Alaska Coastal Clean Water Plan

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Public Review Draft

Executive Summary

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August 15 1995

Greetings,

Enclosed for your review and comment is the Coastal Clean Water Plan Public Review Draft Executive Summary. The Executive Summary outlines Alaska's approach for reducing nonpoint source pollution from forestry, urban and community development, marinas and harbors, dams, modified channels and erosion control structures. The plan also addresses the restoration and protection of wetlands.

The Coastal Clean Water Plan is Alaska's response to Section 6217 of the federal Coastal Zone Act Reauthorization Amendments. Coastal states must submit plans for reducing nonpoint source pollution along their coastlines, which nationally is the largest remaining water quality problem.

You can comment on the plan by submitting written comments. Please give your ideas or suggested wording that can be considered for inclusion in the final plan. A comment sheet is attached for your convenience. Make sure you indicate the page number and line number on the enclosed comment sheet. You may add more sheets as necessary.

Comments must be postmarked by September 15, 1995 to receive full consideration. Send your comments to:

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COASTAL CLEAN WATER PLAN
EXECUTIVE SUMMARY
Comment Form

Name/Affiliation:_____

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Chapter 1 INTRODUCTION

The Coastal Clean Water Plan is Alaska's response to Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. Congress created Section 6217, titled "Protecting Coastal Waters," to help address nonpoint source pollution problems nationwide. Examples of nonpoint source pollution are failing septic tanks and leachfields oozing to the surface, runoff and snowmelt carrying oil and grease into streams and poorly constructed logging roads creating sediment.

Section 6217 requires states such as Alaska, with coastal zone management programs, to develop "coastal nonpoint pollution control programs." Congress did not expect states to develop new, stand-alone, nonpoint pollution programs. Rather, the coastal nonpoint pollution programs are to strengthen and build upon existing state and local expertise and authority.

Section 6217 has two major components. The foundation of the first component are "management measures" or objectives that coastal states must implement. There are about 55 management measures that address nonpoint pollution from agriculture, forestry, urban development, marinas and hydromodification and the protection and restoration of wetlands and riparian areas. The measures are listed in the 1993 EPA *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.*

State's can develop alternatives if the EPA measures are not economically achievable or the pollution sources they address do not exist. Alaska analyzed the EPA management measures and determined that the New Development measure in the urban section is not achievable. Therefore, the state will develop an alternative measure that is practical and affordable. In addition, the state determined that agriculture in the coastal region was not a significant source of nonpoint pollution and therefore will not be including the agriculture management measures in its program.

The second major component of Section 6217 focuses on restoring degraded waters. State's must develop additional management measures where existing nonpoint pollution controls or the general management measures mentioned above are not adequate to restore water quality.

State's will implement the management measures through regulatory programs or by voluntary programs backed up by enforceable authorities.

Timeline for development and implementation of coastal nonpoint pollution programs is provided below:

mid-1995	Coastal state's submit programs to NOAA and EPA.

early 1996	NOAA and EPA review state's programs and grant either full approval or conditional approval. Conditional approval is granted if state's programs need additional time to develop incomplete elements or to demonstrate that existing authorities are adequate to implement the measures. Alaska expects to receive conditional approval.
1999	NOAA and EPA evaluate the progress of coastal states that received conditional approval towards achieving widespread implementation of management measures.
2001	Penalties of up to 30% reduction in funding to the Alaska Coastal Management Program and the Department of Environmental Conservation's Section 319 Nonpoint Pollution Control Program are applied if the state does not have a full approval.
2004	Implementation of all general management measures must be complete.
2009	Implementation of additional measures where necessary to meet water quality standards must be complete.

Chapter 2 PUBLIC PARTICIPATION AND TECHNICAL ASSISTANCE

The goals for the Coastal Clean Water Plan Public Participation component are to: 1) increase the public's awareness and understanding that clean water is in their best interest; 2) increase the public's awareness and understanding of nonpoint source pollution--what it is, what its impacts are, how we all contribute to it; 3) improve dialog between governments and individuals, groups, industries and businesses in order to reach mutually acceptable goals and to find mutually acceptable solutions; and 4) work with the Section 319 Nonpoint Source Pollution Control Program to develop an overall public involvement and technical assistance program.

The goal for the Technical Assistance component is to help people solve problems by funding research, demonstration projects, databases, guidance manuals, training and other tools as appropriate.

These goals will be reached by 1) convening a meeting, or series of meetings, with state and federal resource agencies, educators, non-profit groups, Extension Service, native

organizations, Water Watch groups and others to discuss strategies for education, public involvement and technical assistance. To avoid the "ready, fire, aim" syndrome, the meetings will take place after the Section 319 Nonpoint Source Pollution needs assessment has been completed in August 1996; 2) continuing to fund the Coastal Clean Water grant program for coastal districts; and 3) developing annual Coastal Clean Water Plan public involvement, education and technical assistance workplans until the overall nonpoint source pollution strategy is finalized. Workplans should be completed by October of each year. The plan will use communication techniques that coastal district surveys determined were the most effective, and will tackle the most pervasive coastal pollution sources.

There are many different forums that the public has used to help shape the Coastal Clean Water Plan, including task forces, formal public review periods, mail-outs and publically noticed meetings. In addition, technical assistance has been provided to help affected users and local governments.

Chapter 3 ADMINISTRATIVE COORDINATION

The Coastal Clean Water Plan will reach its goals of protecting and restoring coastal waters by building upon and strengthening existing programs. The challenges for the Coastal Clean Water Plan, therefore, will be to gain the cooperation of stakeholders, identify areas of mutual concern and coordinate activities.

One of the primary mechanisms the state will use to improve interagency coordination and identify common goals and solutions is to complete a statewide nonpoint source pollution needs assessment and action plan during the next 18 months.

Planning should be within an institutional and policy framework designed to compel the interagency and intergovernmental cooperation and coordination necessary to achieve planning objectives (Council of State Governments, 1982). The Alaska Coastal Management Program provides that framework within the coastal zone. Because the ACMP is a networked program, projects in the coastal zone that are either a direct federal action, require a federal permit or require a state approval are reviewed jointly by the departments of Fish and Game, Environmental Conservation and Natural Resources and all affected coastal districts.

In addition, AS 46.40.200 requires state departments, boards and commissions to review their statutory authorities, regulations and procedures and take whatever action is necessary to facilitate full compliance with and implementation of the Alaska Coastal Management Program.

The Coastal Clean Water Plan helps every coastal district that is revising its enforceable policies to incorporate nonpoint source pollution controls into its program. Once the Coastal

Clean Water Plan is approved, the Division of Governmental Coordination, in conjunction with the ACMP Working Group, §6217 Task Force and others will prepare a guidance manual of model enforceable policies.

Further discussions of interagency coordination mechanisms for specific pollution sources are found in the appropriate chapters.

Chapter 4 MANAGEMENT AREA

The Coastal Clean Water Plan applies within the State's coastal zone, as established by the Alaska Coastal Management Program (ACMP). Alaska's coastal zone encompasses nonpoint pollution sources that may have a significant impact on both coastal waters (waters adjacent to the shoreline which contain measurable quantities of seawater) and coastal resources (e.g., anadromous fish). This is a much broader geographic area than required by §6217(e), which only requires a management area large enough to protect coastal waters.

A survey of the 35 coastal district management plans and interviews with state agency staff and coastal district coordinators indicates that there are few uses and activities outside the coastal zone that have, or are likely to have, significant impacts on coastal waters. The major exception to this statement is the Municipality of Anchorage. However, all discharges within the municipality are covered under their National Pollutant Discharge Elimination System Storm Water Discharge application.

Chapter 5 FORESTRY

The Forest Resources and Practices Act and regulations cited in this plan constitute Alaska's Coastal Clean Water Plan for Forestry. The FPA regulations in their entirety, in conjunction with additional non-regulatory components, constitute Alaska's Section 319 Nonpoint Source Pollution Control requirements for activities subject to the FPA (11 AAC 95.185(h))

The goals of the Coastal Clean Water Plan for Forestry are for all timber harvest operations in the coastal zone to meet the State's Water Quality Standards and fully maintain and protect designated uses of State waters, and to obtain 95 percent operator compliance with all applicable requirements of the Forest Resources and Practices Act (FPA) and regulations.

The Action Plan for achieving the goals are to: 1) Review all detailed plans-of-operations submitted to the Department of Natural Resources within the timeframes provided by FPA. 2) Maintain a high number of routine inspections for compliance with FPA. 3) Develop and conduct a BMP implementation monitoring program. 4) Conduct and participate in

comprehensive water quality monitoring projects to demonstrate BMP effectiveness in meeting Water Quality Standards. 5) Complete all forestry tasks contained in Alaska's 1990 Section 319 *Nonpoint Source Pollution Control Strategy;* and 6) Conduct operator and agency training sessions to inform new operators and agency staff of FPA requirements and findings from BMP implementation and effectiveness monitoring studies.

Budgetary and technical constraints may inhibit the State from achieving the goals and objectives of this plan. In addition, Alaska's young geology, extreme weather conditions and highly variable hydrology make it difficult to separate the effects of forest practices from natural conditions. Developing monitoring parameters and protocols and methods for determining change (or the amount of change) that can be attributed to harvest activity is a challenge.

The Coastal Clean Water Plan for Forestry is applicable to commercial forestry activities in the coastal zone on private, state and other public forest lands that intersect, encompass or border on surface waters or riparian areas, or that occur on at least 10 acres in Region I, 40 acres in Region II or 40 acres in Region III if the owner owns more than 160 acres.

AS 41.17.100, Deployment of Broadcast Chemicals and 11 AAC 95.390 Site Preparation, are included in the §319 program but excluded from the Coastal Clean Water Plan. Forest chemicals and mechanical site preparation are of such minor duration and consequence in Alaska's coastal regions that they are not currently or potentially significant sources of nonpoint pollution.

The lead agency responsible for the implementation and enforcement of Alaska's Forest Resources and Practices Act is the Department of Natural Resources. The departments of Environmental Conservation (DEC) and Fish and Game (ADF&G) are each assigned roles in administration of the FPA. As the lead agency on water quality matters, DEC is responsible for assuring that the FPA achieves Alaska's Water Quality Standards under Title 18. The Department of Fish and Game has authority under Title 16 to regulate activities in resident and anadromous fish-bearing streams which is recognized by FPA but administered independently of it.

The FPA requires federal land management plans, guidelines and standards to provide no less resource protection than the standards for state land (AS 41.17.900(b)(1)). The Department of Natural Resources and the Department of Environmental Conservation are in the process of certifying the Forest Service's guidelines and standards. Final approval of this certification is pending on minor clarification and reorganization of the Forest Service's existing rules.

The State is excluding three EPA management measures from its Coastal Clean Water Plan: Site Preparation and Forest Regeneration, Fire Management and Forest Chemical Management. These sources of nonpoint pollution are of minor duration and consequence in Alaska's coastal regions. All other EPA management measures are applicable and suitable for Alaska. The Forest Resources and Practices Act and regulations meet or exceed the federal

requirements outlined in the management measures. Attachment 1 lists the applicable EPA management measures for forestry and the state authorities that meet them.

Chapter 6 URBAN AND COMMUNITY DEVELOPMENT

The overarching goal of the Coastal Clean Water Plan for Urban/Community Development is to ensure that State Water Quality Standards are met within all coastal waterbodies affected by urban/community development. To achieve this, the following steps will be taken:

1) Identify Alaska-specific Best Management Practices (BMP's) that address urban sources of nonpoint pollution.

2) Prepare an urban BMP implementation manual.

3) Prepare a comprehensive urban BMP monitoring strategy.

4) Implement the urban BMP monitoring program.

5) Develop recommendations for changing existing regulatory and non-regulatory programs to further the goals of the Coastal Clean Water Plan.

6) Develop a performance objective (management measure) for stormwater runoff from new development.

7) Improve communication and administrative coordination between local state and federal government agencies and the public. One of the mechanisms will be the creation of an inter-agency Urban Watershed Working Group.

8) Work with local governments to establish ordinances which address nonpoint source pollution.

9) Initiate a public awareness campaign to inform the public of the effects of urban nonpoint source pollution and practical ways for citizens to reduce nonpoint impacts to aquatic resources and water quality.

10) Where appropriate, evaluate and manage nonpoint source pollution impacts on a watershed protection basis.

11) Redefine the State's approach to urban nonpoint source pollution control through participating in the upcoming nonpoint source needs assessment and strategy revision.

The upcoming nonpoint source pollution needs assessment and strategy revision will update and expand the 1990 Section 319 Nonpoint Pollution Control strategy, and will integrate the Coastal Clean Water Plan and Section 319 into one coordinated nonpoint source pollution control program.

Constraints to achieving the objectives of the Coastal Clean Water Plan for Urban/Community Development include: lack of industry, government and public awareness of the impacts of their activities on water quality; lack of funding, lack of data and unresolved legal and enforcement issues. Lack of understanding of the need for erosion and sediment control magnifies the difficulty of convincing municipalities to adopt and enforce appropriate BMP's. Anchorage is drafting a BMP manual, and its eventual acceptance would be most helpful in this regard.

The 11 objectives outlined above are designed to overcome the constraints. Lack of funding or data should not be insurmountable barriers. There are many erosion and sediment control BMP manuals available for reference and many BMP's are fairly standardized. The challenge will be to modify the BMP's if needed to make them effective under Alaskan conditions. BMP's will be modified as the state, cities and developers gain experience with them.

There are 154 organized municipalities in the State of Alaska, of which 129 are located within the coastal zone. Coastal Alaska has four distinct ecoregions -- Tundra, Alaska Range, Pacific Forest and Aleutian Island -- each of which has a unique pattern of urban and community development. Tundra communities are typically scattered on the banks of wide rivers that frequently flood, or along the open ocean coast. The ground surface is usually frozen from October through April, with permafrost (permanently frozen soil) occurring at an average depth of 12 to 18 inches. Soil types in communities on river corridors are typically composed of fine sediment and silt underlain by permafrost, while soils in villages facing the open ocean coast are sand and silt. Structures are designed and constructed to avoid disturbing the permafrost soil. Land disturbance during site development and construction of single family dwellings is usually less than 5,000 square feet.

While Bethel, the largest Tundra community, has a population of just over 5,000 people, the vast majority of communities in the region have less than 1,000 people. Communities are usually confined to an area of less than one square mile. Access is usually by aircraft and boat in the warmer months or aircraft and snow machines in the winter. Average annual rainfall in Bethel is 16.9 inches, and the 2 year/24 hour storm is 1.5 inches. The highest precipitation occurs in August, while less than 5 days a year have rainfall greater than 0.5 inches. Receiving waters are generally large lakes, streams and rivers. Less than 10% of rural villages in the tundra region have storm sewers. Development buffers, riparian setbacks, wetlands plans and other land use planning and zoning ordinances are rudimentary or non-existent in most communities.

Of the four ecoregions, Alaska Range communities are most similar to the Lower 48 States

urban model, with more extensive road paving and higher density populations. Implementation of land use planning, zoning, development buffers and storm sewers is occurring.

The soils in the Alaska Range ecoregion are typically glacial till. Some developed sites are on gravel or sand where soils are highly permeable, but the majority of sites are on relatively impermeable soils or near surface bedrock. Precipitation in Anchorage, near the center of the Alaska Range region, averages 15.3 inches annually, while the 2 year/24 hour storm is 1.5 inches and the 2 year/6 hour event is 0.66 inches. The peak precipitation period is July through September. Rainfall greater than 0.5 inches occurs approximately 5 days a year.

The Pacific Forest region is characterized by a temperate maritime climate with large amounts of rainfall occurring year-round. Average annual rainfall in Juneau, near the center of the Southeast Panhandle, is 50-90 inches, with wide variations from the north to south of the city. The 2 year/24 hour storm is 3.0 inches. The maximum precipitation occurs in October, with 28 days of rainfall exceeding 0.5 inches. In the rainy Pacific Forest region, pulse loadings are not as much of a concern compared to Tundra and Alaska Range regions, except in lower gradient streams.

The mountainous terrain of the Pacific Forest region has resulted in development along the coast and up stream and river valleys. The soils in the floodplains of these streams are predominantly silty, while those on the uplands are shallower and underlain by bedrock or thicker glacier till deposits. Stormwater runoff in developed areas is channeled by storm sewers, ditches, culverts, and creeks.

Juneau, Alaska's capital, is the largest municipality in the region with a population of 29,000. There are three cities in the region with populations between 7,500 and 15,000. Other municipalities range in size from less than a hundred people to 3,500 people. Communities are accessible by ferry or airplane. The only inter-community road system is on Prince of Wales Island in Southeast Alaska.

The Aleutian Island ecoregion is characterized by an extensive chain of volcanic islands extending from the southcentral mainland to the far western reaches of the Bering Sea. Aleutian Island communities are similar to those in the Tundra region in terms of demographics, but have a milder climate, heaver rainfall and no permafrost. Soils are shallow, volcanic and underlain with layers of uplifted sedimentary rock. Average annual rainfall is 40 to 60 inches, with most precipitation occurring during October through March. Land use planning, development buffers, and storm sewers are in the initial stages of implementation. Dutch Harbor is the largest Aleutian Island municipality, with a year-round population of just under 5,000. Access is by sea and air only.

