STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF GOVERNMENTAL COORDINATION

# PROGRAM TO IDENTIFY AND PROTECT HIGH VALUE WETLANDS IN ALASKA COASTAL DISTRICTS

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# 1.0 INTRODUCTION

The purpose of the State of Alaska Division of Governmental Coordination (DGC) High Value Wetland Project is to assist coastal district's in identifying and protecting high value wetlands. The contract anticipates accomplishing this by requiring the contractor to:

- Create a bibliography of wetland references and literature for coastal district use;
- Develop a list of criteria for high value wetlands; and
- Develop enforceable policy/standard language for incorporation into the State of Alaska Coastal Management Program (ACMP).

Three Parameters Plus (3PP), of Wasilla, Alaska, was awarded a contract to complete this work in late March of 1994. Approximately three months were allotted to the project; the contract expiration date being June 30, 1994. In order to better address the requirements of the contract, 3PP sought assistance from Barbara Sheinberg (Sheinberg and Associates; Juneau, Alaska), Jon Issacs (Issacs & Associates; Anchorage, Alaska), Nicole Faghin (Reid Middleton; Anchorage, Alaska), and Dr. James Buell (Buell and Associates; Beaverton, Oregon).

3PP also relied on input from a number of coastal district coordinators, local government planners, and city managers. Input from the district representatives and local governments occurred at several stages of the project. First, input was solicited by means of a ten page questionnaire forwarded to each coastal district coordinator. Secondly, project staff met with a number of coastal district representatives at the ACMP conference in Juneau, April 13-14, 1994. Next, draft policy language was mailed to all district coordinators for their comments.

Early in the project it became apparent that coastal districts were not in favor of adopting a new wetlands protection or identification standard. Most indicated a preference for addressing wetlands within the existing program framework. The draft report presented an opportunity for agencies and districts to indicate their final preference on this matter.

Fifty copies of the review draft report were submitted to those district coordinators who had previously shown an interest in the project and representatives of resource agencies involved in wetland issues in Alaska. The draft reports were distributed in mid-May, 1994. Comments received by June 25,

1994 were incorporated into this report. Comments received after that date were forwarded to DGC for future consideration and evaluations.

Those state agencies whose comments were incorporated into this report include DGC, the Department of Community and Regional Affairs (DCRA), the Department of Natural Resources (ADNR), the Department of Environmental Conservation (ADEC), and the Department of Fish and Game (ADFG), Habitat and Restoration Division. None of the federal agencies receiving review copies of the report submitted comments.

# 2.0 PRELIMINARY FINDINGS

## 2.1 ALASKA COASTAL MANAGEMENT PROGRAM (ACMP)

Coastal districts want to influence how all wetlands (both high and low value) within district boundaries are being regulated and managed by state and federal regulators. To do so effectively though the ACMP, the ACMP and local coastal district programs must look at not just policy language, but rather the consistent and comprehensive treatment of wetlands throughout the entire program. An Alaskan coastal district preparing a district Coastal Management Plan, including Area Meriting Special Attention (AMSA) Plans, must ensure the plan has the following components (6 AAC 85):

* a statement of **Issues, Goals and Objectives**
* a **Resource Inventory**
* a **Resource Analysis**
* a **Coastal Boundary**
* list of **Subject Uses, Proper and Improper Uses**
* **Enforceable Policies**
* an **Implementation** chapter

In addition to exploring new policy language, regulations, or standards, this report examines opportunities for Alaska coastal districts to more effectively interact with the federal wetland regulatory program (Section 404 of the Clean Water Act), within the existing program framework and process.

## 2.2 COASTAL DISTRICT INPUT

Survey results and discussions with coastal district staff at the ACMP Coastal District Conference and during the wetland workshop at that conference, suggest that coastal district's need with regard to wetlands <u>is not</u> additional help through the ACMP to protect high value wetlands, <u>but rather</u>:

a) A better knowledge of what natural resource data already exist and are available to help identify and classify wetlands within their district;

b) Help gaining state and federal agency recognition that locally-important values and uses should be considered during wetland planning and wetland permitting processes;

c) Help obtaining funding for jurisdictional wetland mapping and wetland functions and values assessment projects which would ultimately be approved by the regulating agencies;

d) Help facilitating development in lower value wetlands rather than additional protection of high value wetlands;

e) Help in devising a state and federally acceptable wetland categorization system for coastal districts which takes into account locally-important wetland uses and values. According to the district coordinators who provided input to this project, the system devised should (at a minimum):

- Be consistent with existing federal policy and regulations.
- Consider what is a realistic level of effort for areas with limited staffing and funding.
- Allow for the classification or "categorization" of wetlands into locally relevant categories (i.e., recognize that within any coastal district boundary not all wetlands can be higher value, even if all the wetlands identified locally are of higher value than wetlands within an adjacent district or locality).
- Allow for the assessment of impacts to wetlands as well as the evaluation of mitigation options or opportunities.
- Allow periodic re-evaluation of the data to assess and document relative value changes, especially in highly urbanized districts where wetland resources are already limited.
- Allow assessment of cumulative impacts, both positive and negative, to be tracked and evaluated over time; and

f) Avoid conflict with existing approved district wetlands management plans.

## 2.3 WETLAND SURVEY RESULTS

Approximately 40 questionnaires were distributed to Alaska coastal district representatives. About 30 percent of the questionnaires were returned. No written input was received from the Aleutians, the Kenai Peninsula, or northwest Alaska. Therefore, the findings presented in this section of the report are considered preliminary.

A complete summary of the questionnaire results is presented in Appendix A. Some of the results summarized below and all results found in Appendix A were grouped by geographic region and totaled. Results may not always add up to 100 percent as many respondents left some questions unanswered. Each geographic region was given equal weight when totals were calculated, even though some regions had a higher number of respondents than others. The results are grouped into aquatic, terrestrial, and human use categories.

### 2.3.1 Aquatic Use Characteristics

Under the aquatic use support category, a number of questions regarding flood control, water quality, and fish habitat and resources were developed. In summary, respondents indicated:

a) Flooding ____ a major problem for residents of my district.

Is = 51% Is Not = 49%

b) Drinking water availability _____ a major problem for the residents of my district.

Is = 37% Is Not = 63%

c) Drinking water quality _____ a major problem for the residents of my district.

Is = 27% Is Not = 73%

d) Permafrost disturbance _____ created major problems for my district.

Has = 20% Has Not = 80%

e) District representatives had a mixed level of understanding as to the diversity of fish species which inhabit local waters.

f) A reduction in fish resources would most affect _____.

Commercial users = 10%
Subsistence users = 30%
Both, equally = 43%

g) Most districts agreed that a 0-5% reduction in fish resources (anadromous, freshwater, shellfish, bottomfish) would be significant.

h) Districts were not in agreement as to whether compensatory mitigation should be required to offset significant losses of aquatic habitats.

### 2.3.2 Terrestrial Use Characteristics

Under the terrestrial use support category, a number of questions regarding vegetation, and wildlife resources were developed. In summary, respondents indicated:

a) In general, they had little idea of what types of wetlands were present in their districts, and could not provide a general percentage breakdown of the types present.

b) Most respondents could name a wide variety of waterfowl, furbearing, and seabird species which utilized wetlands within their districts.

c) A reduction of wildlife resources would most affect _____.

Consumptive users = 37%
Non-consumptive = 6.0%
Both, equally = 27%

### 2.3.3 Human Use Characteristics

Under the human use support category, a number of questions regarding recreation, access, subsistence food production, aesthetics, and medicinal or non-food related cultural uses of wetlands were developed. In summary, respondents indicated:

a) Residents and visitors use wetlands for:

Hiking
Beachcombing
Fishing
Hunting
Picnicking
Wildlife Viewing

b) Residents also use wetlands for:

Clamming
Egg Collecting
Berry Picking

c) The most popular kinds of wetlands for recreation in Alaska are:

1. Estuaries, Muskegs (Valued Equally)
2. Tundra, Open Water (Valued Equally)

d) Residents travel from 0-200 miles to recreate in wetlands, primarily traveling by ATV, boats, planes, or other motorized vehicles.

e) Subsistence activities taking place in wetlands are considered _____.

Critical to Most Residents = 38%
Important to Most Residents = 27%
Enjoyed By a Few Residents = 21%

f) District representatives reported _____ enough about key subsistence use areas and practices within district wetlands to make good decisions about potential impacts to subsistence resources.

Knowing = 24%
Not knowing = 59%

g) Wetland plants, animals, or other resources are very important to _____ residents of my district because they are (or provide) important components of traditional practices or ceremonies.

Some = 68%
Most = 4%
All = 0%

## 2.4 DEVELOPMENT OF HIGH VALUE WETLAND CRITERIA

The development of criteria for the protection of high value wetlands requires an understanding of wetland functions and values at both the regional and local level. While local values are of great importance in the review process, the federal regulatory program requires its administrators to evaluate any potential loss of wetland function or value, not just those considered important by local residents. Therefore, the *careful articulation of local needs and values in the regulatory arena is necessary* if districts want due deference in these matters.

### 2.4.1 Wetland Functions (Nationwide)

Attributes generally given as functions of wetland ecosystems, as taken from Richardson (1994) and others, are displayed below. Districts needing more information on any of these functions should find the bibliography in Appendix B helpful.

1. Hydrologic Flux and Storage

    a. Aquifer (ground water) recharge to wetland and/or discharge from the ecosystem.
    b. Water storage reservoir and regulator.
    c. Regional stream hydrology (discharge and recharge).
    d. Regional climate control (evapotranspiration export = large scale atmospheric losses of water).

2. Biological Productivity

    a. Net primary productivity.
    b. Carbon storage.
    c. Carbon fixation.
    d. Secondary productivity.

3. Biogeochemical Cycling and Storage

    a. Nutrient source or sink on the landscape.
    b. C, N, S, P, etc. transformations (oxidation/reduction reactions).
    c. Denitrification.
    d. Sediment and organic matter reservoir.

4. Decomposition

    a. Carbon release (global climate impacts)
    b. Detritus output for aquatic organisms (downstream energy source).
    c. Mineralization and release of N, S, C, etc.

5. Community/Wildlife Habitat

    a. Habitat for species (unique and endangered).
    b. Habitat for algae, bacteria, fungi, fish, shellfish, wildlife, and wetland plants.
    c. Biodiversity.

### 2.4.2 Wetland Values (Nationwide)

Attributes generally given as values of wetland ecosystems, as taken from Richardson (1994) and others, are displayed below.

- Flood control (conveyance), flood storage [1, 2][1]
- Sediment control (filter for waste) [3, 2]
- Waste water treatment systems [3, 2]
- Nutrient removal from agricultural runoff and waste water systems [3, 2]
- Recreation [5, 1]
- Open space [1, 2, 5]
- Visual-cultural [1, 5]
- Hunting (fur-bearers, beavers, muskrats) [5, 2]
- Preservation of flora and fauna (endemic, refuge) [5]
- Timber production [2, 1]
- Shrub crops (cranberry and blueberry) [2, 1]
- Medical (streptomycin) [5, 4]
- Education and research [1-5]
- Erosion control [1, 2, 3]
- Food production (shrimp, fish, ducks) [2, 5]
- Historical, cultural, archaeological resources [2]

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1 Values in brackets denote that value is directly related to a numbered wetland function (displayed in Section 2.4.1); or those functions which can be adversely affected by over-utilization of values. The order of the numbers suggests which primary function is most directly or first affected. For example, the value "hunting" is most affected by over-utilization of community/wildlife habitat (#5) and biological productivity (#2).

- Threatened, rare, endangered species habitat [5]
- Water quality [3, 1], and supply [1]

Because values are based on many intangible human perceptions, it is difficult (if not impossible) to rate the importance of any one function over that of another on a nationwide basis. Richardson (1994) notes "The placement of different functions and values on the wetland ecosystem by different interest groups has resulted in major conflicts in society. /.../ These conflicts often are the result of serious ecological, economic, and ethical differences among interest groups, scientists, and environmentalists."

On a local level, wetland functions can be rated for their importance, however, there will always be individuals or groups that differ with any rating assigned. On a state and nation -wide level, these groups are well organized and ready to interact in every public review process. Local governments and districts with specific development or protection values must be just as willing and prepared to present their position to decision makers whenever a public review is ongoing. Within the 404 program (the basis of federal wetlands protection), failure to interact in the established public review process in a timely manner will virtually guarantee local needs and values will not be considered.

### 2.4.3 Wetland Values (Alaska Coastal Districts)

On a statewide level, Alaskans recognize many of the same values listed in Section 2.4.2, however, appear more focused on those values directly related to their lifestyles (hunting, fishing, etc.), than on those values which provide less tangible results, such as education and research. It is appropriate to note that some of the activities most valued by Alaskans (such as hunting) are not always directly linked to wetlands. That is, upland areas providing similar opportunities for hunting are probably just as valued as the wetland areas.

Alaskans, as a group, are probably more dependent on the direct harvesting of natural resources to sustain their lifestyles than most other U.S. citizens. Finlayson and Moser (1991) note that in Alaska and Canada, residents of native communities owe as much as 75-80 percent of their total fat, protein, and vegetable intake to the hunting, fishing, and trapping of animals and other resources. Further, "the products of natural wetlands provide a source of food and are an essential component in a complex integration of economic, social, and cultural factors."

Many people come to Alaska to take advantage of the hunting, fishing, and recreation opportunities; and as a result, do not want to see those opportunities compromised. Further, many resident's lifestyles are economically dependent upon the harvest of our natural resources (commercial fishing, mining, timber). The fishing industry in particular is dependent upon wetland protection to sustain harvest levels.

Survey results (Section 2.3 and Appendix A) indicate that most coastal districts value wetlands for the following characteristics (listed in order of importance). These results are based on the survey and interviews with coastal district representatives. Eight wetland characteristics contribute most consistently to our perception of "high value". These are listed below with a more detailed discussion directly following.

