edges from infiltration. Accumulated snow will be removed mechanically and stockpiled in designated areas. Sheet flow runoff from construction pads is expected to be considered a SWPPP item and as such will be controlled with structural means including silt fencing, vegetative buffers and routine pad maintenance such as grading to control flow direction and eliminate erosion.

Snow Disposal Areas. Snow disposal from construction camps will be stockpiled in designated areas and allowed to thaw during warmer temperature periods. Thaw volumes and rates are considered moderate relative to dewatering and structural controls such as vegetative buffers, settling basins and controlled drainage are considered the preferred structural controls. Snow disposal area discharge is expected to be included under the Project specific SWPPP. Snow disposal areas are anticipated to have a moderate volume of solid wastes after thaw that will require collection and treatment through incineration or disposal in a landfill as conventional solid wastes.

Shops and Vehicle Maintenance Areas. Equipment maintenance areas are anticipated at each construction camp. Although final facility layout is not complete, equipment shops are expected to have gravel fill pads and petroleum liners under active shop building footprints. Snow removal management will be a continual operation at these facilities with snow stockpiled in designated disposal areas. Stormwater from shop structures is anticipated and will be controlled with structural measures such as vegetative buffers and controlled drainage. These structural controls will be detailed in a project specific SWPPP.

Vehicle and Equipment Washing Areas. Vehicle and equipment washing will be performed inside the equipment maintenance shop during construction and operation. Wastewater is expected to contain small amounts of oil and solids that will be collected in a sump and separated. Oily waste will be disposed of in accordance with Section 5. Water may be discharged to the pad or may be disposed of in the same manner as the oily waste. Additionally, vehicle and equipment washing would occur at other remote locations such as material sites, storage yards, compressor stations, and staging areas.

Ice-rich Spoil Disposal Meltwater. Ice-rich spoil disposal meltwater is expected to require discharge control under nonpoint source or SWPPP practices. Site-specific controls will be required and are expected to be included under the SWPPP. However, general practices such as designated stockpile areas, vegetative buffer runoff and settling basin are considered viable

structural controls. Since ice thaw is a relatively low volume, low discharge rate activity relative to dewatering and stormwater events, structural controls are considered the preferred technique for effluent control.

Gravel Extraction and Processing Areas. Execution contractors are anticipated to use from one to ten mineral material wet-processing locations per section to produce general aggregate and concrete aggregate. These operations will typically be located where a source of water and suitable material for processing is available.

Process water will be discharged to a recycling pond or a settling pond. The primary purpose of recycling ponds is to ensure an adequate supply of process water. Where a recycling pond is used it will be sized to provide approximately two hours of detention time, and storage of settled sediment. It is estimated that five percent of the process flow using a recycling pond can be lost as a result of wetting, spillage, and evaporation. Losses will be replenished by infiltration of groundwater into the recycling pond and/or supplying make-up water in an approved manner.

When a settling pond is used water will be withdrawn from an adequate available source and, after use, diverted to the pond if additional treatment is needed before discharge. The primary purpose of the settling pond is to contain the washed fines. No discharge of process water to an area other than the recycling or settling pond is anticipated under normal wet-processing operations. Process flows for a large plant will typically be in the 2,000-3,000 gpm range. At the completion of wet-processing operations, discharge of the clarified recycling pond water at rates compatible with applicable erosion control methods may be required prior to and/or during covering of settled sediments.

Mineral material wet processing is an open-air operation, and is therefore limited to 4-5 months of the year. Actual washing operations will typically run one shift/day for approximately 20 to 30 days at a specific site. Discharge of clarified settling pond water to facilitate backfilling will occur if required only after material processing is complete.

Permanent Facilities and Post-Construction Stormwater Management. The project specific SWPPP will define stormwater control measures for permanent and post-construction activities. Control measures are expected to include structural controls (energy dissipation systems) and extensive revegetation.

4.2.9 Local Codes and Ordinances

The primary local codes and ordinances are expected to be:

- City of Fairbanks
- Fairbanks North Star Borough
- North Slope Borough
- Delta Junction

With respect to waste management, solid waste management is expected to be the most important area of concern. Solid waste management issues relative to landfill and incineration are discussed under Solid Waste of this section and references under Section 5.

4.3 SOLID WASTE CRITERIA

Criteria pertaining to solid waste management have been developed in accordance with federal, state, and local regulatory requirements. The following sections (4.4.1 through 4.4.3) discuss applicable statutes, regulations, and ordinances and other requirements.

4.3.1 Federal Regulatory Criteria

In addition to the specific criteria related to solid waste management that are discussed in these sections, other federal criteria that are generally applicable to the Project include:

- 18 CFR 380.12, “FERC’s Environmental Reports for Natural Gas Act Applications,” and FERC environmental policy guidelines thereunder;
- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized.

The Solid Waste Disposal Act of 1965 (PL 89-272), the Resource Recovery Act of 1970 (PL 91-512), and the Resource Conservation and Recovery Act of 1976 (PL 94-580) form a body of federal statutes applicable to solid waste management. Under the authority of both the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, and Section 405 of the Clean Water Act, the EPA issued "Solid Waste Disposal Facility Criteria" (40 CFR Part 258) on October 9, 1991. These regulations revise the "Criteria for Classification of Solid Waste Disposal Facilities and Practices," found in 40 CFR Part 257. Part 258 was established to provide minimum national criteria for all solid waste landfills that are not regulated under Subtitle C of RCRA, and that:

- receive municipal solid waste; or
- co-dispose sewage sludge with municipal solid waste; or
- accept non-hazardous municipal waste combustion ash.

Part 257 remains in effect for all other non-hazardous solid waste facilities and practices.

Table 4-6 lists the principal solid waste regulations that ensued from the aforementioned federal legislation and are applicable to construction and operation of the Alaska segment. A summary of applicable portions of the RCRA hazardous waste regulations are provided in Section 5, Oil and Hazardous Substances.

4.3.2 State Regulatory Criteria

The authority of the ADEC to regulate solid waste is established under Title 46, Chapter 03 of the Alaska Statutes. Title 46, Chapter 06 of the Alaska Statutes establishes ADECs authority pertaining to recycling and reduction of litter. The ADEC Solid Waste Management Regulations are published under Title 18, Chapter 60 of the Alaska Administrative Code (AAC). ADEC Air

Quality Control Regulations are published under Title 18, Chapter 50 of the AAC. Chapter 50 contains regulations pertaining to incinerator emission limitations.

4.3.3 ADEC Solid Waste Management – Statutes & Regulations (18 AAC 60 & 18 AAC 64).

The ADEC Solid Waste Regulations were developed to promote cost-effective, environmentally-sound solid waste management and to ensure that waste management facilities including landfills are designed, built, and operated to minimize health and safety threats, pollution, and nuisances. Each type of solid waste that is disposed in a landfill must be placed only in a landfill that meets the standards for that type of waste. Pertinent solid waste management responsibilities outlined in the regulations include 18 AAC 60.010(a) which states: "A person may not store accumulated solid waste in a manner that causes:

- litter violation (18 AAC 64.015);
- attraction or access of domestic animals, wildlife, or disease vectors;
- health hazard; or
- polluted run-off water."

The following summarizes a general overview of the key criteria for solid waste management activities under state of Alaska regulations:

Accumulation, Storage, and Treatment - 18 AAC 60.010 (c) states "A person who made contractual or other arrangements for the collection, storage, transportation, and treatment of solid waste is not relieved of the responsibility for that waste if the contractor fails to manage the waste in compliance with this section."

18 AAC 60.200 (a) states "A person may treat or dispose of solid waste, or construct, modify, or operate a solid waste facility only in accordance with a waste disposal permit issued by the department under 18 AAC 60.215."

Solid Waste Management Planning - 18 AAC 60.205. Requires an applicant for a solid waste permit to demonstrate that the applicant has reasonably considered all solid waste management options and that the permit would be consistent with the waste management hierarchy established in AS 46.06.21

Permit Application - 18 AAC 60.210 specifies the permitting and design submittals for Class I, Class II and in some cases Class III landfills and includes:

- submission of project maps or aerial photographs
- site plans and cross-sectional facility drawings
- estimates of liner permeability and of leachate maximum depth
- liner quality assurance plan
- facility operation and maintenance plan
- site specific geotechnical and hydrological data
- monitoring plan

- closure plan
- proof of financial assurance
- copy of stormwater notice of intent

18 AAC 60.215 provides the basis upon which ADEC makes the decision to issue a solid waste facility permit. 18 AAC 60.250 provides conditions for existing permits and permit renewal.

General Permit - 18 AAC 60.255 provides conditions for general permits which cover a group of facilities or a group of activities if the facilities or activities in the group:

- involve the same type of waste handling systems;
- dispose of the same type of solid waste;
- will not threaten public health, safety, or welfare, or the environment; and
- are, in the department's determination, best regulated under a general permit.

Pertinent ADEC air quality regulations regarding incinerator facilities, and visible emission standards are discussed in 1.6.1 Plan 1, Air Quality.

4.3.4 Class I, II, and III Landfills

Landfill facilities may be developed for the sole use of project waste disposal or in conjunction with other identified regional waste management needs. ADEC regulations pursuant to the federal regulations establish regulatory criteria of solid waste management landfills based upon the amount of waste disposed and in some cases by the facility users or the type of waste disposed.

ADEC Regulations under 18 AAC 60.300 define the criteria for a Class I, II and III landfills.

A Class I Municipal Solid Waste Landfill (MSWLF) is a landfill that accepts, for disposal, 20 tons or more of municipal solid waste daily, based on an annual average; or does not qualify as a Class II or Class III MSWLF.

A Class II MSWLF is a landfill that accepts, for disposal, less than 20 tons daily of municipal solid waste based on an annual average and:

- is located on a site where there is no evidence of groundwater pollution caused or contributed to by the landfill; is not connected by road to a Class I MSWLF or, if connected by road, is located more than 50 miles from a Class I MSWLF; and
- serves a community that experiences for at least three months each year, an interruption in access to surface transportation, preventing access to a Class I MSWLF; or with no practicable waste management alternative, with a landfill located in an area that annually receives 25 inches or less of precipitation.

A Class III landfill designation includes the following stipulations:

- it is not connected by road to a Class I landfill, or if connected by road, is located more than 50 miles from a Class I landfill.

- it accepts ash from incinerated municipal waste in quantities averaging less than one ton per day annually or accepts less than five tons daily on an annual average of municipal solid waste.

4.3.5 Monofills

Monofills may be used to dispose of specific project wastes such as spoils and construction debris. A monofill is defined as a landfill or drilling waste disposal facility that receives primarily one type of solid waste and that is not an inactive reserve pit. ADEC regulations under 18 AAC 60.400 establish regulatory criteria. Monofills do not include municipal solid waste and are therefore not subject to the same regulations as Class III landfills under 18 AAC 60.300.

4.3.6 Solid Waste Management Plan

Solid waste management planning requirements are addressed under 18 AAC 60.205. The primary focus of this regulation is for an applicant of a solid waste permit to reasonably consider all solid waste management systems "consistent with the hierarchy of waste source reduction, recycling, treatment, and disposal wherever economically feasible." Alaska statute AS 46.06.21 states "In order to minimize present and future threats to human health and the environment in the state, the department shall promote the following solid and hazardous waste management practices in the following order of priority:

- waste source reduction;
- recycling of waste;
- waste treatment; and
- waste disposal.