The impacts of urban/community runoff and construction activities in each of the four major ecoregions can be significant. The most common impacts include defoliation of streambanks, sedimentation of anadromous fish habitat and the contamination of local waterbodies with

coliform bacteria originating from both humans and domestic animals.

According to the Department of Environmental Conservation (ADEC) 1994 preliminary draft *Section 303(d) Water Quality Assessment* sixteen waterbodies in the Alaska Range ecoregion are impaired (do not meet State Water Quality Standards) by urban effects associated with roads, highways, industry and residential development. Fecal coliform, turbidity and biological community alteration are the most common problems. Twelve waters in the Pacific Forest region are listed due to urban impacts. Turbidity, fecal coliform, petroleum products, sediment, debris, habitat modification, metals and low dissolved oxygen are the main causes of impairment. Anadromous fish returns in Duck Creek, in Juneau, are just remnants of previous years. Runoff from roads and housing development, improper culvert design and streambank defoliation are the principal causes.

Two Aleutian Island region waterbodies are impaired due to petroleum products in urban runoff, industrial operations and septic tanks. One impaired water in the Tundra ecoregion is located in King Salmon, and is listed due to the presence of petroleum products, metals, and pesticides from an abandoned landfill.

The prevalence of onsite disposal systems (septic systems) varies among the ecoregions. Septic systems are not used in tundra communities due to the presence of permafrost. Some communities have aboveground sewers, or individual households use honeybuckets or holding tanks. In the honeybucket system, human waste in buckets is hand-carried from the dwelling to community storage pits or landfills, or dumped directly onto the ground or ice or into the water. Alaska Range, Pacific Forest and Aleutian Island towns and cities use both onsite and centralized wastewater disposal systems. Onsite disposal systems sometimes use marine outfalls.

The Alaska Department of Environmental Conservation (ADEC) is drafting new regulations to initiate an onsite disposal system installer's certification program. ADEC also conducts an audit stamp program. Some lending institutions, as a condition of making a loan, require that an engineer certify that existing septic systems have been inspected and pumped and new systems have been properly installed. The certification is stamped by ADEC in order for the buyer to qualify for financing. Last year, approximately 1,800 property transfers requiring onsite disposal system inspections occurred, involving about 1,300 existing and 500 new onsite disposal systems. The vast majority of these existing septic systems were approved by ADEC on the basis of engineer certification.

ADEC requires installations discharging in excess of 500 gallons per day receive domestic wastewater disposal permits. In addition, systems serving more than a single family dwelling or duplex must have approvals to both construct and operate. ADEC regulations also stipulate separation distances between onsite systems and surface waters (including marine waters), surface and subsurface drinking water supplies, impermeable strata, and breaks in slope and

groundwater.

Failing onsite disposal systems in Alaskan coastal regions can pose significant risks to human health and water quality. Local waterbodies are in some cases unfit for swimming, shellfish harvesting and recreation due to onsite wastewater contamination. The presence of high nitrogen levels in surface waters may precede fecal coliform bacteria contamination. Hepatitis A, dysentery and other pathogenic bacterial or viral outbreaks occur periodically, and are linked to both failing septic systems and dumping of honeybuckets. Although human wastes account for most documented cases of coliform contamination, domestic and wild animals are also responsible for the introduction of pathogenic coliform to urban surface waters.

Alaska's coastal zone has 31.6 square miles of land per mile of public road. Similarly, the two coastal states of Maryland and Washington have about 0.4 and 0.9 square miles of land per mile of public road, respectively. About 7,473 miles or 66% of Alaska's roads occur in its 235,938 square mile coastal zone. Most of the roads are concentrated in the contiguous, more heavily urbanized areas of the Kenai Peninsula, Matanuska-Susitna borough and the Municipality of Anchorage. These areas support almost three-fourths of the state's population. The rest of the population lives in scattered, small communities with limited to minor local road systems, often less than 5 miles.

Most of the small town and village roads are gravel-surfaced which allows for infiltration and sheet flow of precipitation to the sides of the road and onto the road embankment. Communities in the 4,000-10,000 population range have limited road systems, and while the percent of roads paved may be high, the extent of curb and gutter is generally low, so sheet flow is high. Runoff may have to be controlled and treated before being released to natural drainage systems.

In the Tundra ecoregion, road designers try to select routes that avoid permafrost. If permafrost cannot be avoided, then engineers use construction techniques that either prevent thawing or that remove individual lenses of permafrost.

Virtually all bridges on the state highway system are "hard surfaced" with either unrestricted or scupper controlled runoff. While most bridges occur on relatively low volume highways, there may be cases where the runoff could impact water quality of the receiving water body. If problems were to be documented on bridges of highways eligible for federal highway (ISTEA) funding, they could qualify to be retrofitted to eliminate or reduce the runoff problem to within acceptable limits.

Typical mechanical stormwater controls include oil/water and sediment (grit) separators installed in structures ranging from small drain sumps to huge vaults. The practicality of these techniques, particularly those that may not receive regular maintenance or are in areas of low traffic volumes of less than 30,000 Average Daily Traffic (ADT) is highly questionable. ADOT/PF is currently initiating a research study on a low volume highway on the Kenai

Peninsula to determine the effectiveness of an expensive vault-type oil-grit separator at a vehicle pullout adjacent to the Moose River. Information from this study will help determine if and when these types of stormwater controls should be installed in the future.

Approximately half of the state's coastal zone receives high rainfall. The area encompasses the majority of the population and roads in the coastal zone. While the high rainfall at frequent intervals increases the potential to intensify erosion and sedimentation, it has the opposite effect of diluting stormwater concentrations of dissolved solids, oil and grease, and other pollutants that do not adsorb onto sediments. This situation may increase the need for effective erosion and sedimentation prevention BMP's, yet reduce the need for intensive stormwater treatment BMP's.

Snow and ice control during winter is a major safety concern statewide and is addressed in state and local roadway maintenance plans. Unlike states such as Michigan, where frequent salting is the predominant method of snow control, Alaska relies on plowing followed by sanding to control snow. In small communities, no maintenance or plowing are common, and sanding and salting are rarely used. In bigger communities, salt is used most often as an additive (5%) to stored sand to keep it from freezing.

Recent studies conducted by the Federal Highway Administration indicate that hydrocarbon and toxic pollutant runoff loads from rural roads with less than 30,000 Average Daily Traffic are relatively minor compared to urban roads with ADT's of greater than 30,000 (Federal Highway Administration, 1990). Airborne materials from adjacent land uses were found to contribute more nonpoint source pollution than vehicular traffic. These materials were found to collect on the road, then get flushed off with the next precipitation event. Only a few road segments in Anchorage approach or exceed this number of cars in a day. In villages, road dust can be entrained by the wind and passing vehicles, however road systems are generally short and traffic volumes low, so these effects are localized.

Impacts due to erosion, sedimentation and stormwater runoff are generally limited to local events in the larger urban areas. An example would be snow plowed, blown or dumped onto roadside creeks or large, several acre snow storage areas that might affect groundwater. A recent mishap occurred in Juneau where sediments and trash that had accumulated during several years of marine snow disposal "grounded out" a cruise ship.

ADOT/PF initiated a multi-year study to identify the dissolved constituents and sediment load of the snow dump melt water, and then develop a predictive model of contaminant release quantities and rates during spring snowmelt. Information from this study will be used to design effective snow storage BMP's. A similar study may have to be carried out to determine the effects of meltwater from road snow berms adjacent to streams and wetlands.

Virtually all new and reconstructed state road, highway and bridge construction projects are federally funded and thus are subject to NEPA review. Where wetlands or waters of the U.S.

are affected, projects are subject to the Corps 404 permit and DGC coastal consistency review processes. All of these reviews are structured to assure avoidance of wetland and water impacts where practicable and feasible and minimization of those impacts that cannot be avoided. It includes full resource agency review.

According to the draft preliminary 1994 Section 303(d) impaired waters list, road runoff or road impoundment may have contributed to the impairment of six waterbodies in the coastal zone (excluding Anchorage). Pollutants identified are: dissolved oxygen, debris, metals, fecal coliform, turbidity, habitat modification, temperature and salinity. These waterbodies are subject to a total maximum daily load (TMDL) assessment. This assessment is required when existing controls will not work to maintain water quality. Usually the problem is due to multiple sources of pollutants and additional, innovative controls are required. Even though highway construction with its attendant ditching and placement of culverts may have had impacts, other urban impacts must be considered.

Improper placement of culverts in drainages or streams during highway construction may cause degradation of fish habitat by altering and diverting flows and may prevent the passage of fish due to increased flow velocities. Perching, deep embedment, steep gradients, using too small a diameter of pipe to handle most flows and improper installation techniques are the main causes of problems.

Fish passage design criteria for sizing and installing culverts are being developed through cooperative efforts between the Department of Transportation and Public Facilities, the Department of Fish and Game and the University of Alaska Fairbanks. DOT&PF is proposing additional field research to further refine these criteria, which will then be applied on all future DOT&PF culvert installations on new roadways and, where feasible, on highways that are being reconstructed.

Maintenance activities, if not properly carried out, can also increase erosion, sedimentation and pollution of wetlands, waterbodies and associated habitats. Correct procedures for handling drainage and drainage structures (including wetlands and stream crossings), snow and ice control, and hazardous materials spills are addressed in the Alaska Highway Maintenance and Operations Manual (ADOT&PF, 1993).

During road, highway and bridge construction, DOT/PF will follow its recently adopted *Erosion and Sediment Control Plan-Policy and Procedures* (Alaska Department of Transportation and Public Facilities, 1995) and its *Guide to Preparing Erosion and Sediment Control Plans* (Alaska Department of Transportation and Public Facilities, 1995) to minimize temporary and permanent erosion and sedimentation during project development, construction and maintenance. DOT/PF is also in the process of revising and updating its *Highway Drainage Manual* (Alaska Department of Transportation and Public Facilities, 1995) which also addresses stormwater runoff and erosion and sedimentation impacts with respect to highways and bridges in particular.

In order to receive approval from the National Oceanic and Atmospheric Administration and the US Environmental Protection Agency, the Coastal Clean Water Plan must demonstrate that it meets applicable EPA management measures cited in the *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* The tables in Attachment 1 list the EPA management measures for urban development and roads, highways and bridges, and the state programs that meet the EPA measures. Note that the State has determined that the EPA measure for New Development is not economically achievable. Over the next several years the State will develop an alternative measure that meets the intent of the EPA measure and is achievable under Alaskan conditions.

Chapter 7 HARBORS AND MARINAS

The goal of the Coastal Clean Water Plan for Harbors and Marinas is to reduce pollutants entering water through the use of best available practices in planning, design, construction, maintenance and operation.

The Plan applies to new, significantly expanding and existing facilities in the coastal zone that support at least ten recreational vessels.

The majority of permanently-moored recreational vessels in Alaska are kept at harbors designed, built and owned by the Department of Transportation and Public Facilities. Three-fourths of the DOT&PF facilities are maintained under management agreements between DOT&PF and the local community. Approximately 11,000 vessels occupy moorage in the 34,000 miles of coastal shoreline. Almost 5000 are considered recreational vessels. There are 34,000 recreational vessels registered in Alaska.

Harbors in Southeast Alaska support a mix of recreational and commercial activity but are predominantly commercial. Harbors with a high percentage of recreational vessels are found in Prince William Sound. Very few harbors have been constructed on the western and northern coast of Alaska due to the extreme temperatures, short ice-free seasons and hostile weather conditions.

Circulation in harbors is generally good. Two-thirds of the state's harbors have tides in excess of 10 feet; in 90 percent of the state's harbors, the tidal range exceeds six feet. Designers can take advantage of these tides to provide natural flushing of a harbor basin. Fewer than five existing harbors have poor flushing characteristics.

Water quality in harbors and marinas is influenced by several factors. Glacial rivers carry thousands of cubic yards a day of fine suspended sediments to the ocean. The sediments not only affect dredging needs in harbors but also impact baseline total suspended solids (TSS) values. While harbors are located and designed to avoid the influence of these rivers, ambient

TSS values may still be high.

Much of the Southeast Alaska and Gulf of Alaska coastline is characterized by high mountains, deep fiords and high tidal ranges. Water quality is generally excellent in those areas. Western Alaska has long, gently sloping beaches, moderate nearshore ocean depths and sand, gravel and silty bottom conditions. Since the western coast has only a few communities and rapidly increasing depths off-shore, the water quality within harbors is assumed to have little or no impact on the ambient water outside the basin.

A developer must obtain a US Army Corps of Engineers Section 404 permit prior to construction of any new harbor or marina or modification of an existing facility. As part of this permitting process, an environmental analysis is performed to determine the impacts of a project on water quality; the extent to which these impacts can be avoided; and for those that cannot be avoided, how they can be minimized or mitigated. All state and federal resource/regulatory agencies review the environmental documents. In addition, the Department of Environmental Conservation must issue a Section 401 water quality certification certifying that the project meets state Water Quality Standards, and the Alaska Coastal Management Program must find the project consistent with state and local coastal management enforceable policies. If water quality information provided in the environmental analysis is inadequate, the DEC can request additional water quality data before issuing a Section 401 certification.

The Department of Transportation and Public Facilities performs habitat assessments if a harbor is proposed in an important aquatic habitat such as eelgrass beds or salmon migration and rearing areas. In addition, the Department of Fish and Game can require a habitat assessment during the permit review phase. Habitat assessments can include dive surveys along transect lines, vegetation community mapping, macro invertebrate mapping and substrate mapping. Habitat assessments particularly try to identify resources such as eelgrass beds, clam/cockle beds, mussel beds, herring spawning areas, and salmon rearing areas. Because several marine mammals are endangered species, Endangered Species Act coordination must be done with the appropriate agency.

Typical shorelines along the Southeast Alaska, Gulf of Alaska and Aleutian Island coasts are steep and rocky with pocket beaches; therefore, shoreline erosion is relatively minor. Mainland Bering Sea beaches are composed of very erodible fine sands but recreational harbor development is virtually nil.

Alaska has relatively few upland hull maintenance areas. Fewer than ten marinas have dedicated paved upland maintenance areas or boat yards; 17 facilities have gravel areas. About 15 harbors have boat lifts to take large vessels out for maintenance. There are no upland hull maintenance areas currently planned at new or significantly expanding harbors. Many boats are pulled out of the water after the summer season and are maintained in winter storage areas away from the harbor. Larger vessels (greater than 24' in length) typically remain in water year-round and

undergo maintenance on tidal grids.

Most upland hull maintenance areas are gravel lots that are set back from the water. The gravel provides natural filtration for runoff. Paved upland hull maintenance areas are typically less than 1/2 acre in size. Runoff from the paved areas goes into oil-water separators or settling ponds if required by Corps of Engineers designers or the Department of Environmental Conservation.

There are approximately 40 fueling facilities listed in the 1994 DOT&PF inventory of harbors and marinas. Seventy-five percent of these facilities indicated in a recent survey that they have containment and cleanup equipment (booms, pads or sorbents) at the fueling facilities. An additional ten harbors indicated that they have cleanup equipment although there is no fuel facility in the harbor. These numbers are likely to be low because the inventory is constantly being updated as information becomes available.

Typically, fuel docks are designed with a concrete deck and are located in an area with easy access, but away from the other floats due to fire potential. Fuel docks, if located within a harbor, should be visible from the harbormaster's office. Harbors must report all fuel spills greater than five gallons to the Coast Guard. The Coast Guard indicated that most harbors have reported spills. DOT&PF Harbor Management Agreements require clean-up equipment at fuel docks.

There are estimated to be at least 5100 recreational vessels having a marine head or portable toilet on board (Department of Fish and Game, 1993). The density of live-aboards is quite low. At the present time there are only four pumpouts in state-owned harbors. One of these has failed and is scheduled to be repaired. A cooperative program has been initiated between DOT&PF and the Department of Fish and Game to construct or expand pumpout stations in recreational harbors through Clean Vessel Act grants. During the first phase of the program, nine pumpout stations will be designed and constructed and one will be upgraded. This should provide services to about 90% of the salt-water recreational boaters in the state (Department of Fish and Game, 1993). Fish and Game is applying for Clean Vessel Act funds in 1996 to install additional pumpouts at harbors and marinas. Within the next five years there could potentially be about five-times the number of pumpouts as there are now.

Solid waste generated in Alaskan harbors is typical of most mixed recreational and commercial facilities, although actual quantities are not known. Twenty-nine harbors have one or more MARPOL services. All facilities that have management agreements with the DOT&PF must collect garbage. Batteries, nets, aluminum, copper and other materials are recycled at 26 facilities. The Aleutians East Borough developed guidelines for the operation and maintenance of marine refuse reception facilities.