1. Food production (shellfish, anadromous fish, freshwater fish, furbearers, game species, berries, greens, etc.)
2. Recreation (fishing, hunting, hiking, wildlife viewing, etc.)
3. Erosion Control (primarily shoreline and river bank stabilization)
4. Flood Control (water storage and discharge)

In many rural areas of Alaska, wetlands are also highly valued for:

5. Water Quality and/or Supply
6. Fiber and Medicine Production

In densely urbanized areas of Alaska (and to a lesser extent areas of Alaska which are densely forested), wetlands are also highly valued for:

7. Open Space/Visual Relief/Aesthetics

In mountainous regions of Alaska, suitable building sites are limited in their distribution. In these areas, and in many areas where uplands are relatively scarce, wetlands are also valued because they provide:

8. Room for Community Growth and Development.

Function No. 1) Food Production

The survey results indicate that the "food production" function of wetlands is that most valued by Alaskans in coastal districts. District input consistently specified that wetland fish and wildlife production and harvest areas (including commercial harvest, recreational harvest, and subsistence harvest areas) are the most important wetlands for people within their districts.

Aquatic resources appear to be the most valued, if controversy over habitat loss or impacts can be directly linked to the importance of one resource over another. Most districts indicated a loss of fish resources of 0 to 5 percent would be significant. This implies a high level of dependency on these resources and may also imply Alaskan's already feel the impacts of decreased resource availability. Certainly, recent fishery closures around the state imply these resources are not always able to accommodate the growing demand.

Non-tidal "inland" wetlands, which contain permanent water regimes and are relatively common in Alaska, are considered very valuable to fish (spawning and rearing habitat), waterbirds (nesting) and furbearers (Bergman, et al. 1977; Lensink and Derksen, 1986). Therefore, if these resources are to remain abundant, steps to provide adequate habitat protection are necessary.

Wildlife resources are also highly valued by coastal district Alaskans. However, unlike the aquatic resource consumptive use emphasis, wildlife resource are valued by both consumptive and non-consumptive users. Twenty-seven percent of the districts reported a loss of wildlife resources would equally impact both consumptive and non-consumptive users.

Many animals in the arctic depend on wetlands for some part of their life cycle (Finlayson and Moser, 1991). The barren ground caribou, musk ox, and even polar bears depend on wetland vegetation to meet some of their nutritional requirements. Similarly, animals in the boreal region also depend on wetlands; the moose, woodland caribou, beaver, and bison being good examples.

Coastal and non-coastal wetlands are well known for their contributions to wildlife and fish habitats; providing refuge for millions of migratory birds and fish (Weller, 1981; Merrell and Koski, 1979). Numerous references supporting wetland use by fish and wildlife species can be found in Appendix B.

Function No. 2) Recreation

Recreation, although closely linked to fishing and hunting (i.e., food production), was also highly valued in all geographic regions. Many other forms of recreation in wetlands were noted, including other types of food gathering activities such as berry-picking, green gathering, mushrooms, etc.

Hunting, trapping, and fishing activities can also be of significant economic value to Alaska. The value to Canada of fur trapping has been as much as $61 million dollars annually. Waterbird resources (i.e., waterfowl hunting and bird-watching) have been estimated to bring an additional $104 million dollars to the Canadian economy.

Muskegs and estuaries were noted as the most popular wetland types for recreation in Alaska coastal districts (equal votes for each). Muskegs were valued primarily in southeast Alaska, apparently for their hunting, berry picking, and wildlife viewing potential.

The importance of estuaries for their commercial harvest values was specifically recognized in the Water Resources Planning Act of 1965. Within that act, the coastal zone estuaries were described for their specific values to humans:

> Beyond their *critical importance in man's harvest of economically useful living marine resources*, many estuaries, coves, and bays merit consideration as *visually attractive* settings that *support diverse life* forms of *aesthetic value* and as marine ecosystems of special interest (Federal Register, Vol. 30, #174, Part III, pp. 61-66].

Certainly, the willingness of some coastal district residents to travel as many as 200 miles to recreate (usually hunt or fish) in wetlands, also implies a high degree of value (i.e., there is something these wetlands provide that other areas cannot). On a nationwide basis, the recreational values of wetlands have not been studied as extensively as most other wetland functions and values (Sather and Smith, 1984).

Function No. 3) Erosion Control; Shoreline Stabilization

Globally, the role of wetlands in anchoring shorelines (i.e., preventing erosion) is normally associated with tropical, mangrove-dominated coastlines. In Europe and the Mediterranean, coastal wetlands occur mainly in areas of strong deposition where their role in preventing erosion is limited. Coastal salt

marshes, however, are noted for their protection of shorelines from approaching waves (Finlayson and Moser, 1991).

Nationally, wetlands provide a number of erosion control functions. Carter (1978) concluded that wetland vegetation plays three significant roles in erosion control: 1) it binds and stabilizes substrates, 2) it dissipates wave and current energy, and 3) it traps sediments.

While there is little doubt that some coastal Alaska wetlands perform all three of these functions at one time or another, Alaska coastal districts primarily value wetlands for their role in shoreline stabilization (i.e., creating a buffer against coastal erosion caused by currents and storms).

Function No. 4) Flood Control

The dynamics of water supply and loss are fundamental to the development, maintenance, and functioning of wetlands. Generally, it is recognized that the hydrology of a wetland is defined by three factors: how much water enters it, how much water leaves it, and how much water the wetland is able to store.

There has been general agreement for many years that wetlands associated with streams provide flood storage, slow flood waters, reduce flood peaks, and increase the duration of the flow (Carter et al., 1978; Verry and Boelter, 1978; Clark and Clark, 1979; Larson, 1981; Larson, 1982; Zinn and Copeland, 1982). Although flood control is an important and recognized function of wetlands, there is still little data which documents that one type of wetland provides more effective flood control than another (Reppert et al., 1979).

The hydrological transfer and storage of water in wetlands has been more recently described by Richardson and McCarthy (1994). Johnston (1990, 1994) refined the relationship of wetland areas to peak flows and suggests when less than 10 percent of a watershed is wetlands, significant peak flows occur.

Flood control and water supply were noted as a valued wetland function by approximately half of the coastal district respondents. The loss or reductions of this function can have catastrophic impacts to humans and their property, as evidenced by recent flooding throughout the midwest.

Function No. 5) Water Quality and Supply

Wetlands perform a variety of water quality functions, including removal of nitrogen from agricultural or municiple wastewater runoff (Hammer, 1989). The biogeochemical storage capabilities of wetlands are also important. Metals, nutrients, and toxic organic compounds have been introduced into many wetlands through natural or artificial means in many areas. Through chemical/biological processes, these substances have been changed into harmless substances (Sather and Smith, 1984).

Alaska coastal districts in western Alaska appeared to value wetlands for their contributions to water quality. The lack of survey results throughout western Alaska, and the availability of clean water in other parts of the state, made it difficult to discern if Alaskans generally understand the contributions of wetlands to their water quality.

Function No. 6) Fiber and Medicine Production

The ability of Alaska's wetlands to produce useful fibers and medicinal plants is not well documented, although ethno-botanical studies are not uncommon in Alaska. A correlation between wetland species, and species used for fiber and medicinal purposes will be necessary before the extent of plant utilization in Alaska's wetlands can be determined. Certainly, evidence exists that rural Alaskan's have utilized some species found predominantly in wetlands for centuries (Fortuine, 1988; Kari, 1987). A complete review of ADFG subsistence utilization studies and other ethno-botanical works would be required in order to determine the extent of wetland species utilization in subsistence activities.

Function No. 7) Aesthetics

Visual relief, open space, and aesthetic values were considered important in some coastal districts, but primarily those which are highly urbanized or located within the highly mountainous or forested regions of the state. These functions may be less valued by Alaskans living in rural areas because they do not feel the crowding evident in most population centers.

The importance of recreation and aesthetic values to people has been recognized by the Coastal Zone Management Program since it's inception.

> ... the coastal zone is rich in a variety of natural, commercial, *recreational,*

> industrial, and *aesthetic* resources of immediate and potential value to the present and future well-being of the nation (emphasis added). [Section 302(b) of the Coastal Zone Management Act, 1972]

Section 920.13 of the same act defined areas of significant natural value or importance as "areas which contain landforms, waterforms, exposed geology, vegetational forms, and/or fauna of *visual and intangible impressiveness*" (emphasis added).

The National Environmental Policy Act (NEPA) of 1969 also recognized the importance of visual and aesthetic resources, requiring that:

> The Federal government use all practicable means .../to/.. assure for all Americans .../*aesthetically* and culturally pleasant surroundings...[NEPA, Section 101(b)] (emphasis added).

The scenic value of wetlands has been recognized in the scientific literature since 1957 (Sather and Smith, 1984), however, no studies specific to Alaska wetlands were identified in the literature search for this project. The Alaska Region of the Forest Service developed a method for quantifying visual resources in southeast Alaska a number of years ago. While the method is not specific to wetlands, it provides a means to evaluate visual resources in an objective manner.

Function No. 8) Room for Community Growth and Development

It is also important to recognize that within many Alaska coastal districts, wetlands provide the only practicable alternatives for community expansion and development. Many Alaska coastal communities are surrounded by public lands which cannot be developed. Development is further constrained in some areas by extreme mountainous topography. In these situations, while it is not correct to say that wetlands themselves are valued for their development potential, it is correct to note that the land or landforms which these ecosystems occupy makes them highly valuable for community development and expansion.

### 2.4.4 Criteria for Wetland Development in Alaska Coastal Districts

Wetlands and their buffer areas are valuable natural resources with significant development constraints due to such natural hazards as: flooding, erosion, soil liquefaction potential, and sewage disposal limitations (Association of

State Wetlands Managers, 1992). Development activities in northern regions of Alaska can also disrupt the thermal cover of permafrost, creating additional construction problems.

While human ingenuity and technology have made development in many wetland areas feasible, development activities in many wetlands still require careful planning to avoid or minimize potential adverse impacts.

The wetland sites which are *most valued for development* in Alaska coastal districts typically include:

1) Those wetlands which are isolated or disconnected from larger systems of wetlands and waterways;

2) Those wetlands which are adjacent to existing streets, roads, sewers, and developed water or utility sources;

3) Those wetlands which are adjacent to or surrounded by other developments; and

4) Those wetlands which have frontage on major highways or arterial roadways.

Unfortunately, wetlands in these areas are not always valued just for their development potential. Some may require protection to maintain other important functions and values.

*Wetlands in most need of protection*, because they are highly valued by Alaska coastal districts, include:

1) Those wetlands which provide habitat, harvest, and production areas for fish, wildlife, and vegetation species;

2) Those wetlands that provide recreation opportunities;

3) Those wetlands that prevent shoreline erosion by stabilizing the substrate;

4) Those wetlands that control flooding and stormwater runoff by regulating natural flows;

5) Those wetlands that protect water resources by filtering pollutants, processing biological and chemical oxygen demand, recycling and

storing nutrients, recharging and discharging groundwater, and serving as settling basins for both natural and un-natural occurring sedimentation; and

6) Those wetlands that provide open space, visual variety, and relief from intense urban development or otherwise homogeneous landscapes.

## 2.5 IS A NEW ACMP WETLANDS STANDARD NECESSARY?

At issue is whether or not districts, in their quest to effectively manage and regulate uses and activities in wetlands, need the added tool of an ACMP standard specifically about wetlands. Or, if by following the steps outlined in Section 3.0, districts will have gathered enough information and completed the necessary analysis to develop enforceable policies under existing policy areas (such as coastal development, recreation, habitat, subsistence) to manage and locally regulate wetlands; specifically those that would be considered "valuable" by most ccoast district residents.

As readers consider whether a new ACMP Wetlands Standard is necessary to protect and identify high value wetlands, the authors encourage you to think of a real or fictional development project in a wetland perceived to be of high value in your district or region. Choose a plausible development scenario or land-use conflict and evaluate how your district's needs and concerns could be addressed using the existing ACMP framework or the new draft standard. Then, do the same for a lower value wetland.

# 3.0 ADDRESSING WETLANDS WITH EXISTING ACMP GUIDELINES

If no new standard was created, districts would create enforceable policies within their coastal district plan, and use them to support their wetland-related development and protection interests. Sections 3.1 through 3.7 address how components of an existing plan could be modified to address wetlands.

## 3.1 ISSUES, GOALS AND OBJECTIVES [6 AAC 85.020]

Districts would identify "issue, goal and objective statements" for wetlands within their district in order to set the ground work for later resource inventory and analysis and policy development.

Issues are needs, concerns, and problems expressed by local residents of a coastal district. Issues are identified first and, as an example, could include statements such as:

> Our wetlands are being filled, destroying waterfowl habitat and subsistence opportunities.
>
> Wetlands are generally abundant throughout our district and in many areas upland alternatives for development are not available.
>
> Upland resources, where available, are very limited in our primarily wetland district. These upland areas provide important subsistence resources that cannot be found in other areas of our district.

Goals are broad statements of long term results or conditions that the residents of a district wish to achieve. Goals are general statements of community intent. As an example, goals relating to wetlands could include:

Goal A: Create a more stable economic environment by making land use decisions more predictable.

Goal B: Develop a management scheme for wetlands that allows a balance of development and preservation.

Goal C: Wetlands important for local flood control, drainage, water quality, aquifer recharge, visual or cultural values or habitat functions should be preserved or enhanced.

Objectives are specific actions or measurable steps that can be taken to accomplish a specific goal or move closer to achieving it. Objectives related to wetlands (and the goals provided above) could include:

Goal A, Objective 1: Classify wetlands within the coastal district by assessing the hydrologic, biologic, habitat, and human use functions deemed important and unique for this region.

Goal B, Objective 1: Concentrate community development and growth where infrastructure (e.g., roads, utilities, schools) already exist. Protect and preserve high value wetland areas without community infrastructure.

## 3.2 COASTAL BOUNDARY [6 AAC 85.040]

Most coastal district boundaries have already been established. Districts reviewing their district boundaries should, to the extent possible, see that large contiguous wetlands and watersheds are included entirely within a coastal district and are not dissected (placing part of the watershed or wetland in the district and part of it outside of the district). This will simplify impact analysis and decision making because ultimately any project proposed for the wetland (or watershed) is reviewed by the district. If a wetland (or watershed) is split by two districts, general confusion or significant cumulative impacts could result as projects are proposed and reviewed independently.

Expanding coastal district boundaries beyond the "zone of direct interaction and zone of direct influence" must be based on criteria found in 6 AAC 85.040. Specifically, Part (c) notes (in part) that boundaries may include "all transitional and intertidal areas, salt marshes, salt water wetlands, islands and beaches". Part (d) notes that if other criteria are met, the inclusion of "watersheds" may be used as a reason to expand the coastal district boundary.

