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March, 1984

COOS COUNTY COMPREHENSIVE PLAN

Volume 2: COOS BAY ESTUARY MANAGEMENT PLAN:

Part 3 - Linkage and Goal Exceptions

March, 1984

by:

Coos Bay Estuary Advisory Commission
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STATEWIDE GOAL EXCEPTIONS

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1. INTRODUCTION

This document constitutes Part 3 of the Coos Bay Estuary Management Plan. That Plan is set forth in three separate but related documents:

Part 1: Plan Provisions

This document contains the policies and site-specific management decisions that comprise the Estuary Management Plan.

Part 2: Inventory and Factual Base

This document contains the inventory and analysis of data and other factual information used to support the plan management decisions presented in Part 1.

Part 3: Statewide Goal Exceptions

The remainder of this document (Part 3) is organized into three sections:

Section 2 presents an analysis of the management decisions presented in Part 1 as they relate to the prescriptive requirements of the Statewide Planning Goals administered by the Oregon Land Conservation and Development Commission (LCDC). This plan/goal requirements analysis is called "linkage", because it "links" the two together.

Section 3 contains "goal exceptions", which were developed in accordance with the provisions of LCDC Goal #2 -- which allows variance from other goal requirements when it is found not possible to apply such requirements to specific properties or situations.

Section 4 provides a general assessment of the cumulative effects of management plan development decisions, as required by LCDC Goal #16.

2.0 PLAN "LINKAGE FINDINGS"

2.1. Introduction: The concept of "Linkage"

Plan "Linkage" may be defined as the process of linking Plan decisions to the complex requirements of the Statewide Planning Goals to show whether the Plan conforms, and where Exceptions to the Goals are necessary. It results in a set of findings which demonstrate the consistency of the Plan both internally and when measured against the Goals.

The Coastal Goals, Estuarine Resources (#16), Coastal Shorelands (#17) and, to a lesser extent, Beaches and Dunes (#18), are unlike the other goals in that they contain a complete set of requirements relating to how specific resources should be managed, what types of management units there should be and whether (and under what conditions) certain uses and activities will be allowed. In addition, certain other goals (for example #3, Agricultural Lands and #4, Forest Lands) have requirements which also apply within the Coastal Shorelands Boundary.

It is necessary for the Plan to demonstrate how it complies with these Goals, and, in addition, to show where the Plan cannot comply, resulting in the need to take an Exception. Linkage speeds the plan review process by LCDC and other State agencies and facilitate future permit review for development proposals in Coos Bay and on its shorelands.

2.2 The products of "Linkage"

The "linkage" process results in the following tangible products: three charts or "Linkage Matrices", and a written "Linkage Findings", which supplement the matrices, explaining how some of the conclusions were reached where not otherwise self-evident, and making site specific findings of fact that could not be presented in a chart format. The three charts are laid out as follows:

2.2.1 LCDC Goal #16 "Linkage Matrix" [Estuarine Resources]

This chart is structured around the 82 separate aquatic management segments on the vertical axis, and 30 columns representing the requirements of Goal #16 relating to (i) management unit designations and (ii) findings for dredge and fill actions, on the horizontal axis. The matrix therefore consists of a total of 2,460 individual 'boxes', each one involving a separate piece of information. Some involve simply recording facts that are shown elsewhere in the Plan inventory maps. Other boxes require judgements which must be backed up in the "Linkage findings". The horizontal axis is divided into two major categories:

(i.) "Factual Resources Information": This consists of 16 columns which record the presence or absence of various types of natural resource or physical features in each of the management segments. This information is based on a detailed comparison of the management unit boundaries on the Plan Map with the various resources shown in

the Inventory maps. According to Goal #16, management units should b placed in "Natural", "Conservation" or "Development" units, depending on the resources present, which determine an area's suitability for preservation or varying degrees of development.

(ii) "Other Considerations": This section consists of six columns assessing compatibility with adjacent areas, energy cost/benefit and the extent of commitment of the water surface, and four columns assessing proposals for dredge or fill against the four findings required in Goal #16:

(a) Required for water-dependent uses,
(b) Public Need,
(c) No upland alternatives, and
(d) Adverse impacts are minimized

The first three findings are addressed in a general sense in the "Linkage" narrative for each segment where applicable. However, the fourth finding cannot be made until a specific action is proposed, and is therefore made on a case-by-case basis during permit review. The four columns headed "Consistency Decisions" indicate whether each segment is consistent with the Goal with respect to the management designation it is placed in ("Natural", "Conservation" or "Development") and whether the appropriate findings have been made for dredge and fill actions. A check (✓) in this column means that this segment complies with the Goal; a cross (X) means that it does not, and an Exception is required. In 16 segments, the actual designation requires an Exception; in 12 segments, dredge or fill actions also require Exceptions (four of these segments also require Exceptions for their designations). The remainder are found to be in compliance with the Goal; see section 1.5 below for the "Linkage" findings for each segment which supplement the "Linkage Matrix".

2.2.2 Aquatic Uses and Activities "Linkage" Matrix

This chart is structured around the same 82 aquatic management segments on the vertical axis with twelve (12) uses and seventeen (17) activities listed across the horizontal axis. The "consistency decision" is found at the righthand side. Under each use/activity are two columns; the left column is headed by a dot ( ) and indicates whether the use/activity is allowed in that particular segment; the right column is headed by an asterisk (*) and indicates whether Goal #16 allows that particular use/activity in that type of management unit (Natural, Conservation or Development). Footnotes refer to policies that impose conditions required by Goal #16, or to findings that are made in the "Linkage" narrative. "Special Conditions" are attached to certain uses/activities in each management segment where necessary, to provide an effective link between the general policies and the site-specific Plan provisions.

2.2.3 LCDC Goal #17 and #18 Linkage Matrix [Coastal Shorelands and Beaches/Dunes]

This chart is structured around 81 Coastal Shorelands segments on the vertical axis and 38 columns detailing requirements of LCDC Goals #17 and #18 (with consideration of Goals #3 and #4), across the horizontal axis. The "consistency decision" is found at the right-hand side.

Five columns indicate the presence or absence of natural and cultural resources that require mandatory protection under Goal #17. The next section applies only to rural shorelands. The first three columns indicate whether each segment contains agricultural or forest lands, and whether uses in these areas comply with Goals #3 and #4. Compliance is achieved by a general condition attached to each management segment which requires uses on Agricultural/Forest land to be restricted to those permitted in Goals #3 and #4.

The next eight columns deal with residential development and summarize the conclusions of findings to allow single family dwellings on existing parcels of land (with certain conditions). As upland alternative sites are always available, land division to permit denser residential development in rural shoreland areas is not permitted.

The next two columns summarize the conclusions of findings on water-dependent commercial/industrial uses and water-related uses. Unless specific uses are mentioned in the Management Objective, in which case specific findings for thos uses are made in the Plan, findings will have to be made during Plan implementation when the use is proposed. The following column indicates whether recreational uses are water-dependent. If not, the specific findings required by Goal #17 must be made to permit water-related or non-dependent, non-related uses, as indicated by the footnote [see Goal #17, Coastal Shoreland Uses, 3e and 3f].

The following five columns deal with land divisions and "other uses" not otherwise specified, and summarize the conclusions of findings required in Goal #17, Coastal Shoreland Uses, 3f, to allow these uses. Again, unless specific uses are proposed in the management segment which provide a basis to make the required findings in the Plan, these findings must be made when a use is proposed. This requirement is attached to each management segment as a general condition which requires the findings set out in Goal #17 to be made for all uses, unless already contained in the "Linkage" narrative in the Plan.

The next section, consisting of five columns, deals only with segments in urban/urbanizing areas. It indicates whether a segment (or part of it) is considered "especially suited to water-dependent development" [ESWD], according to the four-part test in Goal #17, and whether the segment has been reserved exclusively for water-dependent uses.

The next section indicates whether dredged material disposal sites or mitigation/restoration sites are present, and whether they are protected. There is reference in a footnote to Plan Policy #22, which

does not require special protection for "low priority" sites. Otherwise, all sites are protected by Policies #20 and #22.

The next section, consisting of three columns, indicates whether dune formations are present. There is a finding that no dune areas are in especially hazardous areas "unsuitable for development". All uses are subject to Policies #30 and #31, as appropriate, which require the special findings in Goal #18 to be made.

The final two columns contain the "Consistency Decision," which indicates whether or not the uses and activities allowed in the respective segments (and the conditions under which they are allowed), are in compliance with the Goals.