There are approximately 60 grids throughout the state. Typical activities performed while a boat is on a grid includes power washing, changing zincs and maintaining or repairing propellers,

cooling coils, rudder pintals, etc. Very seldom is sanding of hulls done on grids. In general, grids are used by 26-foot or greater vessels. Vessels 24-foot in length or less are usually trailered out of the water and repaired or maintained away from the harbor.

Solid waste pollutants associated with grids include bottom paint residue, solvents, organics and repair debris such as wasted zincs and fasteners. Bottom cleaning chemicals, paint (especially paint containing lead, copper, mercury or tin) and solvents may be toxic or hazardous to marine organisms. The Corps of Engineers has found high concentrations of heavy metals in the sediments around many grids.

The potential for high volumes of sport-caught fish waste are possible during peak salmon runs. Marina operators will often post signs asking that fish not be cleaned on the docks for safety and water quality reasons. Concentrations of fish waste can cause an increase in the biochemical oxygen demand, dissolved oxygen and total suspended solids in a harbor. The stench from the waste can be annoying. Piles of fish waste are unsightly and can cause slippery docks. Recreational fish cleaning stations installed in some high summer-use marinas have created problems, leading some harbor operators to install floating dumpsters or to barge the fish waste outside the harbor waters.

According to the 1995 DOT&PF Alaska Harbor Management System survey, most harbors have waste oil collection facilities but few have hazardous waste collection points. Currently, hazardous materials are collected off-site at receiving stations set up during hazardous waste cleanup days. This appears to be adequate to control these types of materials. Liability to the harbor manager or owner is reduced as well.

According to the US Coast Guard, most harbors have reported oil sheens. Several coastal waters are impaired by bilge pumping and incidental fuel spills.

Most boat cleaning and maintenance is done out of the water. Knowledgeable staff believe that in-water cleaning of hulls by divers and power washing of decks is not extensive in Alaska.

Recreational boating along the high energy, rocky shorelines of Southeast Alaska and the Gulf of Alaska does not cause significant erosion or degradation of shallow water habitats. Although the Bering Sea coast in western Alaska has long, gently sloping beaches, moderate nearshore ocean depths and sand, gravel or silty bottoms, there is very little recreational boating due to severe weather and unprotected waters. Concerns have been expressed about boating-caused erosion on the Stikine River, Taku River and Alsek River in Southeast Alaska and the Kenai River in Southcentral Alaska. The Kenai River has documented erosion from boating activities. Because of this, the Kenai River has a management plan which limits outboard motor size to reduce wakes that erode the river banks and destroy fish habitat.

The Coastal Clean Water Plan for Harbors and Marinas will strive to carry out the following

objectives:

1. Complete the Alaska Coastal and Harbor Design Procedures Manual which will incorporate nonpoint source pollution management measures. Scheduled completion is early 1997. Field test the effectiveness of the design procedures in protecting water quality by performing pre- and post-construction monitoring. Evaluate the findings from the field and modify the text as needed. Scheduled completion 2000.

2. Establish harbor operation and maintenance Best Management Practices (BMP's) that reduce nonpoint source pollution.

3. Hold workshops for harbormasters and marina operators on how to prepare oil spill response plans and how to comply with MARPOL and DEC regulations. These classes could be conducted by DEC and the US Coast Guard.

4. Develop a boater education program.

The greatest obstacles to accomplishing these objectives are lack of funding for monitoring, design and management, and lack of awareness. In addition, because of Alaska's varied climate and topography, there is rarely a "cookbook" solution to any given problem. This leads to inconsistent quality control of marine design. To compound the situation, harbors in locations that are naturally protected, easily accessed or dredged have all been constructed. The Coastal Clean Water Plan will fund as many of the objectives as possible and will also seek additional sources of funding.

In order to receive approval from the National Oceanic and Atmospheric Administration and the US Environmental Protection Agency, the Coastal Clean Water Plan must demonstrate that it meets applicable EPA management measures cited in the *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* The attached tables list the EPA management measures for harbors and marinas and the state programs that meet the EPA measures. The main state programs that meet the EPA management measures for harbor siting and design are the DOT&PF *Coastal and Harbor Design Procedures Manual*, Alaska Coastal Management Program Habitats regulation, Department of Fish and Game fish habitat permit and Department of Environmental Conservation Section 401 Water Quality Certification. The main state programs that meet the EPA management measures for operation and maintenance are the proposed state harbor and marina operation and maintenance Best Management Practices guidance manual, harbor management agreements between DOT&PF and harbor operators, several Department of Environmental Conservation statutes and regulations and education and technical assistance programs for recreational boaters, marina managers and harbormasters.

Chapter 8 HYDROMODIFICATION

The goals of the Coastal Clean Water Plan for Hydromodification are to maintain water quality and quantity in unimpacted watersheds and to maintain healthy populations of plant and animal species by maintaining the aquatic and riparian habitats necessary to sustain them. For impacted watersheds, the goal is to restore degraded water quality and quantity to meet water quality standards and protect designated uses and restore damaged aquatic populations by restoring their habitats.

The Plan applies to dams, channelization and channel modifications and human-caused shoreline and streambank erosion in the coastal zone.

Other than trapping insignificant amounts of sediment, run of the river dams in coastal Alaska are usually have been designed to have very little impact on the physical and chemical characteristics of the impounded stream segment and downstream reaches. Other dams can modify upstream and downstream flows, trap sediments, and in some instances, result in temperature modifications and gas supersaturation. There are only a few dams in Alaska that restrict fish passage, and those projects have fish bypass systems.

Channel modifications and human-caused erosion have had significant local impacts, but because of our large area, small population, and relatively recent development, the great majority of Alaska's streams and rivers are much closer to their natural condition than in any other state.

The objectives of the Coastal Clean Water Plan for Hydromodification are:

1. Develop a database which records and categorizes aquatic and terrestrial habitat problems from dam construction, operation, and maintenance, to assist in prioritizing impacts.

2. Develop BMP's for operation and maintenance of dams and attach as conditions on Department of Fish and Game Title 16 permits.

3. Hold training sessions for resource agencies that have a role in reviewing FERC licenses.

4. Identify modified and at-risk channels.

5. Identify impacted and at-risk habitats.

6. Develop mechanisms to protect and restore habitats.

7. Expand ongoing streambank stabilization demonstration projects to other areas of the

state.

In order to receive approval from the National Oceanic and Atmospheric Administration and the US Environmental Protection Agency, the Coastal Clean Water Plan must demonstrate that it meets applicable EPA management measures cited in the *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* The attached tables list the EPA management measures for hydromodification, and the state programs that meet the EPA measures.

Chapter 9 WETLANDS, RIPARIAN AREAS AND VEGETATED TREATMENT SYSTEMS

The goal of the Coastal Clean Water Plan for Wetlands and Riparian Areas is to develop a comprehensive strategy that protects high value wetlands and riparian areas, including areas that provide significant nonpoint pollution abatement functions, and restores high value wetlands with significant nonpoint pollution abatement functions where economically achievable and ecologically desirable. The short term goal for Vegetated Treatment Systems (VTS) is to determine their effectiveness under Alaskan conditions. If they are effective in some or all of Alaska, the long term goal is to promote their use.

The Coastal Clean Water Plan for Wetlands, Riparian Areas and Vegetated Treatment Systems applies to the Alaska coastal zone.

About 65% of Alaska's land area-- almost 175 million acres-- is wetlands. By comparison, wetlands occupy only 5% of the surface area of the Lower 48 states. Wetlands in Alaska include types commonly referred to as bogs, muskegs, wet and moist tundra, ferns, marshes, swamps, mud flats and salt marshes. Wetlands range in elevation from tideline to high alpine zones, and are as common on slopes as they are in lowlands and depressions, due to the presence of permafrost or high precipitation and shallow depth to bedrock. All of western and northern coastal Alaska is tundra, which the U.S. Army Corps of Engineers (Corps) identified as wetlands. Riparian areas have not been delineated.

Cumulative long term losses total less than 200,000 acres statewide, approximately 1/10 of 1 per cent of Alaska's total wetlands. Of this, about 80,000 acres have been lost due to agricultural development (however, virtually all of this acreage is outside the coastal zone and occurred before the major agricultural wetlands protection program referred to as Swampbuster), about 40,000 acres were lost in Anchorage before the Anchorage Wetlands Management Plan was adopted, about 15,000 acres in Juneau were lost before the adoption of the Juneau Wetlands Management Plan, and about 11,000 acres of wetlands were lost during the construction of the North Slope oil facilities and Haul Road. The remaining losses are primarily from placer mining

before the 1940's.

There are no figures available for the acres of riparian areas lost or degraded.

Vegetated Treatment Systems are constructed wetlands and vegetated filter strips. Constructed wetlands are upland environments that have been modified to create poorly drained soils and wetlands flora and fauna for the primary purpose of pollutant removal from wastewaters or runoff. Vegetated filter strips are created areas of vegetation designed to remove sediment and other pollutants from surface water runoff by filtration, absorption and various forms of deposition.

No comprehensive inventory of constructed wetlands and vegetated filter strips has been undertaken in Alaska. An informal survey of state and municipal personnel and review of selected reports indicate that only a few vegetated treatment systems exist in Alaska. The track record, data and science is very limited, and at this point VTS effectiveness is promising but inconclusive. The reason for the limited number of VTS projects may be due to the cold climate, short growing season, high rainfall in some regions and lack of information.

The Coastal Clean Water Plan for Wetlands, Riparian Areas and Vegetated Treatment Systems will seek to accomplish the following objectives

1. **Develop a comprehensive wetlands management strategy**. The purpose of this strategy is to do two things: develop a written document for managing wetlands and to obtain consensus among Alaskans for the objectives contained in the strategy.

2. **Develop a North Slope mitigation strategy**.

3. **Evaluate and continue development of General Permits**.

4. **Provide technical assistance to a Native organization.** DEC, EPA and the Chugachmuit Native Association (Prince William Sound area) will sign an environmental partnership agreement. As part of the agreement, DEC will assist the Native association in drafting a regional comprehensive wetlands plan, to be part of the Chugachmuit resource management plan.

5. **Determine the usefulness of the Hydrogeomorphic Assessment and Classification Methodology (HGM).** HGM is expected to provide Alaska with a methodology that will consider local unique conditions such as permafrost. Pollutant buffering and retention are considered in this methodology. Key state personnel will attend HGM training to learn if it can be applied in Alaska.

6. **Assist a community in preparing a wetlands conservation management plan**. The

purpose of this task is to determine if local wetlands conservation management plans can improve wetlands management.

7. **Promote the use of VTS where these systems will serve a significant nonpoint source pollution abatement function.**

Funding is available for the next two state fiscal years (July 1,1995- June 30,1997) to accomplish Action Plan objectives 1-5. The state will seek funding to accomplish objectives 6-7.

The most significant constraint to achieving the objectives is the uncertainty created by proposed federal legislation. Another constraint is the conflicting positions of Alaskan interest groups.

In order to receive approval from the National Oceanic and Atmospheric Administration and the Environmental Protection Agency, the Coastal Clean Water Plan must demonstrate that it meets applicable EPA management measures cited in *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* A list of the EPA management measures, and the state authorities that meet the intent of the measures is attached. The state has sufficient authority to protect wetlands and restore wetlands. No state authorities have been identified that promote the use of vegetated treatment systems, but the Coastal Clean Water Plan will make funding available for VTS projects if they are found to be effective.

Chapter 10 AGRICULTURE

Agricultural development in Alaska's coastal region has an insignificant impact on coastal resources and human health.

Erosion and sedimentation from agricultural lands is minimal. Vegetable and grain production has the greatest potential for erosion, yet less than 900 acres were cultivated for vegetables in 1993 and 900 acres were planted in grains, generally using no-till practices. Erosion from livestock can also be a source of sediment, yet stocking rates on range and pasture averaged about 1.4 animals per 100 acres. The potential for increased erosion from agricultural lands in the future is minimal. New farms in the Point MacKenzie area will be subject to Farm Conservation Plans which include a soil erosion component.

Wastewater and runoff from confined animal facilities is also insignificant. There are only five dairies in the entire coastal region that are large enough to potentially cause problems. The dairies are widely separated and have approved waste management systems. There are no beef feedlots, stables, poultry facilities or swine facilities that meet the minimum size threshold. Within the next five years there may be another two dairies at the Point MacKenzie area. These facilities will have approved Farm Conservation Plans and approved waste management systems.

About 4700 tons of commercial fertilizers were applied to about 11,000 acres of agricultural land in the entire coastal zone. Fertilizers are applied in May and June after the soils are thawed and the threat of overland flow has diminished. Precipitation is infrequent and of low intensity during that period.

Pesticides were applied to about 2,000 acres in 1992. Degradation rates are slow due to cold soil temperatures which can lead to over-application. The Alaska Cooperative Extension and USDA Natural Resources Conservation Service have developed educational materials for farmers that address this concern. No pesticides have been found in surface or ground waters tested to date.

Although 700,000 acres are classified as suitable for sheep or cattle grazing, there is very little production. Average stocking density is 1.4 animals per 100 acres. Grazing leases are subject to management plans.

Less than 1000 acres were irrigated in 1992, consuming about 8800 acre-feet of water per year. There is no evidence of irrigation water entering surface waters through runoff.

Chapter 11 ADDITIONAL MEASURES

Section 6217(b) of the Coastal Zone Act Reauthorization Amendments and the EPA *Program Development and Approval Guidance* requires state coastal nonpoint pollution control programs to identify impaired and threatened coastal waters; identify land uses that cause or threaten water quality impairment; establish critical coastal areas (important areas that may need additional measures to protect against current or anticipated problems); develop and implement additional measures for the critical coastal areas and land uses if necessary to protect or restore water quality; monitor the effectiveness of the additional controls and revise the additional controls as needed.

The Department of Environmental Conservation has developed a preliminary draft list of impaired and threatened coastal waters. Nineteen impaired waters, one threatened water and two "waters of concern" have been tentatively identified as subject to the Coastal Clean Water Plan additional measures requirement.

DEC, in conjunction with EPA and affected parties, has already begun the process of identifying land uses that are causing or contributing to the degradation of the impaired waters, or that could potentially degrade threatened waters or waters of concern. Target date for completion of the identification process is 1997.

Two types of critical coastal areas will be established. The first type will focus on areas adjacent to waters that are already impaired; the second type will focus on areas adjacent to

waters that are not impaired but are deemed important enough to warrant special consideration. The boundaries of the critical coastal area must encompass the significant sources of nonpoint pollution. The State, with input from other agencies, the public, affected parties and others will take the lead in developing boundary selection criteria and making recommendations on specific critical coastal areas.

The State, in conjunction with EPA and affected parties, has already begun the process of determining whether existing nonpoint source pollution controls are sufficient to bring impaired waters into compliance with the State's Water Quality Standards. If evidence indicates that in some cases existing controls are not adequate, the State and EPA will take the lead in developing additional controls to restore water quality. The additional controls are being developed under section 303(d) of the Clean Water Act, the Total Maximum Daily Load program.

For the second type of critical coastal area-- important areas warranting special consideration-- the State, with input from other agencies, affected parties and others, will take the lead in assessing management options for those areas. The assessment may indicate that additional controls are needed as soon as practical or that existing controls are sufficient to maintain water quality and/or aquatic habitat.

For both types of critical coastal area, if existing controls are determined to be adequate to restore water quality, but after a monitoring period they are shown to not be effective, then additional measures will need to be implemented as soon as practical.

The State will lead teams of experts who will work with the affected parties to develop additional measures tailored to the specific critical coastal area and land uses. The State will also provide technical support to assist the affected parties in implementing the additional measure(s). A monitoring program and schedule will be developed as part of the implementation package.

Chapter 12 MONITORING

The overall goals of the Coastal Clean Water Plan monitoring program are to assess over time the effectiveness of pollution controls in reducing pollution loads and improving water quality; and to determine the need for additional pollution controls to meet water quality objectives in the coastal zone. These goals will be achieved by

1) Surveying federal, state, local and industry personnel to determine what monitoring is already being done. Target date for completion of the directory is July 1996.

2) Determining monitoring objectives for key watersheds, key land uses and key pollution

controls. Target date for completion of this task is July 1996.

3) Identifying monitoring or data gaps, if any. Target date for completion of the gap summary is July 1996.

4) Identifying the types of monitoring (implementation, trend, effectiveness, baseline, etc.) that are necessary to achieve goals and objectives.

5) Identifying available options to address the monitoring gaps. Target date for completion of this task is July 1996.

6) Implementing the monitoring program.

Tasks 2-5 will be coordinated with the Section 303(d) Total Maximum Daily Load program for impaired waterbodies that require additional pollution controls. The Section 303(d) program also requires monitoring to determine the effectiveness of additional controls.