Like all criteria, these are subject to differing interpretation and at times there have been extended "negotiations" about whether areas may be included within a coastal district boundary or not. If a district wants to include a large contiguous wetland area or watershed within its boundary, it should determine if it is:

a) Either a coastal wetland or freshwater wetland (or watershed that contributes to a said wetland) that is likely to have a direct and significant impact on marine coastal waters (which includes by definition "the living resources which are dependent on these bodies of water"). If this is true, a case can likely be built for its inclusion within the district boundary; or

b) An isolated inland wetland or watershed that impacts no coastal waters or living resources dependent upon coastal waters, in which case it may be difficult to justify its inclusion within a coastal boundary.

An good example of expanding district boundaries to protect wetland and district resources is found within the NANA coastal district. Here, some watersheds were ultimately included within the boundary because the management of [uses and activities in] the watershed could have a direct and significant impact on marine coastal waters [specifically anadromous fish, as the "living resource" dependent upon the body of water].

## 3.3 RESOURCE INVENTORY [6 AAC 85.050]

Working within the existing program guidelines, districts would specifically add wetlands to their resource inventory efforts, while keeping the existing ACMP standards in mind. An example of this approach follows:

### 3.3.1 Guidelines for Incorporating Wetlands into Existing Resource Inventory Tasks

Districts must "describe, in a manner sufficient for program development and implementation" the following:

*A. Under 6 AAC 85.050 (1) Habitats*

Districts must identify and describe the habitats listed in 6 AAC 80.130. The standard already includes offshore areas, estuaries, wetlands and tideflats, rivers, streams, and lakes. Specifically, districts could identify wetlands that must be managed so as to assure adequate water flow, nutrient and oxygen levels, avoid adverse effects on natural drainage patterns, and the destruction of important habitat and the discharge of toxic substances into important habitats for policy development under the Habitat Standard.

*B. Under 6 AAC 85.050 (2) Major Cultural Resources*

Districts could identify wetlands that contain significant cultural resources. Further, districts could identify wetlands which provide medicines, fibers, or other materials integral to historic or ongoing cultural practice(s).

### C. *Under 6 AAC 85.050 (3) Major Land and Water Uses and Activities*

Districts could identify any such activities or uses which are conducted within or adjacent to wetlands. Specifically, districts could:

- Districts should identify major watersheds, including wetlands, under the Hydrology Standard.
- Districts should identify wetlands that may be important for the protection of land, air, or water quality under the Climate and Air Quality Standard.
- Districts should identify the soils typically found in wetlands and their development constraints in the Soils Standard.
- Districts should identify those plant communities which are typically found in wetlands in the Vegetation Standard.
- Districts should identify those wetlands which are important components of viewsheds under the Visual Resources Standard.
- Districts should identify wetlands subject to flood hazards, erosion, ice-hazards, storm hazards, landslides, etc. under the Geology and Geological Hazards Standard.
- Districts should identify marine or anadromous species, birds, or wildlife species which are dependent upon wetland habitats for their survival under the Biological Environment, Species Use, and User Groups Standard.
- Identify wetlands used for recreation and tourism for policy development under Recreation and Tourism Standard.
- Identify wetlands that are or may be used for siting an energy facility for policy development under Energy Facilities Standard.
- Identify wetlands that are or may be used for transportation or utility routes under the Transportation, or Utilities, Services, and Community Finance Standards. Generally, if a wetland is to be impacted there must be no feasible and prudent inland route alternative.
- Identify wetlands suitable for the siting of commercial fishing or seafood processing facilities for policy development under Fish and Seafood Processing Standard.

- Identify wetlands suitable for the support of timber harvest and processing activities (roads, log sort yards, log transfer facilities) under the Timber Harvest and Processing Standard.

- Identify wetlands that are or may be used for mining or mining support facilities for policy development under the Mining and Mineral Processing Standard.

- Identify wetlands that are or may be useful for urban, commercial, or residential development under the Government and Private Economic Activities Standard.

- Identify wetlands that are or may be used for subsistence for policy development under the Subsistence Standard.

D. *Under 6 AAC 85.050 (4) Major Land and Resource Ownership and Management Responsibilities*

Districts should describe any significant land ownership or pre-existing resource management issues or direction which pertain to wetlands under this standard.

E. *Under 6 AAC 85.050 (5) Major Historic, Prehistoric, and Archaeological Resources*

Identify wetlands that may be important to the study, understanding or illustration of national, state or local history or prehistory

At a minimum, the above tasks could be done for wetlands on a general level, and to the extent that the plan focuses on wetlands, this description and identification should be as specific to particular wetlands as possible.

### 3.3.2 Recommended Guidelines for the Inventory of Wetlands

It is would be helpful that the person doing inventory and classification work for the district have access to appropriate wetland-related professional training and experience. Currently, several proposed certification programs are pending for persons completing this work, including one by the lead wetlands regulatory agency, the U.S. Army Corps of Engineers (COE). The Anchorage COE office maintains a list of contractors who are interested in working on wetland related projects.

Districts may find existing information and data will assist with the classification of wetland resources within their district. By collecting available data prior to hiring a contractor, they can avoid paying someone else to complete this portion of the work.

Once all existing data sources are located and compiled at the same scale, a preliminary wetlands map can usually be produced for verification. The simplest way of doing this is by digitizing or scanning each data source independently and inputing them all into a geographical information system (GIS) for analysis and plotting. The GIS allows data of all scales to be input and displayed together at any scale desired. Districts who lack GIS capabilities may choose to contract a firm to assist with this part of the analysis. GIS can be expensive in the short term. However, if properly managed it typically results in significant cost savings over the long term because it can be easily updated.

Once a preliminary wetlands basemap is produced, it must be "ground truthed" or "field verified" to be recognized and approved by the COE. Plots which document both wetland and upland characteristics (soils, vegetation, and hydrology) must be completed in representative areas of all vegetation and landtypes identified to determine final jurisdictional wetland/upland boundaries. After field data are compiled and analyzed, the preliminary mapping must be finalized. Normally, a report documenting the methods used is prepared, including copies of the field data forms. COE involvement, both in the early stages of the project and during the field verification program, is important to the overall success and credibility of any wetlands mapping or classification project. Without this credibility and approval, any maps or plans produced will not really simplify the permitting process for landowners, and may ultimately complicate matters by adding another level of review.

The evaluation of wetland functions and values can be accomplished during the initial mapping effort or as a separate effort at the completion of the mapping project. There are pro's and con's to both procedures. It is typically more cost effective to address both simultaneously, however, doing so requires a larger up front investment. Districts with very limited budgets may need to address wetlands mapping and categorization with a phased or task oriented approach, over a five to ten year period. Wetland classification/categorization will be more completely addressed in the following section, Resource Analysis.

The following data sources may be helpful to districts when preparing for wetland mapping and analyses:

## Wetland Mapping

- *U.S. Fish & Wildlife Service National Wetland Inventory Mapping*

  USFWS National Wetland Inventory (NWI) mapping is available for many areas of the state, and more mapping is completed every year. NWI mapping is based solely on vegetation characteristics and is not equivalent to "jurisdictional" wetland mapping. However, these maps are very helpful in identifying larger wetland systems. NWI mapping is completed using high altitude aerial photography, therefore, smaller wetlands are seldom identified. A user's manual is available for most mapped regions and provides additional supporting data. NWI mapping is most accurate in areas where the relief is limited (lowlands and gently sloping areas). Forested wetland mapping in southeast Alaska is typically the least accurate of all NWI mapping. Most maps are provided free of charge. For a fee, some NWI mapping is also available in digital format or on uncoded maps which can be scanned in lieu of digitizing.

  The USFWS can also provide copies of the current lists of plant species recognized as wetland indicators in Alaska. These lists are scheduled for updating in fall of 1994.

  John Hall, Coordinator
  USFWS National Wetlands Inventory
  1011 E. Tudor Road
  Anchorage, Alaska
  (907) 786-3471

- *Corps of Engineers Jurisdictional Wetland Mapping and Current Delineation Guidelines*

  Jurisdictional wetland mapping is available for limited areas of the state, however, it may be outdated in some instances. Contact the Regulatory Branch of the U.S. Army Corps of Engineers in Anchorage (Juneau or Fairbanks) for more information. The COE can also supply copies of the current delineation manual and general information regarding the 404 program. Training sessions are also held periodically.

  U.S. Army Corps of Engineers Regulatory Branch
  P.O. Box 898
  Anchorage, Alaska 99506-0898
  Anchorage (907) 753-2712, outside Anchorage 1-800-478-2712

## Vegetation Data

- *Forest Service Vegetation Mapping (Viereck)*

  Broad, generalized vegetation mapping is available statewide in the map pocket of "Alaska Trees and Shrubs" a Forest Service Publication available through many bookstores and the University of Alaska Forest Experiment Stations. Paperback versions of the book may not contain copies of the map. The text provides more detailed descriptions of the map units and is also an excellent botanical reference for identifying trees and shrubs. Vegetation must be compared with wetland indicator plant lists (obtained from the USFWS) to be of assistance in mapping or identifying wetlands.

- *USGS Earth Resource Observation System (EROS) Alaska Field Office*

  One of the most under utilized sources of good aerial photography and vegetation mapping is the EROS Alaska Field Office, also located in Grant Hall at the Alaska Pacific University. The EROS office maintains extensive files and remote sensing data for many remote areas in Alaska. Districts with GIS or other graphic programs can obtain the EROS data in digital formats. EROS also maintains a reference library of associated reports and legend material.

  Carl Markon
  EROS Alaska Field Office
  4230 University Drive, Suite 230
  Anchorage, Alaska 99508
  (907) 786-7023

## Soil Mapping

- *Soil Conservation Service; Soil Series Mapping & Hydric Soils List*

  Soil series mapping is available for limited areas of the state at no charge. More detailed mapping is underway and several new surveys have been completed in the last few years. Soil mapping available through the "Exploratory Soil Survey of Alaska" is helpful but not site specific. These data should only be used to evaluate trends in soil types, not to predict specific soils in specific locations. There are a number of small, unpublished soil surveys which may be of help with specific area mapping.

  SCS personnel are located throughout southcentral Alaska, primarily in the Mat-Su and Kenai Peninsula Boroughs. Soil scientists may also be on

staff in local Forest Service, Bureau of Land Management, or University of Alaska offices. Districts should keep in mind that even the best soil mapping may not be specific enough to map wetlands with. By definition, an SCS mapping unit (for instance a polygon which is mapped as a specific soil) can include up to 50 percent of other soil types. Therefore, field verification of wetland characteristics (including soils) is almost always necessary.

Where soil mapping is available, districts should also obtain an updated hydric soils list for Alaska. This list will identify which soil series are considered hydric by the SCS. The presence of hydric soils is one of the three parameters used in determining whether a specific site will be considered a jurisdictional wetland by the regulatory agencies. These lists are updated periodically, and the current list should be reviewed whenever data are being initially evaluated or revisited.

Joe Moore, Soil Scientist
Soil Conservation Service
949 E. 36th Avenue, Suite 400
Anchorage, Alaska 99508
(907) 271-2424

**Threatened, Endangered, or Sensitive (TES) Species**

- *Alaska Natural Heritage Program*

  Several resources agencies provide data on TES species and their habitats. Nest sites are well documented for most raptors by the U.S. Fish and Wildlife Service. The University of Alaska, Natural Heritage Program maintains a database of site specific data on both flora and fauna. These data are provided at no charge, and typically take between 3-4 weeks to obtain after submitting a written request. These data are helpful in identifying sensitive or valuable wetland areas.

  Julie Michaelson, Data Manager
  Julia Lenz, Assistant Data Manager
  ENRI - University of Alaska Natural Heritage Program
  707 A Street
  Anchorage, Alaska 99501
  (907) 279-4523

## Subsistence Utilization

- *ADFG Subsistence Resource Utilization Mapping*

  Most areas designated as "rural" were extensively studied by ADFG personnel and contractors during the mid to late 80s to determine the extent and range of subsistence use practices. Reports and general utilization maps were prepared as a result of this work. Local ADFG offices should have copies of these products. If not, final results should be available through the ADFG library in Anchorage. Many regional offices have specific personnel who specialize in subsistence issues. The USFWS also has staff who are knowledgeable about subsistence issues. Existing district resource inventory maps and regional profit and non-profit native corporations may also be good sources of subsistence data.

  Alaska Department of Fish and Game, Subsistence Division
  333 Raspberry Road
  Anchorage, Alaska 99518
  (907) 267-2353 or 267-2105

## General Habitat and Species Utilization Data

- *ADFG Critical Habitat Maps, Habitat and Species Utilization Mapping*

  The Alaska Department of Fish and Game (ADFG) offers critical habitat mapping in a few areas of the state. These, and other habitat utilization data, can be used to determine which wetlands are of value to locally important species. For example, a large portion of Kachemak Bay near Homer is considered critical shell fish habitat. Such areas deserve special protection measures and will contribute to a wetland being categorized as "high value".

  A large atlas of habitat utilization maps was prepared by ADFG in the late 70s. Data are available statewide for marine, freshwater, and terrestrial species (both fish and game). These *Habitat Atlas* maps (and the *Regional Guides* provide basic information regarding nesting, denning, calving areas; as well as migratory routes used by large herds, etc. The maps are very general and lack site specific detail, however, do provide basic documentation of species distribution and important use areas.

  Other areas of the state may have models which help to predict habitat utilization by indicator species. These models contain data on elevation, aspect, and vegetation community composition which may play a role in

predicting species utilization and overall habitat importance. In some instances the models are prepared in cooperation with other federal agencies. Contact local biologists to discern if models have been developed for habitats within or adjacent to your district boundaries.

While local atlas data are probably available at local ADFG offices, copies of all the maps available are available for reproduction at Ridgeways Mid-town office in Anchorage (Mark Hartz 561-1555). There is a small charge for each map produced, however. The maps are organized by region.

- *ADFG Anadromous Fish Stream Mapping*

ADFG is required by Alaska Statute 16.05.870 to "specify" and protect various rivers, lakes, and streams of the state which are important for the spawning, rearing or migration of anadromous fish. ADFG produces a catalog and map atlas which documents these areas. These products are updated frequently as more data is obtained from ongoing survey efforts. ADFG should be contacted for the most current information. A mailing list of interested persons is maintained by region, and notifications are sent out annually for updated areas.

While these data are probably available at most local ADFG offices, copies of all the maps are available for reproduction at Ridgeways Mid-town office in Anchorage (Mark Hartz 561-1555). There is a small charge for each map produced, however. The maps are organized by region.