2.3 Introduction: Site-Specific "Linkage" Findings

The following section provides "linkage" findings on a segment-by-segment basis, where they are necessary to substantiate the conclusions represented in the "Linkage Matrices". As mentioned above, some of the information in the "Linkage Matrices" is simply drawn from factual material in the mapped and written Plan inventories, while other information represents conclusions drawn from additional findings provided in the "Linkage" narrative. This section contains those findings.

It should be pointed out that findings cannot always be made in the Plan to support all possible types of uses and activities that might occur in a particular segment. This is because it is not possible to anticipate all circumstances which might attend a particular proposal. In such cases, necessary findings would have to be made at the time the proposal is made. However, where a segment is intended for general classes of uses/activities, as stated in the Management Objective, it is possible to make the required findings, as the Plan inventory lays an adequate basis for them.

2.4 General Findings

Goal #16 requires general findings to be made on compatibility, energy costs and benefits, and the extent of water surface commitment to surface uses, when classifying estuarine areas into management units.

2.4.1 Compatibility assessment

Compatibility with adjacent upland and aquatic uses and characteristics is assessed in general terms for both existing and proposed uses.

Generally, compatibility with the adjacent upland is assessed as "high" when the aquatic segments are planned to be consistent with future objectives of the shorelands, whether for protection or development. Compatibility is only "moderate" in cases where a "natural" segment adjoins a shoreland area with existing non-dependent/non-related development (for instance 7NA, Jordan Cove, adjacent to a pulp mill, or 13B NA adjacent to residential development

in Glasgow). Similarly, aquatic segments are usually highly compatible with adjacent aquatic segments, except where a 'Natural' segment adjoins a "Development" segment for a great proportion of its boundary. In most cases, this is inevitable, as there is no reason to form a "Conservation" segment as a buffer between the two. In effect, where a "Natural" segment adjoins the navigation channel, for instance, there may be temporary impacts from sediment or turbidity on the adjacent 'Natural' area when maintenance dredging occurs. In these and similar cases, compatibility is assessed as "moderate" only. In no cases is compatibility assessed as "Low", as this situation does not occur in Coos Bay.

2.4.2 Energy costs/benefits

Net energy costs and benefits are assessed generally as "positive", for the following reasons:

For Development segments: Water transport is inherently an energy-efficient mode of transportation because of the large tonnages involved.

For Conservation and Natural Segments: Conservation of natural values minimizes disturbance to the highly efficient energy production and transfer of natural estuarine systems.

Energy costs are chiefly those associated with dredging and dredged material disposal. To the extent that new and maintenance dredging only occurs when the benefits to navigation and commerce outweigh the costs (either through formal Corps of Engineers costs/benefit assessment or though private sector business decisions in the open market), the cost/benefit ratio will normally be positive for all aquatic units in which dredging projects are planned. However, listing dredging as "permitted" in a particular unit does not imply that benefits will always outweigh costs for any particular project.

2.4.3 Commitment of water surface

Future commitment of the water surface to surface uses is addressed in general terms based on the likely extent of fill uses occupying the surface by pilings or other uses (e.g. log storage) relative to the size of the segment. Commitment is "total" (T) where fill or dredged material disposal occur (e.g. 52 A DA). Where log storage occupies much of the segment, commitment is high' (H), (e.g., 28 A DA or 18 A CA). Commitment is moderate' (M) where only part of the segment is likely to be affected by fill or docks, for instance segments 3 DA and 5 DA. Because of the depth of water relatively close to shore, bulkheads will not need to be constructed very far out into the water area to accommodate deep draft vessels. Surface commitment is assessed as 'low' (L) where only minor fill or docks are permitted, as, for instance, in segment 1 CA, where minor fill is anticipated for jetty maintenance. Lastly, in Natural and some Conservation units, where fill and other surface uses are not permitted, surface commitment is assessed as zero. It should be stressed that these assessments are based only on the likely extent of

surface commitment, as anticipated at this time. Theoretically Development units could be entirely devoted to surface uses, ev b total fill, but in most cases this is not currently anticipated in their respective Management Objectives.

2.5 Dredge and fill actions, other reductions, and potential degradations

The following section describes dredge and fill actions in general terms, based on the purpose and expected uses in a particular segme as stated in its "Management Objective". In most cases, specific findings cannot be made in the Plan because impacts will vary with each individual project. Therefore, these findings must be made on case-by-case basis during permit review.

Note also that special Plan conditions require findings to be made some actions at the time a permit application is made. These inclu fills in Conservation and Natural Management Units (see Policy #6), rip-rap or bulkheads involving fill (see Policy #9), and uses and activities subject to Policy #5 as a special condition.

Segment 1 CA

Minor fill and maintenance dredging will be necessary to provide access for barges to the jetty for a maintenance staging area. public need exists to maintain and repair the north jetty due t it essential purpose and the substantial public investment involve There are no other possible locations for these actions, as no adequate overland route for jetty rock transportation exists.

Segment 3 DA

(i) Dredge and fill actions are necessary for navigation and future water-dependent development of Port's North Spit land.

(ii) A public need exists because this area is essential for future economic development in Coos County [see reference].

(iii) There are no alternative upland locations for the fill that will be required because it is necessary t

bulkhead the shoreline out to a water area of sufficient draft.

Segment 5 DA

(i) Dredge and fill actions are necessary for navigation access and future water-dependent development of the Henderson Marsh Site.

(ii) For public need and alternative upland locations, see findings for Segment 3 DA.

Segment 6 DA

(i) Dredge and fill actions are necessary for navigation and future water dependent development of the remaining undeveloped water front of this segment.

(ii) For public need and alternative upland locations, see findings for segment 3 DA.

Segment 8 CA

(i) New dredging and maintenance dredging are necessary to provide access from the natural channel to a boat ramp and to accommodate limited recreational moorage. [See Exception for new dredging in a Conservation Unit.] Minor fill is necessary in the construction of a boat ramp, to ensure the correct elevations and gradient.

(ii) There is a public need for additional recreational access to the bay, particularly the North Spit [see reference].

(iii) There is no upland alternative because all boat ramps must have direct access to the water, which will usually require minor dredging and fill.

Segmemt 11 NA

(i) Dredging is permitted for two purposes:

a) to repair dikes and tidegates, and

b) "for minor navigational improvements" to remove shoaling in the natural Haynes Inlet channel.

Dikes and tidegates are, by their nature, water-dependent uses, because they are water-dependent uses, because they are flooding and tide-control structures, and need an estuarine location. Dredging is necessary to clear obstructions and repair erosion damage to dikes. Removal of shoaling may be necessary for continuation of traditional shallow-draft boat

use of the natural channel, associated with a boat works and boat ramp (in segment 12 CS). See also Exception #12, to allow dredging in a Natural segment, for further findings.

(ii) There is a public need for these actions because:

(a) dikes and tide gates must be maintained to retain agricultural lands in productive use and

(b) The natural channel is used by recreational and other small craft to gain access to Haynes Inlet.

(iii) See Exception for dredging to maintain dikes for findings on alternatives.

Segment 12 CA

Maintenance dredging and minor navigational improvements are permitted for the existing boat works and boat ramp.

(i) These activities are needed for existing water-dependent uses.

(ii) A public need exists to maintain public receational access and existing small marine ways.

Segment 13A NA

Dredging is permitted as "minor navigational improvements" to remove shoals in the natural channel. Findings are the same as for segment 11 NA.

Segment 14 DA

This segment permits new dredging of a "bathtub" to allow access to a rock loading facility, plus maintenance. It also permits fill to construct a bulkhead to provide barge docking and fill in the area behind an existing rock berm at the western end of the segment to extend the area available for storage of rock. [See Exception #23 for the necessary findings on the latter activity.]

(i) These activities are necessary for loading of barges with jetty rock quarried in adjacent uplands, which is a water-dependent use.

(ii) There is a public need to provide water access for barging of rock products, particularly jetty stone, which can only be practicably transported to point of use by barge.

(iii) Alternative upland locations are not available because the stone needs to be transported by barge.

Segment 16 CA

This segment permits maintenance dredging and scalping of shoals as "minor navigational improvements" to provide access through a natural channel to Pierce Point for log transportation and aquaculture.

(i) Log transportation is a water-dependent use for mills which are built to take logs from the water. Dredging is necessary to maintain access to the shore.

(ii) A public need exists because Weyerhaeuser Corp. mill is structured around water access. Future water quality regulations may reduce intertidal log storage. Therefore, there will be a need for upland storage sites with access to water for log transportation only, in order to maintain the same volume of logs coming to the mill by water.