ATTACHMENT 1

MANAGEMENT MEASURE SUMMARY

FORESTRY MANAGEMENT MEASURES

Management Measure: Preharvest Planning		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Identify location of waterbodies, sensitive areas and landslide-prone areas within the harvest unit.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of surface waters and if applicable, the anadromous fish-bearing classification of surface waters that abut or are within harvest units (a)(5)(A), and any known unstable or slide-prone slopes (a)(9)(A).
Time the activity for the season or moisture conditions when the least impact occurs.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the dates the operations are expected to begin and end (a)(4).
Consider potential water quality impacts and erosion and sediment control in the selection of harvesting and site preparation methods.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the harvest and yarding techniques and location of landings (a)(6) and a description of reforestation and site preparation methods (a)(10).
Identify landslide-prone areas and avoiding harvesting in such areas to the extent practicable.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of any known unstable or slide-prone areas located in cutting units (a)(9)(A)
Consider additional contributions from harvesting or roads to any known existing water quality impairments or problems in watersheds of concern.		

Management Measure: Preharvest Planning		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Locate roads, landings and skid trails to avoid to the extent practicable steep grades and steep hillslope areas, and to decrease the number of stream crossings.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of any unstable or slide-prone slopes that are traversed by roads (a)(9)(A), where known, the site specific erosion prevention measures developed under 11 AAC 95.290(a) ((a)(9)(C), and the approximate location of stream crossings (a)(5)(B) and (C).
Avoid to the extent practicable locating new roads and landings in Streamside Management Areas	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of any known road to be located in a riparian area for a reason other than a water crossing (a)(7)(C).
	11 AAC 95.285(b), Road Location	A road may not be located in a riparian area except where access is needed to a water body crossing, or where there is no feasible alternative. A road in any riparian area must be designed and located to minimize adverse effects on fish habitat and water quality.
Determine road usage and select the appropriate road standard.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include whether roads are intended to be permanent or temporary (a)(7)(A).
	11 AAC 95.290, Road Construction	This regulation set forth the standards for forest road construction .
Size and site stream crossing structures to prevent failure.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of proposed stream crossings; a stream crossing must be designed and constructed in accordance with 11 AAC 95.300 and 11 AAC 95.305.

Management Measure: Preharvest Planning		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
	11 AAC 95.285, Road Location	This regulation sets forth the standards for determining the location of a new road, including stream crossing structures.
	11 AAC 95.300, Bridge Standards	This regulation sets forth the standards for bridge construction.
	11 AAC 95.305, Culverts and Other Water Crossing Provisions	This regulation sets forth the standards for culverts and fords.
For fish-bearing streams, design crossings to facilitate fish passage.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must include the location of stream crossings requiring approval by the Department of Fish and Game (a)(5)(C).
	11 AAC 95.300(c), Bridge Standards	This regulation sets forth the standards for bridge construction over anadromous fish-bearing waters.
	11 AAC 95.305, Culverts and Other Water Crossing Provisions	This regulation sets forth the standards for culverts and fords in anadromous fish-bearing streams.
Ensure that the design of road prism and road surface drainage are appropriate to the terrain and that the road surface design is consistent with the road drainage structures.	11 AAC 95.290, Road Construction	This regulation sets forth the standards for road construction, design and road running surface.
	11 AAC 95.295, Road Drainage	This regulation set s forth the drainage standards for forest roads.
Use suitable materials to surface roads planned for all-weather use to support truck traffic.	11 AAC 95.290, Road Construction	This regulation sets forth the standards for road running surfaces, including winter roads.

MANAGEMENT MEASURE: STREAMSIDE MANAGEMENT AREAS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Establish and maintain a streamside management area along surface waters, which is sufficiently wide and which includes a sufficient number of canopy species to buffer against detrimental changes in the temperature regime of the waterbody, to provide bank stability and to withstand wind damage. Manage the SMA in such a way as to protect against soil disturbance in the SMA and delivery to the stream of sediments and nutrients generated by forestry activities, including harvesting. Manage the SMA canopy species to provide a sustainable source of large woody debris needed for instream channel structure and aquatic species habitat.	AS 41.17.115-.119, Riparian Areas 11 AAC 95.260, Riparian Standards	AS 41.17.115 to .119 and 11 AAC 95.260 stipulate that the management intent for riparian areas is the adequate preservation of fish habitat by maintaining a short- and long-term source of large woody debris, stream bank stability, channel morphology, water temperatures, stream flows, water quality, adequate nutrient cycling, food sources, clean spawning gravels, and sunlight. Timber harvest is prohibited within 100 feet of an anadromous or high value resident fish waterbody on state and federal land in Southeast Alaska, and State, federal and private land in Southcentral, Northern and Western Alaska. Timber harvest on private land in Southeast Alaska is prohibited within 66 feet of a Type A waterbody, and must be conducted in compliance with slope stability standards within 100 feet of a Type B waterbody or 50 feet of a Type C waterbody. On other public land, timber harvest is not allowed within 100 feet of an anadromous or high-value resident fish waterbody located south or north of the Alaska Range. This requirement may be waived north of the Alaska Range if adequate protection is in place.

	11 AAC 95.280(d), Slope Stability Standards in a Riparian Area	This regulation sets forth the standards to prevent sediment, small woody debris and other residue from entering surface waters in a riparian area.
	11 AAC 95.350, Bank Integrity	This regulation sets forth the standards for maintaining bank integrity.

MANAGEMENT MEASURE: ROAD CONSTRUCTION/RECONSTRUCTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Follow preharvest planning (as described under Management Measure A) when constructing or reconstructing the roadway.	AS 41.17.120, Inspections and Investigations	The department may inspect and investigate forest land activities as necessary to ensure compliance with applicable regulations and requirements, including adherence to the Detailed Plan of Operations. Enforcement procedures are specified in AS 41.17.125-.143
	11 AAC 95.290, Road Construction	This regulation sets forth standards for road construction.
Follow designs planned under Management Measure A for road surfacing and shaping.	AS 41.17.120, Inspections and Investigations	The department may inspect and investigate forest land activities as necessary to ensure compliance with applicable regulations and requirements, including adherence to the Detailed Plan of Operations. Enforcement procedures are specified in AS 41.17.125-.143
	11 AAC 95.290, Road Construction	This regulation sets forth standards for road surfacing and shaping.

MANAGEMENT MEASURE: ROAD CONSTRUCTION/RECONSTRUCTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Install road drainage structures according to designs planned under Management Measure A and regional storm return period and installation specifications. Match these drainage structures with terrain features and with road surface and prism designs.	AS 41.17.120, Inspections and Investigations	The department may inspect and investigate forest land activities as necessary to ensure compliance with applicable regulations and requirements, including adherence to the Detailed Plan of Operations. Enforcement procedures are specified in AS 41.17.125-.143
	11 AAC 95.295, Road Drainage	This regulation sets forth standards relating to spacing of drainage structures. Operators must install appropriate ditches, culverts, cross drains, drainage dips, water bars, and diversion ditches when the natural drainage is crossed with the roadbed material. Operators also must ensure that there is adequate interim drainage, prior to finishing the project, if activities must be suspended because of winter conditions or other situations. Additionally, operators are required to use measures such as settling basins, cross drains, and vegetated areas to minimize sedimentation as a result of road construction activities.
Guard against the production of sediment when installing stream crossings.	11 AAC 95.300, Bridge Standards	This regulation sets forth standards for bridge construction.
	11 AAC 95.305, Culverts and Other Water Crossing Provisions	This regulation sets forth standards for culvert and ford installation.

MANAGEMENT MEASURE: ROAD CONSTRUCTION/RECONSTRUCTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Protect surface waters from slash and debris material from roadway clearing.	11 AAC 95.290(e), Road Construction	Where feasible, operators must fell tress away from fish-bearing waters, standing waters, and from other surface waters where necessary to avoid degradation of water quality. An operator may not fell a tree into cataloged anadromous fish-bearing waters without prior approval of Fish and Game. If a tree is felled into non-catalogued waters, the operator shall remove the limbs and other small debris within 48 hours, and shall remove the bole as soon as necessary equipment is at the site. If a tree is felled into non-fish bearing waters or surface waters, the operator must remove the debris at the earliest feasible time when necessary to avoid degradation of water quality.
Use straw bales, silt fences, mulching, or other favorable practices on disturbed soils on unstable cuts, fills, etc.	11 AAC 95.290(c), Road Construction	Operators must treat unstable soils with effective and appropriate erosion control measures such as grass seeding or erosion control mats.
Avoid constructing new roads in SMAs to the extent practicable.	11 AAC 95.285(b), Road Location	A road may not be located in a riparian area except where access is needed to a water body crossing, or where there is not feasible alternative. A stream crossing or road in any riparian area must be designed and located to minimize significant adverse effects on fish habitat and water quality.

MANAGEMENT MEASURE: ROAD MANAGEMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Avoid using roads where possible for timber hauling or heavy traffic during wet or thaw periods on roads not designed and constructed for these conditions.	11 AAC 95.290(h), Road Construction	The Division of Forestry may block or prohibit summer vehicle traffic on winter roads if necessary to prevent surface water siltation. *Forest roads in Southeast Alaska are generally constructed for year-round use.*
	11 AAC 95.365, Tracked and Wheeled Harvest Systems	Tracked skidders, wheeled skidders or logging shovels may not be used during saturated soil conditions if degradation of surface and standing water quality is likely to result.
Evaluate the future need for a road and close roads that will not be needed. Leave closed roads and drainage channels in a stable condition to withstand storms.	11 AAC 95.320, Road Closure	This regulation sets forth the requirements for road closure.
Remove drainage crossings and culverts if there is a reasonable risk of plugging or failure from lack of maintenance.	11 AAC 95.320(h), Road Closure	This regulation sets forth the standards for bridge, culvert and fill removal during road closure.
Following completion of harvesting, close and stabilize temporary spur roads and seasonal roads to control and direct water away from the roadway. Remove all temporary stream crossings.	11 AAC 95.315(c), Road Maintenance	As soon as feasible following termination of active use, operators must maintain ditches and drainage structures to assure water flow and fish passage; and keep the road surface crowned, outsloped, water barred or otherwise left in a condition not conducive to erosion.

MANAGEMENT MEASURE: ROAD MANAGEMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	11 AAC 95.320, Road Closure	Bridges, culverts and fills must be removed from surface waters, unless the Division of Forestry determines other measures would provide adequate protection. Removal standards are set forth in (c).
Inspect roads to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or seeding of road surfaces, and, in extreme cases, slope stabilization or removal of road fills where necessary to maintain structural integrity.	11 AAC 95.315, Road Maintenance	This regulation sets forth requirements for active road maintenance and inactive road maintenance. If necessary to prevent significant degradation of surface water quality or fish habitat, the Division of Forestry will, in its discretion, require an operator or landowner to rehabilitate unstable or erodible exposed soils by a suitable method to minimize siltation of surface waters.
Conduct maintenance activities, such as dust abatement, so that chemical contaminants or pollutants are not introduced into surface waters to the extent practicable.	11 AAC 95.315(b)(3), Road Maintenance	Operators must perform road surface maintenance as necessary to minimize erosion of the surface and subgrade.
Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood (a) that stream overflow will divert onto roads, and (b) that fill erosion will occur if the drainage structures become obstructed.	11 AAC 95.315, Road Maintenance	On active and inactive roads, operators must keep culverts functional.

MANAGEMENT MEASURE: TIMBER HARVEST		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Timber harvesting operations with skid trails or cable yarding follow layouts determined under Management Measure A.	11 AAC 95.340, Harvest Unit Planning and Design	Logging systems and harvest units must be in compliance with the requirements of the Forest Resources and Practices Act.
Install landing drainage structures to avoid sedimentation to the extent practicable. Disperse landing drainage over sideslopes.	11 AAC 95.345, Landing Location, Construction and Operation	Landings must be located, constructed and operated in a manner that minimizes sedimentation of surface and standing waters (a)(4). Landings must be sloped, water barred, ditched or otherwise constructed and maintained to minimize accumulation of water on the landing (b)(6).
Construct landings away from steep slopes and reduce the likelihood of fill slope failures. Protect landing surfaces used during wet periods. Locate landings outside of SMAs.	11 AAC 95.345, Landing Location, Construction and Operation	Where slopes have a grade greater than 67%, are unstable or are in a slide-prone area, fill material used in construction of a landing must be free from loose stumps and excessive accumulations of slash, and must be mechanically compacted in layers if necessary to prevent soil erosion and mass wasting (b)(4). Truck roads, skid trails or fire trails must be outsloped or cross drained uphill of the landing and the water diverted onto the forest floor away from the toe of any landing fill ((b)(5) Landings must be sloped, water barred, ditched or otherwise constructed and maintained to minimize accumulation of water on the landing (b)(6).
Protect stream channels and significant ephemeral drainages from logging debris and slash material.	11 AAC 95.345, Landing Location, Construction and Operation	Landings must be located, constructed and operated in a manner that prevents logs and vegetative debris from entering surface and standing waters (a)(3).

MANAGEMENT MEASURE: TIMBER HARVEST		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	11 AAC 95.370(c), Slash	Unstable slash concentrations around a landing must be disposed of or dispersed by the operator to prevent entry into surface waters.
Use appropriate areas for petroleum storage, draining, dispensing. Establish procedures to contain and treat spills. Recycle or properly dispose of all waste materials.	11 AAC 95.815, Disposal of Waste Material	This regulation sets forth the standards for the handling and disposal of petroleum products and waste material.
Limit yarding corridor gouge or soil plowing by properly locating cable yarding landings.	11 AAC 95.360, Cable Yarding	This regulation sets forth the standards for cable yarding.
Locate corridors for SMAs following Management Measure B.	11 AAC 95.360, Cable Yarding	This regulation sets forth the standards for cable yarding.
	11 AAC 95.350, Bank Integrity	This regulation sets forth the standards for maintaining bank integrity.
Within SMAs, operate ground skidding equipment only at stream crossings to the extent practicable. In SMAs, fell and endline trees to avoid sedimentation.	11 AAC 95.365(b), Tracked and Wheeled Harvest Systems	Within riparian areas, the number of skidding routes must be minimized, and one-end suspension of logs is required.
Use improved stream crossings for skid trails which cross flowing drainages. Construct skid trails to disperse runoff and with adequate drainage structures.	11 AAC 95.365(f), Tracked and Wheeled Harvest Systems	When using tracked and wheeled vehicles, operators must use water bars or another appropriate techniques as necessary and outslope skid trails where feasible
On steep slopes, use cable systems rather than ground skidding where ground skidding may cause excessive sedimentation.	11 AAC 95.340, Harvest Unit Planning and Design	Yarding and skidding must be in compliance with the Forest Practices Act and regulations.

MANAGEMENT MEASURE: REVEGETATION OF DISTURBED AREAS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Revegetate disturbed areas (using seeding or planting) promptly after completion of the earth-disturbing activity. Local growing conditions will dictate the timing for establishment of vegetative cover.	11 AAC 95.290, Road Construction	Operators must treat unstable soils with effective and appropriate erosion control measures such as grass seeding, erosion control mats or end-hauling materials.
	11 AAC 95.300, Bridge Standards	Earth embankments constructed for bridge approaches must be revegetated or otherwise protected from erosion.
	11 AAC 95.326, Material Extraction and Disposal Sites	Within the first growing season after completion of a disposal operation, operators must stabilize the site and all exposed erodible soils by revegetation with grass, clover, ground cover or if possible, native ground cover.
	11 AAC 95.330, Rehabilitation After Mass Wasting	Where mass wasting is caused by forestry operations, the operator must, to the extent feasible, stabilize the slide path and all associated exposed soils by grass seeding, erosion control mats or other effective slope stabilization measures.
	11 AAC 95.350, Bank Integrity	The Division of Forestry may require stabilization of disturbed banks to prevent soil erosion and degradation of water quality.
Use mixes of species and treatments developed and tailored for successful vegetation establishment for the region or area.	same regulations as listed above	

MANAGEMENT MEASURE: REVEGETATION OF DISTURBED AREAS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Concentrate revegetation efforts initially on priority areas such as disturbed areas in SMAs or the steepest areas of disturbance near drainages.	same regulations as listed above.	

MANAGEMENT MEASURE: WETLANDS FOREST		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Plan, operate, and manage normal, ongoing forestry activities (including harvesting, road design and construction, site preparation and regeneration, and chemical management) to adequately protect the aquatic functions of forested wetlands.	11 AAC 95.220, Detailed Plan of Operations	Detailed Plans of Operations must show the location of cutting units and location of surface waters, anadromous fish-bearing waters, stream crossings and roads in riparian areas.
	11 AAC 95.260, Riparian Standards	This regulation addresses harvesting in riparian wetlands.
	11 AAC 95.285, Road Location	When feasible, roads must be located away from marshes and non-forested muskegs to protect wetlands values.
	11 AAC 95.345, Landing Location, Construction and Operation	All landings must be located, constructed and operated in a manner that avoids surface and standing waters (except when frozen) and minimize the use of marshes and non-forested muskegs.
	11 AAC 95.360, Cable Yarding	When yarding across marshes and non-forested muskegs, operators must make an effort to minimize damage to vegetative cover.
	11 AAC 95.390, Site Preparation	If site preparation is necessary, the land owner must minimize degradation of surface water quality or cause significant harm to fish habitat.
	18 AAC 90.600(b), Permit Requirement application of Pesticide to water	Pesticides may not be applied to the waters of the state or by airplane, helicopter or hovercraft without a permit.