Alaska Department of Fish and Game, Habitat Division
333 Raspberry Road
Anchorage, Alaska 99518
(907) 344-0541

**Topographic & Hydrologic, Land Status Data**

- *U.S. Geological Survey Topographical Maps*

Topographical mapping is helpful in determining the hydrologic characteristics or an area. The more detailed the data are, the more useful they can be in determining where water comes from and why it collects in a certain area.

Topographical mapping is available for purchase for all areas of the state, although the level of detail and accuracy varies widely. Municipalities

with mapping capabilities, the State of Alaska Department of Community and Regional Affairs (DCRA) Community Profile Maps, and AeroMap USA are also potential sources of topographic maps at a community scale.

USGS also has high altitude color infra-red photography available for purchase. Coverage area and quality can be reviewed via a special machine in the Anchorage Office (Grace Hall, Alaska Pacific University). USGS also has vegetation mapping, geologic mapping, and special hydrologic studies available for some areas. Some data may also be available in digital format from Fort Collins, Colorado.

U.S. Geological Survey
National Mapping Division (or Water Resources Division)
4230 University Drive
Anchorage, Alaska 99508
(907) 786-7000

- *FEMA Floodplain Mapping*

Floodplain mapping and special study reports can be obtained from FEMA. Most are available free of charge and take about two weeks for delivery. Indexes are available for all mapped areas. Approximately 275 maps have been prepared for Alaska.

DCRA, Municipal and Regional Assistance Division, is the FEMA National Floodplain Insurance Program (NFIP) coordinator for Alaska. In this capacity, MRAD also maintains the FEMA floodplain maps for Alaska. MRAD has also collected maps from other agencies, such as the Corps of Engineers, Soil Conservation Service, USGS, and other special hazard studies. The 23 Alaska municipalities participating in the NFIP also maintain FEMA maps.

FEMA Floodplain Distribution Center or
6930 San Thomas Road
Baltimore, Maryland 21227-6227
1-800-358-9616

Christy Miller, DCRA
333 W. 4th Avenue, #319
Anchorage, AK 99501
(907) 269-4567

- *Aerial Photography*

Available aerial photography should be indexed and registered to a topographical base map. Lower-altitude, color photography is the most helpful for wetland delineation, but black and white or high altitude

photography can also be used. Stereo-coverage should be obtained for new photography, especially if the photography is obtained specifically for resource inventory work. Stereo coverage allows the photographs to be viewed in three-dimensions, by means of a stereoscope. Ortho-photos may also be helpful, and are available for many areas through USGS.

A person experienced in aerial photograph interpretation and wetland delineations may be needed to produce a credible base map from the aerial photographs. The map can be produced at whatever scale of photography is available, however, the accuracy of the mapping will be heavily dependent on the scale and quality of photographs provided.

Existing photography can be obtained from a number of sources, including USGS, DCRA, EROS Alaska Field Office, COE, Forest Service, BLM, and private contractors. The Alaska Department of Transportation (ADOT) typically obtains current photography for most new and major road upgrades. One of the most comprehensive databases of aerial photography is maintained by AeroMap Inc., in Anchorage. However, other private companies also have negatives on file and will probably be interested in bidding new work. New photography is expensive, but greatly reduces labor intensive field verification time for mapping efforts. Talk with several contractors to determine appropriate specifications before seeking bids or awarding a contract for this type of work.

- *Local Land Status Maps (Plats, Etc.)*

Districts with property taxes may have departments which track the platting and ownership of local properties. These data, including any applicable zoning restrictions, will be very helpful in addressing local wetlands management.

To avoid takings disputes[2], districts should be aware of the implications when placing restrictions on lands which are privately owned, unless the restrictions are supported by state or federal regulations.

District recorders offices (State of Alaska Department of Natural Resources) also maintain records of ownership and plat maps. DCRA, the BLM, and Native Corporations may also be able to provide land status information.

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2 Takings and other considerations are discussed in Section 3.7, Implementation.

## 3.4 RESOURCE ANALYSIS [6 AAC 85.060]

To address wetlands in an ACMP plan, the "Resource Analysis" section should specifically identify the environmental capability and sensitivity of local wetlands, the cultural uses of wetlands, and should assess the present and anticipated needs and demands on wetlands within the district. Like the Resource Inventory effort outlined above, the resource analysis should be as specific as possible.

A wetland functions and values assessment, or classification/categorization effort, is in many ways analogous to an ACMP wetland resource analysis. The data sources described in Section 3.3 will provide some baseline data (i.e., habitat utilization, subsistence utilization, flood zones, etc.) on important wetland functions and values. However, to assure human use needs are fully considered in the resource analysis, data sources in addition to those identified in Section 3.3 should be obtained. Some of these data may already be available through existing inventory requirements of the ACMP. Data which should be available for wetland resource analysis include:

1. Recreation Use (existing and potential)

2. Aesthetics (open space, visual relief, uncommon geomorphic features)[3]

3. Community Development Needs (Residential, Commercial, Industrial)

There are many different types of classification/categorization schemes for wetlands. Most methods include assessing several different wetland functions and values, a relative weighing of these functions and values, and the assignment of some type of ranking system for management purposes, such as 'high, medium, low' or 'development, preservation, etc.'

The evaluation parameters listed in the draft wetlands standard (Section 4.0) provide the foundation for many functions and values assessments which are completed in Alaska, and most were developed by a wetlands working group composed of representatives from seven state and federal agencies. This list includes more "value" parameters than some methods, because it is the intent of DGC that human values and needs receive equal consideration with other species needs and values in permit decisions.

The wetland resource analysis (i.e., functions and values assessment) and final categorizations must take a balanced approach when weighing aquatic vs.

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[3] Districts looking for methods which allow a less subjective rating of visual resources should review Aesthetic Resources of the Coastal Zone (Roy Mann Associates, 1975, for the Office of Coastal Zone Management, NOAA) and the Alaska Region of the U.S. Forest Service's Visual Resource Management (VRM) System.

terrestrial vs. human use functions and values. Failure to do so may result in a plan which is accepted and supported by the community at large, but fails the regulators needs for compliance with federal guidance.

District representatives have indicated they are concerned that all of their local wetlands will be classified as "high value" using any new standard or existing functions and values assessment method. Districts must work closely with the wetland regulatory agencies (COE, EPA) when adopting or modifying any classification/categorization system if they ultimately want approval from these agencies to implement their plan or approve their mapping. Failure to communicate and cooperate with these agencies continuously throughout the preparation of a local wetlands management plan typically results in major cost and time setbacks. Coordination with other resource agencies is important, however, obtaining approval from other agencies does not guarantee compliance with the federal regulatory program.

Numerous classification and categorization schemes can be found in the literature of federal and state agencies, private consultants, and locally in the Juneau and Anchorage Wetlands Management Plans. The cities of Homer and Haines have also completed plans for the management of local wetlands. Please refer to the bibliography (Appendix B) for a listing of references related to wetland functions and values. DGC has received a separate grant from the EPA to focus on the development of a statewide wetland classification/rating system. Also, the COE is currently developing a new approach to wetland classification which may ultimately be implemented nationwide. However, many years could pass before any single classification or categorization system is adopted state or nation-wide.

## 3.5 SUBJECT USES (6 AAC 85.070) PROPER AND IMPROPER USES (6 AAC 85.080)

Regulation requires districts to:

a) Describe the land and water uses and activities that will be managed and regulated by the district program.

b) Describe uses and activities that will be considered proper and improper within the district.

Districts should specifically describe the uses and activities in and adjacent to wetlands that will be managed by the district, as well as uses and activities that are proper and improper in and adjacent to wetlands. At a minimum, this should be done on a general level, and to the extent that the plan focuses on wetlands, this should be as specific as possible.

## 3.6 ENFORCEABLE POLICIES (6 AAC 85.090)

Policies that will be applied to land and water uses and activities must be developed. The policies must be comprehensive, specific and enforceable. Current policy areas include:

A. Coastal Development (6 AAC 80.040)
B. Geophysical Hazard Areas (6 AAC 80.050)
C. Recreation and Tourism (6 AAC 80.060)
D. Energy and Industrial Facilities (6 AAC 80.070)
E. Transportation and Utilities (6 AAC 80.080)
F. Fish and Seafood Processing (6 AAC 80.090)
G. Timber Harvest and Processing (6 AAC 80.100)
H. Mining and Mineral Processing (6 AAC 80.110)
I. Subsistence (6 AAC 80.120)
J. Habitats (6 AAC 80.130)
K. Air, Land and Water Quality (6 AAC 80.140)
L. Historic, Prehistoric and Archeological Resources (6 AAC 80.150)

Examples of policies to address wetlands using some of the existing ACMP standards (listed above) follow. Note that the examples below[4] are samples and ideas only. Only a few have been approved by the Coastal Policy Council.

A. Coastal Development (6 AAC 80.040)

To avoid unnecessary impacts to wetlands, new growth and development shall be located to take advantage of existing infra-structure such as roads, utilities and schools, to the extent feasible and prudent.

Coastal development shall incorporate designs and measures to mitigate potential significant adverse impacts to high value wetlands.

Coastal development shall be discouraged in wetlands (identified on Map No. _):

1) Where rare plants or unique plant communities are present,

2) That are within the 100-year floodplain,

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4 These examples are modifications to address wetlands found in the *City of Haines 1993 Update ACMP*, *Juneau Wetlands Management Plan AMSA*, *Pelican Coastal Management Program*, and *State of Oregon, Wetland Classification and Decision Criteria: West Eugene Wetlands Plan* by Steve Gordon (*State Perspectives on Wetland Classification (Categorization) for Regulating Purposes*, Association of State Wetland Managers, March, 1992).

3) That are near perennial waterways,

4) That are connected geographically or hydrologically to other wetlands or waterways,

5) That contain a high diversity of wildlife habitats or contribute to the diversity of wildlife habitat within the region, or

6) When protection of the wetland would further the goals and objectives of this plan,

Coastal development shall be acceptable in wetlands (identified on Map No._):

1) With previously approved Corps of Engineers 404 permits,

2) That are relatively isolated or disconnected from a larger system of wetlands and waterways,

3) That are served by existing streets, roads, and utilities,

4) That are adjacent to or surrounded by existing development, or

5) That have frontage on a major highway or street.

C. Recreation and Tourism (6 AAC 80.060)

Wetland areas described in the resource inventory and analysis chapter and so noted on Map No. __ as supporting significant recreation uses and activities shall be reserved primarily for these uses. To the extent feasible and prudent, activities which conflict with recreational uses in these designated recreation areas shall be conducted in a manner which minimizes significant adverse impacts to recreation resources and activities, including access.

Public owned shorelines, beaches, wetlands, and upland areas which are vacant and have high recreation, scenic wildlife and/or water quality values or are subject to natural hazards for development purposes, shall be considered as public open space or recreation areas until such time as other uses are required by the public interest.

E. Transportation and Utilities (6 AAC 80.080)

Transportation and utility corridors shall be sited, designed, and operated to

avoid, and if avoidance is not possible, to minimize significant adverse impacts to high value wetlands shown on Map No. __.

Pipeline crossings of wetlands important to waterfowl and shorebirds shall incorporate mitigation measures, to the extent feasible and prudent, to minimize significant adverse impacts.

J. Habitats (6 AAC 80.130)

High value wetlands, depicted on Map No. __, that are owned by the City of ____, will be retained by the City and managed for environmental protection. High value wetlands depicted on Map No. __, that are not owned by the City can be developed only if there is no net loss of individual functional values within the wetland drainage basin.

Moderate value wetlands, depicted on Map No. __, can be developed if there is no net loss of aggregate functional value in the area served by public roads.

Low value wetlands, depicted on Map No. __, can be developed using best management practices.

The _____ wetland, depicted on Map No. __, shall be managed to protect public safety; to maintain, wherever feasible and prudent, the natural vegetation, beaches, tidal pools, and aquatic life bordering ___ Cove; and to maintain the scenic, recreation, and educational values along the waterfront.

K. Air, Land and Water Quality (6 AAC 80.140)

The watershed for the _____ wetlands requires careful attention. Continuing and future negative impacts from development must be minimized to the extent feasible and prudent in order to maintain and enhance this wetlands important sediment and toxicant retention functions.

Section 4.0 explores the need or opportunity for an additional standard which specifically addresses wetlands. If such a standard is adopted, the development of enforceable policies would be accomplished under a separate category. For example:

N. Wetlands (Dredge or Fill Activities)

1) Avoid significant adverse impacts to important fish and wildlife habitat.

2) Avoid significant interference with fish migration, spawning, and rearing, and with wildlife during critical life history phases.

3) Limit areas of direct disturbance to as small an area as possible.

4) Minimize the amount of waterborne sediments traveling away from the dredge or fill site.

5) Be conducted in compliance with all state and federal regulations.

## 3.7 IMPLEMENTATION (6 AAC 85.100)

Districts must describe the methods and authority that will be used to implement the plan. An ACMP wetlands management plan or Area Meriting Special Attention (AMSA) plan would be implemented using the same techniques as any other coastal management plan, as well as some techniques specific to wetlands. Some of the implementation techniques common to all ACMP plans include:

- Use of state consistency process conducted under 6 AAC 50.

- Incorporate a review of consistency with ACMP plan policies into local land use permits/decisions (such as issuance of conditional use permits).

- Ensure that zoning and subdivision codes, as well as comprehensive plan designations and policies comport with ACMP policies. For example, use comprehensive plan designations for high value wetlands such as "public use", "parkland", "greenbelts and open space", and "floodways". Zone high value wetlands in categories such as, "floodplain district" or "conservation districts".

- Ensure that local economic development projects and capital improvement projects are consistent with ACMP policies.

- Review zoning and municipal ordinances to ensure that they incorporate a consistency review process when appropriate.

- Work with project applicants to explain ACMP policies and concerns.

- Explain ACMP policies and goals clearly to local, state, and federal agency staff so that they can assist in implementation efforts.

- Work with local, state, and federal planners to ensure that ACMP policies and goals are incorporated into local, state, and federal plans.

Under the heading "Recommended Environmental and Development Management Programs, Ordinances, and Funding", districts might include a specific recommendation for the management of wetlands. This might include plans for a wetlands identification project (inventory and analysis), the production of draft and final wetland management guidelines, local wetlands ordinances, etc.