Segment 18 A CA

This segment permits maintenance dredging of a log storage area adjacent to the shore to restore natural depths that have been affected by upwelling from nearby dredge spoils disposal. It also permits dredging to maintain dikes and tidegates and repair/maintenance of dikes which may require fill. For findings on the latter activities, see Segment 11 NA, and Exception #10 [to permit dredging to repair dikes and tidegates].

(i) Maintenance dredging is necessary for continued log storage in the area, which is a water-dependent use [see findings in segment 16 CA].

(ii) A public need exists because existing sub-tidal log storage areas need to be maintained, due to restrictions on intertidal log storage.

Segment 18 B CA

This segment permits maintenance dredging and minor navigational improvements to remove shoaling that may occur in the natural Cooston channel.

(i) Maintenance dredging is necessary for log transportation which occurs in the natural Cooston channel, a water-dependent use.

(ii) There is a public need because Cooston Channel is one of the principal routes for log transportation to Weyerhaeuser mill and can be affected by shoaling from sediment deposited by the Coos River system.

Segment 19 A CA

See findings for 18 A CA.

Segment 19 B DA

This segment permits new and maintenance dredging to restore it to its natural depth due to upwelling, and to give access to the upland for water-dependent development. It also permits repair/maintenance of dikes. For findings on dike repair see Segment 11 NA.

(i) Dredging is needed for maintenance of a log storage area, which is a water-dependent use [see segment 16 CA], and for access to water dependent uses of upland Segment 19 D, the Christianson Ranch site. [See Management objective]

(ii) There is a public need for development of the Christianson Ranch site for lumber and wood products uses and associated water-dependent use of the shore. [see Exception #19 for findings on why this use should be provided for]. For public need findings on log storage, see Segment 18 A CA.

Segment 20 CA

This segment permits maintenance dredging, dredging to repair dikes and tide gates, and repair/maintenance of dikes involving fill. For findings on the latter uses, see segment 11 NA.

(i) Maintenance dredging is necessary to retain access to extensive log storage along either side of the river channel, which is a water-dependent use [see Segment 16 CA].

(ii) For findings on public need, see Segment 18A CA.

Segment 20 A DA

This segment permits maintenance dredging and dike maintenance for an existing barge and tug business, and fill needed to provide expanded wharf frontage.

(i) All these activities are required for a barge/tug operation, a water-dependent use.

(ii) A public need exists to maintain and expand facilities for waterborne transportation.

(iii) There are no upland alternatives for fill, because it is needed to provide bulkheading out to a suitable water depth for tugs and barges.

Segment 20 B DA

This segment permits maintenance dredging and fill to provide access to a rock loading facility and maintain/repair dikes.

(i) These activities are necessary for a water-dependent use (rock shipment).

(ii) There is a public need: see findings for Segment 14DA.

(iii) There are no upland alternatives for fill, as it is needed to provide bulkheading out to a suitable water depth for barges. A special condition prohibits use of fill to create additional upland area for storage.

Segment 20 C DA

This segment permits maintenance dredging and fill to provide access to a log terminal, and maintain/repair dikes.

(i) These activities are necessary for a water-dependent use (log transportation).

(ii) There is a public need to move logs by water as many mills on Coos Bay are set up to receive logs from the water, and because it is the most energy efficient method. Dredging and fill are necessary to maintain facilities necessary for log transport.

(iii) There are no alternative upland sites for fill, as it is needed to construct docks suitable for log dumping. A special condition prohibits use of fill to create extra land area.

Segment 20 D DA

Findings are the same as for Segment 20 C.

Segment 21 CA

This segment permits maintenance dredging, dredging to repair dikes/tidegates, and minor navigational improvements.

(i) Maintenance dredging is necessary for existing small docks along Catching Slough. Minor navigational improvements may be necessary to clear shoals in the natural channel to allow shallow draft navigation to continue. Dredging is necessary to keep dikes and tidegates in functional order. For findings on the latter activity, see Segment 11 NA.

(ii) A public need exists to retain public recreational boating and other shallow-draft navigational access to catching slough because of past and present use.

Segment 21 A NA

This segment permits new and maintenance dredging to allow development

of a public boat ramp. See segment 8 CA for findings.

Segment 23 DA

This segment permits new/maintenance dredging, fill and minor navigational improvements for the purpose of providing access to existing water-dependent uses (barge construction) on the adjacent shorelands. [23A UW].

(i) These activities are necessary for water-dependent uses.

(ii) There is a public need to maintain access to important sites especially suited to water dependent uses.

(iii) There is no upland alternative to fill in this location, because of the need to bulkhead out to sufficient water depth for barge launching and moorage.

Segment 26A CA

This segment permits new/maintenance dredging for access to a proposed marina in Segment 26 B CA to the south. It also permits minor navigational improvements to remove shoals from the natural Marshfield channel to maintain it for shallow draft navigation.

(i) Dredging is required for a water-dependent use.

(ii) There is a public need for additional moorage for recreational/commercial boats; see special Moorage Element, Section 6.3.4. There is also a public need to maintain the Marshfield Channel, as it is a vital link between the authorized deep-draft and Coos River Channels for log-transport and other shallow draft navigation.

Segment 26 B CA

This segment permits new/maintenance dredging and minor navigational improvements to develop a marina and associated boat ramp. Findings for fill will be made separately, as required by a special condition referring to Policy #6. See Segment 26 A for findings.

Segment 27 DA

This segment permits new/maintenance dredging, minor navigational improvements and fill to allow development of water access to a prime water-dependent development site [Shoreland Segment 27 UW].

(i) These activities are necessary for water dependent uses planned in shoreland segment 27 UW.

(ii) There is a public need to provide vacant acreage

for future water-dependent development with adequate access to the deep draft channel. [See Industrial Land Needs, Section 5.8].

(iii) There are no upland alternatives to fill to construct bulkheads out to water of sufficient depth to accommodate deep draft ships.

Segment 28 A DA

This segment permits new/maintenance dredging, fill, and minor navigational improvements, necessary to develop and maintain deep or shallow draft access to water-dependent uses on the shorellands.

(i) These activities are necessary to develop and maintain water-dependent uses in shoreland segments 36 UW and 28 UW.

(ii) For public need findings, see Segment 27 DA above.

(iii) There are no upland alternatives to fill to construct bulkheads out to water of sufficiemt depth to accommodate shipping.

Segment 30CA

This segment is proposed for maintenance dredging, minor navigational improvements and dredging to repair dikes/tidegates. For findings on the latter activity, see Segment 11 NA.

(i) These activities are necessary to allow log storage and transport to continue, which is a water-dependent use.

(ii) For public need findings, see Segment 20 C DA.

Segment 31 NA

This segment permits new/maintenance dredging for the purposes of constructing a public boat ramp. It also permits dredging to maint dikes/tidegates. For findings on this activity, see Segment 11 NA.

(i) These activities are necessary for a water-dependent use (public boat ramp).

(ii) There is a public need for additional public access points in various parts of Coos Bay. [See Special Moorage Element, Section 6.4.3]

Segment 34 NA

This segment permits minor new/maintenance dredging necessary to improve and maintain an existing boat ramp.

(i) These activities are necessary for a water dependent use (public boat ramp).

(ii) For public need findings see Segment 31 NA above.

Segment 38 CA

This segment permits new/maintenance dredging and fill to develop small-shallow draft marina in Coalbank Slough. It also permits maintenance dredging of dikes/tidegates. See findings for Segment NA.

(i) These activities are necessary for a water dependent use (marina).

(ii) For public need and alternative upland location findings, see Exception #24, which is necessary to justify a fill in a Conservation Management Unit.

Segment 43 DA

This segment permits new/maintenance dredging, fill, navigational structures and minor navigational improvements, in association wit water-dependent uses planned for the adjacent upland Segment (43 U

(i) These activities are necessary for water-dependent commercial/industrial uses.

(ii) There is a public need to develop and maintain sites that are adjacent to the deep draft channel, a are "especially suited to water dependent use" [see Economic Development, Section 5.7]

(iii) There are no upland alternative sites for fill because it is necessary to bulkhead out to water of sufficient depth to accommodate shipping, within the limits of what is economically or physically feasible to dredge. Navigational structures involving fill must necessarily be in aquatic areas.

Segment 44 DA

This segment permits the same activities as Segment 43 DA above. The same findings also apply.

Segment 45 A CA

This segment permits maintenance dredging and minor navigational improvements to continue sub-tidal log storage.

(i) These activities are necessary for log storage/ transport, which is a water-dependent use.

(ii) For findings on public need, see Segment 20 C DA.

Segment 46 DA

This segment permits new/maintenance dredging and fill for limited moorage of commercial fishing vessels.

(i) These activities are necessary for moorage, a water-dependent use.