These statutes under "AS 46.03.100(e) require an applicant for a solid waste permit to demonstrate that the applicant has reasonably considered all solid waste management options and that the permit would be consistent with the waste management hierarchy established in AS 46.06.021. The purpose of this section is to ensure that the applicant is proposing a waste management system consistent with the hierarchy of waste source reduction, recycling, treatment, and disposal wherever economically feasible. Further, the waste management planning requirements under 18 AAC 60.205 states an applicant is exempt from the requirements of this section if the facility to be permitted is:

- privately owned and operated without financial assistance from a local, state, or federal government agency; and
- not built using a government grant or other nonreimbursable form of government financial assistance.

4.3.7 Waste Collection and Transportation

Vehicles used for transportation on Alaska road systems are subject to requirements for commercial vehicles under Alaska statues. Additionally, regulations controlling transportation of solid waste are under 18 AAC 60.015 and include the following provisions:

- a person who transports solid waste shall keep the waste contained during transport;
- a person who spills solid waste during transport shall promptly pick up the waste and any waste residue resulting from the spill.

4.3.8 Pollution Prevention/Recycling

Title 46, Chapter 06 of the Alaska Statutes establishes ADECs authority pertaining to recycling and reduction of litter. The Alaska Materials Exchange program encourages businesses to reuse materials and find alternatives to discarding valuable materials into local landfills via a quarterly catalog listing. Numerous recycling vendors exist throughout Alaska. Recyclable items include the following:

Batteries
Tires
Office Paper
Corrugated Cardboard/Brown Grocery Bags
Newspaper
Glass
Aluminum & Tin Cans
#1 & #2 Plastic Bottles & Jugs
Plastic Bags
Mixed Paper
Antifreeze (Ethylene & Propylene Glycol) Compost
Egg Cartons and Boxes
Styrofoam “Peanuts”
Miscellaneous Scrap Metal
Used Oil
Appliances
Furniture
Magazines
Paint
Electronics
Phone Books
Medical Waste

Medical waste is defined as “laboratory waste consisting of discarded cultures and stocks of infectious agents and associated microbiologicals, pathological wastes; selected isolation waste; used and unused discarded sharps; animal waste; human blood, or blood products; and other wastes defined as ‘regulated waste’ in 29 CFR 1910.1030(b).” 18 AAC 60.030 provides regulations for depositing medical wastes into a landfill. Prior to disposal, all medical waste must either be:

- Decontaminated or sterilized, and then packaged to prevent a health hazard or
- Incinerated in a medical waste incinerator.

Current proposed amendments of 18 AAC 60.030 may alter this regulation and will be discussed in more detail in following sections of this document.

The Alaska Department of Fish and Game (ADFG) prohibits indiscriminate feeding of game animals. The applicable regulations follow:

- No person may intentionally feed a moose (except under terms of a permit issued by the department), bear, wolf, fox or wolverine, or intentionally leave human food or garbage in a manner that attracts these animals.

Nothing in Title 5 of the Alaska Administrative Code prohibits a person from taking game in defense of life or property if the necessity for the taking is not brought about by harassment or provocation of the animal, or by an unreasonable invasion of the animal's habitat provided:

- the necessity for the taking is not brought about by the improper disposal of garbage or a similar attractive nuisance; and
- all other practicable means to protect life and property are exhausted before the game is taken. 5 AAC 92.410.

4.3.9 Local Codes and Ordinances

The pipeline alignment traverses several organized boroughs and communities. Some of the local codes that may influence the development of the Project solid waste management systems are described below. A report titled “Alaska Solid Waste Regionalization Report” prepared by the Solid Waste Association of North America, Alaska Chapter in 1999 discusses benefits of regional approaches to solid waste management. This study evaluated economics of three scenarios representing different waste hauling and disposal philosophies. Scenario 2, which was determined in the study to be the most economical solution for the region, included landfills in Tok and Delta Junction. This study concluded that regionalization, effective recycling programs, sanitary landfills, and incineration facilities offered benefits to communities responsible for waste management. ADEC has included funding for follow up waste management studies in its 2003 budget.

Within the Fairbanks North Star Borough (FNSB) an enabling ordinance Title 8, Chapter 8.12 provides the Borough the authority to regulate solid wastes. Under this chapter dumping is prohibited except in areas designated or provided by the borough. The ordinance also provides for the promulgation of regulations governing the operation and maintenance of disposal sites. The only disposal site currently provided by the FNSB is the South Cushman Landfill. Solid wastes generated within the FNSB may be hauled to the landfill and disposed of free of charge for residents. There is a fee for disposal of commercial wastes and solid waste generated outside the Borough.

Within the North Slope Borough, ordinances exist which establish a service area for the provision of Borough solid waste collection services and require the use of these services by all operators within this service area: NSB Ordinance 81-1, Section 9.08.020 states: "All owners or occupiers of premises located within Service Area 10 shall use and pay for the garbage and solid waste collection and disposal systems provided by the Borough."

4.3.10 Future Regulatory Trends or Changes within Project Timeframe

The following ADEC Solid Waste regulations are currently proposed for amendment:

18 AAC 60.030 Medical Waste

- Proposed changes state "a person shall manage medical waste in a way that prevents the spread of disease."
- The owner or operator of a Class I, Class II or an industrial waste monofill may accept untreated medical waste under specified conditions.

18 AAC 60.200 Permit Requirement

- Proposed changes offer exemptions from obtaining a permit for disposal of certain materials.

18 AAC 60.205 Solid Waste Management Planning

Proposed changes would require the solid waste management plan to be submitted and approved before a landfill permit application would be considered complete under 18 AAC 60.210.

18 AAC 60.210 Permit Application

- Proposed changes would require an applicant to schedule a pre-application meeting with the department prior to submitting an application.

18 AAC 60 250 Existing Permits and Permit Renewal

- Proposed changes would be repealed and readopted.

18 AAC 60.255 General Permit

- Proposed changes would regard annual fees.

4.3.11 Waste Management Design Criteria

Waste Management design criteria for this project are based upon the current best understanding of the Project construction schedule and upon waste generation estimates previously developed by the Project for the ROW application (Stipulation 1.6.1 Solid Waste Management Plan). The working assumptions relevant to development of waste management design criteria included:

- four construction camps will operate at one time (peak construction);
- up to 17 camps will be used during project construction;
- camp size will range from about 1000-1700 persons;
- construction spread will range from 1100 to 1600 persons;
- camp and related utilities area will require 30-35 acres; and
- post-construction facilities will include a buried gas pipeline, 11 compressor stations, two metering stations, pipeline, roads, workpads, storage yards and bridges

4.3.12 Solid Waste Sources and Generation Overview

Construction Camps. Solid waste produced by Construction Camps expected to generate the following general types of waste:

scrap metal
strapping scrap metals
wood packing materials
cardboard
paper
batteries
drums
destroyed vehicles
polyethylene sheeting
kitchen waste and grease
dewatered sewage sludge
spent carbon filter media
junk equipment and autos
plastic containers
empty drums
electrical wiring
sheetrock

Project solid waste will be segregated as it is generated depending on the type of material and recycling or disposal methods available. The waste will be placed in designated, secure waste receptacles provided for the Project or in containers provided under a solid waste service agreement with a third party waste management facility operator or shipping service. Waste will be either shipped to project specific treatment or disposal facilities or to third parties such as the Fairbanks North Star Borough or North Slope Borough landfill facilities.

Modularized design and proven North Slope installation techniques will result in very low generation of construction scrap waste materials. Most scrap can be expected to consist of packaging from bulk deliveries of permanent materials, supplies, and miscellaneous parts and equipment. The use of drums will be kept to a minimum by the bulk delivery of fuels, lube oil, hydraulic fluid, and process chemicals. Drums containing hazardous substance residues will be disposed of in accordance with procedures described in Section 5, Oil and Hazardous Substances. Materials that are not combusted for volume reduction and are suitable for landfill are to be collected and disposed of at project specific or third party landfill facilities.

Estimated ranges of quantities of destroyed vehicles, waste batteries, and tires are provided in following sections and provide the basis for the document estimates. These estimates were originally presented in the 1983 permit document but some of the estimated quantities have been increased by 50% to provide for initial planning values.

Compressor and Metering Stations. Solid waste produced by construction of the Compressor and Metering stations will be collected, segregated, processed and finally disposed according to the following general concepts:

- Construction wastes from along the right-of-way will be transported back to construction camps for segregation and subsequent disposal or will be hauled directly to solid waste disposal or incineration sites.
- Project waste collection bins, temporary storage areas, handling equipment, incinerators and disposal sites will be sized to operate successfully at the solid waste generation rates to which they will be subjected.

Accordingly, the major categories of project solid waste for pipeline construction have been identified and generation rate estimates have been developed for each category. Table 4-7 presents a summary of the quantities of these wastes, which are nonsalvageable. Sewage sludge, while a solid waste, has not been considered herein, but is accounted for in the Part 1.6.1 previous sections of this plan under, Liquid Waste Management. Similarly, hazardous wastes, waste oil, and oil spill clean up materials have not been considered in this plan, but are addressed in Section 5 Oil and Hazardous Substances.

Alignment (Spread) Crew Activities. Domestic solid wastes generated from construction crew are accounted for in the daily solid waste production from the camps. These wastes will be brought back to the camp and integrated into the camp waste management systems. If spread activities are near third party waste management facilities, the waste may be hauled directly to those facilities.

4.3.13 Temporary Pipeline Construction Camp Solid Waste

Solid waste from the construction camp is estimated at 10 pounds per person per day. The peak camp work force is approximately 1,700 persons. Camp generated solid waste (bottles, cans, paper, kitchen and shop wastes, etc.) are broken down as follows (Reference 1):

- 50 % combustibles
- 15 % metal and glass
- 15 % organic waste
- 20 % moisture

Camp generated solid wastes will be placed into commercial landfills or may be incinerated on site. Camps would be equipped with solid waste storage or transshipment areas as dictated by the camp specific waste management methodologies. After incineration the total weight of inerts to be landfilled is estimated at 2 pounds per capita per day (up to 1.5 lbs metal and glass and 0.5 lbs ash). When combustibles and organic wastes are incinerated, a 92 percent weight reduction is expected. A summary of the estimated quantities of camp-generated solid waste after volume reduction is provided in Table 4-2.

Construction of new pipeline and compressor station camps will generate solid waste consisting of the following materials: insulation, metal strapping, scrap metal, paper, wood packing, cardboard, electrical wiring, sheetrock, visqueen, etc. It is estimated that scrap material from construction of camps could be generated in a ratio of approximately 1 cubic yard/bed, uncompacted. In some cases where small quantities of manageable size are to be dealt with, the debris may be incinerated. The ash and other residue will be landfilled. Table 4-2 provides a summary of the estimated quantities of camp construction debris after volume reduction.

Several different methods will be evaluated to reduce the volume of solid waste generated during the construction and operation phases of the Alaska Segment. Incinerators will be considered for installation at pipeline construction camps and at each compressor station designated for permanent housing. Where incinerators are used they will be sized to be capable of burning all putrescible solid wastes. Kitchen grease is a wildlife attractant and will be managed in the recyclable materials wastestream. Ash and other residue from open burning and incineration will be landfilled at approved facilities.

If tire shredding or other waste tire preprocessing is practiced, it will be conducted periodically at selected solid waste disposal sites. This will lead to a reduced volume (approximately 60 percent reduction) of waste tires through better compaction. Whenever tires can be recycled, recycling will be a priority before landfill disposal.