Other management tools for addressing wetland protection and management include:

### 3.7.1 Acquisition

Wetlands valued by the public may receive the highest level of protection when acquired by local governments or a resource management agency. This is particularly true of wetlands valued for recreation. Privately owned lands are subject to use limitations/restrictions by the owners at any time.

Acquisition of high value wetlands can be accomplished in a number of ways, but most require funding of one sort or another. Purchase (acquisition) of easements, while reducing total acquisition costs, is constrained by the difficulty of determining the exact value of the rights acquired.

Recently, the City of Haines was able to acquire some high value wetlands adjacent to Sawmill Creek by providing the private land owners with tax breaks or tax credits on the remainder of their properties. Not only did the land owners reduce their tax burden on lands which they could probably never develop (because of their wetland values), they received a credit for the value of those lands against their remaining tax burden.

### 3.7.2 Conservation Easements

Another innovative protection technique is called a conservation easement. Here, private landowners place irrevocable restrictions on their property, primarily to preserve its ecological functions and values and in return receive tax breaks or credits. Typically, the easement lands are designated for conservation and wildlife habitat, but limited development activities are often allowed. The Nature Conservancy (TNC) has staff specially trained to work with local governments and individuals interested in this type of program, particularly when the lands in question are of biological significance. Donated conservation easements have also been used as negotiating tools for development rights (in less fragile areas) by private corporations in Alaska.

### 3.7.3 Public Education

Public education and outreach may be one of the most underrated wetland protection techniques. Many people simply do not understand the importance of these ecosystems and lack the skills to identify specific components of wetlands that may be of local interest or importance. For instance, many Alaskan's enjoy fishing and take pride in our state's vast fish resources. Landowners with fish habitat on their property may be unaware of the importance of that habitat or even how to identify the types of young fish using the area. Outreach programs would identify and work with these landowners to develop ways they can protect or even enhance the resources on their properties.

### 3.7.4 General Permit (GP) Acquisition

Several Alaska Coastal Districts/local governments have obtained "General Permits" from the U.S. Army Corps of Engineers for limited dredge and fill activities in wetlands. Typically, to obtain a GP requires an advanced identification of wetlands within the GP area and a determination of value and ecological significance. After negotiating the types of activities which would be allowed under the GP and determining the cumulative impacts of multiple fills in the area, the COE may grant a local government permitting authority for fills in the "lower value" areas. Typically, the local government is required by the COE to track the number and type of fills within the GP area.

### 3.7.5 Mitigation

Districts may also consider inventorying and evaluating mitigation opportunities in their districts. Identifying wetland and other aquatic area restoration needs and opportunities may be best accomplished with assistance from local biologists, environmental groups, and recreation-oriented groups.

Establishing a quantitative method for evaluating mitigation actions is important for districts that want to require mitigation for specific development impacts (wetland fills, etc.). Without such a method, it is difficult to say whether a specific mitigative action adequately offsets impacts from a proposed development. Further, such a method also allows project proponents the opportunity to present a suitable mitigation plan at the time of application, eliminating time consuming negotiations, etc.

The ADFG Habitat and Restoration Division has recently completed an analysis and database of restoration projects attempted in Alaska. This database

should provide districts with helpful information on the types of projects which have the highest likelihood of success as well as general insight into the restoration process.

### 3.7.6 Mitigation Banking

Although presently untested in Alaska, mitigation banking opportunities are also worthy of consideration by local governments, especially if they have identified large areas suitable for reclamation, restoration, enhancement, or wetland creation.

In a mitigation bank, a project which is typically beyond the financial or technical means of most individuals or groups is undertaken by the bank, which then sells credits to developers required to mitigate other project impacts. In some situations developers simply write checks which are used by the bank staff to buy supplies, pay labor expenses, etc. In other situations developers are assigned a specific part of the project (channel reconstruction, plantings, etc.) which they must complete within a specified time period. The State of Alaska is currently investigating potential mitigation bank opportunities in Alaska. The Association of State Wetland Managers also compiles and provides information on mitigation bank projects throughout the United States.

### 3.7.7 Takings

The ultimate issue in the regulatory environment is whether a regulation will be deemed a taking of property for public use without just compensation, in violation of the Fifth Ammendment of the U.S. Constitution. The typical example of a takings by governmental action requires the government to pay compensation when it physically takes possession of property by eminent domain powers. Wetlands regulations do not take physical possession of property, rather the government places restrictions on the use of land which may have the ultimate effect of restricting all of an owner's profitable use of the property.

Traditionally, the federal government has held significant authority to regulate wetlands. There are a few cases in which a court has determined the exercise of wetlands regulation constitutes a taking. The authority to regulate wetlands is through the federal government's power over navigable waters. Since 1979, the U.S. has begun to diminish this preeminent power.[5] A court

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[5] Kaiser Aetna v. U.S., 444 U.S. 164 (1979).

may find a taking has occurred in navigable waters (or through the regulation of wetlands) upon review of the following significant factors: "the economic impact of the regulation, its interference with the reasonable investment backed expectations of the property owner, and the character of the governmental action.[6]

When drafting regulations, a governmental entity must demonstrate there exists a "nexus" or a rational connection between a permit condition and the problem to be created by a proposed development.[7] Moreover, the regulation may not deprive a landowner of all viable economic use of the land.[8] Most recently, the U.S. Supreme Court stated that local governments must show a "rough proportionality" between the effects of new development and the amount of land the government wishes to use, but not pay for, to protect the public interest.[9] These considerations will be important in the drafting of any new wetlands management programs for Alaska.

The implementation of wetlands identification and protection through each district's local program appears to allow the flexibility and local control that districts have indicated they need. However, there may be ways of standardizing wetlands protection program-wide. An implementation manual, for instance, could provide districts with mandatory procedures and processes for addressing wetlands within their local programs. Certainly, district representatives should look to their peers in Anchorage, Juneau, Homer, and Haines for guidance on what has worked and what has not worked in their local wetland planning efforts.

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6 Penn. Cent. Transp. Co. v. N.Y.C., 438 U.S. 104, 124 (1978).

7 Nollan v. Calif. Coastal Comm., 483 U.S. 825 (1987).

8 Lucas V. South Carolina Coastal Council, 112 S.Ct. 2886 (1992).

9 Dolan v. City of Tigard, __ U.S. ____ (June 24, 1994).

# 4.0 ADDRESSING WETLANDS WITH A NEW ACMP STANDARD

## 4.1 DRAFT STANDARD LANGUAGE

If a new Part 6 Alaska Coastal Policy Council Chapter 80 Standard on Wetlands was developed for incorporation in the Alaska Coastal Management Program, it would enable districts to create enforceable policies under the heading of Wetlands. However, if a mandatory Wetlands Standard were adopted, it would require compliance in all new and revised programs. At this time there does not appear to be sufficient funding nor staffing to implement wetlands identification and protection program-wide. DGC may wish to consider the implementation of an "optional" wetlands standard, until sufficient funding and staffing can be secured.

Extensive coordination and cooperation between state and federal resource agencies and district coordinators would be necessary before this type of standard could be implemented. Quantifiable fish and wildlife production and census data are necessary to provide legally defensible significance thresholds. ADFG has indicated these data may not be available for all coastal district areas and the likelihood of obtaining such data in the near future is unrealistic.

The draft standard is followed by several pages of draft definitions which are necessary to understand and further define the intent of draft standard. Changes to these definitions will enable the applicability and intent of this standard to be altered in many ways. For instance, if the number or types of species defined as "terrestrial species" is increased, the standard becomes more stringent. Conversely, if the number or types of species is reduced, the standard becomes less stringent.

To assure maximum implementation flexibility for coastal districts, it is recommended that the needed threshold data interspersed throughout the policy (note shaded areas) be provided in range format within the standard. Coastal districts would then determine the level of sensitivity which best meets local needs and concerns after coordination with local biologists and holding public hearings.

Before a wetlands protection standard is adopted, overlap and redundancy between such a standard and other existing standards should be eliminated. This standard appears to overlap with the existing Habitat Standard [ACMP, 6 AAC 80.130] and may overlap with other standards as well. District representatives have indicated a need to reduce redundancy in the ACMP wherever possible.

## ARTICLE 2
## USES AND ACTIVITIES
## 6 AAC 80.___ Wetlands

### (a) Mapping

Coastal districts shall identify wetlands using the current federal definition[1] of a wetland in use at the time a new coastal program is implemented or an existing program is re-authorized. Wetland delineations must be prepared in accordance with the current method required by the U.S. Army Corps of Engineers, and verified by this agency. Wetlands identified must be included in the resource inventory section of a local district program.

Wetlands, including "high value" areas, occur in all sizes and shapes. Importance and value are generally determined by the potential or ability of a wetland to provide functions, many of which are independent of size. There is no minimum size delineation for a wetland under this standard, unless a minimum size delineation is subsequently adopted by the federal government.

Districts are not required to identify all wetlands within their boundary, however, each district is encouraged to do so if sufficient resources are available. Districts are also encouraged to determine the relative abundance or scarcity of wetland types in their districts, and to include this information in their resource inventory.

### (b) Functions and Values Assessment

In order to ensure fair and predictable consistency determinations, wetlands identified shall be evaluated according to their functions and values, using a quantitative method which evaluates at least the following wetland functions and values:

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1 The Clean Water Act [33CFR Section 328.3(b) and 40 CFR Section 230.3(t)], defines the term wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

The ACMP has several definitions of wetlands in 6 AAC 80.900 tideflats (13), freshwater wetlands (19), and saltwater wetlands (19). However, any policy, mapping, classification, or categorization which is not based upon or cross referenced to the federal definition will face a more intensive review and possible opposition from the federal regulatory agencies. To minimize liabilities associated with takings disputes or conflicts between federal and state law; local governments should work within the existing federal regulatory program. Failure to do so will potentially complicate the approval process.

(1) Aquatic Use Characteristics

a. Hydrologic Connections
b. Water Regime/Flood Control
c. Extent of Open Water
d. Water Quality (sediment retention, erosion, stability, etc.[2])
e. Fish Habitat

(2) Terrestrial Use Characteristics

a. Vegetation Composition
b. Wildlife Habitat
c. Edge
d. Interspersion

(3) Human Use Characteristics

a. Food Production (fish, game, fruits, greens, etc.)
b. Cultural Resource Production (fibers, traditional medicines, etc.)
c. Recreation (including hunting, fishing, etc.)
d. Aesthetics
e. Economic & Community Development

The Functions and Values Assessment and rating/categorization method utilized shall be documented in the resource analysis section of a local area program or appendix to that program. This assessment can be applied to all wetlands within a district or on a case by case basis. However, once such an assessment is made, it must be documented in the next re-authorization of a local district program.

The Functions and Values Assessment and rating/categorization method shall also allow the quantitative assessment of both adverse and beneficial development impacts and proposed mitigative actions. Districts must specify in their program what will constitute a significant adverse impact to wetlands in a quantitative manner[3].

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2 Wetlands perform additional water quality functions such as processing, removing or transforming pollutants, and buffering receiving waters from the effects of pollutants. These characteristics are difficult to observe and document in the field without expensive monitoring and laboratory work. Some districts may wish to include an analysis of these parameters in their programs, however, they should evaluate the costs and availability of data prior to doing so.

3 For example, districts might determine a 5 percent loss in of aquatic or terrestrial use characteristics would constitute a significant adverse impact, a 10 percent loss in of combined use characteristics, a 1 percent loss of unique wetlands, etc.

**(c) Categorization:**

An analysis of the functions and values of district wetlands shall determine which of these wetlands are **"unique"** or **"valuable"** within the coastal district and therefore requiring protective measures.

(1) A **"unique wetland"**, as used herein, shall refer to those wetlands having special aquatic, terrestrial, or human use significance as inventoried in a coastal management program. A wetland must have at least one of the following characteristics before it can be categorized as "unique":

i) The documented presence of rare or endangered flora or fauna appearing on state or federal endangered species lists (assumes protection under the Endangered Species Act);

ii) Documented annual use by significant numbers ([redacted] or more) of migrating waterfowl, shore birds, marsh birds, or wading birds;

iii) Unusual wildlife diversity (greater than [redacted] species); or local production significance ([redacted]% greater than average production for that region) of species utilized by subsistence-dependent residents;

iv) Presence of high overall visual quality as determined by approved district program scenic quality criteria, or uncommon geomorphic features encompassed by the wetland; or

v) Presence of archaeological evidence documented by the State of Alaska Historic Preservation Office and recommended for maximum protection under the National Historic Preservation Act.

(2) A **"valuable wetland"**, as used herein, shall mean any non-"unique wetland" which provides valuable aquatic habitat, valuable terrestrial habitat, or valuable human use habitat, or any combination thereof, as these terms are defined in this section.

i) "Valuable Aquatic Habitat" shall refer to:

a) Rivers, ponds, estuaries, and emergent aquatic habitats which are characterized by unusual numbers of aquatic species diversity [greater than [redacted] species] or significant production [[redacted]% greater than average production for that geographic region] of freshwater, anadromous, or saltwater species (including shellfish).

b) Rivers, ponds, estuaries, and emergent aquatic habitats which provide critical spawning, rearing, and overwintering areas [mapped or defined by the Alaska Department of Fish and Game (ADFG) for private and state lands, or by the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS) for federal lands].

c) Habitat for aquatic species appearing on official state or federal lists of endangered or threatened species (but only where there has been documented evidence of use by such a species).

d) Wetlands which provide measurable flood storage capabilities for waters which flood on an annual or semi-annual basis, when these wetlands occur immediately "upstream" of populated areas.

e) Wetlands which provide measurable filtration of sediments, heavy metals, or other contaminants; which might otherwise affect human water supplies or anadromous fish habitats.

ii) "Valuable Terrestrial Habitat" shall refer to:

a) Those wetlands which are characterized by unusual seasonal or annual avian diversity [greater than ___ species], or providing significant waterfowl production [___% greater than average production for a region].

b) Habitat for terrestrial species appearing on official state or federal lists of endangered or threatened species (but only where there has been documented evidence of use by such a species).

c) Critical deer (wintering, fawning), moose (wintering), and caribou (calving, summer) habitat areas which are also wetlands; as previously mapped, or identified by ADFG through means of a current habitat model (at the time a specific permit is under consideration).

d) Areas which contain plants or animals at or near the limit of their geographic range, but only when limited in their local distribution.

e) Wetland types which are determined to be "scarce" in the district or region.

iii) "Valuable Human Use Habitat" shall refer to:

a) Undeveloped wetlands which, in their natural state, are frequently and legally[4] utilized for subsistence and recreation [hunting, fishing, hiking, camping, boating, picnicking, berry picking, bird watching, nature photography] by the public.

b) In densely populated or forested areas, includes undeveloped wetlands that provide open space and visual variety.

c) Plant collection areas for medicinal or cultural use practices.