(ii) There is a public need for additional moorage space for commercial fishing vessels. [See Special Moorage Element, Section 6.3]

(iii) There is no upland alternative location for such fill as is necessary to bulkhead out to water of sufficient depth for moorage, given the economic and physical limits to dredging.

Segment 47 DA

This segment permits the same uses as Segment 46 DA above, but for barge access for rock products offloading and other purposes. Findings are the same as for Segment 46 DA above.

Segment 48 A DA

This segment is proposed for fill by lowering the surrounding uplands, which are former dredged material disposal areas from deep draft channel maintenance.

(i) Following fill,the upland area is reserved for water-dependent uses. [see Exception]

(ii) For findings on public need and alternative location, see Segment 27 DA.

Segment 51 CA

This segment permits minor new/ maintenance dredging for the improvement of an existing boat ramp, and for a limited boat dock for transient moorage.

(i) These activities are required for water-dependent uses (boat ramp/docks).

(ii) For public need findings, see Segment 8 CA.

Segment 52 NA

This segment permits new dredging of a channel north of the proposed airport extension fill, as a form of estuarine mitigation (enhancemen of tidal circulation).

(i) This activity is required for a water-dependent use (estuarine enhancement).

(ii) There is a public need because the airport fill requires mitigation [see North Bend Airport Exception.]

Segment 52A DA

This segment permits fill for the proposed North Bend Airport extension.

(i) This activity is needed for a non-water-dependent u [See North Bend Airport Exception].

(ii) For public need and alternative location findings see North Bend Airport Exception.

Segment 53 CA

This segment permits maintenance dredging for access to a log storage area. See Segment 45 A CA for findings.

Segments 54DA

This segment permits new/maintenance dredging, fill and navigational structures, as necessary to develop and maintain water access to upland Segment 54 UW, for water-dependent uses.

(i) These activities are necessary for water-dependent uses planned in Segment 54 UW.

(ii) There is a public need to develop and maintain water access to shoreland areas that are "especially suited to water-dependent use".

(iii) There are no alternative upland locations for fill necessary to bulkhead out to water of sufficient depth to accommodate shallow-draft vessels, given the economic and physical limitations on dredging due to the underlying rock shelf in this area.

Segment 56 DA

This segment permits new/maintenance dredging, fill and navigational structures, as necessary to develop and maintain water access to upland Segment 56 UW. Findings are the same as for Segment 54 DA.

Segment 60 CA

This segment permits new/maintenance dredging and fill, solely for the purpose of constructing a public boat ramp and transient boat dock. Findings are the same as for Segment 8 CA.

Segment 61 DA

This segment permits new/maintenance dredging, fill and navigational structures for the purposes of moorage and access to water-dependent uses in shorelands Segment 61 UW.

(i) These activities are necessary for water-dependent uses planned in Segment 61 UW.

(ii) There is a public need to provide moorage space for commercial fishing vessels and water access to shoreland areas that are "especially suited to water-dependent uses." [see Special Moorage Element Section 6.4.]

(iii) There are no alternative upland locations for fill necessary to bulkhead out to water of sufficient depth to accommodate shallow-draft vessels. Fill is limited by Special Conditions to that necessary for access structures only, and is prohibited from expanding the upland area.

Segment 63 A NA

This segment permits maintenance dredging and minor navigational improvements (such as removal of shoals in the natural channel) solely for the purposes of an approved aquaculture operation.

(i) These activities are necessary for a water-dependent use (aquaculture) to provide access for barges and small boats from the growing area to processing facilities.

(ii) There is a public need to maintain and expand aquaculture in this area because aquaculture is the activity most compatible with the conservation and protection of estuarine resources. Joe Ney Slough is one of the most suitable areas for oyster culture due to its generally high water quality.

Segment 63 B CA

This segment permits new/maintenance dredging for the purpose of establishing a major recreational marina.

(i) These activities are necessary for a water-dependent use needing an estuarine location (recreational marina).

(ii) There is a public need for additional recreational moorage space in the bay [see Special Moorage Element, Section 6.3]

Segment 63 C DA

This segment permits new/maintenance dredging and fill for the purposes of continuing and expanding an existing oyster processing operation. The Management objective specifies dredging a "bathtub" to allow storage of barges at low tide. Limited fill is allowed to reconfigure the bankline to allow barge loading.

(i) These activities are necessary for a water-dependent use (oyster processing).

(ii) There is a public need to maintain and expand aquaculture in this area. Findings are the same as for Segment 63A NA. The adjacent South Slough is also one of the most suitable areas of the bay for oyster culture because of its generally high water quality.

Segment 66 A DA

This segment permits new/maintenance dredging, fill and navigational structures for the purposes of maintaining and expanding moorage for commercial fishing and recreational craft.

(i) These activities are necessary for water-dependent uses (commercial and recreational moorage) that require an estuarine location.

(ii) There is a public need for these activities because the Plan identifies this area as one of the principal centers of commercial/recreational moorage, and because commercial fishing is essential to the economy of the area. [see Special Moorage Element, Section 6.5].

(iii) There are no alternative upland locations for fill because it is necessary for bulkheading out to water of sufficient depth to accommodate shallow-draft vessels.

Segment 67 CA

This segment permits maintenance dredging, fill and navigational structures only to provide access to the South jetty and Charleston breakwater for necessary maintenance, and to expand the area of the jetty and breakwater if necessary for repair, added strength or to prevent sediment accretion.

(i) These activities are necessary for water-dependent uses (jetty and breakwater).

(ii) There is a public need to maintain and expand these structures to protect the deep-draft and Charleston navigation channels and the boat basin and reduce the need for costly maintenance dredging.

(iii) There is no alternative upland location for fill and navigation structures because they must be in an aquatic area to perform their essential function.

Navigation Channels

(i) Deep Draft.

(ii) Charleston

(iii) Isthmus Slough

(iv) Coos/Millicoma

These segments, the authorized channels, permit new/maintenance dredging as necessary to keep then open to shipping (either deep or shallow-draft) and to increase the depth if necessary, subject to Congressional authorization. Federal dredging projects are normally subject to an Environmental Impact Statement (depending on whether impacts are determined to be "significant"), which will address questions of public need, alternatives and impacts in more detail. This Plan makes the general findings that:

(i) These activities are necessary for a water-dependent use (navigation), and

(ii) That a public need exists to keep these channels open for the continued economic well-being of the County as a whole.

2.6 Findings of "Consistency with the Resource Capability of the Area" for Aquatic Uses and Activities

Goal #16 requires that certain types of uses and activities may only be allowed:

> "Where consistent with the resource capabilities of the area and the purposes of this management unit."

This is required in Natural and Conservation Segments for more intensive uses and activities which may not always be appropriate in a particular area, depending on what impacts it is capable of sustaining while continuing to satisfy the general purpose of that type of management unit. It is also required in Development Segments for low impact uses which are normally associated with Natural and Conservation Segments, and may not always be consistent with the more intensive uses allowed.

The following findings contain a brief segment-by-segment statement about the resource capabilities of that area, and a finding of consistency for each use or activity, except for the following uses and activities for which resource capability consistency findings have been deferred in accordance with Policy #4a:

(i) Natural Management Segments

-- Aquaculture
-- Log storage

(ii) Conservation Management Segments

-- High-intensity water-dependent recreation
-- Aquaculture
-- Log storage dredging
-- Bulkheading

(iii) Development Management Units

-- Aquaculture
-- Bulkheading (except for Segments #3 DA, 5 DA and 6 DA)

There is also a corresponding finding of consistency with the purposes of the particular type of management unit, except where findings have been deferred as above.

Goal #16 contains general statements about the purposes of each type of management unit. They are as follows:

a) Natural Units are designated "to assure the protection of significant fish and wildlife habitats, of continued biological productivity within the estuary, and of scientific, research, and educational needs. These shall be managed to preserve the natural resources in recognition of dynamic, natural, geological and evolutionary processes."

b) Conservation Units are designated "for long-term uses of renewable resources that do not require major alteration of the estuary, except for the purpose of restoration. These areas shall be managed to conserve the natural resources and benefits. These shall include areas needed for maintenance and enhancement of biological productivity, recreational and aesthetic uses, and aquaculture."

c) Development Units are designated "to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses."

Segment-by-segment findings for uses and activities are as follows. In many cases, special conditions are attached to specific uses/activities in the Plan Provisions, as required by the Goal, which help insure consistency.

Segment 1 CA.

This segment contains significant habitat, but of less than "major" importance. It has some clam population, but no aquatic vegetation. Fish populations move in and out of the area during migration, but only part is used for salmonid rearing and feeding. The segment permits a temporary dock or similar facility for jetty construction or

maintenance. It also pemits maintenance dredging, minor navigat a improvements and piling/dolphins for the same purposes.