4.3.14 Water and Wastewater Treatment Solid Waste

Water and wastewater treatment systems will be built to serve the construction activity demands. An estimated 195 cubic feet of spent activated carbon from the water treatment plant will be generated each year. The operation of the wastewater treatment plant will generate approximately 0.4 pound per day per person of sludge. The sludge may be dewatered on site. Regardless, the sludge will collect in leak proof containers provided specifically for this purpose, and either hauled to a landfill or an incinerator for disposal. Kitchen fats and greases should be recycled regularly to avoid accumulation. It is estimated that the weekly generation rate is 1.75 cups/person or 190 gallons per week per 1700 man camp.

4.3.15 Operating Permanent Facility Solid Waste

Solid wastes that may be generated at the operating permanent facilities (compressor stations and metering stations) will be handled in a manner consistent with that described in Section 4.3.13.

4.3.16 Waste Specific Generation Forecasts and Management Options

The following sections summarize preliminary estimates of waste generation rates for the Project. These rates are based upon the waste generation rates and assumptions provided in the earlier version of this document and these quantities are subject to revision more precise project information become available.

4.3.16.1 Destroyed Vehicles

A destroyed vehicle is defined as a vehicle, which has been used or damaged beyond economical repair. All heavy equipment will be salvaged. Estimates of the number of small service and support vehicles that would be destroyed during the three year construction period are shown below assuming a 20 percent destruction rate for small service automobiles and a 10 percent destruction rate for service vehicles. The estimates in Table 4-8 were developed from project vehicle and equipment requirements for times of peak construction activity. No adjustments were made for lower seasonal construction activity levels. It was assumed that tires would be changed twice on each vehicle during the three years of vehicle use, and that batteries would be changed every six months.

Twenty percent of all passenger vehicles and service vehicles are assumed to be destroyed during the construction phase. Parts may be salvaged as economics dictate. Destroyed vehicles, both passenger and large service, will be considered scrap material and will be transported to point of sale or recycling.

4.3.16.2 Batteries

For purposes of this discussion, batteries are defined to include only lead-acid batteries used in automotive and heavy equipment. It was assumed that each battery would be replaced twice each year during the construction phase of the Project, and that each small service vehicle would require one battery (Type 27), whereas each piece of heavy equipment would require two

batteries (Type 8D). The following summarizes the estimated total number of batteries requiring disposal during the Project construction period and the estimated waste weight. Type 27/8D Batteries Estimated Quantity: 37,320, Estimated weight 1,728 tons.

4.3.16.3 Tires

The estimated volume of waste tires generated from small service vehicles is provided as follows:

- Estimated number of waste tires 104,500 tires, volume before shredding 16,222 c.y.
- The estimated number of heavy-duty equipment tires used is shown below (no recapping or reuse of tires has been assumed):
- Estimated number of waste tires: 7,920 tires
- Tires can be recycled through third party facilities or shredded prior to landfill disposal

4.3.16.4 Scrap from Pipeline Construction

Projected material scrap includes, but is not limited to the following items generated along the right-of-way:

- pipe pups
- dented pipe and culvert sections
- damaged piping and valves
- rebar and ironwork cutoffs
- piling cutoffs
- insulation waste
- scrap building materials nonflammable
- welding rod and containers

Permanent material scrap from pipeline construction was assumed to be equal to two percent of the total amount of permanent materials. Scrap was assumed to have a density of 1 ton per cubic yard. It was estimated that the nonsalvageable (landfillable) material would amount to 25 percent of the total scrap volume. An estimation of the total permanent material scrap and the landfill volume required for the nonsalvageable permanent material scrap is shown below. Non-salvageable scrap 3,345 cy.

Scrap from pipeline construction will be disposed of using one or more of the following methods:

- sale to steel recycling brokers volume reduction and landfill disposal sale on site (as-is, where-is)
- landfill disposal for non-recyclable of materials

4.3.16.5 Scrap from Construction of Compressor Stations

Total permanent material for compressor stations is estimated at 13,000 tons for all stations combined. It was assumed that 3 percent of the total permanent material would be waste with 25 percent of this waste being nonsalvageable. Therefore, nonsalvageable permanent material scrap from each compressor station-requiring disposal is as follows:

- non-salvageable permanent material: 65 cy per compressor station

Disposal options for permanent material waste from compressor stations are the same as those for pipeline material discussed in the previous sections.

Scrap From Equipment Components and Parts (worn out or broken equipment components) include those, which are rebuildable, and those, which are not. Rebuildable parts include, for example, some but not necessarily all of the following: work engines, transmissions, final drives, torque converters, hydraulic cylinders, starters, alternators, and hydraulic pumps. The material composition of scrap parts is estimated at 95 percent iron and steel, 1.5 percent aluminum and 3.5 percent nonsalvageable scrap (i.e., filters, lights and gauges, glass, etc.). The estimated weights of scrap materials from spare parts are listed below.

- iron 11,100 tons
- aluminum 177 tons
- paper, plastic, glass, 413 tons

Only the nonsalvageable material will require disposal and it was estimated that the density would be approximately 1 ton per cubic yard. Scrap from equipment components and parts will be disposed of by using one or more of the following methods:

- sale to steel recycling brokers, volume reduction, and landfill disposal
- sale on site or form a central location near populated areas
- landfill disposal for non-recyclable of materials

4.3.16.6 Wood Crating

Temporary facilities lumber, camp wood waste generated by unsalvageable temporary buildings at the end of construction, and crating for compressor station construction is estimated at 0.5 percent of total permanent materials. Estimated quantities of wood waste by camp are summarized in Table 4-7. The quantity of crating for pipeline and civil permanent materials is estimated to be insignificant and will be disregarded in this estimate.

4.3.16.7 Drums/Containers

Bulk purchases of fuel, lube oil, hydraulic fluid, etc. will help to reduce the quantity of drums utilized. However, it is estimated that approximately 10,000 drums will require disposal.

Reusable drums (i.e., those drums acceptable to the fuel suppliers) will be returned to the suppliers. Non-reusable drums free of hazardous substance residue (approximately 25 percent or 2500 drums) will be disposed of using one or more of the following methods:

- transport to point of sale for recycling
- draining, cutting, crushing and landfill disposal, where allowable under existing permit conditions.
- drums containing residues of hazardous materials will be disposed of in accordance with procedures described in plan 12, oil and hazardous substances.

4.3.16.8 Sewage Solids

The generation rate of sewage solids was estimated at about 0.4 pounds per person per day. Assuming a 1,700-person camp, this equates to about 10 tons of sewage sludge per month per camp. Assuming a peak camp operation of four camps yields about 30 tons of sewage sludge per month.

4.3.16.9 Incinerator Ash

Incinerator ash is produced at a rate of about 2 lbs per person per day if most of the camp waste is incinerated on site. This number assumes no recycling of solid wastes. If recycling is accomplished this rate may be reduced to about 1.25 pounds per person per day and for 1,700-person camp is equivalent to about 30 tons of incinerator ash per month.

4.3.16.10 Clearing Debris

Procedures for the disposal of clearing debris will be in accordance with the procedures outlined in the Clearing section (TIS10).

4.3.16.11 Spoil Disposal

Criteria pertaining to the selection, reconnaissance, and design of spoil disposal sites are specified in the Design Criteria Manual.

4.4 LIQUID WASTE METHODOLOGIES

This section explains how the Project will control its wastewaters to the extent required by the statutory and regulatory criteria for all project wastewaters, of both point and non-point origin. The review characterizes and quantifies the wastes in sufficient detail for each waste's variability, and amenability to treatment to be determined. Discussed herein are the recommended collection, treatment and disposal methods for each identified wastewater.

In general, the degree of treatment provided to any given wastewater is that which the aforementioned statutes and regulations require. Some of those requirements are more explicit than others and, hence, the appropriate levels of controls are more apparent. For example, state regulations mandate (with some exceptions) a minimum of secondary treatment for all wastewater discharges to waters or lands of the state (18 AAC 72.024), although additional treatment may be required to protect public health or the environment. It is clear that secondary treatment is the minimal acceptable level of performance for the Project's sewage treatment

plants. The need for more stringent controls is dependent on the impact of the proposed discharge on down-slope activities, groundwater and downstream water quality. For some discharges, the preservation of downstream water quality is the sole determining factor in assigning level of treatment.

Title 18, Chapter 70 of the Alaska Administrative Code sets criteria that surface waters of the State must meet. Any project activity involving a direct or indirect discharge to these waters must provide sufficient controls that the beneficial uses associated with the particular water body in question are protected. Where it appears that an activity will cause state water quality criteria to be exceeded and known and feasible forms of treatment have been employed, a short-term variance will be in place to assure compliance with the water quality standards. The procedures for obtaining a variance are described in detail in 18 AAC 70.015, and have been previously summarized.

4.4.1 Point Source Discharge

The domestic wastewater generated at the pipeline and compressor station construction camps will be given secondary treatment prior to disposal for surface water discharges. Engineering specifications for sewage treatment systems are contained in the engineering documents.

4.4.2 Pipeline Construction Spreads

The three types of field toilets being considered are incinerator toilets, chemical toilets, and mobile self-contained sanitary modules. The section also describes the circumstances under which each might be used. To achieve final disposal, incinerator toilets require supplemental fuel or power, periodic service and ash removal to a suitable landfill.

When placed in service, chemical toilets are typically charged with a mixture of five gallons of water and the chemical additives. Unless their capacity is exhausted earlier, chemical toilets are typically serviced (i.e. emptied and recharged) on a five to seven day interval. When the toilet fills to 15 to 30 gallons, its content will be pumped out by a vacuum truck and transported to a nearby designated pipeline construction camp, where it will be transferred into the wastewater collection system for the camp at a point of entry (manhole, metered tine, or process tank) that will ensure sufficient dilution to avoid any formaldehyde induced upset of biological treatment. The detailed design effort will also develop generation curves for chemical toilet flows and delineate the equipment, time regimen, and record keeping system under which vacuum truck deliveries are to be made to each designated treatment plant. Conversely, the design will determine what allowances must be made in the plant to accommodate spike loadings of high BOD and the presence of a bacteriostat. This information will be submitted to the ADEC in the normal course of the Chapter 72 Plan Review process for camp systems.

Should mobile self-contained sanitary modules be used in addition to or as a substitute for chemical field toilets, the effect of those flows on plant performance will be assessed and accounted for in the same manner.

Pipeline sections are expected to require hydrostatic testing. As stated previously, hydrostatic testing fluids are expected to be water in volumes ranging up to 10,000,000 gallons per test section. Hydrostatic test fluids are expected to have small quantities of settleable solids from

welding and construction but would otherwise have relatively low concentrations of other objectionable materials. Hydrostatic test fluids may fall under the CGP and as such could be discharged under the controls provided under the CGP. If hydrostatic test fluids are not considered under the CGP, a project specific discharge permit, either as a point or nonpoint source will be required. In any event, a project-wide permit is expected.

As stated previously a drying agent may be used after the hydrostatic testing is complete. If so, hydrostatic testing and drying will be distinct and separate operations with separate discharge procedures and permitting for each.

4.4.3 Dewatering Activities from existing contaminated sites

Dewatering within a 3-mile radius of known or suspected contaminated sites is not permitted under the existing CGP. The ADEC requires a site-specific assessment by an Alaskan Registered Professional Engineer to determine the potential a known or suspected contaminated site may impose on the planned dewatering operation. The ADEC will require specific controls to avert any contamination from entering the discharge stream or may require specific treatment methods if contamination enters the dewatering stream.

4.4.4 Fuel Containment Areas

The following provisions have been developed to control losses of hydrocarbons from fuel storage areas. These measures are excerpts from information presented in more detail in Section 5 and will be addressed by a future design specification on fuel storage areas.