URBAN/COMMUNITY MANAGEMENT MEASURES

MANAGEMENT MEASURE: NEW DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1a) By design or performance: after construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80 percent.		80% removal of TSS is not attainable even when the Best Management Practices (BMPs) judged to be most cost effective for Alaska's communities are implemented. See attached report *Assessment of Stormwater Controls in Coastal Alaska.* Further, Alaska State Water Quality Standards do not include TSS as a criterion. Until sufficient runoff data is gathered to develop an economically achievable alternative measure, Alaska will follow an interim measure for new development: The data gathering is estimated to take 1 to 3 years, depending on funding.
By design or performance: reduce the postdevelopment loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings.		This component can probably be met in Southcentral Alaska and in residential and industrial development in Southeast Alaska. It probably cannot be met in western or northern Alaska. Until sufficient rainfall runoff and snowmelt data can be gathered to develop an alternative measure, the State will follow an interim measure.

MANAGEMENT MEASURE: NEW DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
To the extent practicable, maintain postdevelopment peak runoff rate and average volume at levels that are similar to predevelopment levels.		This component is linked to the previous two components, which are not economically achievable in Alaska. Therefore, the State will develop an alternative measure that is appropriate for Alaska. In the meantime, the State will follow the interim measure listed next.

INTERIM MANAGEMENT MEASURE: RAINFALL AND SNOWMELT RUNOFF FROM NEW DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
By design or performance, after construction has been completed and the site is permanently stabilized, reduce turbidity and settleable solids to the maximum extent practicable.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, ADEC must issue a certificate of reasonable assurance, authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for sediments. The department may attach conditions or terms to the permit to ensure compliance.
	18 AAC 72.500, Nondomestic Wastewater Permit	Plans for controlling runoff from a construction site must be approved by the department under 18 72.500. This regulation gives ADEC adequate authority to control erosion and offsite movement from project sites.
	18 AAC 72.600, Nondomestic Wastewater System Plan Review	Projects that construct, operate, or modify nondomestic wastewater treatment works or disposal systems (including stormwater controls) must have ADEC approval of engineering plans.
	6 AAC 80.130, Habitats	Development projects in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the standards of the regulation.

INTERIM MANAGEMENT MEASURE: RAINFALL AND SNOWMELT RUNOFF FROM NEW DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 19.10.160, Standard Plans and Specifications	AS 19.10.160 requires the Alaska Department of Transportation and Public Facilities (DOT/PF) to adhere to standards of the American Association of State Highway and Transportation Officials (AASHTO) as closely as practicable. DOT/PF *Highway Preconstruction Manual* adopts by reference AASHTO vol. III, *Erosion and Sediment Control on Highway Construction Projects*. DOT/PF also adopts by reference all other volumes of the AASHTO Highway Drainage Guidelines, including vol. X, *Guidelines for Evaluating Highway Effects on Surface Water Environments*. DOT/PF *Standard Specifications for Highway Construction* includes a section on "Temporary Erosion and Pollution Control."

MANAGEMENT MEASURE: WATERSHED PROTECTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Develop a watershed protection program to: (1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination (6 AAC 50).
	6 AAC 85.010 -.110, Guidelines for District Coastal Management Programs	Under the Alaska Coastal Management Program, local coastal district programs support, or act as surrogates for, comprehensive plans. Coastal district plans include: a discussion of issues, goals and objectives, a resource inventory and analysis, and a list of enforceable policies that carry out the intent of the goals and objectives. For example, the enforceable policies can require that development not be sited in riparian areas or sensitive habitats.

MANAGEMENT MEASURE: WATERSHED PROTECTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 46.40.210, Areas Which Merit Special Attention	Special area management plans can be written for areas with: (1) significant erosion; (2) high natural productivity or essential habitat; and (3) the need to protect, maintain or replenish coastal lands and resources (AS 46.40.210). These management plans allow more specificity in resource assessment and enforceable policies than coastal district programs.
(2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.130, Habitats	Development in important upland habitat, wetlands, riparian areas, estuaries, rivers, streams and lakes must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists and all feasible and prudent steps have been taken to maximize conformance with the regulation.
	AS 46.40.210, Areas Which Merit Special Attention	Special area management plans can be written for areas with: (1) significant erosion; (2) high natural productivity or essential habitat; and (3) the need to protect, maintain or replenish coastal lands and resources (AS 46.40.210). These management plans allow more specificity in resource assessment and enforceable policies than coastal district programs.

MANAGEMENT MEASURE: WATERSHED PROTECTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 16.20 & 5 AAC 95.400 - .440, Special Areas Statutes and regulations	AS 16.20 and 5 AAC 95.400-.440 protect and preserve the natural habitats of critical habitat areas, game refuges and sanctuaries.
	11 AAC 53.450, Buffer Strips	11 AAC 53.450 applies to State land subdivided by the Department of Natural Resources for disposal to the public. The regulation requires that public access easements along navigable waters must, where possible, include a strip of undisturbed vegetation.
(3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination (6 AAC 50).
	6 AAC 85.010-.110, Guidelines for District Coastal Management Programs	Under the Alaska Coastal Management Program, local coastal district programs support, or act as surrogates for, comprehensive plans. Coastal district plans include: a discussion of issues, goals and objectives, a resource inventory and analysis, and a list of enforceable policies that carry out the intent of the goals and objectives. For example, the enforceable policies can require that development not be sited in riparian areas or sensitive habitats.
	6 AAC 80.040, Coastal Development	6 AAC 80.040 directs development away from shorelines unless the development is water-dependent and water-related.
	6 AAC 80.080, Transportation and Utilities	Transportation and utility routes and facilities must be sited inland from beaches and shorelines unless they are water-dependent or no feasible or prudent inland alternative exists

MANAGEMENT MEASURE: WATERSHED PROTECTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.130, Habitats	Development in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the standards of the regulation.
	AS 46.40.210, Areas Which Merit Special Attention	Special area management plans can be written for areas with: (1) significant erosion, (2) high natural productivity or essential habitat; and (3) the need to protect, maintain or replenish coastal lands and resources (AS 46.40.210). These management plans allow more specificity in resource assessment and enforceable policies than coastal district programs.

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1) Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that are particularly susceptible to erosion and sediment loss, as identified by a district, must be sited, designed and constructed to minimize property damage and loss of life.

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.130, Habitats	Development in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the regulation.
	AS 16.05.870, Protection of Fish and Game	Projects which change the flow, occur within, or cross a stream containing anadromous fish must properly protect fish habitat.
	AS 16.20 and 5 AAC 95.400-.440, Special Areas	Establishes critical habitat areas, game refuges and sanctuaries.
	AS 19.10.160, Standard Plans and Specifications	Alaska Department of Transportation and Public Facilities (DOT/PF) must adhere to standards of the American Association of State Highway and Transportation Officials (AASHTO) as closely as practicable. DOT/PF *Highway Preconstruction Manual* adopts by reference AASHTO vol. III, *Erosion and Sediment Control on Highway Construction Projects.* DOT/PF also adopts by reference all other volumes of the AASHTO Highway Drainage Guidelines, including vol. X, *Guidelines for Evaluating Highway Effects on Surface Water Environments.* DOT/PF *Standard Specifications for Highway Construction* includes a section on "Temporary Erosion and Pollution Control."

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(2) Limit increases of impervious areas, except where necessary.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that are particularly susceptible to erosion and sediment loss, as identified by a district, must be sited, designed and constructed to minimize property damage and loss of life.
	6 AAC 80.130, Habitats	Development in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the standards of the regulation.
	AS 16.05.870, Protection of Fish and Game	Projects which change the flow, occur within, or cross a stream containing anadromous fish must properly protect fish habitat.
	AS 16.20 and 5 AAC 95.400-.440, Special Areas	Establishes critical habitat areas, game refuges and sanctuaries.

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 19.10.160, Standard Plans and Specifications	The Alaska Department of Transportation and Public Facilities (DOT/PF) must adhere to standards of the American Association of State Highway and Transportation Officials (AASHTO) as closely as practicable. DOT/PF *Highway Preconstruction Manual* adopts by reference AASHTO vol. III, *Erosion and Sediment Control on Highway Construction Projects.* DOT/PF also adopts by reference all other volumes of the AASHTO Highway Drainage Guidelines, including vol. X, *Guidelines for Evaluating Highway Effects on 1 Surface Water Environments.* DOT/PF *Standard Specifications for Highway Construction* includes a section on "Temporary Erosion and Pollution Control."
(3) Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that are particularly susceptible to erosion and sediment loss, as identified by a district, must be sited, designed and constructed to minimize property damage and loss of life (6 AAC 80.050).

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.130, Habitats	Development in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the standards of the regulation.
	AS 16.05.870, Protection of Fish and Game	Projects which change the flow, occur within, or cross a stream containing anadromous fish must properly protect fish habitat.
	AS 16.20 and 5 AAC 95.400-.440, Special Areas	Establishes critical habitat areas, game refuges and sanctuaries.
	AS 19.10.160, Standard Plans and Specifications	The Alaska Department of Transportation and Public Facilities (DOT/PF) must adhere to standards of the American Association of State Highway and Transportation Officials (AASHTO) as closely as practicable. DOT/PF *Highway Preconstruction Manual* adopts by reference AASHTO vol. III, *Erosion and Sediment Control on Highway Construction Projects.* DOT/PF also adopts by reference all other volumes of the AASHTO Highway Drainage Guidelines, including vol. X, *Guidelines for Evaluating Highway Effects on 1 Surface Water Environments.* DOT/PF *Standard Specifications for Highway Construction* includes a section on "Temporary Erosion and Pollution Control".

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(4) Limit disturbance of natural drainage features and vegetation.	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that are particularly susceptible to erosion and sediment loss, as identified by a district, must be sited, designed and constructed to minimize property damage and loss of life (6 AAC 80.050).
(4 cont.) Limit disturbance of natural drainage features and vegetation.	6 AAC 80.130, Habitats	Development in the habitats identified in 6 AAC 80.130 must maintain or enhance the biological, physical and chemical characteristics that contribute to the capacity to support life, unless there is a significant public need, no feasible or prudent alternative exists, and all feasible and prudent steps have been taken to maximize conformance with the standards of the regulation.
	AS 16.05.870, Protection of Fish and Game	Projects which change the flow, occur within, or cross a stream containing anadromous fish must properly protect fish habitat.
	AS 16.20 and 5 AAC 95.400-.440, Special Areas	Establishes critical habitat areas, game refuges and sanctuaries.

MANAGEMENT MEASURE: SITE DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 19.10.160, Standard Plans and Specifications	The Alaska Department of Transportation and Public Facilities (DOT/PF) must adhere to standards of the American Association of State Highway and Transportation Officials (AASHTO) as closely as practicable. DOT/PF *Highway Preconstruction Manual* adopts by reference AASHTO vol. III, *Erosion and Sediment Control on Highway Construction Projects.* DOT/PF also adopts by reference all other volumes of the AASHTO Highway Drainage Guidelines, including vol. X, *Guidelines for Evaluating Highway Effects on 1 Surface Water Environments.* DOT/PF *Standard Specifications for Highway Construction* includes a section on "Temporary Erosion and Pollution Control".
	AS 19.10.230, Construction of Highway Ditches	Highway ditches must be designed so as to preserve the natural flow and drainage of surface water.

MANAGEMENT MEASURE: CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, DEC must issue a certificate of reasonable assurance, authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for sediments. The department may attach conditions or terms to the permit to ensure compliance.
	18 AAC 72.500-.600, Nondomestic Wastewater & System Plan Review	Plans for controlling runoff from a construction site must be approved by ADEC under 18 72.500 and 18 AAC 72.600. These regulations give the department adequate authority to control erosion and offsite movement from project sites.
	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.
	6 AAC 80.130, Habitats	Because much of construction in Alaska is in wetlands or could affect wetlands, it must be consistent with the Alaska Coastal Management Program Standards (6 AAC 80). The Habitats standard, 6 AAC 80.130 requires that the construction activity assure adequate oxygen levels in water, and avoid adverse effects on natural drainage patterns, the destruction of important habitat and the discharge of toxic substances. Construction in estuaries must avoid the discharge of silt and the destruction of productive habitat.

MANAGEMENT MEASURE: CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AAC 80.140, Air, Land, and Water Quality	6 AAC 80.140, Air, Land, and Water Quality standard, incorporates by reference the authorities of ADEC.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that are particularly susceptible to erosion and sediment loss, as identified by a district, must be sited, designed and constructed to minimize property damage and loss of life.
	AS 16.05.870, Protection of Fish and Game	Construction that changes the flow, occurs within, or crosses a stream containing anadromous fish must properly protect fish habitat.
(2) Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, DEC must issue a certificate of reasonable assurance, authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for sediments. ADEC may attach conditions or terms to the permit to ensure compliance.
	6 AAC 50, Conclusive Consistency Determination	Under the Alaska Coastal Management Program, activities in or affecting the coastal zone that require a permit must receive a conclusive consistency determination.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1) Limit application, generation, and migration of toxic substances.	AS 46.03.740, Oil Pollution	Discharge of oil is prohibited under AS 46.03.740 except by permit.
	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, ADEC must issue a certificate of reasonable assurance, as authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for toxic substances, petroleum hydrocarbons, oils, grease and residues. The department may attach conditions or terms to the permit to ensure compliance.
	18 AAC 90.005-.035, Pesticide Applicator Certification	Restricted use pesticide applicators must receive training in the proper use, storage and disposal of pesticides.
	18 AAC 90.430, Pesticide Prohibitions	No person may: (1) improperly store, abandon, transport or dispose of pesticides; (2) use pesticides in a manner that is inconsistent with the label or in violation of AS 46; or (3) operate faulty or unsafe application equipment.
	6 AAC 50, Conclusive Consistency Determination	Pesticide use on public projects, aerial application of pesticides, and application of pesticides to water in or affecting the coastal zone are subject to Alaska Coastal Management Program consistency review.
	6 AAC 80.130, Habitats	Construction in estuaries, wetlands and tideflats must avoid the discharge of toxic wastes and substances; construction in rivers, streams and lakes must protect water quality.
	6 AAC 80.140, Air, Land, and Water Quality	The Alaska Coastal Management Program incorporates by reference ADEC's authorities.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 16.05.870, Protection of Fish and Game	Under the Department of Fish and Game's Title 16 authorities, construction that will pollute anadromous fish-bearing rivers, streams, and lakes must submit a complete plan and specifications with proper protection of fish.
	AS 19.10.160, Standard Plans and Specifications	The Department of Transportation and Public Facilities (DOT/PF) *Standard Specifications for Highway Construction* requires a soils analysis to ensure that only the proper amount of fertilizer is applied to revegetated disturbed areas.
	18 AAC 90.600-.640, Pesticide Permit Requirements	No public pesticide project is approved unless ADEC has issued a permit.
	18 AAC 90.430, Pesticide Prohibitions	No person may store, transport, abandon, or dispose of a pesticide in a manner that might endanger public health, safety, or welfare, or the environment. No person may use a pesticide that is inconsistent with the labeling instructions.
(2) Ensure the proper storage and disposal of toxic materials.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, ADEC must issue a certificate of reasonable assurance, as authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for toxic substances, petroleum hydrocarbons, oils, grease and residues. ADEC may attach conditions or terms to the permit to ensure compliance.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	18 AAC 90.005-.035, Pesticide Applicator Certification	As required by 18 AAC 90.005-.035, restricted use pesticide applicators receive training in the proper use, storage and disposal of pesticides.
	18 AAC 90.420, Storage and Disposal of Pesticides and Containers	18 AAC 90.420 outlines proper pesticide storage and disposal procedures.
	18 AAC 60.015, Accumulation and Storage of Solid Waste	Accumulation and Storage of Solid Waste regulation under 18 AAC 60.015 outlines the proper solid waste storage and disposal procedures.
	18 AAC 60.087, 18 AAC 62, Hazardous Waste	Hazardous waste must be disposed of in an approved facility and follow Resource Conservation and Recovery Act (RCRA) requirements respectively.
	6 AAC 50, Conclusive Consistency Determination	Pesticide use on public projects, aerial application of pesticides, and application of pesticides to water in or affecting the coastal zone are subject to Alaska Coastal Management Program consistency review.
	6 AAC 80.130, Habitats	Construction in estuaries, wetlands and tideflats must avoid the discharge of toxic wastes and substances; construction in rivers, streams and lakes must protect water quality.
	6 AAC 80.140, Air, Land, and Water Quality	The Alaska Coastal Management Program incorporates by reference ADEC's authorities.
	AS 16.05.870, Protection of Fish and Game	Under the Department of Fish and Game's Title 16 authorities, construction that will pollute anadromous fish-bearing rivers, streams, and lakes must submit a complete plan and specifications with proper protection of fish.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	18 AAC 90.600-.640, Pesticide Permit Requirements	No public pesticide project is approved unless ADEC has issued a permit.
	18 AAC 90.430, Pesticide Prohibitions	No person may store, transport, or abandon, or dispose of a pesticide in a manner that might endanger public health, safety, or welfare, or the environment. No person may use a pesticide that is inconsistent with the labeling instructions.
(3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	When an Army Corp of Engineers section 404 permit is required, ADEC must issue a certificate of reasonable assurance, authorized under 18 AAC 15.180, that such activities will meet State Water Quality Standards, including criteria for toxic substances, petroleum hydrocarbons, oils, grease and residues. The department may attach conditions or terms to the permit to ensure compliance.
	6 AAC 50, Conclusive Consistency Determination	Development in the coastal zone that requires a state or federal authorization must be consistent with the standards of the Alaska Coastal Management Program.
	80.130, Habitats	Construction in estuaries, wetlands and tideflats must avoid the discharge of toxic wastes and substances; construction in rivers, streams and lakes must protect water quality.
	6 AAC 80.140, Air, Land, and Water Quality	The Alaska Coastal Management Program incorporates by reference ADEC's authorities.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 16.05.870, Protection of Fish and Game	Under the Department of Fish and Game's Title 16 authorities, construction that will pollute anadromous fish-bearing rivers, streams, and lakes must submit a complete plan and specifications with proper protection of fish.
(3 cont.) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.	AS 19.10.160, Standard Plans and Specifications	The Department of Transportation and Public Facilities (DOT/PF) *Standard Specifications for Highway Construction* requires a soils analysis to ensure that only the proper amount of fertilizer is applied to revegetated disturbed areas.