Due to the small area involved, and the temporary nature for these uses/activities, all uses and activities allowed in the segment (oth than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 2 NA

This segment contains aquatic resources of major importance includin aquatic beds, salmonid feeding and rearing areas, herring spawning areas, major clam beds and bird habitat. Aquacultural uses are consistent with protection of these resources and continued biologic productivity. Low-intensity utilities (e.g. communication facilitie are consistent because the area affected is small and disturbance is temporary. Mitigation and active restoration when part of an approv mitigation project (plus vegetative stabilization which is a form of active restoration) are consistent in general with improvement of habitat values. DSL review of mitigation proposals is a check on consistency. All uses and activities allowed in the segment (other than those for which resource capability consistency findings ha been deferred in accordance with Policy #4a) are therefore consi n with the resource capabilities of the area and the purposes of the management unit.

Segment 3 DA

The primary resource of this area is its "deep water close to shore" which lends it to deep-draft development. Mining/mineral extraction and recreation facilities (a boat ramp) are allowed subject to speci conditions that they are compatible with the main purpose of the uni deep-draft moorage. A bulkhead (out to the pier head line) of up tc 2000 linear feet with backfill to support heavy marine dockside usag is allowed subject to special conditions regarding erosion control; minimization of impacts and provision of mitigation, and is therefor consistent with the resource capability of the area and the purposes of the management unit. Other activities allowed in the segment (docks, low and high intensity utilities, minor navigational improvements, pilings/dolphins and navigational aids) are ancillary deep draft development, and therefore consistent with the resources the area, and the purpose of a Development Unit. Vegetative stabilization may be preferable to structural means on parts of the shoreline that remain undeveloped, to prevent erosion or sand deposition. This activity is also consistent. All uses and activities allowed in the segment (other than those for which resour capability consistency findings have been deferred in accordanc it Policy #4a) are therefore consistent with the resource capabilit the area and the purposes of the management unit.

Segments 5 DA and 6 DA

These segments permit most of the same uses and have the same resource as Segment 3 DA, and the same findings apply.

Segment 7 NA

This segment contains important biological resources of major significance -- tidal flats, some salt marsh, clam beds, salmonid rearing/feeding, herring spawning and bird habitat.

Uses/activities include aquaculture, low-intensity utilities, (communication facilities), navigation aids, mitigation and active restoration , including vegetative stabilization. Due to the similarity of resources, and permitted uses, the findings made for Segment 2 NA apply here also. Navigation aids have minimal and temporary impact, like communication facilities, and are also consistent with the resources capabilities of the area and purposes of a Natural unit.

Segment 8 CA

This area is biologically significant, but is only of lesser importance. The substrate is sandy and rapidly sloping. There is no aquatic vegetation, and fishery use is transient, although juvenile salmonids, striped bass and flat fish are present. There are also some clam beds, but they are not of significant recreational importance. The Segment is to be developed for a public boat ramp and limited transient recreational moorage ("recreational facilities" and "docks").

Following development of these facilities, maintenance dredging and minor navigational improvements will be necessary, commercial uses may occur (not using fill), and pilings/dolphins will be ancillary to these uses. High intensity utilities, like outfalls, may be developed, as consistent with State and federal water quality regulations.

Since this package of uses/activities will have low long-term impacts on this area of relatively low importance and will not require major alterations, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 10 NA and 11 NA.

These segments contain biological resources of major importance, including mud flats, aquatic beds, diverse salt marshes, major recreational clam beds, striped bass and salmonid feeding and rearing areas and duck resting areas. As well as outright permitted uses, the segments permit aquaculture, low intensity utilities, mitigation and

active restoration, including vegetative stabilization. Aquaculture would utilize and enhance the biological productivity of the area. Low intensity utilities would have very minor impacts, occupying very little surface area. They are therefore consistent with the resource capabilities of the area. Mitigation and vegetative stabilization would enhance the natural resources of the area. Again DSL review would insure that there would be positive benefits and no unintended impacts; therefore, these activities would be consistent with the resource capabilities of the area.

Because they would assure protection of habitats and continued biological productivity, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 12 CA

This segment contains narrow tidal flats, partially altered by previous activities, and a section of natural channel. Biological resources are significant, but of lesser importance than the surounding area due to previous alteration. As well as outright uses, this segment permits recreational facilities, industrial facilities (existing boat works) and docks and commercial uses associated with the boat ramp. Maintenance dredging, minor navigational improvements and pilings/dolphins ancillary to the main uses are also permitted. As new dredging and fill are not permitted, and uses must occupy the water surface by means other than fill, impacts and alteration will be minor, and consistent with the already partially altered character of the area.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 13A NA and 13 B NA

These two segments are essentially very similar, and contain significant biological resources of major importance, including large aquatic beds, clam beds, feeding and rearing for salmonids and striped bass and habitat for shorebirds and waterfowl. Apart from outright permitted uses, these segments allow aquaculture, low-intensity utilities, and mitigation. Segment 13 B in particular has high suitability for oyster culture, and may be developed in the future if water quality proves adequate.

Consistency findings are essentially the same as for segments 10 NA and 11 NA, because of the similarity of the resources and permitted uses/activities.

Segment 14 DA

This segment is a subtidal area partly altered by the adjacent fill. It contains some crustaceans and clam beds, but only Macoma and Tellina species, which are of minimal recreational importance.

This segment is suitable for barge loading of jetty rock with appropriate minor dredging, and permits the following uses which require consistency findings: docks, low/high intensity utilities, minor navigational improvements, pilings/dolphins, and navigational aids, all of which maybe considered ancillary to barge loading facilities. It also permits low and high intensity recreational facilities; such uses would be appropriate for water access from East Bay Drive, and might be considered an alternative interim use for the area when not being used for barge loading. Vegetative bank stabilization is appropriate where structural means are not necessary to stabilize the fill.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit, which is as a shallow-draft barge loading dock.

Segments 15NA and 17 NA.

These segments allow the same uses/activities and contain similar resources, and are therefore considered together. They contain biological resources of major importance including tidal flats, extensive aquatic beds and salt marshes, and prime habitat for juvenile salmonids, striped bass, flat fish, clams and waterfowl. There are also oyster plats, currently inactive, in Segment 15. These segments permit aquaculture, which can utilize and enhance the biological productivity of the area. The tidal flats are especially suited to oyster culture, as evidenced by the oyster plat, which may return to this area on a large scale when water quality improves.

The segment also permits low-intensity utilities. Their impacts are so minor and generally temporary that they maybe considered consistent with the area's resources and the purpose of the Natural unit. Mitigation is also appropriate because it can enhance productivity and benefit water quality.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 16 CA

This segment is of lesser biological importance, with a natural channel and narrow area of tidal flats. It is intended for assembly and transport of log rafts, with access via the "finger channel", permitting only maintenance dredging and removal of shoals to retain

the natural depth.

It permits commercial uses, docks and industrial/port facilities in conjunction with the primary purpose of the segment, (when occupying the water by means other than fill) and in-water log dump, sort and storage. The resources are of little importance, and their use will involve little alteration. Low intensity recreation facilities, similarly, will not adversely affect the resources and are appropria to a Conservation unit. High intensity utilities will not impact th resource, subject to State approval of outfalls. Maintenance dredgi of existing facilities, and minor navigational improvements will onl involve small amounts of removal to keep the natural channel clear o obstructions. Dredging of new facilities is not permitted. Pilings and dolphins, similarly, are necessary for log storage, and will not impact resources significantly.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 18 CA and 19 A CA

These narrow, mostly subtidal segments contain minimal resources (habitats restricted to fish migration) and are intended for continuation of existing log storage use.

They permit the following uses: Log storage, recreational facilitie (18 A only), high intensity utilities (19 A only), maintenance dredging, minor navigational improvements, and pilings/dolphins. al these uses/activities would involve relatively little impact, becaus the resources of the area are minimal. Both areas suffer from upwelling due to the weight of dredge spoils on nearby Christianson Ranch, which makes dredging necessary and even beneficial, to mainta natural depths and currents.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 18 B

This segment consists of the natural Cooston Channel; its habitat values consist mainly of a passage for migratory fish. Because of currents, there are very limited vegetation or benthic organisms. I purpose is chiefly the transport and storage of logs.

It permits (as well as outright uses), log sorting and storage, and maintenance dredging, minor navigational improvements and

pilings/dolphins, which are ancillary to log handling. Existing facilities are limited to the log storage areas themselves. Removal of materials will be relatively minor and occasional, to keep the natural channel clear of obstructions and retain access to log rafts. The segment also permits low intensity water-dependent recreation, which due to its location, is unlikely to involve any structures.