(3) If, upon completing a wetlands inventory (Mapping) and analysis (Functions and Values Assessment) of a district's wetlands, it is determined that more than ▒ percent of a districts wetland resources are categorized as "unique" or "valuable", a district may adopt another quantitative rating system which allows the categorization of wetlands into low, moderate, and high value ratings (based on the range of scores obtained during the quantitative analysis). However, such a rating system must have written conceptual approval by the wetland regulatory agencies prior to inclusion in a district program. Further, the rating system must be fully documented in the local program.

Districts may categorize wetlands using other terminology (i.e., preservation, conservation, A, B, etc.), as long as wetlands are also categorized as "unique" or "valuable". Districts with existing approved wetland management plans or categorization systems must change existing wetland management plans to include the new terminology described in this standard during their next program re-authorization.

**(d) Alternatives Analysis (For Projects Proposed in Any Wetland)**

Planning by project proponents is required in order to:

(1) Avoid or minimize damage to wetlands wherever possible [Section 404(1)(b) Clean Water Act Alternatives Analysis].

(2) Require activities not dependent upon a specific wetland location be sited within uplands or non-"unique" or non-"valuable".

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4 Illegal trespass on private property by the public shall not constitute a valuable human use rating.

## (e) Development Standards for Activities in Wetlands

### (1) Development Activities In or Adjacent to "Unique Wetlands"

Development activities in wetlands categorized as "unique" shall be consistent to the maximum extent practicable[5]. Likewise development activities in areas which are bordering, neighboring, or contiguous with "unique wetlands" shall be consistent to the maximum extent practicable to prevent adverse impacts to "unique" wetland functions and values, including potential impacts from flooding.

Unavoidable adverse impacts related to development activities in "unique wetlands" shall require the enhancement of existing wetlands or aquatic habitats, the restoration of degraded wetlands or aquatic habitats, or the creation of new wetlands or aquatic habitats; to mitigate these impacts. If unavoidable adverse impacts are identified which cannot be mitigated, such development activities will be found inconsistent with the local district program.

### (2) Development Activities In or Adjacent to "Valuable Wetlands"

Development activities in wetlands designated as "valuable" shall be consistent to the maximum extent practicable. Development activities in sites bordering, neighboring, or contiguous with "valuable wetlands" shall also be consistent to the maximum extent practicable; avoiding or minimizing adverse impacts to those wetland functions which contribute to the "valuable" categorization.

Unavoidable adverse impacts related to development activities in "valuable wetlands" may require mitigation in the form of enhancement of existing wetlands or aquatic habitats, the restoration of degraded wetlands or aquatic habitats, or the creation of new wetlands or aquatic habitats; to offset adverse impacts which are unavoidable. Districts are required to note which, if any, "valuable" wetland functions must be mitigated in their local district program. If unavoidable adverse impacts cannot be mitigated (and a district program requires mitigation for that function), the proposed development activities will be found inconsistent with the local area program.

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5 It may be appropriate for projects sited in unique or valuable wetlands to be automatically placed in an extended review period (i.e., unique 120 days, valuable 90 days). This will enable the district representative and state reviewer adequate time to review existing data, coordinate with appropriate agency personnel, and to develop appropriate protection stipulations.

(3) Development In Other Wetlands

Development activities are acceptable in wetlands not categorized as "unique" or "valuable", but only in areas where there are no practicable upland alternatives. Development activities in such wetlands shall be managed in such a way that:

a) The existing vegetation is preserved to the extent practicable.

b) Significant adverse impacts are avoided or minimized in areas that serve as habitat, natural food sources, nesting places, wintering places, or water sources.

c) The site plan is designed to minimize significant adverse impacts to the existing natural topography, water sources, and trees.

d) Floodplain fills are minimized, or impacts on floodplains are calculated.

e) The development activity conforms to the existing water quality standards of all local, state, and federal agencies.

## 4.2 DRAFT DEFINITIONS

The following terms will be defined according to Section 404 of the Clean Water Act and other related guidance. This is to assure uniformity and eliminate confusion between the state and federal wetland protection efforts.

Adjacent
Alternatives Analysis
Dredged Material
Emergent
Fill Material
Wetlands
Mitigation
Pollution
Practicable
Practicable Alternative

The following definitions are also applicable to the draft standard:

Avoid means to prevent from occurring.

Aquatic means growing or living in water.

Aquatic Species means those species that grow or live in water.

Categorize means to place in a category; classify.

Classify means to arrange in classes according to a system.

Consistency means compliance with the standards of the ACMP, including the enforceable policies of an approved district coastal program.

Consistent to the Maximum Extent Practicable means that uses, activities, and projects directly affecting the coastal zone must be consistent with the ACMP to the fullest degree permitted by law including approved district programs, and federal uses, or activities (unless compliance would violate another federal law as per 15 CFR 930.32.(a)).

Criteria means the technical basis on which a judgement or decision may be made.

Critical Habitats are identified areas which support essential life history requirements of fish or wildlife species. These essential areas encompass one or more of the following: pupping, calving, colonial nesting, spawning, rearing, wintering, migration, important feeding, and haul-out areas; highly productive breeding and nesting areas; sites providing unique population elements including high seasonal use and threatened or endangered species; unique ecological systems; and areas supporting a large population of the individuals or species of fish or wildlife population in the region during specific seasons.

Function means the natural specialized action of a wetland.

Habitat means the natural environment of an organism; the place where it is typically found.

Including means including but not limited to.

Interspersion means a measure of how the wetland type is distributed in relation to surrounding types or diversity within the wetland type.

Minimize means to select from a comprehensive review of alternatives the option which uses the best available technology to limit or reduce impact to the smallest amount, extent, duration, size, or degree.

Mitigate means to lessen an adverse impact or moderate its severity.

Ranking means to assign a position to.

Regional -- currently undefined; possibly USGS Hydrological Subregions

Scarcity means of being scarce; inadequate supply.

Shall means mandatory and requires a course of action or set of conditions to be achieved.

Should states intent for a course of action or set of conditions to be achieved and implies that case-specific discretion may be applied for achieving the intent of the action.

Significant Adverse Impact means an impact as indicated in AS 46.40.210(5) of the Alaska Coastal Management Act.

Terrestrial means living on land.

Terrestrial Species means those species living **on** land (rather than **in** water). This would include species who spend time on or in water but complete at least part of their life cycle on land.

Value means the characteristics of a wetland which represent its worth, or in other words an estimate, usually subjective, of the worth, merit, quality or importance of a particular ecosystem or portion thereof.

Vegetation means all plant species in a particular region, typically consisting of one to several plant communities.

## 4.3 ADEC POLICY DEVELOPMENT

The State of Alaska Department of Environmental Conservation (ADEC) developed wetland policy/criteria language under the heading "Freshwater Wetlands Pollution Control" [Review Draft dated December 4, 1992]. ADEC indicated to 3PP that these criteria have interagency agreement, however, all state and federal agencies contacted by 3PP (for policy review and input) were unable to support the ADEC language as presented.

There are many similarities between the ADEC policy and the policy presented in Section 4.1, however. For instance, both seek protection of wildlife concentration areas, including nesting and calving areas. Both seek protection of anadromous fish habitats as well.

There are also significant differences between the ADEC policy and the policy presented in Section 4.1. A few of these are discussed below.

The ADEC policy appears to restrict <u>any</u> development in state game refuges, critical habitat areas, game sanctuaries, and state recreation river protection areas. However, without supporting definitions it is difficult to determine what exactly constitutes pollution, which triggers mandatory preservation of an area. As such, the ADEC policy appears to preclude development of any kind in "preservation wetlands", including parking, access, or educational facilities that might be important to overall community development and tourism support industries. Such a policy (if correctly interpreted by 3PP), would not meet the needs of many coastal districts participating in this project.

The ADEC policy avoids takings disputes by exempting privately owned lands from management assignments; except where they have the approval of private property owners. This could allow impacts to areas that districts have indicated need protection.

In the multiple use corridor section, the policy appears to allow fills [(c), (d)] without a review of potential impacts. This is clearly contrary to existing federal law and could also result in impacts to areas districts have indicated need protection.

## 4.4 ENFORCEABLE POLICY DEVELOPMENT

Adoption of an ACMP Wetlands Standard (such as the one presented in Section 4.1) would also require districts to create policies within their own local area programs under a new "Policy" section or chapter (6 AAC 85.090) labeled "Wetlands". Currently, the policy chapters are labeled A-L; therefore, a new Wetlands policy section would probably be labeled M or N. For example:

<u>N. Wetlands</u>

1. Development projects proposed in, or that impact "unique" wetlands within the district shall be...

2. Development projects proposed in, or that impact "valuable" wetlands within the district shall be...

# 5.0 FINDINGS & RECOMMENDATIONS

*Finding 1. Currently, most coastal district representatives do not have sufficient data or staff resources to implement a wetlands protection standard as part of their ACMP requirements.*

Recommendations

Typically an ACMP plan must develop policies to address all "uses, activities, habitats, and resources" listed as ACMP standards in 6 AAC 80. Because wetlands may not be a significant issue for all coastal districts or in all parts of a coastal district; and because of the high costs of a major wetland inventory effort, we recommend that if a new standard is created, that coastal districts be given discretion to determine whether or not they will complete inventory and other efforts to develop policies for this topic area.

In any case, the adoption of a mandatory new standard which specifically addresses wetlands should be postponed until:

1. A method of inventory and classification/categorization, which will ultimately provide the support data necessary to validate and enforce any proposed standard, should be prepared and tested in several regions of the state. As noted in Section 2.0 of this report (Preliminary Findings), any inventory and classification method adopted should:

    - Be consistent with existing federal policy and regulations;

    - Consider what is a realistic level of effort for areas with limited staffing and funding, or provide for a temporary increase in staff or funding while the wetland inventory and classification work is underway;

    - Allow for the classification/categorization of wetlands into locally relevant categories (i.e., recognize that within any coastal district boundary not all wetlands can be higher value, even if all the wetlands identified locally are of higher value than wetlands within an adjacent district or locality);

    - Allow for the assessment of impacts to wetlands as well as the evaluation of mitigation options or opportunities;

- Allow periodic re-evaluation of the data to assess and document relative value changes, especially in highly urbanized districts where wetland resources are already limited; and

- Allow assessment of cumulative impacts, both positive and negative, to be tracked and evaluated over time.

2. At least 50 percent of the districts have completed a resource inventory and analysis with wetlands as a specific component of their approved program. Comprehensive inventory and analysis of wetland functions and values across the state's coastal districts should provide sufficient data to allow the production and implementation of an enforceable wetlands standard with appropriate flexibility to take into account important regional and demographic differences.

3. Thresholds of significance can be determined with assistance from resource management and protection agencies, or enforceable language which does not require threshold data can be developed.

4. Redundancy between the proposed Wetlands Standard and the existing Habitat Standard (or any other standards) can be eliminated.

*Finding B. Many coastal district representatives do not have access to, nor training in, the use of many types of existing scientific data which could contribute to their understanding of local wetland functions and values. An understanding of these data are important if local district representatives are to make good decisions with regard to pending developments in their communities, regardless of how wetlands are addressed in the formal program guidelines.*

Recommendations

The state's coastal management program should consider the preparation of resource map sets, for distribution to each coastal district representative. Each district representative should receive training in the proper use of the maps at the time of distribution. A users guide should be prepared for each regional or localized map atlas, which identifies proper and improper uses of each type of resource map included in the atlas.

Regional map sets should be made available for public review in population centers, statewide. It is important for potential applicants to determine, prior to application, potential areas of concern. This allows the applicant to address potential impacts with local resource agencies prior to application.

This will allow a higher degree of "predictability" in the permitting process, and could help shorten review, coordination, and processing times.

Regional map sets should also be distributed to those DGC employees responsible for oversight of the state's Coastal Management Program. This will ensure both the local district and the state representatives have access to the same baseline information, and again help ensure applicants also have access to information that will be used in making consistency determinations.

DGC should coordinate the updating of map sets on an annual basis, providing each district representative with replacement maps, etc. This will help ensure that both local district and state personnel are making decisions based on the best available data.

*Finding C. Districts need additional support from the state and federal governments in order to map and classify wetlands.*

Recommendations

Sources of funding, training, and technical support should be identified by DGC or other agency and provided to all district representatives. Coastal district representatives would benefit from a workshop dedicated to successful grant writing techniques for environmental projects, training in wetland terminology and basic field observations, and statewide sources of technical support.

*Finding D. Both published and unpublished data on ethno-botanical uses of Alaska plants are available, though many sources are difficult to obtain and review in a timely manner. Data which are available are not specific to wetlands (i.e., a prior understanding of which plants occur in wetlands is necessary before the data can be used).*

Recommendations

DGC, or other resource agency, should pursue an in-depth study of available ethno-botanical and subsistence use literature. The goal of such a study would be to prepare a summary document which identifies both common and uncommon uses of hydrophytic vegetation (i.e. wetland dependent vegetation) by Alaskans, and specifically identify those uses which are important components of traditional ceremonies or practices and those uses which have economic value to Alaska residents (such as the harvest of fibers used in basket-making by western Alaskan villagers).

The study results should be cross referenced to the USFWS *National List of Wetland Indicator Species: Alaska Region*. The summary document should include a statewide list of hydrophytic species used by Alaskans as well as more localized or regional lists (southeast Alaska, southcentral Alaska, etc.). The commonness or rarity of all plant species identified as important to traditional practices should also be documented in both the statewide and regional sections of the final report.

*Finding E. While many high value wetlands occur within Alaska's coastal districts, the wetland functions which are most valued by Alaskans are not necessarily limited to wetlands within recognized coastal district boundaries.*

Recommendation

If the identification and protection of high value wetlands is the State of Alaska's goal, then a broader forum for implementation should eventually be examined. A statewide policy to identify and protect high value wetlands may be necessary to eliminate the possibility of a two-tiered standard within the state (i.e., wetlands within coastal districts always being considered more important than wetlands outside of coastal districts). While the protection of coastal areas may be important to many residents, there are also important food production and recreation areas within interior Alaska which probably warrant similar consideration and protection measures.