MANAGEMENT MEASURE: EXISTING DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1) Identify priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures.		The Department of Environmental Conservation is spearheading the development of a watershed protection framework for identifying pollutant reduction opportunities.
		As part of the TMDL process, the Department of Environmental Conservation, in conjunction with EPA and stakeholders, is identifying additional pollution controls needed to restore impaired waters.

MANAGEMENT MEASURE: EXISTING DEVELOPMENT		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(2) Contain a schedule for implementing appropriate controls.		As part of the TMDL process, the Department of Environmental Conservation, in conjunction with EPA and stakeholders, is identifying schedules for implementing additional pollution controls needed to restore impaired waters.
(3) Limit destruction of natural conveyance systems.	6 AAC 80.158, Areas Which Merit Special Attention	Areas with existing development can be designated Areas Which Merit Special Attention. Enforceable policies contained in AMSA plans can limit the destruction of natural conveyance systems and preserve buffers along surface waters and their tributaries. Another type of special area planning are wetlands management plans. Anchorage and Juneau have implemented these types of plans. The purpose of both these plans is to limit destruction of high value wetlands, which can act as natural conveyance systems.
(4) Where appropriate, preserve, enhance, or establish buffers along surface waterbodies and their tributaries.	6 AAC 80.158, Areas Which Merit Special Attention	Under the Alaska Coastal Management Program, areas with existing development can be designated Areas Which Merit Special Attention (AMSA). Enforceable policies contained in the AMSA management plan could limit the destruction of natural conveyance systems and preserve buffers along surface waters and their tributaries.

MANAGEMENT MEASURE: NEW ONSITE DISPOSAL SYSTEMS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(1) Ensure that new Onsite Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives: (a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and (b) where low-volume plumbing fixtures have not been installed in new developments or redevelopments, reduce total hydraulic loadings to the OSDS by 25 percent. Implement OSDS inspection schedules for preconstruction, construction, and postconstruction.	ADEC Onsite Disposal System Installer Certification Program	ADEC is currently drafting regulations to require department certification of onsite disposal system installing engineers.
	18 AAC 72.245, Construction Certification	Systems which require engineering plans must be certified by a professional engineer to ensure the system was constructed according to the design plans.
	18 AAC 72.255, Treatment Plants	Establishes specifications for domestic wastewater treatment plants.
	18 AAC 72.260, Stabilization Ponds	Establishes specifications for stabilization ponds.
	18 AAC 72.265, Community Soil Absorption Systems	Establishes specifications for community soil absorption systems.
	18 AAC 72.210-235, Domestic Wastewater System Plan Review	Requires ADEC plan review and approval for the construction, installation, modification or operation of onsite disposal systems serving three or more units, or single family or duplex conventional onsite disposal systems if similar systems in nearby areas have failed, or failure may be expected due to marginal soils or high groundwater. Discharge must meet State Water Quality Standards.

MANAGEMENT MEASURE: NEW ONSITE DISPOSAL SYSTEMS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
2) Direct placement of OSDS away from unsuitable areas. Where OSDS placement in unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas within floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies.	18 AAC 72.300, Subdivision Plan Review	Requires subdivider to submit information on the proposed method of providing potable water and disposing of wastewater for each lot. For each lot where onsite disposal is proposed, the subdivider must submit a soils report, a pollution abatement report if lot size is less than 40,000 square feet, and a map showing the location of muskegs, intermittent drainages, public and private drinking water sources, and a delineation of the apparent usable area for wastewater disposal.
	18 AAC 72.375, Pollution Abatement Report	A subdivision must be planned so that it will not contribute to nitrate concentrations in groundwater, contribute to fecal coliform bacteria contamination or cause other pollutants to exceed water quality standards.
	18 AAC 72.210-235, Domestic Wastewater System Plan Review	Requires ADEC plan review and approval for the construction, installation, modification or operation of onsite disposal systems serving three or more units, or single family or duplex conventional onsite disposal systems if similar systems in nearby areas have failed, or failure may be expected due to marginal soils or high groundwater. Discharge must meet water quality standards.
	ADEC Onsite Disposal System Installer Certification Program	ADEC is currently drafting regulations to require department certification of onsite disposal system installing engineers.

MANAGEMENT MEASURE: NEW ONSITE DISPOSAL SYSTEMS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(3) Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect waterbodies and/or contribute to a public health nuisance.	18 AAC 72.015, Wastewater Separation Distances	Establishes minimum separation distances between surface or subsurface drinking water sources and potential sources of contamination.
	ADEC Onsite Disposal System Installer Certification Program	ADEC is currently drafting regulations to require department certification of onsite disposal system installing engineers.
4) Establish protective separation distances between OSDS system components and groundwater which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS.	18 AAC 72.015, Wastewater Separation Distances	Establishes minimum separation distances between surface or subsurface drinking water sources and potential sources of contamination.
	ADEC Onsite Disposal System Installer Certification Program	ADEC is currently drafting regulations to require department certification of onsite disposal system installing engineers.
(5) Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce total nitrogen loadings by 50 percent to ground water that is closely hydrologically connected to surface water.	18 AAC 72.375, Pollution Abatement Report	A subdivision must be planned so that it will not contribute to nitrate concentrations in groundwater, contribute to fecal coliform bacteria contamination or cause other pollutants to exceed water quality standards.
	ADEC Onsite Disposal System Installer Certification Program	ADEC is currently drafting regulations to require department certification of onsite disposal system installing engineers.

MANAGEMENT MEASURE: OPERATING ONSITE DISPOSAL SYSTEMS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
1) Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutant into ground waters that are closely hydrologically connected to the surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low volume plumbing fixtures, and reduce the total phosphorus loadings to the OSDS by 15 percent (if the use of low level phosphate detergents has not been required or widely adopted by OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters.		ADEC encourages the use and installation of garbage disposal systems to prevent bears from being attracted to outside garbage containers.
	ADEC Audit Stamp Program	ADEC encourages banks and lending institutions to require property and home buyers, as a condition of financing approval, to obtain certification from a professional engineer that an operating septic system has been inspected and pumped. ADEC then stamps the engineers certification.
(2) Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing.	ADEC Audit Stamp Program	ADEC encourages banks and lending institutions to require property and home buyers, as a condition of financing approval, to obtain certification from a professional engineer that an operating septic system has been inspected and pumped. ADEC then stamps the certification.

MANAGEMENT MEASURE: OPERATING ONSITE DISPOSAL SYSTEMS		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
(3) Consider replacing or upgrading OSDS to treat effluent so that total nitrogen loadings in the effluent are reduced by 50 percent. This provision applies only: (a) where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant ground water nitrogen loadings from OSDS, and (b) where nitrogen loadings from OSDS are delivered to ground water that is closely hydrologically connected to surface water.	ADEC Audit Stamp Program	ADEC encourages banks and lending institutions to require property and home buyers, as a condition of financing approval, to obtain certification from a professional engineer that an operating septic system has been inspected and pumped. ADEC then stamps the certification.

MANAGEMENT MEASURE: POLLUTION PREVENTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How it Applies to Component**
1) Implement pollution prevention and education programs to reduce nonpoint source pollutants generated from the following activities, where applicable.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
	18 AAC 60.087, Hazardous Waste Disposal	A person may dispose of a waste that is hazardous only at a facility that is approved for the disposal of each specific type of waste, or in accordance with an ADEC permit.
	AS 46.03.317, Hazardous Waste Reduction Grants	A hazardous waste reduction grant account is established in the general fund and is used to fund hazardous waste reduction programs.

MANAGEMENT MEASURE: POLLUTION PREVENTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How it Applies to Component**
2) The improper storage, use, and disposal of household hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
3) Lawn and garden activities, including the application and disposal of lawn and garden care products, and the improper disposal of leaves and yard trimmings.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
4) Turf management on golf courses, parks, and recreational areas.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
5) Improper operation and maintenance of onsite disposal systems.;	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
6) Discharge of pollutants into storm drains including floatables, waste oil, and litter.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
	AS 46.03.370, Educational Assistance for Underground Storage Tank Owners	ADEC provides educational assistance to owners and operators of underground storage tank systems to help them comply with federal and State regulations.

MANAGEMENT MEASURE: POLLUTION PREVENTION		
State Authorities That Meet the Measure		
Measure Component	**Citation**	**How it Applies to Component**
7) Commercial activities including parking lots, gas stations, and other entities not under NPDES purview.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.
8) Improper disposal of pet excrement.	AS 46.06.021, Solid and Hazardous Waste Management Practices	ADEC promotes: 1) waste source reduction; 2) recycling of waste; 3) waste treatment; and 4) waste disposal.

MANAGEMENT MEASURE: PLANNING, SITING AND DEVELOPING ROADS AND HIGHWAYS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Plan, site, and develop roads and highways to protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss.	AS 19.10.160, Standard Plans and Specifications	DOTPF projects follow AASHTO guidelines, which meet 6217 requirements. During planning and design, areas of high or sensitive water quality are, where practicable, avoided and then impacts are minimized.
	BMP manual to be completed by July 199.6	The manual will include BMP's for design and construction erosion and sediment control and an inspection checklist for erosion and sediment controls. The manual will become standard operating procedure for DOTPF.
	AS 19.10.230, Method of Construction of Highway Ditches	Ditches shall not obstruct the natural flow or drainage of surface waters.

MANAGEMENT MEASURE: PLANNING, SITING AND DEVELOPING ROADS AND HIGHWAYS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.050, Geophysical Hazard Areas	To be consistent with the Alaska Coastal Management Program, roads and highways in areas that are particularly susceptible to erosion and sediment loss must be sited, designed and constructed to minimize property damage and loss of life.
	6 AAC 80.130, Habitats	Roads and highways in wetlands must assure adequate water flow, nutrients and oxygen levels and avoid adverse effects on natural drainage patterns and discharges of toxic substances. Roads and highways in important upland habitats must maintain or enhance the biological, physical and chemical characteristics of the habitat.
Plan, site, and develop roads and highways to limit land disturbance such as clearing and grubbing and cut and fill to reduce erosion and sediment loss.	AS 19.10.160, Standard Plans and Specifications	DOTPF projects must follow AASHTO guidelines, which meet 6217 requirements. Clearing, grading, cuts and fills on road, highway and bridge projects are minimized yet meet safety standards.
	BMP manual to be completed by July 1996.	The manual will include BMP's for design and construction erosion and sediment control. The manual will become standard operating procedure for DOTPF.
	6 AAC 80.050, Geophysical Hazard Areas	To be consistent with the Alaska Coastal Management Program, roads and highways in areas that are particularly susceptible to erosion and sediment loss must be sited, designed and constructed to minimize property damage and loss of life.

MANAGEMENT MEASURE: PLANNING, SITING AND DEVELOPING ROADS AND HIGHWAYS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.130, Habitats	Roads and highways in wetlands must assure adequate water flow, nutrients and oxygen levels and avoid adverse effects on natural drainage patterns and discharges of toxic substances. Roads and highways in important upland habitats must maintain or enhance the biological, physical and chemical characteristics of the habitat.
Plan, site, and develop roads and highways to limit disturbance of natural drainage features and vegetation.	AS 19.10.160, Standard Plans and Specifications	DOTPF projects must follow AASHTO guidelines, which meet 6217 requirements. Avoidance or minimization of impacts to natural drainages and vegetation is addressed in project planning and preliminary design. Mitigation is further refined during design. Minimum disturbance is implemented during construction.
	BMP manual to be completed July 1996.	The manual will contain BMP's for design and construction erosion and sediment control. The manual will become standard operating procedure for DOTPF.
	AS 19.10.230, Method of Construction of Highway Ditches	Ditches shall not obstruct the natural flow or drainage of surface waters.
	General Concurrence NWP-14, Road Crossing	Fills for roads crossing wetlands shall be limited to the amount necessary for the actual crossing, no more than 1/2 acre and no more than 200 linear feet.

MANAGEMENT MEASURE: PLANNING, SITING AND DEVELOPING ROADS AND HIGHWAYS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.050, Geophysical Hazard Areas	To be consistent with the Alaska Coastal Management Program, roads and highways in areas that are particularly susceptible to erosion and sediment loss must be sited, designed and constructed to minimize property damage and loss of life.
	6 AAC 80.130, Habitats	Roads and highways in wetlands must assure adequate water flow, nutrients and oxygen levels and avoid adverse effects on natural drainage patterns and discharges of toxic substances. Roads and highways in important upland habitats must maintain or enhance the biological, physical and chemical characteristics of the habitat.

MANAGEMENT MEASURE: BRIDGES		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Site, design and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.	AS 19.10.160, Standard Plans and Specifications	DOTPF projects must follow AASHTO guidelines, which meet 6217 requirements. Avoidance or minimization of impacts to sensitive and valuable aquatic ecosystems and important water quality areas is addressed in project planning and preliminary design. Mitigation is further refined during design. Minimum disturbance is implemented during construction.

MANAGEMENT MEASURE: BRIDGES		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	BMP manual to be completed July 1996.	Bridge maintenance BMP's will be included in this manual, which will become standard operating procedure for DOTPF maintenance crews.
	18 AAC 72.500, .600, Nondomestic Wastewater and System Plan Review	The Department of Environmental Conservation reviews bridge projects' stormwater controls. Conditions may be placed on the permit to ensure water quality are protected.
	6 AAC 80.130, Habitats	To be consistent with the Alaska Coastal Management Program, bridges over estuaries must assure adequate water flow, natural circulation patterns, nutrients, and oxygen levels and avoid the discharge of toxic wastes, silt and destruction of productive habitat. Bridges over wetlands and tideflats must assure adequate water flow, nutrients and oxygen levels and avoid adverse effects on natural drainage patterns, the destruction of important habitat and the discharge of toxic substances. Bridges over barrier islands and lagoons must maintain adequate flows of sediments, detritus and water, avoid the alteration or redirection of wave energy which would lead to the filling in of lagoons or the erosion of barrier islands. Bridges over rivers, streams and lakes must protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow.
	General Concurrence NWP-15, US Coast Guard Approved Bridges	Bridges over waters of the US must use appropriate erosion and siltation controls during construction.

MANAGEMENT MEASURE: BRIDGES		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	General Concurrence-7, Culvert and Bridge Installation	Bridges must be designed, installed and maintained to accommodate the efficient passage of fish, minimize the alteration of streambanks, stabilize disturbed streambanks immediately and avoid sensitive fish life-stages. Installation, replacement or modification must maintain fish and wildlife and their habitats. If a structure crosses freshwater, it must not contain creosote or pentachlorophenol.
	AS 16.05.870, Protection of Fish and Game	The Department of Fish and Game must approve plans and specifications of bridges that affect anadromous fish streams. Conditions can be placed on the permit to protect valuable and sensitive aquatic habitat.
	AS 16.05.840, Fishway Required	Structures in fish streams must be sited and designed to allow for the efficient passage of fish.

MANAGEMENT MEASURE: CONSTRUCTION PROJECTS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Reduce erosion and, to the extent practicable, retain sediment on site during and after construction.	AS 19.10.160, Standard Plans and Specifications	DOTPF follows AASHTO guidelines, which meet 6217 requirements. A plan for temporary and permanent erosion and sedimentation control is finalized during the design of roads, highways and bridges. This plan becomes part of the bid document.
	BMP manual to be completed by July 1996.	This manual will include BMP's for construction erosion and sediment control. The manual will become standard operating procedure for DOTPF.