None of these uses will involve much alteration or impact on resources. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 19B, 20A, 20B, 20C, 20D,-(all DA).

These five segments are basically similar; they all are narrow subtidal segments along the banks of the Coos/Millicoma riverine system. Biological values are of lesser or even minimal importance (20 C and 20 D) and are limited to migratory fish passage. Past alteration is extensive in 19B, 20C and 20 D.

Planned uses include log handling, barge loading, docking and access to upland water dependent development: these areas' chief resource capability is for shallow draft access to adjacent uplands. Permitted uses include: docks, mining/mineral extraction (19B only, and only when not interfering with moorage and log storage), utilities, minor navigational improvements, pilings and dolphins, navigation aids (not 20C or 20D), and vegetative stabilization.

With the exception of vegetative stabilization, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit. Vegetative stabilization is appropriate where structural measures are unnecessary, and is also consistent with the resources of the area, where part of the bank is left undeveloped, and with the purposes of a Development unit.

Segment 20 CA

This subtidal segment consists of the Coos and Millicoma rivers outside the 50-foot-wide channel. It is important for striped bass and salmonid habitat, though containing none of the features which would require a Natural management unit.

Its principal purpose is for recreational use and log storage/transport, while protecting fish habitats. Uses include: docks, log handling, recreational facilities, high intensity utilities, maintenance dredging, minor navigational improvements, and

pilings/dolphins. All these uses are connected with the primary purposes of the segment. Maintenance dredging may be necessary to maintain access to log storage areas; minor navigational improvements will probably involve mostly removal of snags and other obstructions. Utilities will be subject to DEQ approval, and thus impacts should be minor.

All these uses/activities will have minor impacts on the primary resource, which is fish habitat, and will involve little alteration. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 21 CA - Catching Slough

This segment consists of mostly a subtidal channel with narrow fringe tidal flats and minor marshes; its primary resource is as an important fish rearing habitat for striped bass and salmonids.

It is to be managed for "rural upland uses, while protecting aquatic resources" [see Management Objective]. Permitted uses include: docks, recreational facilities, maintenance dredging of existing facilities (some small private docks), minor navigational improvements (to remove obstructions and shoals in the channel), and pilings/dolphins.

These uses are all consistent with the purpose of the area (rural upland uses), and will not involve significant impact on the fish resources or major alteration. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4 a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 21 A NA - Catching Slough

This segment consists of tidal flats and scattered salt marshes of major habitat importance in Catching Slough. The flats are important for salmonid rearing and also contain a clam bed; the salt marshes are chiefly important as remnants of a once-vast area of marsh.

Uses include: aquaculture, low intensity utilities, mitigation and passive restoration. Aquaculture in this area could utilize and enhance its natural productivity. The type and intensity of operation would be governed by ODFW permit.

Low intensity utilities involve such minor impacts, mostly temporary, that they are consistent with the resource. The segment contains designated mitigation sites. Mitigation will enhance biological productivity and water quality, and is therefore consistent with the resource. All of these uses will ensure continued habitat protection

and productivity. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 23 DA

This area has minimal biological importance. Its primary resource capability is that it is deep water close to shore, and its purpose is for access to upland water-dependent uses.

Permitted uses/activities include: docks, recreational facilities, utilities, minor navigational improvements, pilings and dolphins, navigation aids, and vegetative stabilization. These uses are ancillary to water-dependent moorage and access, including recreational facilities, which are also appropriate in WD shorelands. Vegetative stabilization is appropriate on undeveloped sections of bank where structural measures are unnecessary. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segments 24 NA and 25 NA

These areas have similar resources of major importance, including tidal flats and extensive salt marshes. They are also important for clams, crustaceans, salmonid feeding/rearing and shorebird/waterfowl habitat.

Permitted uses/activities include: aquaculture, low-intensity utilities, mitigation and passive restoration. Aquaculture in these areas could utilize and enhance their natural productivity. The type and intensity of operation would be governed in part by ODFW permit. Utilities, like communication tower supports, have very minor, mostly temporary, impacts, and are consistent with the protection of these resources. Mitigation can enhance these resources and water quality, and is therefore consistent. Because they protect habitat and enhance productivity, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 26A CA (Marshfield Channel)

This segment consists of the subtidal natural Marshfield Channel, which is planned for continuation of historic shallow-draft navigation and log storage. Biological resources consist of a passage for migratory fish. There are no benthic or attached vegetation resources due to currents. The primary resource capabilities of this segment are as a channel for shallow-draft navigation and as a channel for fish migration.

Permitted uses/activities include: log handling, low-intensity recreation facilities, high-intensity utilities, maintenance dredging minor navigation improvements and pilings/dolphins. Most of these uses/activities are ancillary to the primary purposes of the segment. Recreation facilities must necessarily be undeveloped because of the location of the segment. Maintenance dredging and minor navigational improvements will continue to be necessary to keep the channel at its natural depths.

As they involve only minor alteration of the estuary, all uses and activities allowed in the segment (other than those for which resourc capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 26B CA (Tidal flat south of Marshfield Channel)

This segment consists of a tidal flat with biological resources of "less than major" importance. The principal resources are feeding/rearing for salmonids and starry flounder. There are also clam beds of Tellina and Macoma species, which are of minimal recreational importance. This area also adjoins the Marshfield Channel and is immediately east of the deep-draft channel, with war upland adjacent which is "especially suited to water-dependent use". The resource capability of the area is two-fold: it has minor importance for fish habitat, and it is an access area to the adjacent upland for water-dependent development. It is proposed primarily for marina development. [See Exception #20, where an Exception is taken to the "consistency" language in Goal #16 for the proposed marina].

Permitted uses include: docks, log storage, low-intensity recreation facilities (boat ramp), high-intensity utilities, maintenance dredging, minor navigational improvements and pilings/dolphins. All these uses are ancillary to future marina development, except log storage, which is an interim use. Following dredging and development of a marina, there will be considerable disturbance of natural habitats [see Exception #20 for impacts]. Taking this into account, the ancillary uses would have no additional impacts.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 27 DA: Lower Isthmus Slough:

This segment is considered "partially altered" by past log storage ar pile-driving activity and by run-off from dredge spoil disposal. It is also needed for development of water-dependent uses on the adjace

'ESWD' upland. The area contains mud flats with some juvenile salmonid use and Macoma/Tellina clam beds (which are of minimal recreational importance). However, these resources are affected by past alteration and are secondary in importance to the primary resource capability of the area, which is as an ideal access between the deep draft channel and prime "ESWD" uplands.

Permitted uses include docks, mining/mineral extraction (only if not in conflict with moorage), recreational facilities, utilities, minor navigational improvements, pilings/dolphins, navigation aids and vegetative stabilization. Most of these uses/activities are ancillary to the primary purpose of the area, (shipping access to the ESWD uplands for water-dependent industrial development). Recreational uses (water-dependent) are regarded as a subsidiary use. Vegetative stabilization would be appropriate for any parts of the shoreline that remain undeveloped.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segments 28A DA and 28 B DA [Lower Isthmus Slough]

These segments consist of mainly subtidal sections of Lower Isthmus Slough, with some minor tidal marshes. Much of these two areas is considered to be of "minimal biological importance". The remainder is substantially altered by past log storage activity, by wood debris, or former diking. Biological activity is greatly limited by poor water quality, and consists of fish passage during migration. The resource capability of the area is primarily as deep water close to shore for access between the shallow and deep-draft channels and uplands designated for water-dependent uses; it is also proposed for continued log storage.

Permitted uses include: docks, mining/mineral extraction (where not in conflict with industrial acccess), recreational facilities, utilities, minor navigational improvements, pilings/dolphins, navigation aids and vegetative stabilization. Most of these uses are ancillary to the primary purpose of the segment. Recreation facilities are regarded as a secondary use in conjunction with uplands that permit them. Vegetative stabilization is appropriate for parts of the shoreline that remain undeveloped.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 29 NA ("Kennedy Field").

This segment is a partly diked (breached) large tidal flat of roughly 60 acres with ±8 acres of low salt (silty) marsh adjacent to the east. It was used for many years as a site for log storage, and is

now proposed as a high priority mitigation (enhancement) site (U-40). Kennedy Field provides habitat for crustaceans as well as two clam species (Macoma and Tellina) that have little recreational importance. A power line support structure (low intensity utilities) presently exists in the segment.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 30 CA - [Mid - Isthmus Slough]

This segment contains primarily subtidal areas which are of lesser biological importance. The primary biological resource is as a migration passage for salmonids and striped bass. There are also some areas of amphipods and minor Macoma/Tellina clam beds. The primary purpose of the area is subtidal log storage/transport, which is also part of its resource capability.