Each fuel tank containment area including day tanks and drum run areas will be lined for protection against any environmental damage that may occur due to a spillage. The linings, flashings and boots will be made of reinforced chlorinated polyethylene sheets or equivalent installed in accordance with engineer and manufacturer specifications. The effective volume of the secondary containment is expected to be in the order of 120 percent of the largest single fuel tank within the impoundment.

The area within the dikes will be graded so that precipitation and spillage drain to a sump or depression at a location suitable for water removal. This will allow using portable pumps for water removal from diked areas and will prevent the accidental discharge of spilled fuel that could occur from overflow pipes penetrating the dike. There will be no through-dike piping. Impounded water will be periodically inspected for oil, and discharged to segregated tankage for analytical testing and treatment and/or disposal in accordance with regulatory requirements. The actual treatment procedures and record keeping employed will conform to the provisions of ADEC wastewater disposal permits issued for this activity.

4.4.5 Permanent Facilities

See civil design documents of the Compressor and Metering Stations for a discussion of wastewater treatment and disposal. Both facilities will either use conventional onsite wastewater disposal systems designed and permitted in accordance with ADEC regulations or will use internal above-grade storage and septic hauling to permitted wastewater treatment facilities. In any event, shop and equipment maintenance facilities will not be tied to onsite domestic

wastewater treatment systems. Permanent segregated holding tankage systems will be used for shop and maintenance areas to maintain waste stream segregation. Shop and equipment maintenance waste streams will be transported to offsite regulated treatment facilities for proper treatment and disposal in accordance with regulatory testing, manifest, and treatment requirements.

4.4.6 Material Wet Processing

Wet material processing is expected to be primarily aggregate processing and concrete plant processing. Wet material processing is expected to fall under the CGP and the Project-wide SWPPP for liquid discharge criteria. Both the CGP and SWPPP issues relative to material processing are discussed elsewhere under this section.

Non-Point Source dewatering activities may be necessary at a number of construction sites including:

- pipeline ditches
- compressor station excavations
- bridge abutment and pier construction
- pipeline valve excavating
- buried stream crossings and culvert installation
- material sites

Disposal of silty water is a regulated activity and dewatering in non-contaminated areas is included under the Construction General Permit (CGP). The first consideration will be protection of natural surface waters. Figures 4-1, 4-2, and 4-3 illustrate decision trees that will be included in establishing how discharge decisions will be made. If the discharge will occur in an area clearly outside the possible radius of impact to a receiving water, then the question of discharge must take into account erosion potential, possible encroachments on adjacent facilities, and potential effects on vegetation within and downslope of the discharge zone.

Induced erosion and use conflicts are considered to have a priority over possible vegetative impacts in most cases. Land discharges are to be limited to soils that are thaw stable, unless it is judged in the field that water striking, flowing over, and/or ponding on the ground surface at the rate anticipated will not shear away the organic layer or create a prolonged incidence of thaw related erosion. Where the potential for erosion of this kind does exist, the field engineer has a number of mitigative techniques that can disperse and dissipate the energy of the discharge and enable it to occur without detriment to the soil. Some of these methods are the use of perforated piping oriented across the slope of the disposal zone, use of piled riprap or steel plate deflectors to provide splash pads that protect against scour, and use of additional lengths of discharge piping so that broader or more stable disposal areas can be accessed. Optimizing the use of topography to avoid channeling of flow is another suitable method of control. The method or combination of methods to be used, and the configuration deployed will depend upon local soil conditions and will be determined in the field in accordance with procedures contained in the SWPPP.

An examination of the downslope land uses of others is to be made before discharge plans are finalized, so that possible conflicts can be avoided or, where avoidance is not possible, adequately addressed. Examples of situations to be avoided are the compromise of an actively used water supply, overload and impoundment behind third party drainage structures, and inundation or icing of third party roadways or work areas. Selective redirection or dispersal of flow, controlled discharge rate, and specialized protection to structures (sandbagging, bypass piping, or layering with plastic sheeting) are possible mitigation methods.

After it has been determined that an upland discharge is free of erosion problems and downslope use conflicts or that these concerns can be resolved to the satisfaction of-third parties, attention is to be given to the vegetative make-up of the proposed disposal zone. In discharging silty water in upland areas the intent is to use the vegetation as a sediment filter without causing long-term plant damage. Sediment deposits at the base of the plants as the water is absorbed into the soil or is slowed in its flow downslope. Tolerance to sediment accumulation varies with plant species. Field personnel charged with making disposal decisions will be provided allowable depth limits for each of the major vegetation cover types found within the pipeline corridor, using the USFWS categorization system. This, plus gradient information and assumptions about the permeability of the underlying soil will be used to estimate the actual area required for disposal.

A prioritized list of cover types suitable for disposal will also be developed so that where several types of vegetation exist within the reach of discharge equipment, the vegetation to be used is chosen with consistency. The project specific SWPPP will contain guidance on the use of vegetated filter areas. Wherever this method is employed, periodic observations will be made to ensure that the vegetation is not covered beyond its perceived ability to recover.

In some instances it is not possible to practice upland disposal or keep a silty water discharge from coming in contact with natural surface waters. Where this is likely to occur, the controls employed and the form of permit approvals required will correspond to the envisioned severity of impact to the receiving water:

- Site specific, project-wide, or general NPDES permits issued by EPA and certified by ADEC (these are for direct discharges to a receiving water and contain specified effluent quality limits);
- Site specific, general or project-wide water quality variances issued by ADEC for instances that absent such variances, would cause short-term violations of state water quality criteria;
- A project-wide NPDES permit appears suitable under the existing CGP under which water discharge to receiving waters could proceed unencumbered, provided the discharge did not cause the sediment load at a prescribed distance downstream of the discharge to be increased by a specified increment above ambient or cause aquatic life to be adversely affected.

Project field personnel would ascertain whether the discharge would not exceed the allowable increment in the permit and, if determined to be the case, the discharge would proceed with minimal additional controls other than necessary to control erosion of streambeds or banks. If the Project-wide permit required an agency field approval, such would be obtained prior to the discharge.

Fish streams threatened by an increase in settleable solids in excess of regulatory limits would be afforded the maximum protection necessary to satisfy regulatory concerns. The possible range of controls would be described in the SWPPP for this project. Well points, ponds and dewatering sedimentation basins would be employed only where the irreparable damage to stream and/or stream bank habitat was not more severe than the targeted perturbation to water quality. The siting and configuration of any sedimentation basins or diversion areas would be undertaken in a manner than maximizes the use of available topographic relief to achieve basin capacity or land buffer from the receiving water. Basins and percolation ponds would be designed in accordance with the procedures and field design examples provided in the SWPPP. Discharge permitting would be expected to proceed on an individual basis. Where for reasons of excessive habitat commitment both types of structures were impractical, an appropriate number of other alternate controls would be adopted and a site-specific variance would be requested.

4.4.7 Camp Pad Stormwater Runoff

Factors affecting the quality of storm runoff from gravel camp pads include suspended solids and possibly hydrocarbons (oil and grease) as the contaminants of concern, and presents general upper bound estimates for suspended solids levels after major rainfall events.

The most effective way to control contaminants in pad runoff is to contain them at their source before the water that bears them comes in contact with runoff from otherwise clean areas of the pads. Applying this approach, control of water from certain selected pad areas where the potential for contamination to occur is considered to be the greatest. These areas are:

- Fuel storage areas;
- Shops and vehicle maintenance areas;
- Vehicle and equipment washing areas;
- Snow disposal areas; and
- Areas where fuel is transferred or consumed:
    - fueling islands
    - generators
    - space heaters
    - piping fabrication yards
    - drum storage

The remainder of the pad not otherwise considered to be problem areas will be graded to drain by sheet flow to avoid flow concentrations that could induce thaw in soils underlying the gravel fill or at the pad margins. Where adjacent wetlands or watercourses are to be protected, pad embankments and fills will be graded in such a manner that sheet flow drains towards the edge of the pad farthest removed from the wetlands or watercourses. The design objective will be to use surrounding drier vegetation to filter or allow sediment to settle out before the pad runoff enters the sensitive habitat. The proximity of contaminant sources on the pad to adjacent waters and wetlands is also to be considered in ascertaining whether the buffer is adequate.

Snow removal from camp pads will be a continuing process to prevent snow buildup from occurring. Designated areas will be set aside for dumping the removed snow. The purpose of these snow disposal areas is to confine pollutants and trash gathered during snow removal for cleanup. The snow disposal areas will be sized to accommodate the anticipated quantities of snow to be removed.

4.4.8 Snow Disposal Areas

In no cases will snow be bladed off the edge of the pad. Instead designated snow disposal areas will be set-aside on each pad to confine pollutants and trash gathering during snow removal in one location for cleanup. The disposal areas will be sized to accommodate the anticipated winter accumulation of snow to be removed from traffic ways and other maintained areas of the pad.

Containment of the spring snowmelt from the pile will be accomplished by disposing of the snow in a depressed or curbed area. Debris remaining after the meltwater has evaporated or percolated into the pad will be swept or bladed up and incinerated.

4.4.9 Shops and Vehicle Maintenance Areas

Oil and grease may be inadvertently spilled onto the gravel pad through a variety of vehicle and equipment maintenance procedures occurring in and adjacent to the shops. The shop procedure considered most likely to cause chronic spills and oil to accumulate in the pad is crankcase draining, and the transfer of these waste crankcase oils into storage. To control shop spills, maintenance personnel will be instructed that any oil changes undertaken at the camps are to be performed in service bays and not on the open pad. At pipeline camps the service bays will be equipped with a waste oil collection systems and a carefully engineered system that minimizes the chance of waste oil being spilled to the pad before it reaches the sump. Methods to be considered include concrete floors, vacuum collection equipment, and embedded liners. The actual choice will be determined during final design of pipeline camp facilities. Oil in the sump will be periodically collected by vacuum truck and transferred to a storage tank prior to disposal in a waste oil burner dedicated to that purpose or other regulatory approved disposal methods.

4.4.10 Vehicle and Equipment Washing Areas

Vehicle and equipment washing will only be conducted at the pipeline and compressor station construction camps. Washing will be limited to a dedicated area on the camp pad underlain by an impermeable membrane. The membrane will be sloped to a sump that will function as an oil water separator. The oil will be periodically removed by sorbent materials and will be disposed of in the camp incinerator. The water remaining after floating oil has been removed will be discharged onto the camp pad. After oil separation, the CGP allows vehicle and equipment discharge provided no detergents are used in the washing process.

4.4.11 Ice-rich Spoil Disposal Meltwater

Meltwater from ice-rich spoil disposal will be sufficiently contained to prevent offsite sediment damage, using (in order of desirability): existing terrain features, containment berms, or other

sediment control measures. Meltwater containment for ice-rich spoil from pipeline construction will be in accord with procedures described in the Project SWPPP. Ice-rich spoil meltwater is considered a non-point discharge and can be administered under the CGP.

4.4.12 Gravel Extraction and Processing Areas

Material development areas will require stormwater and meltwater runoff control measures under the Project-wide SWPPP. Also, the SWPPP will be required to include a description of pollutant sources from areas other than construction, specifically including stormwater discharge from dedicated asphalt plants and dedicated concrete plants with a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

Permanent facilities will require stormwater runoff control measures. Such measures are expected to be structural in nature and included under final engineering designs for these structures.

At construction camps, implementation of specific procedures under the SWPPP will be the responsibility of both the Owner and the Execution Contractors. Other specific elements not executed under the CGP may be delegated to the Execution Contractor, such as sanitary wastewater treatment and disposal, used oil disposal, etc. During the pipeline operation, the Owner will perform the liquid waste management functions in accordance with approved operating plans and permits in effect at that time or provide quality assurance measures for attainment of approved operating plans and permits for those functions specifically delegated and assumed by the Execution Contractor(s).