In the interim, however, the development and implementation of a wetlands standard through the state's coastal program should provide a good foundation for progressive movement to a statewide policy. Further, by testing such a policy within Alaska's coastal districts, the state will likely identify specific areas of concern which should be addressed before a policy is developed or applied statewide.

# APPENDIX A

# QUESTIONNAIRE SUMMARY

# THREE PARAMETERS PLUS
# COASTAL DISTRICT HIGH VALUE WETLAND
# QUESTIONNAIRE SUMMARY

**Includes Input from Alaska Coastal Districts Who Responded By May 3, 1994. Approximately 40 Questionnaires Were Distributed.**

| Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay, Aleutians | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|
| 5+ | 3 | 2 | 2 | 1 | 13 |

| Southeast: | Southcentral: | Kodiak, Etc.: | Western Alaska: | Arctic Alaska: |
|---|---|---|---|---|
| 1. Ketchikan | Yakutat | Bristol Bay | Bethel | North Slope Borough |
| 2. Haines | Valdez | Kodiak | Nome | |
| 3. Sitka | Anchorage | | | |
| 4. Pelican | | | | |
| 5. Juneau | | | | |
| 6. Petersburg (did not return survey but forwarded some information) | | | | |

Please Note: Data presented in the following pages should not be considered precise nor accurate. They provide, at best, a glimpse into how the responding coastal district coordinators perceive wetland utilization and "values" within their districts. In some cases, their answers may be well documented "facts", however, in most cases their answers are simply based on local knowledge or personal perceptions. Some coordinators did not complete the survey because they were concerned their answers would be closely scrutinized and readily accepted as fact. Where possible, 3PP combined the results by grouping them geographically, to minimize the possibility of these data being misused in future evaluations.

The results contained in the following pages do reflect the diverse geographic and demographic characteristics found in Alaska's many coastal districts. While it is possible that a more complete survey response would demonstrate a common thread among the districts, the results which follow would seem to indicate a larger response would provide an even broader spectrum of findings.

**Describe your district:**

| Characteristics | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska |
|---|---|---|---|---|---|
| Approximate Size (Square Miles) | 8,000 | 8,100 | 60,000 | 70 | 90,000 |
| Percent Wetlands | 5-54% | 10 | ? - 20% | 100 | 100 |
| Percent Wetlands Tidally Influenced | 2.5-23% | 7 | ? - 10% | 8 | 1 |
| Percent Wetlands Freshwater Influenced | 2.5-70% | 3 | ? - 90% | 92 | 99 |
| Largest City, Town, or Village | Juneau, Sitka, Ketchikan, Haines | Anchorage | Kodiak Dillingham | Bethel, Nome | Barrow |
| Smallest City, Town, or Village | Pelican, Baranof Warm Springs | Yakutat | Portage Creek Russian Villages | -- | Pt. Lay |
| Number Cities, Towns, Villages | 7 | 3 | 20 | 2 | 8 |
| Approx. Number of Residents | 54,000 | 250,000 | 20,000 | 9,200 | 6,000 |
| Approx. Number of Seasonal Workers | 4,500 | 1,250 | 2,000+ | 700 | 6,000 |
| Approx. Number of Tourists | 350,000+ | 1,136,000 | 8,000 | 15,000 | 25,000 |
| Regional Native Corporations with Holdings | Sealaska, Cape Fox, Shee Atika | Cook Inlet Eklutna, Inc. Sealaska | Koniag Bristol Bay | Calista Bering Strait | Arctic Slope |
| Village Corporations with Holdings | Klukwan, Goldbelt, Sitka Tribe | Eklutna, Yak-tatkwaan | Numerous (Lists) | Bethel Native Sitnasuak King Island | 8 Village Corporations |

| Characteristics ("C" = Current Use, "F" = Future Use) | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska |
|---|---|---|---|---|---|
| Agriculture | | C | C | | |
| Fishing | | | | | |
| Fin | C | C | C | C | |
| Shell | C | C | C | F | |
| Bottom | C | C | C | | |
| Mariculture | F | C | C | | |
| Mining | Gravel Only | C | C | C | C |
| Oil/Gas | | C | | | C |
| Timber | C | | C | | |
| Tourism | C | C | C | C | C |
| Transportation | C | C | C | C | |
| National Parks (NPS) | | Wrangell St. Elias, Glacier Bay, Russell Fjords, Lake George Monument[6] | Katmai | | Gates of Arctic Petroleum Reserve |
| National Refuges | St. Lazaria Bird Refuge | | Togiak, Kodiak Maritime, AK Peninsula | Yukon Delta | ANWR, Noatak, Maritime |
| National Forests | Tongass | Tongass, Chugach | | | |
| State Parks | | Chugach | Wood-Tikchik Shuyak Island | | |
| State Refuges | Mendenhall Wetlands, Chilkat Bald Eagle Preserve | Anchorage Coastal | Walrus Island | | |
| Threatened, Endangered, Sensitive Species/Habitat | Steller Sea Lion, Bald Eagle | White-Fronted Goose, Bald Eagle | | | Spec. Eiders |

[6] This area was noted by a district, however, 3PP could find no evidence of state or federal lands with such a designation.

| Characteristics ("C" = Current Use, "F" = Future Use) | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska |
|---|---|---|---|---|---|
| **Agencies ("SO" indicates a Staffed Office, "FV" indicates Frequent Visitation)** | | | | | |
| Fish & Game | All except BLM | All | SO | SO | SO |
| Environmental Conservation | | | SO | SO | FV |
| Natural Resources | | | SO | SO | FV |
| Army Corps of Engineers | | | FV | | FV |
| Bureau of Land Management | | | | SO | FV |
| Environmental Protection Agency | | | | | FV |
| Fish & Wildlife Service | | | SO | SO | SO |
| Forest Service | | | | | |
| National Marine Fisheries Service | | | SO | | FV |
| National Park Service | | | SO | SO | SO |
| Soil Conservation Service | | | FV | | |
| **In-House Resources (Numbers indicated are the number of respondents who had access to these resources)** | | | | | |
| Wetlands Management Plan | 1, 1-In Progress | 1 | | | None Listed |
| COE Wetland Maps | 1 | 1 | 1 | 1 | |
| National Wetland Inventory Maps | 3 | 2 | 1 | | |
| Critical Wildlife Habitat Maps | 1 | 1 | 1 | | |
| Anadromous Fish Stream Maps | 4 | 2 | 2 | | |
| Subsistence Resource Utilization Maps | 1 | | | | |
| FEMA Flood Hazard Maps | 4 | 2 | 1 | 2 | |
| SCS Soil Mapping | 1 | 2 | 2 | | |

| Characteristics ("C" = Current Use, "F" = Future Use) | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska |
|---|---|---|---|---|---|
| **Past Consistency Determinations** | | | | | |
| Involved Wetlands? | 0-100% | 0-100% | ~40% | 0% | 100% |
| Consistent With Local Guidelines? | 100% | 100% | All | 0% | 97% |
| Consistent With State Guidelines? | 100% | 100% | All | 0% | -- |
| Controversial Projects Involving Wetlands? | 3 | 10 | 3 | 0 | 10 |

**13. A list of high value criteria for wetlands will help me to do a better job in making consistency determinations, but only if:**

1. Based on current state and federal guidelines.
2. Doesn't hinder development.
3. High value is defined. Policy or uses are also outlined.
4. Involves human factors, don't think it can be done on a statewide basis.
5. They are tailored geographically to clarify regional differences and include sensitive species (wildlife and plants) on a regional scale and not just the Federal T/E lists. State Statutes should clearly indicate parameters for development, protection, and standards.
6. There is more help in education and enforcement.
7. It was accompanied by a map which delineated wetlands and classified wetlands by their functions and values.
8. High value should be what the people of an individual town want.
9. It is specific and provides alternatives rather than strict non-development status. The local community/CZD must have some flexibility for decision-making.

**Conversely, such a list could make my job harder if:**

1. The list is more stringent than existing state and federal guidelines.
2. Does hinder development and has no flexibility.
3. It does not take into account the specific needs of my district.
4. There isn't a mechanism to resolve conflicts between the criteria and other rules, such as city codes.
5. COE continues it's no enforcement approach.
6. Areas which are needed for public/city facilities are designated for preservation.

14. **An enforceable policy protecting high value wetlands will help me to do a better job making consistency determinations, but only if:**

1. The policy is attached to state and federal enforcement.
2. Does not hinder development.
3. It is incorporated into state standards and into each local program, includes flexibility for exemptions and for takings issues.
4. There are accurate maps defining where high value wetlands are. A GIS would be most useful.
5. Enforcement if performed by a non-local agency.
6. Identifies uses to be protected.
7. The criteria for identifying high value wetlands are understandable by the average person and if it is made available to the district.
8. It is specific and provides alternatives rather than strict non-development status. The local community/CZD must have some flexibility for decision-making.

**Conversely, such a policy could make my job harder if:**

1. Required hired staff.
2. Placed all economic use of private property out of bounds, and required local districts to make such determinations.
3. Does hinder development.
4. Outlines specific uses to be protected.
5. There is no local support or input into the policy.
6. Enforcement if performed by a local agency.

15. **What uses do residents make of wetlands within your district now?**

Everything, from residential to institutional to industrial.
Recreation (Active and Passive)
Viewing
Hunting
Clamming
Fishing
Flood Drainage, Storm water run-off
Subsistence (Major and Minor)

16. **What uses of wetlands do residents want to insure receive the highest level of protection?**

Fish (most frequently salmon, fishing & subsistence)
Wildlife Resources (Hunting)
Recreation (Active), Viewing
Subsistence (Habitat)
Flood Control, Water Quality
House Construction, Dredge from harbor

## FLOOD CONTROL

| Flood Control | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| The residents and industry of my district are located: | | | | | | |
| Active Flood Hazard Area (%) | 0-20% | 1-5% | 15% | 1% | -- | 8.2 |
| Occasional Flood Hazard Area (%) | 1-10% | 25% | 20% | 5% | | 12.0 |
| Away from Flood Hazard Area (%) | 0-99% | 70-99% | 65% | 94% | | 71.4 |
| Flood hazards in my district include: | | | | | | |
| Storm Wave (tidal influenced) | 30% | 45% | 50% | 50% | 100% | 55.0 |
| Ice Dams/Break-up Flooding | | 10% | | 50% | | 12.0 |
| Major Precipitation Events | 30% | 45% | 50% | | | 25.0 |
| Flooding /____ is _____ is not/ a major problem for the residents of my district. | | | | | | |
| Is a problem | 20% | 33% | | 100% | 100% | 50.6 |
| Is not a problem | 80% | 66% | 100% | | | 49.2 |

## WATER QUALITY

| Water Quality | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| The residents of my district get their drinking water from: (Many respondents indicated multiple sources with no percentages) | | | | | | |
| Community or Private Wells (%) | 0-98% | 75% | 55% | | 12% | 24-48.0 |
| Surface Water/Rain/Snow (%) | 0-100% | | 40% | | 88% | 23-45.6 |
| Filtered/Treated Water Systems (%) | 0-100% | 25% | 5% | 100% | | 23-46.0 |
| Drinking water availability /____ is ___ is not/ a major problem for the residents of my district. | | | | | | |
| Is a problem | | 33% | | 50% | 100% | 36.6 |
| Is not a problem | 100% | 66% | 100% | 50% | | 63.2 |

| Water Quality, Industrial Influences | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| The rural or largely unpopulated areas within my district are: | | | | | | |
| Clearcut (%) | | 0-25% | | | | 5.0 |
| Farmed or Ranched (%) | | | | | | |
| Mined (Placer or Hard-rock) (%) | 0-2% | | | | | |
| Oil/Gas Production (%) | | | | | 1% | |
| Undeveloped (%) | 98-100% | 65-99% | 100% | 75% | 99% | 95% |
| Drinking water quality /____ is ____ is not/ a major problem for the residents of my district. | | | | | | |
| Is a problem | | 33% | | 100% | | 26.6 |
| Is not a problem | 100% | 66% | 100% | | 100% | 73.2 |

| Water Quality: Permafrost | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Mostly, the wetlands in my district: | | | | | | |
| Occur over continuous permafrost (%) | | | | 100% | 100% | 40% |
| Occur over discontinuous permafrost (%) | | | | | | |
| Do not occur over permafrost (%) | 100% | 100% | 50% | | | 50% |
| The disturbance of permafrost /____ has ____ has not/ created major problems for the residents of my district (erosion, stability, water quality). | | | | | | |
| Is a problem | | | | 100% | | 20% |
| Is not a problem | 100% | 100% | 50% | | 100% | 70% |