Permitted uses include: water dependent commercial uses and docks (both excluding fill), log handling, recreation facilities, utilities, maintenance dredging, minor navigational improvements, and pilings/dolphins. These uses/activities are basically ancillary to the primary purpose of the unit, except commercial and recreational uses.

The permitted uses/activities will not impact the biological resources of the area, or cause major alteration. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 31 NA and 34 NA, Upper Isthmus Slough, Davis Slough, Shinglehouse Slough

These segments contain biological resources of major importance, including tidal flats, aquatic beds, extensive salt marshes, and important fish habitats (salmonids and striped bass). The resource capability of the area is as a highly productive natural area. Permitted uses/activities include: aquaculture, low intensity utilities, mitigation and passive restoration. Findings for these uses/activities are the same as for other similar Natural segments: [see Segments 10 and 11].

Segment 38 CA (Coalbank Slough)

This segment contains biological resources of lesser importance. It is primarily a subtidal natural channel with minor tidal flats, aquatic beds, fringe marshes and minor clam beds (softshell) in the lower section. The main biological resource is a navigation route for

salmonids. Its resource capability is two-fold, both as a migration route and as a shallow-draft channel suitable for moorage of small craft. The segment is proposed for a small marina and continued log storage in the lower part, and for resource protection in the upper part.
Permitted uses/activities include: Commercial, docks, industrial and port facilities (all without fill), marina, recreation facilities, utilities, maintenance dredging, minor navigational improvements, and pilings/dolphins. Most of these uses are ancillary to the primary uses in the segment. Commercial/
industrial uses are secondary uses which could not involve fill, and would complement similar uses of shoreland segment 42UD. None of these uses would involve major alteration of the estuary: dredging of a marina with associated uses would not impact the biological resources of the area, since these are limited mostly to fish passage.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 39 NA (Coalbank Slough Marshes)

This segment consists of two marshes of major resource importance. They are proposed for resource protection and enhancement.

Permitted uses/activities include aquaculture, low intensity utilities, mitigation, active restoration and vegetative stabilization. Utilities like power line supports would have very minor impacts on the resource. Mitigation is specifically proposed in the segment and will enhance biological productivity. Aquaculture in this area could utilize and enhance its natural productivity. The type and intensity of operation would be governed in part by ODFW permit.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segments 43 DA, 44 DA, 46 DA and 47 DA (Coos Bay/North Bend Waterfront)

These segments are all considered to be of "minimal biological importance" and have "deep water close to shore". Therefore, their primary resource capability is as access between the deep channel and the shorelands (most of which are "ESWD").

Permitted uses/activities include: docks, mining/mineral extraction (where not conflicting with navigation/moorage), recreation facilities (in 44 DA and 46 DA), utilities, minor navigational improvements, pilings/dolphins, navigation aids and vegetative stabilization. These

uses/activities are all ancillary to the primary purpose of these segments, with the exception of mining/mineral extraction and recreational facilities, which are secondary uses which would not conflict with primary uses. Vegetative stabilization would be consistent for parts of the shoreline that are not developed.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 45NA [Upper Bay]

This segment consists of large expanses of tidal flat and associated channels, with tidal marshes, a biological resource of major importance. Eel grass beds, clam beds, fish habitats (salmonids, starry flounder) and waterfowl habitats are also important. The resource capability of the area is as a highly productive environment

Permitted uses/activities include: aquaculture, low intensity utilities (e.g. pipeline for spoil disposal) mitigation and passive restoration. For consistency findings see similar segments, eg. 15 N and 17 NA.

Segment 45 A CA [subtidal area off Coos Bay/North Bend Waterfront]

This subtidal segment contains biological resources of lesser importance only (primarily the outer fringe of clam beds and amphipod/salmonid feeding and rearing areas). Its primary resource capability is as a subtidal area adjacent to the deep-draft channel well-suited to log storage.

Permitted uses/activities include: log handling, low-intensity recreation facilities, low intensity utilities (e.g., pipeline for spoil disposal on nearby spoil islands), maintenance dredging (to ensure access to log storage areas), minor navigational improvements and pilings/dolphins. These uses/activities are mostly ancillary to the primary purpose of the segment, and to appropriate dredged material disposal, and will involve only minor alteration to the estuary. Recreation facilities will essentially be undeveloped, because of the segment's location.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 48 CA (North Point)

This segment consists of tidal flats and a subtidal area of lesser biological importance. There is some use by juvenile salmonids and flat fish as well as Macoma/Tellina clams and some crustaceans. The

purpose of the segment is basically protection of these resources, as water-dependent industrial uses of the adjacent upland are not expected to require any large-scale alteration of the estuary.

Permitted uses/activities include: recreation facilities, utilities, minor navigational improvements and pilings/dolphins. Due to the low level of alteration required and the relatively minor biological importance of the area, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 50 NA (Pony Slough)

This segment contains biological resources of major importance, including tidal flats, aquatic beds, salt marshes, clam beds, high concentrations of crustaceans, and flat fish habitat. It contains the highest concentration of winter waterfowl in the bay. The segment is proposed for protection of the natural resources.

Permitted uses/activities include: aquaculture, low intensity utilities, mitigation and passive restoration. Aquaculture could utilize and enhance the natural productivity of this area. The type and intensity of operation would be governed in part by ODFW permit. Utilities (such as power line supports) would have minimal impacts (mostly temporary) on the resources. Other permitted activities would actually enhance resource production, subject to ODFW/DSL review. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 51 CA - (off North Bend Airport)

This segment consists of a mainly subtidal area with minor amounts of tidal flat/aquatic bed. A large part of the segment is regarded as a "partially altered area". Biological resources are generally of lesser importance. A small area around the boat ramp at the mouth of Pony Slough contains Macoma/Tellina clams, amphipods and flat fish habitats. This segment is intended for an improved boat ramp/dock and maintenance of natural resources in the rest of the area.

Permitted uses/activities include: docks (not on fill), recreation facilities, utilities, maintenance dredging, minor navigational improvements, and pilings/dolphins.
Because they would involve only minor alterations and impacts on the resources, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 51 A DA - In-water DMD area off airport

This segment is an altered area previously used for subtidal DMD. The only permitted use (other than DMD) is navigation aids, as necessary to mark the DMD site. This activity is consistent with the resources of the area and purpose of this type of Development unit.

Segment 52 NA - Lower Bay

This segment contains considerable biological resources including some areas of major importance, including tidal flats, aquatic beds, salt marshes, clam beds, habitat for salmonids, flat fish and striped bass. It also supports large numbers of waterfowl and shorebirds. The purpose of this segment is management to protect resource productivity. Two designated mitigation sites are in this segment. Aquaculture, also a permitted use, could utilize and enhance the natural productivity of the area. The type and intensity of operation would be governed in part by ODFW permit. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 52 A DA - North Bend Airport extension

This segment is proposed for fill to allow extension of the North Bend airport. [See Exception #21]. Uses permitted include: utilities and vegetative stabilization, which are consistent with the development of the airport runway and the purposes of this type of Development unit.

Segment 53 CA - North of Empire Docks.

This segment contains biological resources of lesser importance, including subtidal areas, tidal flats and aquatic beds, some crustaceans, fish habitats (salmonids and flat fish), and some clam beds, the extent of which is not great. The purpose of the unit is to protect these resources and allow continued subtidal log storage. The resource capability of the area relates to these biological resources. Permitted uses/activities include: log handling, low intensity utilities, maintenance dredging (of the log storage area), minor navigational improvements and pilings/dolphins. These uses will involve only minor impacts or alterations and will not interfere with conserving the relatively less important resources of the area and the purposes of a Conservation unit.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 54 DA and 56 DA [Empire Dock and Sitka Dock]

These segments contain some small areas of biological resources of lesser importance (aquatic beds and clam beds): these are one minor aspect of their resource capability. However, an Exception has been taken to place them in Development units and take advantage of their considerable resource capability for moorage and access to 'ESWD' shorelands, namely deep-water close to shore. Most of these segments is also considered of 'minimal biological importance' due to previous alteration and navigational use.