Wastewater Permitting Approach. Many field activities associated with construction and operation of the gas pipeline and its support facilities will entail wastewaters, the handling and disposal of which require a multitude of federal and state permits and approvals. It is also recognized that the agencies' permitting regulations provide a certain degree of flexibility as to the type, format and timing of permits required for these activities in developing an overall structure for the acquisition of wastewater permits and approvals. Emphasis has been placed on permitting alternatives that encourage the following:

- minimal layering of federal and state permits for the same activity;
- consistency in the permit requirements imposed across the project (e.g. for the various construction sections) and for activities that are similar in nature;
- comprehensive permitting such that all anticipated discharges and permit situations are addressed in a way that covers all possible discharge consequences (e.g. an intended land discharge that in spite of proper precautions contacts a receiving water, needs a permit mechanism in place that accounts for this contingency);
- stage permit issuance so that conditions affecting selection of equipment or requiring unusual construction efforts can be accommodated early;
- maximum use of general permits issued for users at large in the geographic vicinity of the project. This includes use of existing general permits in the pipeline corridor, possible amendment of existing general permits to address any special circumstances

attendant to the gas pipeline, or application for new general permits for discharges that frequently occur but have not before been addressed by general permitting; and

- consolidation of interdependent activities under one permit.

The project's sewage treatment plants at camps and permanent facilities will be permitted on an individual basis. In cases where the disposal of treated sewage is judged by EPA to constitute a direct discharge to navigable water, individual NPDES discharge permits will be required.

Vehicle and Equipment Washing. Vehicle washing at camps will be confined to a lined area where the wash waters can be collected in a sump and floating oil can be removed and processed through the facility's wastewater treatment system. A project-wide permit will be sought for cases where a discrete point discharge of sorbed washwater results from these operations. The permit is expected to specify visually detectable limits for oil present in the discharge and prescribe record keeping requirements.

Field Toilets. All units and transport equipment associated with field toilet waste are expected to be subjected to ADEC review under the Plan Review process for the project treatment facility designated to receive waste.

Hydrostatic Test Water. To address instances where it is not possible to avoid the direct discharge of hydro test water to navigable surface water under the CGP, a project-wide NPDES permit will be requested. It is expected that this permit will prescribe scour controls and allowable solids, pH, and oil and grease levels in the discharge, and specify record keeping requirements.

In cases of discharges of pipeline hydro test water to the land, discharge will comply with the terms and conditions of existing CGP or ADEC general permits issued for these activities or, where volume threshold limits are to be exceeded, will apply for new individual permits or increased limits in the general permits. The volume of test water to be used at pipe yards and compressor stations is not expected to exceed the general permit limitations. Concurrent with requesting ADEC wastewater discharge permits, application for a short-term variance to the 18 AAC 70 Water Quality Criteria, such variance to take effect whenever discharge is unable to avoid the excedance.

Dewatering. All dewatering in non-contaminated areas is expected to fall with the CGP issued for Alaska or general ADEC disposal permits containing allowable limits for induced changes in downstream water quality and that occasional site specific permits are foreseen for major sedimentation basins. The subsection's content will not be repeated here.

For dewatering in or near known or suspected zones of contamination, the CGP may not be applicable and ADEC will require site-specific determination and dewatering discharge. The most likely sites for this more aggressive level of effort is expected at former TAPS construction camp pads.

The dewatering of fuel containment areas is considered to be a commonplace low-level occurrence that is ideally suited to ADEC project-wide or general permitting. Such permits would be expected to contain provisions as to the seasonal timing of discharge, the allowable discharge, record keeping requirements, and the configuration of pump intakes and discharge lines and, if combined with the previously described project-wide permit for steam cleaning, could be issued on a consolidated basis. It is expected that fuel containment areas can in all cases

be dewatered without creating a direct discharge to navigable water. Hence, no NPDES permit will be sought for this purpose.

Gravel Processing. Gravel processing operations may take place at material sites or stockpile areas convenient to a water supply. Contractors will be provided a list of designated sites suitable for this purpose, but will use their discretion in determining where the actual setups occur, based on their material needs and logistical considerations at the time. To ensure that the contractors are prepared to properly conduct their activities, the Owner will secure in advance project-wide NPDES and ADEC waste disposal permits for gravel processing. It is also expected that the permits will require a final site-specific approval of treatment facilities and discharge equipment before the processing operation can commence. Gravel Process discharge may be acceptable under the CGP and the Project-wide SWPPP. If not, for Operations requiring sedimentation basins of substantial size, ADEC Plan Review could be necessary and, if so, would be conducted in the field.

Non-Point Sources. Stormwater and snowmelt runoff from gravel pads are expected to be addressed under a project-wide SWPPP to be addressed in the review of pad designs and are not considered suited to separate wastewater permitting. A water quality variance will be requested, however, for the unavoidable short-term degradation of surface waters to result downslope from cuts, major fills, stockpiles of ice-rich material, and overburden.

4.4.13 Performance and Compliance Monitoring

Liquid waste discharges will be monitored according to permit requirements. Samples taken at required intervals will be analyzed for required parameters according to procedures published in the most recent edition of Standard Methods for the Examination of Water and Wastewater. Results of these analyses will be filed with the appropriate regulatory agencies. During pipeline construction, the periodic spot checks of plant operations will be undertaken by the Owner or Owner's representative to assure that procedures and routine maintenance schedules are being properly conducted.

Documentation of routine operational procedures and operator laboratory tests will be conducted according to permit requirements. Copies of required periodic operational data sheets will be sent to the appropriate agencies maintained on file with the Owner or Owner's representative as permit regulations stipulate.

4.4.14 Operator Training and Certification

Construction camp wastewater treatment plants will require certified system operators. Contaminated sites dewatering will require assessment by an Alaska Registered Professional Engineer. Project-wide SWPPP will require a seal by a Registered Professional Engineer. Soil and fluid sampling in area suspected or known to have petroleum contaminated are expected to require qualified sampling personnel. For this project, personnel sampling at suspected or known contaminated sites or facilities should be "qualified" under terms issued by the ADEC.

4.4.15 Quality Assurance and Quality Inspection

The Owner will establish a Quality Assurance (QA) and Quality Inspection (QI) program to meet the regulatory testing requirements set forth under the CGP, NPDES permits, SWPPP requirements, and other project specific permits. A comprehensive environmental management plan is under consideration for addressing all QA/QI established permit compliance.

4.5 SOLID WASTE METHODOLOGIES

The following sections outline the methodology the Project will use to plan and implement the comprehensive management of solid waste during construction and operational phases of the Project. The solid waste management methods will be based on the following key components:

- establishment of camp and construction waste generation forecasts upon which to base sizing and configuration of solid waste management systems
- establishment of permanent facility size and functions to base permanent operation waste management systems
- preparation of a comprehensive solid waste management plan that establishes solid and hazardous waste management practices and that minimizes present and future threats to human health and the environment through establishment of management practices in the following order of priority:
  - waste source reduction;
  - recycling of waste;
  - waste treatment; and
  - waste disposal.

4.5.1 Solid Waste Management Conceptual Overview

Permitting documents prepared in the early 1980s and discussed in previous sections established preliminary design criteria for ANGTS waste management systems. In the 20 years since the initial design criteria development of state-of-the-art waste management methodologies have matured somewhat but are still based on estimating waste volumes and types and configuring an integrated waste management system using a combination of waste prevention, recycling, incineration and landfilling. Options available for recycling of wastes through brokers or directly to third party facilities has improved while liability associated with development of waste management facilities has increased somewhat.

Long- term liabilities and costs associated with closure and post-closure monitoring and maintenance of solid waste landfills mandate that economics of development of project specific landfill or monofill facilities be considered vis-à-vis utilization of developed third party facilities. Pollution prevention and recycling are an integral component of any modern waste management system. General solid waste management activities that represent practice s likely to be employed on this project include:

- On-site segregation and volume reduction of waste streams,

- Use of on-site incineration for domestic wastes as appropriate,
- Transportation of waste streams to third party facilities or brokers, and
- Development of project-specific solid waste disposal landfills or monofills.

The Project will use a combination of these methods based upon engineering and economic analyses as well as consideration of socioeconomic factors to best meet project regulatory and design criteria.

4.5.2 Use of Existing Facilities or Construction of New Facilities

The two largest existing waste management facilities along the Project alignment are:

- North Star Borough Landfill
- North Slope Borough Landfill

These facilities can, by permit authorization, accept the following wastes streams:

- construction debris
- dewatered sewage sludge
- domestic solid waste

Transportation of wastes to these facilities from some of the construction locations may be impractical and result in development of project specific landfills or monofills. Waste production rates during peak construction periods may result in storage of specific classes of construction debris or other solid waste until facilities are prepared to accept the waste or transportation is available.

4.5.2.1 North Slope Borough Facilities

The Oxbow landfill, a Class I MSWLF, is located in Deadhorse, AK. Their permit allows them to accept inert materials, municipal waste, ash, and sludge and construction debris. NSB Ordinance 81-1, Section 9.08.020 states: "All owners or occupiers of premises located within Service Area 10 shall use and pay for the garbage and solid waste collection and disposal systems provided by the Borough."

The facility currently has an operational incinerator. The incinerator is primarily used for thermally treating oily wastes but is also used to incinerate kitchen grease and volume reduction of applicable items prior to landfill disposal (Pers. Comm., McNamara, 2002). Oily waste is accepted if placed in specified bags. The Oxbow landfill does not currently have a recycling program.

4.5.2.2 Fairbanks North Star Borough Facilities

Fairbanks North Star Borough Class I Landfill currently operates the South Cushman Landfill, a Class I facility. The landfill currently accepts from commercial businesses: solid wastes, tires, construction debris, household appliances, junked automobiles and pressurized bottles. Recyclable items accepted include scrap metals, metal containers (drums and tanks), waste paper

and aluminum. Disposal of more than 25 tons of solid waste per month from a source outside of the borough requires completion of an application and mayor approval. Disposal of solid waste from a source outside of the Borough for longer than 60 days also requires borough assembly approval.

4.5.2.3 Fairbanks Wastewater Treatment Plant

Golden Heart Utilities is the wastewater treatment plant that currently accepts sewage sludge for composting. The sewage sludge requires a one-time laboratory characterization analyses from each camp prior to acceptance.

4.5.2.4 Other Facilities

The Delta Junction landfill is potentially an option for waste disposal. Delta Junction currently operates a Class III landfill. The city is currently in the planning and permitting stages for opening up a Class II landfill in 2004. The current Class III landfill may continue operation and accept only construction debris or it may be closed with the onset of the new Class II landfill.

Plans for Delta Junction's new Class II landfill may include an operational incinerator and a sludge treatment facility.

4.5.2.5 Development of Project Waste Management Facilities

Final project establishment of waste management facilities will be based upon engineering evaluation of acceptable combinations of waste management practices that achieve the following goals:

- full compliance with applicable federal and state regulations
- provision of safe, dependable, and sanitary waste management services
- minimization of risk to the Project owner, personnel and the environment
- meeting project and community waste management goals in an economical manner

The final configuration of project equipment and facilities along with use of third party facilities will mature as project specifics become more available. Waste management methodologies will consist of a combination of the following approaches:

- source reduction of generated wastes
- recycling by transport to third party facilities
- combustion of wastes on or off-site
- landfilling of wastes

4.5.3 On-site Waste Segregation and Temporary Storage

Waste storage on site will be conducted in a manner to prevent escape of solid waste or waste liquids, and offensive odors, or access by wildlife to the waste. Areas protected from the

elements will be provided for segregation and storage of recyclable materials in an orderly fashion. Kitchen greases will also be stored in areas inaccessible to wildlife and sent to off-site grease recycling facilities.