MANAGEMENT MEASURE: CONSTRUCTION PROJECTS		
State Programs that Meet the Measure		
	18 AAC 72.500, .600, Nondomestic Wastewater and System Plan Review	The Department of Environmental Conservation reviews bridge projects' stormwater controls. Conditions may be placed on the permit to ensure water quality are protected.
Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.	AS 19.10.160, Standard Plans and Specifications	Same as above, plus a contractor must review plan and obtain DOT&PF approval of needed changes prior to beginning construction.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Limit the application, generation and migration of toxic substances	AS 19.10.160, Standard Plans and Specifications	DOTPF follows AASHTO guidelines, which meet 6217 requirements. Contractor is required to provide a detailed plan for the containment, cleanup and disposal of hazardous waste material including petroleum products resulting from construction. This includes types of equipment and cleanup materials to be kept on hand.
	AS 46.03.740, Oil Pollution	Discharge of oil is prohibited except by permit.
	18 AAC 90.430, Pesticide Prohibitions	No person may improperly store, abandon, transport or dispose of pesticides; use pesticides in a manner that is inconsistent with the label or operate faulty or unsafe application equipment.
	18 AAC 90.600, Permit Requirements	Pesticide use on public projects, aerial application , and application to water requires a permit. The permit identifies special precautions to protect the environment.

MANAGEMENT MEASURE: CONSTRUCTION SITE CHEMICAL CONTROL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	Pesticides have not been used by DOTPF for roadside maintenance in 20 years due to public outcry.	
	6 AAC 80.130, Habitats	Projects in coastal estuaries, wetlands and tideflats must avoid the discharge of toxic substances; projects in coastal rivers, streams and lakes must protect water quality.
Ensure the proper storage and disposal of toxic materials.	AS 19.10.160, Standard Plans and Specifications	DOTPF follows AASHTO guidelines, which meet 6217 requirements. Contractor is required to provide a detailed plan for the containment, cleanup and disposal of hazardous waste material including petroleum products resulting from construction. This includes types of equipment and cleanup materials to be kept on hand.
	18 AAC 60.015, Accumulation and Storage of Solid Waste	Solid waste must be stored in a safe manner
Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.	*Standard Specifications for Highway Construction*	DOTPF requires contractors to obtain a soils analysis to determine the proper amount of fertilizer to be applied to reseeded or revegetated areas. A revegetation plan is prescribed for each project.
	BMP manual to be completed by July 1996	The manual will include BMP's for fertilizer application. The manual will become standard operating procedures for DOTPF.

MANAGEMENT MEASURE: OPERATION AND MAINTENANCE		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Incorporate pollution prevention procedures into the operation and maintenance of roads, highways and bridges to reduce pollutant loadings to surface waters.	AS 19.10.160, Standard Plans and Specifications	Permanent erosion and sedimentation controls are addressed during project planning and design. Also, DOT&PF has developed a Maintenance and Operations Manual which addresses water quality issues.
	BMP manual to be completed by July 1996.	The manual will have BMP's for de-icing chemical application rates, fertilizer application rates, alternatives to de-icing chemicals, de-icing chemical storage practices, snow removal practices, snow dumping practices, practices to restore vegetation needed for soil stabilization, maintenance of oil-grease separators and sediment basins, street sweeping, vacuuming and washing practices, and pothole and roadside repairs. The manual will become standard operating procedures for DOTPF.

MANAGEMENT MEASURE: ROAD, HIGHWAY AND BRIDGE RUNOFF SYSTEMS		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures)	Pub. L. No. 102-240, 105 Stat. 1914, 1926 (1991), Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)	An enhancement measure under ISTEA provides funding to retrofit existing highways and bridges to correct ongoing significant pollution problems.
Establish schedules for implementing appropriate controls.	See above	ISTEA allows for scheduling the implementation of appropriate controls

HARBOR AND MARINA MANAGEMENT MEASURES

MANAGEMENT MEASURE: MARINA FLUSHING		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.	Alaska Coastal and Harbor Design Procedures Manual	Flushing will be addressed in the manual. This will become DOT&PF's recommended best design practices. The Department also references the December 1979 publication Effects of Planform Geometry on Tidal Flushing and Mixing in Marinas, Technical Report No. 62, by R. Nece, E. Richey, J. Rhee, and H. Smith (University of Washington, Department of Civil Engineering, Seattle, Washington), for new and significantly expanding harbor design.
	18 AAC 15.180, Certification for other federal licenses or permits	The Department of Environmental Conservation must certify that a proposed harbor or marina's federal Section 404 permit will meet water quality standards. Conditions on the siting and design of the harbor can be placed on the certificate
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program consistency determination requires that proposed harbors and marinas in estuaries must assure natural circulation patterns.

MANAGEMENT MEASURE: MARINA FLUSHING		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.
	AS 16.05.870, Protection of fish and game	If a proposed harbor or marina could use, divert, obstruct, pollute or change a designated anadromous fish stream, the Department of Fish and Game requires developers to submit plans and specifications for approval.

MANAGEMENT MEASURE: MARINA WATER QUALITY ASSESSMENT		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Assess water quality as part of marina siting and design.	Alaska Coastal and Harbor Design Procedures Manual	Water quality assessment will be addressed in the manual. This will become DOT&PF's recommended best design practices.
	18 AAC 15.180, Certification for other federal licenses and permits	The Department of Environmental Conservation may require pre-construction water quality data before certifying a proposed harbor or marina's federal Section 404 permit.

MANAGEMENT MEASURE: MARINA WATER QUALITY ASSESSMENT		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	AS 16.05.870, Protection of fish and game	If a proposed harbor or marina could use, divert, obstruct, pollute or change a designated anadromous fish stream, the Department of Fish and Game requires developers to submit plans and specifications for approval.
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program consistency determination requires that proposed harbors and marinas in estuaries must assure adequate water flow, nutrients and oxygen levels.

MANAGEMENT MEASURE: MARINA HABITAT ASSESSMENT		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or Federal governments.	18 AAC 15.180, Certification for other federal licenses and permits	The Department of Environmental Conservation must certify that a proposed harbor or marina's federal Section 404 permit meets state water quality standards, which establishes growth and propagation of fish, shellfish and wildlife as a protected use. The department can place conditions on the certificate that ensure a harbor or marina is sited and designed so as to protect aquatic habitat.

MANAGEMENT MEASURE: MARINA HABITAT ASSESSMENT		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program consistency determination requires proposed harbors and marinas in estuaries to avoid the destruction of productive habitat.
	Alaska Coastal and Harbor Design Procedures Manual	The manual will address habitat assessment during harbor siting and design.
	AS 16.05.870, Protection of fish and game	If a proposed harbor or marina could use, divert, obstruct, pollute or change a designated anadromous fish stream, the Department of Fish and Game requires the developer to submit plans and specifications for approval. The department uses habitat assessments performed by other agencies, or may require the developer to perform a habitat assessment.

MANAGEMENT MEASURE: SHORELINE STABILIZATION		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Where shoreline erosion is a nonpoint source pollution problem, shorelines should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas.	6 AAC 80.050, Geophysical hazard areas	Proposed projects in erosion-prone sites will not be determined to be consistent with the Alaska Coastal Management Program until siting, design and construction measures for minimizing damage have been provided.
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program consistency determination requires proposed projects in estuaries to avoid the discharge of silt.
	18 AAC 15.180, Certification for other federal licenses and permits	The Department of Environmental Conservation must certify that a proposed marina or harbor's federal Section 404 permit will not result in pollution of navigable waters. Conditions requiring shoreline stabilization can be attached to the certificate.

MANAGEMENT MEASURE: SHORELINE STABILIZATION		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	Alaska Coastal and Harbor Design Procedures Manual	The DOT&PF manual will include design practices and procedures for shoreline stabilization. This will become the Department's manual of recommended best design practices. In addition, the department is investigating the properties of dynamically stable cobble or "shingle" beaches. Conventional protection against 12 foot waves may require 5 ton stone on a 4:1 slope. In nature, there are beaches in equilibrium against 12 foot waves that are composed of 3 to 4 inch cobbles on 5:1 and 6:1 slopes. Designs incorporating natural processes can significantly reduce the cost of shore protection and provide a less environmentally disruptive solution to erosion. The Corps of Engineers has concurred that dynamically stable beaches are a viable alternative under appropriate circumstances.
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.

MANAGEMENT MEASURE: SHORELINE STABILIZATION		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	AS 16.05.870, Protection of fish and game	Proposed projects that could use, divert, obstruct, pollute or change a designated anadromous fish stream must be designed to protect fish habitat. Provisions for stabilizing streambanks, using vegetative methods where feasible to provide fish rearing and resting habitat would be required if necessary.

MANAGEMENT MEASURE: STORMWATER RUNOFF		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas.	6 AAC 80.130, Habitats	A proposed harbor or marina must prevent the discharge of toxic substances into estuaries, wetlands, tideflats, lagoons, rivers, streams and lakes to be consistent with the Alaska Coastal Management Program.
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.
	AS 16.05.870, Protection of fish and game	Proposed projects that could use, divert, obstruct, pollute or change a designated anadromous fish stream must have their plans and specifications approved by the Department of Fish and Game before construction begins. The department can attach stipulations requiring stormwater controls to the approval.

MANAGEMENT MEASURE: STORMWATER RUNOFF		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	18 AAC 72.500. and .600, Nondomestic wastewater permit and system plan review.	The design of parking lots and upland hull maintenance areas must be reviewed for stormwater controls by the Department of Environmental Conservation.
	Alaska Coastal and Harbor Design Procedures Manual	This manual will cover the design of parking lots and upland hull maintenance areas to control stormwater runoff. For existing harbors, a companion manual of operation and maintenance BMP's will include pollution prevention activities.
	Harbor Management Agreements	A stormwater control plan may be stipulated in Harbor Management Agreements between the DOT&PF and harbor operator (typically a community). The agreements include a statement committing the harbor operator to comply with current federal laws, state statutes and municipal ordinances.
Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.		This component is not economically achievable in Alaska by any BMP whose performance can be quantified. The state will develop an alternative that is economically achievable.

MANAGEMENT MEASURE: FUELING STATION DESIGN		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Design fueling stations to allow for ease in cleanup of spills.	Harbor Management Agreements	DOT&PF does require operators to have oil spill equipment on-scene and in a state or readiness, and can also require operators to prepare spill prevention plans. Cities that operate DOT&PF harbors can also write ordinances requiring fuel docks to have oil spill equipment.
	Alaska Coastal and Harbors Design Procedures Manual	This manual will address designs of fuel docks that allow for ease of cleanup of spills.
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program requires proposed projects to prevent the discharge of toxic substances into estuaries, wetlands, tideflats, lagoons, rivers, streams and lakes.
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.
	AS 16.05.870, Protection of fish and game	Proposed projects that use, divert, obstruct, pollute or change a designated anadromous fish stream must submit plans and specifications to the Department of Fish and Game. Provision for the proper design of fuel docks would be necessary before the department would approve construction.

MANAGEMENT MEASURE: MARINA SEWAGE FACILITIES		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.	Alaska Coastal and Harbor Design Procedures Manual	This manual will address the need for, and the design of, pumpouts, dump stations and restrooms.
	Harbor Management Agreements	DOT&PF can require operators to install sewage facilities and signs.
	6 AAC 80.130, Habitats	The Alaska Coastal Management Program requires proposed projects to prevent the discharge of toxic substances into estuaries, wetlands, tideflats, lagoons, rivers, streams and lakes.
	Clean Vessel Act	The Department of Fish and Game has obtained funding for the construction or expansion of 10 pumpouts. The department is seeking additional funding for 10 more pumpouts.
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.
	AS 16.05.870, Protection of fish and game	Proposed projects that use, divert, obstruct, pollute or change a designated anadromous fish stream must submit plans and specifications to the Department of Fish and Game. Provision for sewage disposal would be necessary before the department would approve construction.

MANAGEMENT MEASURE: MARINA SOLID WASTE		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.	Harbor Management Agreements	DOT&PF can require operators to dispose of solid waste. In addition, DOT&PF requires operators to comply with federal, state and local laws. Local governments can require by ordinance the proper disposal of boating wastes.
	Alaska Coastal And Harbor Design and Procedures Manual	This manual will cover the design of solid waste collection and disposal facilities.
	18 AAC 60.015, .025, .200 Accumulation and storage of solid waste	Harbors and marinas must obtain a solid waste permit and adhere to state solid waste regulations which cover the accumulation, storage and transport of solid wastes. The handling of hazardous wastes is addressed under the Liquid Material management measure.
	18 AAC 64, Litter receptacles	Marinas, boat launches, piers, docks and small boat harbors accessible by road must provide at least one litter receptacle. Receptacles must hold at least 10 gallons, be suitable for outdoor use, be reasonably vandal proof, and tight. Signs must be posted on receptacles to encourage their use. Harbor and marina operators must empty them often enough to prevent odors and overflow. The contents must be disposed of in conformance with solid waste regulations.

MANAGEMENT MEASURE: MARINA SOLID WASTE		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	AS 16.05.840, Fishway required	Harbors and marinas must provide for the efficient passage of fish.
	AS 16.05.870, Protection of fish and game	Proposed projects that use, divert, obstruct, pollute or change a designated anadromous fish stream must submit plans and specifications to the Department of Fish and Game. Provision for solid waste disposal would be necessary before the department would approve construction.

MANAGEMENT MEASURE: SOLID WASTE FROM TIDAL GRIDS Note: This measure was developed by the state.		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Properly dispose of solid wastes produced by the cleaning, maintenance and repair of boats on tidal grids to limit entry of solid wastes to surface waters.	Alaska Coastal and Harbor Design Procedures Manual	This manual will address the design and use of tidal grids to reduce the entry of solid waste to surface waters. It may be feasible to design grids to contain most materials. A research project to develop best design practices for grids will be completed by DOT&PF July 1996. The project will look at siting and design, as well as hull cleaning methods, for tidal grids.

MANAGEMENT MEASURE: SOLID WASTE FROM TIDAL GRIDS Note: This measure was developed by the state.		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	Harbor Management Agreements	DOT&PF could incorporate grid BMP's into harbor management agreements.

MANAGEMENT MEASURE: MARINA FISH WASTE		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.	Harbor Management Agreements	DOT&PF could require operators to provide proper fish waste disposal as a term of the harbor management agreement. Harbor management agreements require operators to comply with all federal, state and local laws.
	Alaska Coastal And Harbor Design Procedures Manual	Siting and design of sport fish cleaning stations will be addressed in the manual. Additionally, BMP's are being developed for the use and maintenance of sport fish cleaning stations.
	AS 34.110, Waste and offal disposal	The Department of Environmental Conservation requires waste and offal from processing, cleaning, storing or preparation of fisheries products to be promptly removed and disposed of according to 18 AAC 60 and 18 AAC 72.

MANAGEMENT MEASURE: MARINA LIQUID MATERIAL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.	Harbor Management Agreements	DOT&PF includes a condition in its harbor management agreements that the operator provide for collection and disposal of waste oils. Recent agreements also require compliance with MARPOL regulations Harbor management agreements require operators to comply with all federal, state and local laws.
	Draft operation and maintenance BMP manual	BMP's are being developed for the proper handling of liquid materials at harbors.
	AS 46.06.021, Solid and hazardous waste management practices AS 46.06.031, Solid and hazardous waste reduction and recycling program AS 46.03.317, Hazardous waste reduction matching grants	The Department of Environmental Conservation mandates recycling, and funds a hazardous waste reduction and recycling program and hazardous waste reduction matching grant program.
	18 AAC 60.087, Hazardous waste disposal 18 AAC 62, Hazardous waste	The Department of Environmental Conservation adopts by reference federal hazardous waste and used oil regulations (RCRA). Hazardous wastes generated by boats are regulated under RCRA. Hazardous wastes stored or transported on land are controlled by state regulations.

MANAGEMENT MEASURE: MARINA LIQUID MATERIAL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	18 AAC 75.319, Disposal of hazardous substances	DEC approval is required for the ultimate disposal of hazardous substances and materials contaminated with hazardous substances.

MANAGEMENT MEASURE: MARINA PETROLEUM CONTROL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.	AS 46.03.740, Oil pollution	The discharge of oil into water and onto shorelines and bottom sediments is prohibited.
	AS 46.04.020, Removal of oil discharges	Oil discharges must be immediately contained and cleaned up.
	18 AAC 75.327, Cleanup	Discharges of hazardous substances to land or waters of the state must be cleaned up by the responsible party.
	17 AAC 80.090, Prohibited acts	Depositing gasoline and oil into harbor waters is prohibited.
	draft operation and maintenance BMP manual	The manual will include BMP's for proper fuelling and bilge pumping.