## FISH RESOURCES

| Fish Habitat, Species Diversity | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Generally speaking, the freshwater wetlands and waters in my district provide significant spawning, rearing, or overwintering habitat for ___ anadromous or freshwater species. | | | | | | |
| 3 or less Species | 20% | | | 50% | 100% | 34.0 |
| 4 - 7 Species | 20% | 100% | 50% | | | 34.0 |
| > 7 Species | 40% | | 50% | | | 18.0 |
| Generally speaking, the tidally influenced wetlands and waters in my district provide significant habitat for __ species of shell or bottom fish resources. | | | | | | |
| 3 or less Species | 40% | 33% | | 50% | 100% | 44.6 |
| 4 - 7 Species | 20% | 66% | | | | 17.6 |
| > 7 Species | 20% | | 100% | | | 24.0 |
| In my district, if a loss of aquatic habitat resulted in a significant reduction in fish resources, that loss would most affect /___ the commercial fishing industry, ___ the subsistence-dependent residents, or ___ both commercial and subsistence, equally/. | | | | | | |
| Commercial | 20% | 33% | | | | 10.0 |
| Subsistence | | | | 50% | 100% | 30.0 |
| Both, Equally | 80% | 33% | 100% | | | 42.6 |

| Fish Resources, Threshold Limits | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of anadromous fish resources in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | 60% | 33% | | | 100% | 38.6 |
| 5-10% = Significant Loss | | | | | | |
| 10-25% = Significant Loss | 40% | | | | | 8.0 |
| > 25% = Significant Loss | | 33% | | | | 6.6 |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of freshwater fish resources (trout, shee fish, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | 60% | 33% | | | 100% | 38.6 |
| 5-10% = Significant Loss | | | | | | |
| 10-25% = Significant Loss | 40% | | | | | 8.0 |
| > 25% = Significant Loss | | 33% | | | | 6.6 |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of shell fish resources (crab, clams, abalone, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | 60% | 33% | | | 100% | 38.6 |
| 5-10% = Significant Loss | | | | | | |
| 10-25% = Significant Loss | 40% | | | | | 6.6 |
| > 25% = Significant Loss | | | | | | |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of bottom fish resources (halibut, black cod, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | 60% | 33% | | | 100% | 38.6 |
| 5-10% = Significant Loss | 20% | | | | | 4.0 |
| 10-25% = Significant Loss | 20% | | | | | 4.0 |
| > 25% = Significant Loss | | | | | | |

| Fish Habitat, Mitigation | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| If a significant amount of aquatic habitat were to be impacted would you want to see mitigation in the form of ___1. enhancement of remaining habitats or ___2. creation of new habitat or ___3. Neither. | | | | | | |
| 1. Enhancement | 60% | 33% | | 50% | | 28.6 |
| 2. Creation | | 33% | | | | 7.0 |
| 3. Neither | 40% | | | | 100% | 28.0 |
| If an insignificant amount of aquatic habitat were impacted would you want to see mitigation in the form of ___1. enhancement of remaining habitats or ___2. creation of new habitat or ___3. Neither. | | | | | | |
| 1. Enhancement | 20% | 33% | | | | 10.0 |
| 2. Creation | | 33% | | | | 7.0 |
| 3. Neither | 60% | | | 50% | 100% | 42.0 |

| Fish Resources, Conflicts | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| In addition to commercial or subsistence fisheries, my district is under increasing pressure by recreational fishing and harvesting activities. | | | | | | |
| True | 100% | 66% | 100% | 100% | | 73.2 |
| False | | | | | 100% | 20.0 |
| Fish resources in (all, most, some) of my district are heavily utilized by fishing guides, residents, and tourists. | | | | | | |
| True | 100% | 66% | 100% | 100% | | 73.2 |
| False | | | | | 100% | 20.0 |
| The loss of even small amounts of aquatic habitat, because of the potential reduction of fish resources, creates major controversy within (all, most, some) of my district. | | | | | | |
| True | 60% | 66% | 100% | | | 45.2 |
| False | 40% | | | 100% | 100% | 48.0 |
| There are ongoing disputes regarding fish resource allocations (subsistence, commercial, sport) within (most, a few areas) of my district. | | | | | | |
| True | 100% | 33% | 100% | 50% | | 56.6 |
| False | | 33% | | 50% | 100% | 36.6 |

## VEGETATION RESOURCES

| Vegetation | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Generally, the wetlands in my district include the following broad types. | | | | | | |
| Muskegs, Tundra, or Moist Meadows | 5-20% | 8-25% | 30% | 75% | 95% | 49.0 |
| Bogs, Fens, or Wet Meadows | 5-15% | 0-10% | 3% | | | 5.6 |
| Riparian, Tall or Short Scrub-Shrub | 5-10% | 9-15% | 15% | | | 8.0 |
| Forested (Broadleaf or Needleleaf) | 20-30% | 18-40% | 20% | | | 18.0 |
| Estuarine | 15-50% | 20-40% | 15% | | | 21.0 |
| Ponds, Lakes, Open Water | 5-20% | 5% | 17% | 25% | 5% | 14.4 |

## WILDLIFE RESOURCES

| Wildlife Habitat | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Generally speaking, the freshwater wetlands and waters in my district provide habitat for: | | | | | | |
| <5 Waterfowl Species | 20% | | | | | 4.0 |
| >5 Waterfowl Species | 20% | 66% | 50% | | 100% | 47.2 |
| <5 Furbearing Species | 20% | 33% | | | | 10.0 |
| >5 Furbearing Species | 20% | 33% | 50% | | 100% | 40.6 |
| Generally speaking, the tidally influenced wetlands and waters in my district: | | | | | | |
| <5 Waterfowl Species | 20% | | | | | 4.0 |
| >5 Waterfowl Species | 20% | 33% | 50% | | 100% | 40.6 |
| <5 Seabird Species | 20% | 33% | | | | 10.0 |
| >5 Seabird Species | 20% | | 50% | | 100% | 34.0 |
| In my district, if a loss of terrestrial habitat resulted in a significant reduction in wildlife resources, that loss would most affect: | | | | | | |
| Consumptive Users | | 33% | | 50% | 100% | 36.6 |
| Non-Consumptive Users | | 33% | | | | 6.0 |
| Both, Equally | 80% | | 50% | | | 26.0 |

| Wildlife Resources, Threshold Limits | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of waterfowl resources in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | 20% | 33% | | | 100% | 30 |
| 5-10% = Significant Loss | 20% | | | | | 4.0 |
| 10-25% = Significant Loss | | 33% | | | | 7.0 |
| > 25% = Significant Loss | 40% | | | | | 8.0 |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of furbearer resources (beaver, muskrat, mink, otter, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | | 33% | | | 100% | 26.6 |
| 5-10% = Significant Loss | 20% | | | | | 4.0 |
| 10-25% = Significant Loss | | | | | | |
| > 25% = Significant Loss | 60% | 33% | | | | 18.6 |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of small mammal resources (squirrel, rabbits, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | | 33% | | | 100% | 26.6 |
| 5-10% = Significant Loss | | | | | | |
| 10-25% = Significant Loss | | | | | | |
| > 25% = Significant Loss | 60% | 33% | | | | 18.6 |
| Based on your experience in dealing with local residents and industry, what would constitute a significant loss of large mammal resources (caribou, moose, deer, bear, etc.) in your district (0-100 percent)? | | | | | | |
| 0- 5% = Significant Loss | | 33% | | | 100% | 26.6 |
| 5-10% = Significant Loss | 20% | | | | | 4.0 |
| 10-25% = Significant Loss | 60% | 33% | | | | 18.6 |
| > 25% = Significant Loss | | | | | | |

## RECREATION

| Recreation | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Common recreational wetland use by residents (denote by an "R") and visitors (denote by a "V") in my district include: | | | | | | |
| Hiking/Beachcombing | RV | RV | RV | RV | RV | RV |
| Hunting | RV | RV | RV | RV | R | RV |
| Fishing | RV | RV | RV | RV | R | RV |
| Clamming | R | R | R | | R | R |
| Egg Collecting | R | R | R | | R | R |
| Berry Picking | R | R | R | R | RV | R |
| Picnicking | RV | RV | R | R | R | RV |
| Wildlife Viewing | RV | RV | RV | RV | V | RV |
| The most popular kind of wetlands used for recreation in my district are: | | | | | | |
| Muskegs | 1,1,2 | 2 | | 1,2 | | 1 |
| Tundra | | | | 1,2 | 1 | 2 |
| Estuaries | 1,1,1,2 | 1 | | | | 1 |
| Forests | 2,2,2 | 2 | | | | |
| Riparian | | 2 | 2 | | | |
| Ponds, Lakes | | 1 | 1 | | 2 | 2 |
| How far do people travel from towns or villages within your district to recreate in wetland areas? | | | | | | |
| Less than 1/4 mile | | | | | | 100% > 1 mile |
| Between 1/4 and 1 mile | | | | | | |
| Greater than 1 mile | | | | 50% | 0-200 miles | |
| More than 10 miles | 100% | 33% | 0-150 miles | | | |
| How do they travel? | | | | | | |
| ATV | All | All | ATV | | All | All |
| Boats | | | Boat | | | |
| Cars/Trucks | | | Planes | 50% | | |
| Walk | | | | | | |

## FOOD PRODUCTION (SUBSISTENCE USE ONLY)

| Food Production | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Subsistence hunting, fishing, and gathering activities, which take place in local wetlands are: | | | | | | |
| Critical to Most Residents | | 33% | 50% | | 100% | 37.6 |
| Important to Most Residents | 80% | | | 50% | | 26.0 |
| Enjoyed by a Few Residents | 20% | 33% | | 50% (City) | | 20.6 |
| Of those residents in my district who rely on subsistence resources, what percent utilize local wetlands for: | | | | | | |
| Hunting | 10-50% | 100% | 0-28% | 35% | 100% | 62.6 |
| Fishing | 5-80% | 100% | 0-63% | 75% | 100% | 83.6 |
| Trapping | 1% | 30% | 0-6% | 17% | 100% | 30.8 |
| Egg Collecting | 1-20% | 50% | 1% | | 5% | 15.2 |
| Berry Picking | 20-40% | 100% | 0-5% | 50% | 10% | 41.0 |
| Greens | 5-50% | 30% | 0-2% | | 10% | 4.0 |
| Mushrooms | 1-10% | 75% | | | - | 17.0 |
| Fibers/Grasses | 0-1% | 30% | 0-3% | | - | 6.8 |
| How much time do these residents spend in subsistence related activities in wetlands? | | | | | | |
| <30 Days/Year | | -- | -- | | | |
| >30 Days/Year | 20% | | | 100% | 100% | 44% |
| How do they travel to these wetlands? | | | | | | |
| Boats/Planes | All | All | --- | All | All | All |
| ATV | | | | | | |
| Cars/Trucks | | | | | | |
| Walk/Bike | | | | | | |
| I _____ enough about the key subsistence use areas and practices within my district's wetlands to make good decisions about potential impacts to subsistence resources. | | | | | | |
| Know | 20% | | | | 100% | 24.0 |
| Do Not Know | 80% | 66% | 50% | 100% | | 59.2 |

## AESTHETICS

| Aesthetics | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| The disturbance or filling of tidally influenced wetlands in my district would have a major impact on the tourism industry (cruise ships, flight-seeing, etc.). | | | | | | |
| 1. True | 20% | 66% | | | | 17.2 |
| 2. False | 60% | | | | 100% | 32.0 |
| The disturbance or filling of tidally influenced wetlands in my district would be controversial among most local residents. | | | | | | |
| 1. True | 20% | 66% | | | | 17.2 |
| 2. False | | | | | 100% | 20.0 |
| The disturbance or filling of inland wetlands in my district would have a major impact on the tourism industry (flight-seeing, remote lodges, etc.). | | | | | | |
| 1. True | 20% | | | | | 4.0 |
| 2. False | 40% | 33% | | 50% | 100% | 44.0 |
| The disturbance or filling of inland wetlands in my district would be controversial among most local residents. | | | | | | |
| 1. True | 40% | 66% | | | | 21.2 |
| 2. False | 20% | | | 50% | 100% | 34.0 |
| There are some vistas within my district that include world class views and should be preserved. [If true: These vistas /___do,___do not/ include wetlands.] | | | | | | |
| 1. True (Do or Not Answered) | 80% | 66% | | | | 29.2 |
| 2. True (Do Not) | | 33% | | | | 7.0 |
| 3. False | | | | 50% | 100% | 30.0 |
| Most of the vistas within my district are not uncommon for Alaska and my region. | | | | | | |
| 1. True | 40% | 33% | | 50% | 100% | 44.6 |
| 2. False | 40% | 66% | | | | 21.0 |

## MEDICINAL OR OTHER CULTURAL VALUES

| Other Cultural Values | Southeast Alaska | Southcentral Alaska | Kodiak, Bristol Bay | Western Alaska | Arctic Alaska | Total |
|---|---|---|---|---|---|---|
| Wetland plants, animals, or other resources are very important to **(some, most, all)** residents of my district because, in addition to providing food, they are important components of traditional practices or ceremonies. | | | | | | |
| Some<br>Most<br>All | 60%<br>20% | 33% | 100% | 50% | 100% | 68.6<br>4.0 |
| Please list any specific cultural uses (other than food) you are aware of. For example, note if villagers use a specific tree bark to make tea, collect certain reeds or grasses to make baskets, furs for clothing, etc. | | | | | | |
| 1. Yanahey (medicinal)<br>2. Spruce Roots for Baskets | 20% | 33% | Numerous (List) | Numerous (List) | | ------- |

# APPENDIX B

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**Literature Search for**
**Alaska Coastal Management Program**
**Section 309 Project:**

# Program to Identify and Protect High Value Wetlands in Alaska

Division of Governmental Coordination
Alaska Office of the Governor

April 1994

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# INTRODUCTION

This report is part of a project funded under the authority of the Coastal Zone Management Act (Section 309, PL 101-508, November 5, 1990). The purpose of the project is to develop specific regulatory guidance to identify and protect high value wetlands. The initial information gathering stage of this project involved an extensive review of wetlands literature and development of a bibliography of publications addressing wetlands values and valuation. The resulting bibliography follows this introduction.

## Overview

The subject of wetlands is extremely complex and the volume of literature is tremendous. Wetlands management is complex both socially and scientifically. Socially, because the inherent conflict between use and preservation requires value judgements concerning appropriate use of wetlands. Scientifically, because of the inherent complexity and interdependency of natural ecosystems, as well as the magnitude and variety of wetland environments.

Despite twenty years of intense scientific scrutiny and policy debate, there remain significant disagreements over classification systems, assessment methods, and management decisions. The same questions have been asked over and over again, and casual use of simple sounding terms have often lead to confusion rather than clarity.

Until quite recently, the terms "function" and "value" were used interchangeably or in tandem in wetlands literature. Recently, however, the U.S. Army Corps of Engineers has decided to separate the two terms. Functions, after all, can be assessed objectively, while values (by definition) are subjective. The word "value" is further complicated by it's relation to monetary assessment, which can also be a consideration when formally evaluating wetlands and other land types for land exchanges or appraisals. The Corps is now developing a new hydrogeomorphic wetlands classification system intended to facilitate data collection, functional understanding, value assessment, and practical decision making.

Unfortunately, most publications prior to 1993 (as well as some more recent publications) did not consistently differentiate between the two terms, so this bibliography covers both functions and values. Because of the tremendous volume of literature on the subject, the greatest challenge was deciding how to organize the references in a reasonably useful format. Some literature, while not specifically linked to wetland studies, include important information about habitat utilization. These are included in subcategories by species.

## Organization

This bibliography is organized into nine sections.

- Wetland values/functions references with general or nationwide application.
- Wetland values/functions references specific to Alaska.
- Wetlands-related annotated bibliographies.
- Fisheries-related references, most specific to Alaska, but where relevant, other regions.
- Mammal-related references, most specific to Alaska, but where relevant, other regions.
- Avian-related references, most specific to Alaska, but where relevant, other regions.
- Recreation/Tourism-related references, including non-consumptive wildlife utilization.
- Wetland vegetation/ecology references, most with general or nationwide application.
- Wetland ethno-botanical references, most specific to Alaska.

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