4.5.4 On-site Treatment and Volume Reduction

Volume reduction methods can be an important component of the ANGTS waste management systems. Unservicable tires will be shredded prior to transport for recycling or disposal.

The previous position of ADEC was that tires cannot be placed in project landfills unless they are shredded or sliced axially cut prior to landfilling . However, only limited commercially available shredders are available for handling expended heavy equipment tires. Therefore, only the volume of shredded small service vehicle tires was considered in estimating the volume of tires that may be placed in project landfills. It was estimated that tire shredding would result in a volume reduction of 60 percent. In the lieu of shredding, small service vehicle tires may be transported to third party facilities for retreading or disposal in some other legally permissible manner; e.g., landfills authorized to accept tires or tire pyrolization plants.

The acceptable options for disposing of waste heavy equipment tires are as follows:

- disposal of shredded tires in sanitary landfills if such disposal does not violate permit conditions.
- return recyclable tires to a point of sale or to supplier.

Incineration can result in 80 percent reduction of camp solid waste to be landfilled.

Density of the incinerator residue is estimated at 70 pounds/cf (Reference 3). Therefore, the required landfill capacity for the domestic waste residue from a 1700 man camp would be about 1.7 cubic yard per day.

If solid waste haul and transfer to a third party waste management facility is a selected option, solid waste may be compacted prior to transport.

4.5.5 Development of Solid Waste Management Plan

This Solid Waste Management Plan is a comprehensive plan for the collection, transportation, segregation, storage, and disposal of solid wastes generated by construction and operation of the Alaska segment of the ANGTS, including the compressor station and metering facilities.

A solid waste management plan will be prepared for the ANGTS project. Preparation of this plan will include the following items:

- an estimate of the quantity and source of each type of waste to be managed; and
- a general description of the waste collection, treatment, and disposal methods to be used and the end points of the various waste stream components.

If the system includes a landfill the solid waste management plan will also address:

- calculation of the space available for disposal;

- estimated total life cycle costs for a proposed new landfill or the estimated remaining life cycle costs for an existing landfill;
- expected useful life of the components of the solid waste management system, including the proposed closure date of any landfill included in the system; and
- lowest available cost estimate to transport the waste to another facility, including a general cost breakdown for each feasible waste transport alternative.

The objectives of the solid waste management plan are to prevent or mitigate adverse environmental impacts associated with solid waste, fulfill regulatory requirements, and protect the safety of project personnel by reducing the probability of human-carnivore interaction. In furtherance of these objectives, this plan will address:

- management framework necessary for implementation of the plan;
- statutes and regulations pertaining to the collection, treatment, and disposal of solid wastes;
- criteria for siting and design of new solid waste landfill sites to be developed and operated solely for project use; and
- operational plans for those solid waste landfill sites that are to be under project control.

This plan will only address non-hazardous solid wastes. Hazardous wastes are the subject of Section 5, Oil and Hazardous Substances. Substantial quantities of solid waste will be generated by project-related activities during construction and operation of the Alaska segment. Such wastes include, but are not limited to, domestic refuse, scrap metal, dunnage, tires, plastics, card-board, oil-contaminated soil and absorbents, and other construction debris. This plan sets forth a program of procedures and provisions for the proper collection, transportation, storage, treatment, and ultimate disposal of these solid wastes.

Waste segregation is a major part of this program. Solid wastes will be segregated according to their ability to be recycled, landfilled, or incinerated. In the sense of this project, landfillable wastes are considered to be those non-hazardous, nonputrescible, solid wastes, which will compact well in a landfill with only minimal preprocessing. Salvageable commodities will be segregated at the first reasonable opportunity in the handling sequence and stored at suitable sites for recycling. Nonsalvageable material from pipeline activities will be landfilled at commercial facilities or solid waste disposal sites permitted specifically to the Project. Where possible, pipeline putrescible wastes will be incinerated prior to disposal at landfills. At commercial landfills, the existing permit requirements and operating procedures regarding putrescible material will prevail.

This plan will describe options, which are available for disposal of the various types of solid waste. Each execution contractor (EC) will select from these options when formulating specific plans for solid waste handling and disposal. The Project will review these plans prior to implementation.

Waste Minimization and Recycling are a required component of waste management plans. Project Management commitment to this waste management component follows:

- establish facility-wide pollution prevention goals.

- perform facility-wide pollution prevention opportunity assessments.
- create forums for employees and supervisors to identify ways to reduce waste.
- solicit and reward employee suggestions for waste reduction ideas.
- allocate waste treatment and disposal costs to the operations that generate the waste.
- consider implementation of an environmental management system such as ISO 14001.
- consider modifying the specifications, design or composition of your product to reduce life-cycle costs.
- provide training for proper handling of materials and operation of equipment to minimize material waste and energy and water use

4.5.6 Procurement Systems and Inventory Tracking

Implementation of centralized procurement and inventory control and tracking systems for the construction project can reduce the amount of excess supplies procured for project activities. Establishment of procurement guidelines prior to construction can help in the following waste management areas:

- procurement of low toxicity or recyclable products to reduce hazardous and solid waste stream generation;
- establish inventory control system to trace hazardous materials from “cradle to grave”;
- use (as possible) “just-in-time” ordering system to prevent overstocking of raw materials or hazardous materials that may become obsolete or outdated;
- develop a running inventory of unused chemicals from project activities to enter into the Alaska Materials Exchange Program or re-deploy to other project areas;
- select quality package types to minimize packing waste or product loss due to damage;
- provide covered areas to protect materials and containers from degradation due to exposure to elements; and
- clearly label containers with information on contents, handling, storage, expiration dates, and health and safety hazards.

The Alaska Materials Exchange Program can help to conserve resources; energy and land fill space by finding alternatives to the disposal of useful materials or wastes. The materials exchange provides an information clearinghouse for businesses to list materials wanted and available. Type of materials listed include:

- out of date/overstock chemicals
- pallets and wood
- containers/packaging materials
- used office/electronic equipment
- construction materials
- paints and coatings
- metals
- plastic
- oils
- paper products

4.5.7 Recycling Facilities and Brokers

Alaska and the northwest United States as well as western Canada are served by a wide variety of waste management facilities and brokers that accept recyclable products for processing. These resources, contact numbers, acceptance criteria and profiling requirements, and packaging and transportation requirements will be identified in the Project Waste Management Plan. Specific waste streams that recycling facilities will identify include:

- energy recovery or reprocessing of on-specification used oil
- energy recovery or reprocessing of off-specification used oil
- glycols (anti-freeze)
- water/methanol mixtures
- oil contaminated water or water contaminated oil
- spill cleanup debris
- lead-acid or other recyclable batteries
- aluminum, glass, plastics, cardboards (OCC products), paper, newspapers
- heavy equipment, truck and automotive tires
- equipment scrap parts and steel scrap, and vehicles
- toner cartridges
- kitchen grease

Batteries slated for recycling will be frequently shipped from field locations to approved recycling brokers or directly to approved recycling facilities, pending batteries to be recycled are stored in corrosive resistant leak-proof containers. Batteries acids may be drained and managed as a corrosive hazardous waste if they are broken or if it is a requirement for shipping.

Cooking oils, greases and fats will be generated at each construction camp. Disposal of these items will require stringent kitchen design and management practices. Kitchens will need to be equipped with grease traps and interceptors to eliminate disposal of cooking oils with wastewater and to decrease problems associated with clogged drains. Kitchen cleaning practices will need to be adopted to dispose of excess grease in 55-gallon drums, five-gallon buckets, or other secure storage containers acceptable for storing food grade liquids.

Used cooking oil will be stored in an enclosed area to avoid attracting wildlife until it can be shipped off site for recycling or reuse. Screening of cooking oil wastes may be required if the intent is to recycle the product for animal feed.

4.5.8 Waste Transfer Facilities

Depending upon the combination of waste methods used, once waste is generated it may be managed temporarily at a project waste transfer facility prior to transshipment to an existing permitted third party landfill or a project specific developed monofill or Class III landfill.

Waste transfer areas shall:

- use containers with covers, fencing, or other methods to prevent wind and animals from scattering the waste;
- manage the site so that the regulations for disease vectors and animal control are met; and
- prevent or control run-off that would violate water quality standards

Solid waste transfer areas may also include areas for storage, segregation and accumulation of recyclable products, used oils, glycols, and batteries.

4.5.9 Transportation of Solid Waste and Recyclables

Solid waste and recyclable materials will be transported from field construction areas to the nearest construction camp or available commercial facilities for waste treatment, disposal, or product recycling. Solid waste will be contained during transport in one of the following manners:

- covered end dumps with liquid tight seals
- covered and secured waste transshipment receptacles
- roll-on roll-off bulk waste containers
- commercial garbage trucks

Transportation of waste requiring placarding, or special containers shall be conducted in accordance with applicable state and federal regulations including applicable provisions of the hazardous materials transportation regulations under 49 CFR Part 177.

Spills of solid waste during transport and any waste residue resulting from the spill will be collected promptly for continued shipment to the intended waste management location.

Destroyed vehicles will be stored at equipment laydown areas on the camp pads. Reusable parts will be salvaged and reused as economics dictate. Options open to the Project and the execution contractor for disposal of whole destroyed vehicles include the following:

- vehicles may be sold to scrap dealers on an as-is, where-is basis;
- vehicles may be transported to a point of sale; or
- vehicles may be processed at the Fairbanks North Star Borough's baler facility.

All liquids will be drained from destroyed vehicles prior to disposal in the equipment maintenance shop. Drained liquids will be stored in accordance with the hazardous waste management plan.

4.5.10 Use of Existing Disposal Facilities

Whenever feasible solid waste will be managed at an existing waste management facility such as the Fairbanks North Star and North Slope Borough landfills. The possible exception is the event that an environmental review of the facility indicates that a shared liability may exist for large

volume users of the facility. Use of existing facilities may include facilities that accept materials for recycling or energy recovery purposes.

4.5.11 Development of Project Specific Disposal Facilities

The project camp locations relative to available third party waste management facilities may result in development of project solid waste management reduction and disposal facilities. The configuration of related waste management systems and the locations of these systems have not been determined at this time. The following discusses some possible system components.

4.5.11.1 On-site Incineration

On site incineration will generally be used at each camp that does not haul waste directly to a third-party landfill facility. In some cases camps with incinerators may haul incinerator ash to a third party landfill facility. Incinerators will typically consist of prefabricated modular units and in some cases may be equipped with a conveyor loading system. Incinerators will be sized to operate during a 12-hour shift or in some cases on a nearly continuous basis. Incinerator ash is typically inert and sterile and may in some cases be disposed of in a project developed landfill or monofill. Air quality permits under 18 AAC 50 will be as stipulated in the Air Quality Control Plan.

Incinerators will provide volume reduction of solid wastes at some project locations. All putrescible wastes will be incinerated. Other combustible wastes small enough to fit into the combustion chamber will also be incinerated. Incinerators will be purchased with emission control systems to comply with federal, state and local requirements. Regulatory criteria pertaining to incinerator emissions are specified in the Air Quality Program.

4.5.11.2 Project Landfills or Monofills

Landfills or monofills may be developed for this project as construction camp facilities siting relative to available waste management networks are finalized. Development of new facilities will be managed under applicable provisions of 18 AAC 60 the Solid Waste Management regulations. Siting and design standard for these facilities are detailed in these regulations. The Project will comply with these regulations in the pursuit of any new solid waste management facilities.