MANAGEMENT MEASURE: MARINA PETROLEUM CONTROL		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
	Harbor management agreements	Harbor management agreements require operators to comply with all federal, state and local laws. Fire Codes require installation of automatic fuel shut-off nozzles. DEC has regulations on fuel containment.

MANAGEMENT MEASURE: BOAT CLEANING		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning.	draft operation and maintenance BMP manual	This manual will contain BMP's for in-water boat cleaning.

MANAGEMENT MEASURE: MARINA PUBLIC EDUCATION		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.		All agencies have a responsibility to better educate the boating public, harbormasters and marina owners on pollution controls. One of the Action Plan objectives is to develop a boater education program, using the expertise of the various agencies involved. The Coastal and Harbor Design Procedures Manual and the operation and maintenance BMP manual are first steps in that direction. Public education will be the main tool used to reduce pollution in private marinas. Through harbor management agreements and on its own initiative, DOT&PF posts signs at harbors to promote proper solid waste disposal. DOT&PF and the Department of Fish and Game also publish statewide directories which identify services, such as waste oil disposal, provided by harbors. The directories are updated periodically.

MANAGEMENT MEASURE: MAINTENANCE OF SEWAGE FACILITIES		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.	Harbor management agreements	DOT&PF can require operators to maintain sewage facilities. Operators must comply with federal, state and local laws.
	Clean Vessel Act	Harbors and marinas that construct pumpouts using Clean Vessel Act funds must maintain the facilities for at least five years.
	draft operation and maintenance BMP manual	This manual will address operation and maintenance of pumpouts.
	11 AAC 58.690, Sanitation	Harbors and marinas on tidelands leased from the Department of Natural Resources shall keep the premises in a neat, clean and sanitary condition, and every effort shall be made to prevent the pollution of water.
	18 AAC 72.930, Reports	The Department of Environmental Conservation may require a person who owns or operates a domestic wastewater disposal system to routinely submit reports.
	18 AAC 72.940, Emergency notice	The owner or operator of a domestic wastewater disposal system shall report to the Department of Environmental Conservation any shutdown of the system, any condition that results in inadequate treatment or threatens public health or water quality or flood or overflow.

MANAGEMENT MEASURE: BOAT OPERATION		
State Programs that Meet the Measure		
Measure Component	**Citation**	**How It Applies to the Component**
Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.		The Coastal Clean Water Plan will implement this measure where evidence indicates that boating activities are impacting shallow water habitats.
	AS 16.05.870, Protection of fish and game	A person who uses, obstructs, pollutes or alters the bed of a designated anadromous fish stream must notify the Department of Fish and Game.
	AS 41.23.420, General management of recreation rivers and corridors	The Department of Natural Resources may regulate boating, if necessary, under management plans developed for state owned land and water within recreation rivers or corridors.
	11 AAC 12.335, Closures and use management	The director of the Division of Parks may impose restrictions on a use or activity in order to protect environmental values and resources. If the restriction is significant, it must be adopted as a regulation.

HYDROMODIFICATION MANAGEMENT MEASURES

MANAGEMENT MEASURE: PHYSICAL AND CHEMICAL CHARACTERISTICS OF SURFACE WATERS		
State Authorities that Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters in coastal areas.	18 AAC 15.180, Certification for Other Federal Licenses and Permits	Department of Environmental Conservation evaluates a project's potential impact on water quality before issuing a 401 certification.
	AS 16.05.840, Fishway required	ADFG evaluates a project's potential to impede efficient passage of fish.
	AS 16.05.870, Protection of Fish and Game	ADF&G evaluates a project's potential impact on anadromous fish habitat, including water quality and quantity, before issuing a permit.
	6 AAC 80.130, Habitats	Proposed channel projects must demonstrate that water quality and natural water flow are protected.
Plan and design channelization and channel modifications to reduce undesirable impacts.	AS 16.05.870, Protection of Fish and Game	Project designs must avoid, reduce or mitigate for undesirable impacts on anadromous fish bearing streams before ADF&G will issue a permit.

MANAGEMENT MEASURE: PHYSICAL AND CHEMICAL CHARACTERISTICS OF SURFACE WATERS		
State Authorities that Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
	18 AAC 15.180, Certification for Other Federal Licenses and Permits	Projects must be designed to meet water quality standards before DEC will issue a 401 certification.
	6 AAC 80.130, Habitats	Proposed channel projects must demonstrate that water quality and natural water flow are protected.
Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.	AS 16.05.870, Protection of Fish and Game	Project operations and maintenance must reduce, avoid or mitigate for undesirable impacts on anadromous fish bearing streams before ADF&G will issue a permit.
	AS 16.05.895, Penalty for Causing Material Damage	ADF&G can require mitigation if existing projects damage anadromous fish habitat.
		This program will establish a mechanism so that restoration efforts of various state, federal and local agencies are coordinated.

MANAGEMENT MEASURE: INSTREAM AND RIPARIAN HABITAT RESTORATION		
State Authorities that Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Evaluate the potential effects of proposed channelization and channel modification on instream and riparian habitat in coastal areas	18 AAC 15.180, Certification for Other Federal Licenses and Permits	DEC evaluates a project's potential impact on beneficial uses, including growth and propagation of fish, shellfish and aquatic life, before issuing a 401 certification.
	AS 16.05.870, Protection of Fish and Game	ADF&G evaluates a project's potential impact on instream anadromous fish habitat before issuing a permit.
	6 AAC 80.130, Habitats	Proposed channel projects must demonstrate that important fish or wildlife habitat will be protected.
Plan and design channelization and channel modifications to reduce undesirable impacts.	AS 16.05.870, Protection of Fish and Game	Projects must be designed to avoid undesirable impacts on instream anadromous fish bearing streams and at a minimum, reduce undesirable impacts before ADF&G will issue a permit.
	18 AAC 15.180, Certification for Other Federal Licenses and Permits	DEC requires project designs to meet water quality standards before issuing a 401 certification.
	6 AAC 80.130, Habitats	Proposed channel modifications must be designed so as to protect important fish or wildlife habitat.

MANAGEMENT MEASURE: INSTREAM AND RIPARIAN HABITAT RESTORATION		
State Authorities that Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Develop an operation and maintenance program with specific timetables for existing modified channels that includes identification of opportunities to restore instream and riparian habitat in those channels.	AS 16.05.870, Protection of Fish and Game	Project operation and maintenance must be designed to avoid undesirable impacts and at a minimum reduce undesirable impacts on instream anadromous fish bearing streams before ADF&G will issue a permit.
	AS 16.05.895, Penalty for Causing Material Damage	ADF&G can require mitigation if existing projects damage fish habitat.
		This program will establish a mechanism so that restoration efforts of various state, federal and local agencies are coordinated.

MANAGEMENT MEASURE: EROSION AND SEDIMENT CONTROL DURING DAM CONSTRUCTION		
State Authorities that Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Reduce erosion and to the extent practicable, retain sediment onsite during and after construction.	11 AAC 93.171, Dam Construction	DNR may inspect dams during and after construction for adherence to the terms of their erosion and sediment control plan.
Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.	11 AAC 93.171, Dam Construction	DNR requires erosion and sediment control plans for dam construction, modification, removal or abandonment if necessary to prevent degradation to water quality or aquatic habitat.
	AS 16. 05.870, Protection of Fish and Game	ADFG may attach erosion and sediment control stipulations to its permit.

MANAGEMENT MEASURE: DAM CHEMICAL AND POLLUTANT CONTROL		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Limit application, generation and migration of toxic substances.	Toxic substances are rarely used and are insignificant sources of pollution. However, if they were used the following authorities would apply.	
	AS 16.05.870, Protection of Fish and Game	ADF&G may attach stipulations to its Title 16 permit to control use of toxic materials.
	18 AAC 60.015, Accumulation and Storage of Solid Waste	Solid waste must be stored and disposed of according to proper performance standards.
	18 AAC 62, Hazardous Waste	Hazardous wastes must be treated, stored and disposed of according to specific c standards.
	18 AAC 72.500, Nondomestic Wastewater and 18 AAC 72.600, Nondomestic Wastewater System Plan Review	Persons disposing of liquid-carried nondomestic wastes must have an approved wastewater system.
	18 AAC 15.180, Certification for Other Federal Licenses and Permits	FERC dams must comply with State water quality standards.
	11 AAC 93.171, Dam Construction	Dam certificates of approval may address toxic materials and fertilizers. Proposed action on the dam may not begin until a certificate of approval is issued.
	6 AAC 80.130, Habitats	Dam certificates of approval, DEC permits and ADF&G permits must be consistent with the Habitats standard, which requires that rivers, streams and lakes be managed so as to protect water quality.

MANAGEMENT MEASURE: DAM CHEMICAL AND POLLUTANT CONTROL		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Ensure the proper storage and disposal of toxic materials	18 AAC 60.015, Accumulation and Storage of Solid Waste	Generators of solid waste must meet DEC performance standards for the proper storage and disposal of solid waste.
	18 AAC 62, Hazardous Waste	Hazardous wastes must be treated, stored and disposed of according to specific standards.
	18 AAC 72.500, Nondomestic Wastewater and 18 AAC 72.600, Nondomestic Wastewater System Plan Review	Persons disposing of liquid-carried nondomestic wastes must have an approved wastewater system.
Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.	Fertilizers are not known to be used during dam construction or maintenance.	

MANAGEMENT MEASURE: PROTECTION OF SURFACE WATER QUALITY AND INSTREAM AND RIPARIAN HABITAT		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Develop and implement a program to manage the operation of dams that includes an assessment of surface water quality and instream and riparian habitat and potential for improvement.	11 AAC 93.171, Dam Construction	The construction, repair, modification, and operation of dams are monitored through inspections. Inspections are performed by DNR staff and engineers employed by the owner operating under inspection instructions from DNR. The owner inspection required by permit are reviewed by DNR for proper frequency and adequate content. Major inspections during operation are the financial responsibility of the owner and are directed by DNR.
		The Coastal Clean Water Action Plan for dams calls for developing a dam problem database and development of BMP's.
	AS 16.05.840, Fish Passage and AS 16.05.870, Protection of Fish and Game	The Department of Fish and Game monitors compliance with AS 16 mitigation requirements and may require the developer to perform pre-construction, construction, and post-construction monitoring and habitat studies.

MANAGEMENT MEASURE: PROTECTION OF SURFACE WATER QUALITY AND INSTREAM AND RIPARIAN HABITAT		
State Authorities That Meet the Management Measure		
Measure Component	**Citation**	**How It Applies to Component**
Develop and implement a program to manage the operation of dams that includes an assessment of significant nonpoint source pollution problems that result from excessive surface water withdrawals.	Excessive surface water withdrawals are not a significant problem, because of AS 46.15.030 and .035, AS 46.15.145 and 11 AAC 93.141, Water Rights, and 11 AAC 93.120-.130, Appropriation of Water.	Water that supports fish life may be removed or appropriated only if DNR reserves a volume of water for the use of fish and to maintain fish habitat. Water may be reserved for the protection of fish and wildlife habitat, migration and propagation, and sanitary and water quality purposes. Water appropriations may include conditions to maintain a specific quantity of water at a given point on a stream or waterbody, or in a specified stretch of stream, throughout the year or for specified times of the year, to protect fish and wildlife habitat, sanitation and water quality.
	AS 16.05.840, Fish Passage and AS 16.05.870, Protection of Fish and Game	The AS 16 permit from the Department of Fish and Game may also have stipulations related to water quantity and quality protection for fish and wildlife.

MANAGEMENT MEASURE: ERODING STREAMBANKS AND SHORELINES		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Where streambank or shoreline erosion is a nonpoint source pollution problem, streambanks and shorelines should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other streambanks, shorelines and offshore areas.	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that have been identified as likely to erode or flood may not be approved until siting, design and construction measures for minimizing damage and loss of life have been provided. The standard allows both structural and non-structural solutions to erosion hazards.

MANAGEMENT MEASURE: ERODING STREAMBANKS AND SHORELINES		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	6 AAC 80.130, Habitats	Estuaries must be managed so as to avoid the discharge of silt and the destruction of productive habitat. Wetlands and tideflats must be managed so as to avoid adverse effects on natural drainage patterns, destruction of important habitat. Seacliffs must be managed so as to avoid the destruction of important habitat. Barrier islands must be managed so as to avoid the alteration or redirection of wave energy which would lead to the filling in of lagoons or the erosion of barrier islands. High energy coasts must be managed to avoid redirection of transport processes and wave energy. Rivers, streams and lakes must be managed to protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow. Existing development that causes shoreline and streambank erosion is subject to ACMP consistency review when the project permits are renewed, if the scope of the development has changed significantly or the standard of review has changed since the permit was originally issued.
Protect streambank and shoreline features with the potential to reduce nonpoint source pollution.	6 AAC 80.130, Habitats	See above

MANAGEMENT MEASURE: ERODING STREAMBANKS AND SHORELINES		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.	6 AAC 80.130, Habitats	See above.
	6 AAC 80.050, Geophysical Hazard Areas	Development in areas that have been identified as likely to erode or flood may not be approved until siting, design and construction measures for minimizing damage and loss of life have been provided. The standard allows both structural and non-structural solutions to erosion hazards. Existing development that causes shoreline and streambank erosion is subject to ACMP consistency review when the project permits are renewed, if the scope of the development has changed significantly or the standard of review has changed since the permit was originally issued.

WETLANDS, RIPARIAN AREAS, VEGETATED TREATMENT SYSTEMS

MANAGEMENT MEASURE: PROTECTION OF WETLANDS AND RIPARIAN AREAS		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Protect from adverse effects wetlands and riparian areas that are serving a significant nonpoint source pollution abatement function and maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate and species composition.	The comprehensive wetlands strategy will consider the nonpoint source pollution abatement potential of wetlands.	
	18 AAC 15.180, Certification for Other Federal Licenses & Permits	DEC will not issue a Section 401 certification unless the project is designed, constructed and operated so as not to degrade wetlands.
	AS 16.05.870, Protection of Fish and Game	Activities in riparian areas that could impact anadromous fish stream beds or channels must obtain a permit.
	6 AAC 80.130, Habitats	Projects in wetlands and riparian areas must ensure that the biological, physical and chemical characteristics of the habitat are maintained.
	6 AAC 80.140, Air, Land and Water Quality	Projects in the coastal zone must adhere to DEC authorities pertaining to water quality.
	18 AAC 72.110, anti-degradation clause of Water Quality Standards	Wetlands are included in the definition of waters of the State and must be protected from being degraded.

MANAGEMENT MEASURE: PROTECTION OF WETLANDS AND RIPARIAN AREAS		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 41.17., Forest Practices Act	Type A waterbodies include anadromous waterbodies that are wetlands. On private land in Southeast Alaska, harvest of timber may not be undertaken within 66 feet of these waters. Timber harvest is prohibited within 100 feet of an anadromous or high value resident fish waterbody on state and federal land in southeast Alaska, and state, federal and private land in southcentral, northern and western Alaska. Timber harvest on private land in southeast Alaska is prohibited within 66 feet of a Type A waterbody and must be conducted in compliance with slope stability standards within 100 feet of a type B waterbody or 50 feet of a Type C waterbody.

MANAGEMENT MEASURE: RESTORATION OF WETLANDS AND RIPARIAN AREAS		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Promote the restoration of the preexisting functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant nonpoint pollution abatement function.		Over 50 wetlands restoration projects have been accomplished in Alaska. Restoration projects have been located in wetlands impaired by forestry, urban development, placer mining and oil and gas development.
	Local coastal district enforceable policies	About half of the coastal districts have mitigation policies. Juneau and Anchorage have wetlands management plans that supplement their coastal management program.
	5 AAC 95.900, Mitigation of Damages	Developers who receive ADFG permits must mitigate any adverse effects to fish and wildlife habitat which may result, or which actually results from, the permitees action or inaction. Additional provisions for mitigating damages may be attached to the permit.
	AS 27,19,020, 11 AAC 97.200(3)(d), 11 AAC 97.250(b), Mining Reclamation Standards	Mining and gravel bailing shall be reclaimed as contemporaneously as practical. If the operation diverts a stream channel or modifies a flood plain to the extent that the stream channel is no longer stable, the stream channel and bank profile must be reestablished in a stable location.

MANAGEMENT MEASURE: RESTORATION OF WETLANDS AND RIPARIAN AREAS		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
	AS 46.03.780, Liability for Restoration	A person who violates an order, permit or other determination of the Department of Environmental Conservation and thereby degrades the environment is liable to the state for damages, including an amount necessary to replenish the damaged or degraded resource, restock the injured land or waters or restore the environment to its condition before injury.

MANAGEMENT MEASURE: VEGETATED TREATMENT SYSTEMS		
State Authorities that Meet the Measure		
Measure Component	**Citation**	**How It Applies to Component**
Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these system will serve a significant nonpoint pollution abatement function.	No state authorities have been identified which promote the use of vegetated treatment systems. However, the Coastal Clean Water Plan will make funding available for VTS projects if they are shown to be effective.	

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