4.5.12 Final Disposition of Temporary or Modular Construction Facilities

Temporary construction camps remaining after completion of the Alaska segment facilities construction will be disposed of using one or more of the methods outlined under the section discussing Pipeline Camps.

4.5.13 Coordination with other Regulatory Programs

Solid waste management activities extend into a variety of regulatory areas identified in this plan including:

- hazardous waste management
- groundwater and surface water quality standards
- fish and game wildlife protection standards
- air quality regulations

4.6 IMPLEMENTATION

Solid Waste Permitting Approach. Potential development of solid waste facilities and required permits will be fully scoped with approving agencies prior to arriving at a final project decisions as to whether to develop a facility at a particular location. Receipt of early input from ADEC, DNR, ADFG and other agencies will prevent a facility development from moving forward before any fatal flaws are highlighted. Early meeting with affected communities and landowners is also essential to the landfill siting and development process.

Performance and Compliance Monitoring. The solid waste management requirements contained herein and in subsequent plans, procedures, and specifications will be subject to inspection, surveillance, and audit by quality assurance inspection. Additionally regulations under 18 AC 60 provide for landfill monitoring if those are used. Compliance and inspection activities will be conducted during construction operations and closure phases of solid waste facilities. Compliance monitoring will be performed as part of the Project Environmental Management Program (EMP) as described in ENVIS01.

Quality Assurance and Quality Inspections. The Project will establish Quality Assurance (QA) and Quality Inspection (QI) Programs to meet the regulatory testing requirements set forth under the project-specific permits.

Training. Solid waste and related training will be administered at several levels of the project organization. As part of the Environmental Briefings, Orientation, and Education Program (ENVIS11), Project personnel will receive a general presentation on appropriate waste management procedures. The orientation will provide instructions on reporting and response actions to be taken when a spill is discovered. In addition to the orientation, all personnel directly engaging in waste handling or transport activities will receive specific training related to waste management activities and the importance of regulatory compliance.

4.7 FIGURES AND TABLES

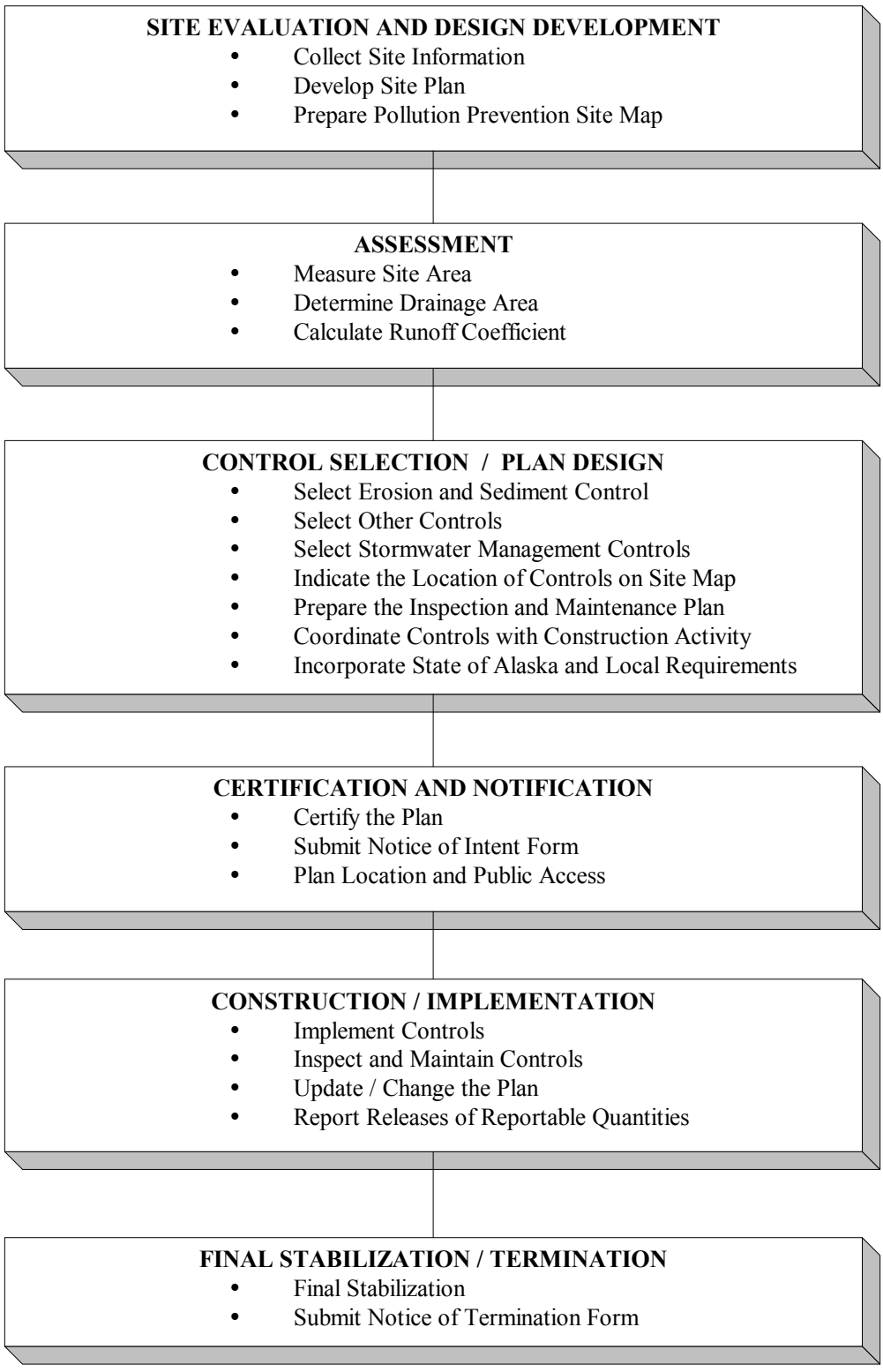

Figure 4-1
Developing and Implementing a Stormwater Pollution Prevention Plan for Construction

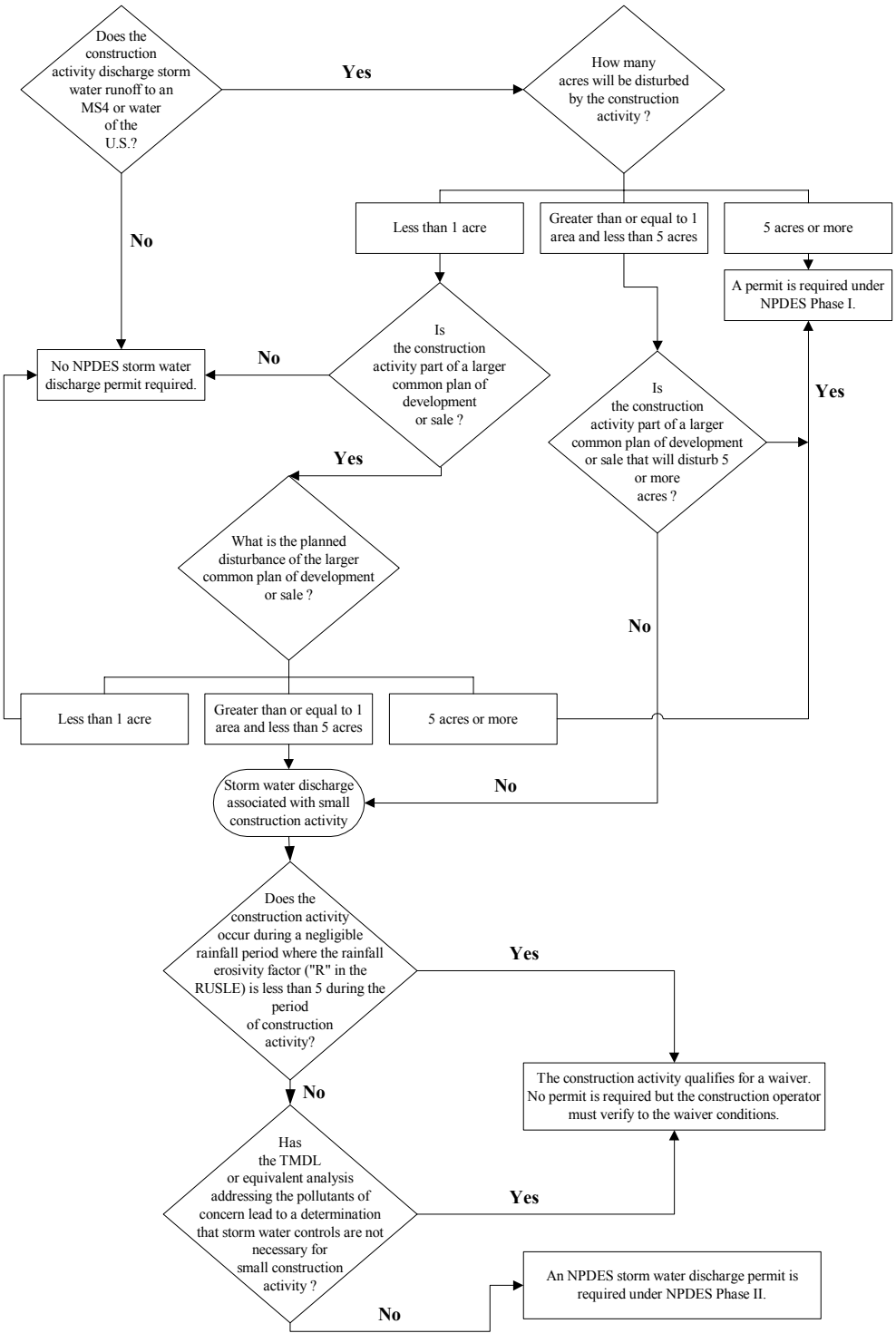

Figure 4-2
Construction Activities Stormwater Program Permitting Decision Tree

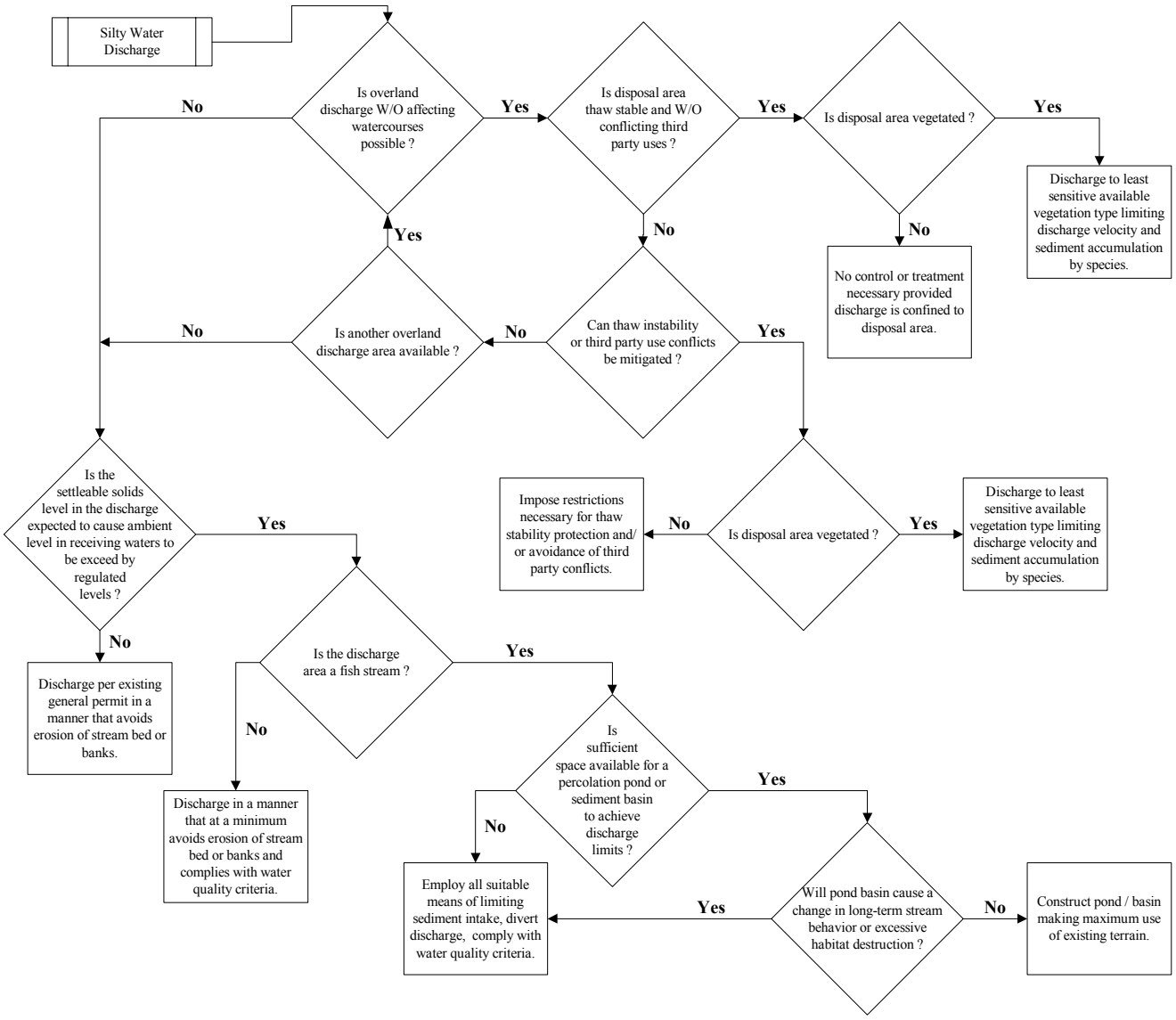

Figure 4-3
Storm Water Discharge Decision Tree

Table 4-1
Liquid Waste Sources

	TEMPORARY FACILITIES				PERMANENT FACILITIES		
	CONSTR. CAMPS	CONSTR. SPREADS	PIPE YARDS	MATERIAL SITES	COMPR STNS	METER STNS.	HDQTR. FACIL.
Point Sources Requiring Treatment							
Domestic Sewage	X				X		X
Vehicle and Equipment Washing	X				X		X
Field Toilets		X	X	X	X	X	
Hydrostatic Test Water		X	**X**				
Dewatering:							
General Construction		X			X	X	
Material Pit				X			
Fuel Containment Areas	X						X
Gravel Processing				X			
Water Treatment Plant Backwash	X				X		X
Concrete Batch Plant Washdown		X		X			
Nonpoint Source Requiring Control							
Stormwater Runoff [1]	X	X		X	X	X	X
Snowmelt Runoff [2]	X		X	X	X	X	X
Ice-Rich Spoil Meltwater [3]		X		X	X		

Notes:
[1] Grading of pads to drain in desired direction
[2] Designation of snow disposal area (s) to confine trash meltout
[3] Control of fines

Table 4-2
Typical Liquid Waste Quantities

SOURCES	FLOW	OCCURRENCE
Construction Camp Domestic Waste [5]	70 gpcd - 100 gpcd	year-round
Construction Spread Field Toilets	0.38 gpcd [1] - 2 gpcd [2]	year-round
Vehicle & Equipment Washing	200 gpd/camp - 500 gpd/camp	year-round
Hydrostatic Test Water	2,500,00 gal/test [2]	year-round
Dewatering General Construction & Material Sites	Varies widely (see text)	year-round
Fuel Containment Areas	Precipitation-dependent	spring-fall
Gravel Processing	Varies (see Text)	spring-fall
Compressor Station Domestic Waste [3]	45 gpcd [4]	year-round
Metering Station Domestic Waste [3]	0.38 gpcd [1]	year-round
HQ Facilities Domestic Waste [3]	15 gpcd [6]	year-round
Stormwater Runoff	Nonpoint source, Varies	rainfall
Snowmelt Runoff	Nonpoint source, Varies	breakup
Ice-Rich Spoil Meltwater	Nonpoint source, Varies	spring-fall
Water Treatment Plant Backwash	Intermittent, small incremental percentage of plant flow, dependent on filter design	year-round
Concrete Batch Plant Washdown	Varies	spring-fall

Notes:
Values are based on Stipulation 1.6.1 Plan Number 10 of the Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.

[1] Based on chemical toilets

[2] Typical test section

[3] Permanent facilities

[4] Assumes vacuum collection

[5] Eggener C.L. and Tomlinson, B.G. "Temporary Wastewater Treatment in Remote Locations," Journal WPCF, December 1978.

[6] Office workers

Table 4-3
Estimated Liquid Waste Quantity Characteristics

SOURCES	BOD_5 (mg/l)	SUSPENDED SOLIDS (mg/l)	OIL AND GREASE (mg/l)
Construction Camp Domestic Waste [1]	300-700	300-800	50 -150
Construction Spread Field Toilets	6,00-15,000[7]	10,000-20,000 [7]	Minimal
Vehicle & Equipment Washing	Minimal	Variable	Significant
Hydrostatic Test Water	Minimal	Minimal	Minimal
Dewatering General Construction & Material Sites	Minimal	Minimal - 10,000 [3]	Minimal
Fuel Containment Areas	Minimal	Minimal	<50
Gravel Processing	Minimal	5,000 - 20,000 [3]	Minimal
Compressor Station Domestic Waste [4]	450-1,100	450 -1,200	50-150
Metering Station Domestic Waste [2]	6,000-15,000	10,000 - 20,000	100-200
HQ Facilities Domestic Waste [5]	200-300	200-400	Minimal
Stormwater Runoff	Minimal	Variable	Minimal
Snowmelt Runoff	Minimal	Variable	Minimal [6]
Ice-Rich Spoil Meltwater	Minimal	Variable	Minimal
Water Treatment Plant Backwash	Minimal	High	Insignificant
Concrete Batch Plant Washdown	Minimal	High	Insignificant

Notes:

[1] Eggener C.L. and Tomlinson, B.G. "Temporary Wastewater Treatment in Remote Locations," Journal WPCF, December 1978.

[2] Based on use of chemical toilets

[3] See Table 4-4

[4] Assumes vacuum collection system

[5] Metoalf and Eddy, Inc. Wastewater Engineering, McGraw-Hill, NYC, 1972.

[6] See text for exceptions

[7] Robbins, J. H. and Greene, A. C. "Onshore Treatment of Sewage from Waterborne Waste Retention Systems," EPA 67.

[8] Assumes vacuum-flush toilets

Table 4-4
Characteristics of Individual Waste Streams

SOURCE	FIXTURES	GPCD*	BOD_5 (mg/L)	TSS (mg/L)	Others
Dormitory	Showers, Commodes, Urinals, Lavatories, Personal Laundry Facilities, Janitor's Sink	58.7	200 - 300	200 - 300	High Phosphate High Temperature
Kitchen	Preparation Sinks, Prewash Tables, Dishwasher, Coffee Urn's, Janitor's Sump	4.6	2,000 - 3,000	2,800 - 3,800	High Oil and Grease High Temperature
Offices and Recreation Hall	Commodes, Urinals, Lavatories	2.0	350 - 450	400 - 500	
Utility Building	Water Treatment Plant Backwash, Sinks, Floor Drains, Clean-up Sumps	1.5	200 - 300	300 - 400	
Miscellaneous Sources	Bedding Laundry, Chemical Toilets, Miscellaneous Sources	3.2	500 - 1,500	500 - 1,000	
	Total:	70.0			

Notes:
Values based on "Wastewater Treatment for Temporary Construction Camps in Remote Locations, C.L. Eggner, B.G. Tomlinson, 1977"
*Gallon per capita -day

Table 4-5
Estimated Wastewater Characteristics for General Construction and Material Site Dewatering, and Mineral Material Processing Operations

SUBJECT WATER	TURBIDITY (NTUs)	SUSPENDED SOLIDS (mg/l)	SETTLEABLE SOLIDS (mg/l)	SETTLEABLE SOLIDS (color units)
Raw Dewatering Wastewater	500 / 1,000	2,500 / 10,000	2 / 10	150 / 500
Raw Gravel Wet-Processing Wastewater	5,000 / 10,000	15,000 / 30,000	20 / 50	600 / 2,000
Data from Chilled Pipe Test Sites (CPTS)				
Little Salcha CPTS [1]	40 / 900	168 / 18,900	<1 / 7.0	25 / 160
Livengood CPTS [2]	130 / 7000	57 / 10,000	<1 / 2.5	

Notes:
Values are estimated minimums/maximums based on Stipulation 1.6.1 Plan Number 19 of the Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.

[1] Continuous discharge from ditch Estimated

[2] Batch discharge from ditch sump

Table 4-6
Applicable Solid Waste Regulations

REGULATION	TITLE	SCOPE
40CFR243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste	Delineates minimum levels of performance for solid waste collection. Such requirements are mandatory for Federal agencies operating collection systems and are recommended to state, regional, and local governments. Storage, safety, collection equipment, collection frequency, and collection management are addressed.
40CFR257	Criteria for Classification of Solid Waste Disposal Facilities and Practices	Presents criteria for determining whether an existing or proposed disposal facility does or will pose a reasonable probability of adverse effects on health or the environment. Facilities not satisfying the criteria are prohibited. Apart from a few specific exceptions, the criteria apply to all federal, state, local and private operations. Separate criteria are presented for flood- plains, protection of endangered species, protection of surface and groundwater, disease controls, open burning, and safety.
40CFR258	Criteria for Municipal Solid Waste Landfills	"Establishes minimum national criteria under the Resource Conservation and Recovery Act (RCRA) for all municipal solid waste landfill units and under the Clean Water Act for municipal solid waste landfills that are used to dispose of sewage sludge. These minimum national criteria ensure the protection of human health and the environment. These Criteria apply to owners and operators of new MSWLF units, existing MSWLF units, and lateral expansions, except as otherwise specifically provided in 40CFR258; all other solid waste disposal facilities and practices that are not regulated under subtitle C of RCRA are subject to the criteria contained in 40 CFR 257."

Table 4-7
Estimated Non-Salvageable Solid Waste Summary

Waste	Volume (Cubic Yards)
Demobilization	4800 to 7200
Tires	117000 to 177000
Equipment Component Parts	410 to 600
Other Scrap from Permanent Material	3800 to 5700
Camp Solid Waste	11100 to 16700
Camp Construction Waste	1650 to 2500
Wood Crating Debris	340 to 500
Total Solid Waste	139,100 to 210,200

Notes:
Values based on Stipulation 1.6.1 Plan Number 19 of the Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.

The upper range estimated values were obtained by increasing referenced quantities by 50%.

Table 4-8
Estimated Construction Automotive Wastes

Vehicles Destroyed During Construction	Quantity
Small Service Vehicles (Pickups, Carryalls, Sedans, Station Wagons, etc.)	440 to 660
Service Vehicles (Fuel Trucks, Grease Trucks, Sewage Trucks, Water Trucks, Wreckers, etc.)	138 to 207

Notes:
Values based on Stipulation 1.6.1 Plan Number 19 of the Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.

The upper estimated values were obtained by increasing referenced quantities by 50% .