Permitted uses/activities include: docks, marina, mining/mineral extraction, recreation facilities, utilities, minor navigational improvements, pilings/dolphins, navigation aids and vegetative stabilization. Mineral extraction is only permitted where not in conflict with navigation/moorage. Marina development includes construction of a protective breakwater and dredging, as necessary.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segments 55 CA and 59 CA - Subtidal areas off Empire/Barview

These segments consist of biological resources of considerable importance, however, not of such major importance that they require the protection of a Natural management unit. The great commercial value of the subtidal clam beds in Segment 59 is the principal resource in these segments and constitutes the major part of the resource capability. The shallow sections of these segments also support salmonid rearing/feeding and herring spawning. The purpose these segments is to harvest clam populations and allow low-intensit recreational uses consistent with the conservation of other resource

Permitted uses/activities include: docks (55 A only), recreational facilities, low-intensity utilities (plus maintenance of sewage plan outfall in 55 A), minor navigational improvements and pilings/dolphins.

Because they will involve only minor impacts and alterations to the estuary, all uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity wate dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segments 55 B NA, 57 NA and 58 NA - Intertidal areas of Empire/Barvi

These segments consist of intertidal habitats of major biological importance, including tidal flats, aquatic beds, rocky intertidal areas, major recreational clam beds, fish habitats, including salmo

and herring areas, and important waterfront/shore bird areas. These areas will be managed for continued public access and protection of their considerable natural resource capability.

Permitted uses/activities include: aquaculture, low-intensity utilities, mitigation and passive restoration. Aquaculture can enhance and utilize the biological productivity of these segments. Low intensity utilities will cause minor, mostly temporary impacts. Mitigation will actually enhance resource values, subject to review by DSL and ODFW. A designated mitigation site is situated in Segment 55 B and adjacent to Segments 58 and 59. Vegetative stabilization can improve water-quality and habitat values.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 60 CA - Barview Wayside

This segment contains a small section of an area of major biological importance, including a narrow tidal flat and subtidal aquatic beds. Clam beds are also present. This segment has some limited biological resource capability. However, its major capability is as a suitable location for a public boat launch facility, due to the fact that the tidal flats are narrow and sufficient depth of water exists adjacent to the shore. The purpose of the segment reflects this capability.

Permitted uses include: docks (not using fill), recreational facilities, low-intensity utilities, maintenance dredging, minor navigational improvements and pilings/dolphins. New dredging is also permitted, but this is justified in an Exception [see Exception #5].

All these uses are ancillary to development of a public boat ramp and dock and involve only minor alteration to the estuary. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 60 A NA - adjacent to Barview Wayside

This segment contains an area of major biological importance including tidal flats and subtidal/intertidal eel grass beds. Clam beds and fish habitats (salmonids and flat fish) also exist in the segment. The purpose of this segment is to protect the considerable biological resource capability of the area.

Permitted uses include: aquaculture, low-intensity utilities, mitigation and passive restoration.

Due to the similarity of resource capability and uses/activities,

findings are the same as for segments 55 B, 57 and 58.

Segment 61 DA - Hansen's Landing

This segment consists of a variety of resources: certain areas are part of biological resources of major importance, including tidal flats and aquatic beds. Other sections are considered "partially altered" by past moorage activity, although some clam beds remain in the area. Other parts are considered to be of minimal biological importance, and the "deep water close to shore" is the principal resource of the area. An Exception has been taken [see Exception #6], to allow a Development unit in the area, and utilize the deep water characteristics (while minimizing degradation the South Slough) for shallow-draft access to water-dependent shoreland development.

Permitted uses/activities include: docks, mining/mineral extraction, recreation facilities, utilities, minor navigational improvements, piling/dolphins, navigation aids and vegetative stabilization. These uses are all ancillary to the primary purpose of the segment except mining/mineral extraction which is only allowed when not in conflict with moorage.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 63 A NA - Joe Ney Slough

This area consists of biological resources of major importance, including tidal flats, saltmarshes and extensive eelgrass beds. Salmonid habitat is important in the western part. However, the primary resource capability of the area is as a site for oyster-culture, due to the good water quality, which is the primary purpose of the segment.

Permitted uses/activities include: aquaculture, low intensity utilities, mitigation, active restoration and vegetative stabilization. Aquaculture is especially suited to this area's resources, subject in part to ODFW permit approval governing the type of operation and compatibility with existing oyster culture. Low intensity utilities would have very minor (mostly temporary) impacts and are consistent with protection of natural resources and aquaculture. Mitigation would enhance resource productivity and water quality.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 63 B CA [Indian Point marina site]

This segment contains natural resources of major importance, including

tidal flats, salt marsh and subtidal eelgrass beds. Salmonid use als occurs in the area, together with clam beds (Macoma/Tellina species). However, this small bay is also ideally suited to a recreational marina, due to its sheltered position and easy access to a shallow draft channel. An Exception has been taken [see Exception #7] to designate this area "Conservation" and permit a dredged marina.

Permitted uses/activities include: commercial, docks, recreational facilities, low-intensity utilities, maintenance dredging, minor navigational improvements and pilings/dolphins. None of these uses may utilize fill.

All these uses/activities are ancillary to the primary purpose of the area and will not involve major alteration of the estuary beyond the initial dredging needed for the marina. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 63 C NA [South Slough north of Sanctuary]

This area contains biological resources of major importance, including tidal flats, small salt marshes, subtidal/intertidal seagrass/algae beds, extensive crustacean and recreational clam beds, juvenile salmonid feeding/rearing areas and waterfowl habitat. The area also contains some oyster culture, and will be managed to maintain the considerable natural resource capability.

Permitted uses/activities include: aquaculture, low-intensity utilities, mitigation and passive restoration. There is a designated mitigation/restoration site in the area.

Findings are the same as for Segment 63 A NA because of the similarity of resources and uses.

Segment 63 C2 DA - Oyster processing facility -- Charleston

This is a subtidal channel, partially altered by past dredging/diking activity, used for access to an oyster processing facility. The primary resource capability is as a channel for barge access to the facility.

Permitted uses/activities include: docks, utilities, minor navigational improvements, pilings/dolphins, navigation aids and vegetative stabilization.

These uses are all ancillary to the primary purpose of the segment. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 66 A DA [Charleston Boat Basin]

This is an area which is of minimal biological importance, within the Charleston boat basin. Its primary resource capability is as a shallow-draft commercial/recreational moorage with access to shoreside water-dependent uses.

Permitted uses/activities include: docks, recreation facilities, utilities, maintenance dredging, minor navigational improvements and pilings/dolphins.

These uses are all ancillary to the primary purposes of the segment. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Segment 66 B CA ("Coastal Acres").

This segment contains various resources of some biological importance, including tidal flats, aquatic beds, productive recreational clam beds and juvenile salmonid habitat. The area has resource capability both for its recreational clamming importance and for its suitability to shallow draft moorage. This is due to its access to the shallow draft channel, and its closeness to the ocean and existing boat basin.

Permitted uses/activities include: aquaculture, docks, recreational facilities, utilities, maintenance dredging, minor navigational improvements and piling/dolphins.

These uses are ancillary to the recreational aspect of the segment. All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 67 CA - (South Jetty)

This segment contains similar resources to segment 1 CA on the other side of the navigation channel . They are not generally of major biological importance, except for the razor clam bed, which is unique in the bay. The segment is proposed for maintenance and repair of the jetty, breakwater construction and protection of the razor clam bed. The natural resource capability of the segment is related to the razor clam bed, use of the area by migratory salmonids, and the large number of other recreationally important fish species using the area.

Permitted uses/activities include: recreation facilities (low-intensity), low-intensity utilities, maintenance dredging (to maintain access to the jetty), minor navigational improvements and pilings/dolphins.

These uses would all involve only minor alterations and impacts on t resources of the area. All uses and activities allowed in the segme (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a, that is, high-intensity water-dependent recreation, aquaculture, log storage dredging and bulkheading) are therefore consistent with the resource capabilities of the area, and the purposes of a Conservation Unit.

Segment 67 A DA [In-water DMD area]

This area is proposed for an emergency in-water dredged material area, due to its depths and currents carrying the materials out to sea. Findings are the same as for Segment 51 A DA.

Segment 69 NA [South Slough Estuarine Sanctuary]

This segment contains substantial natural resource s of major importance, including tidal flats, salt marshes, aquatic beds, clam beds, oyster culture and major feeding grounds for juvenile salmonids and other fish. Waterfowl use the entire area. The natural resource capability of the area is very substantial, and is protected by the Plan and by its inclusion in the South Slough Estuarine Sanctuary.

Permitted uses/activities include: aquaculture (restricted by special condition), low-intensity utilities, mitigation, active restoration and vegetative stabilization. All use/activities are subject to review by the Sanctuary Commission to ensure compatibility with the Sanctuary's Management Plan as well as by ODFW permit process. Aquaculture exists at present, and as conditioned is restricted to low impact oyster culture (stake or bottom-culture) on a 100-acre total area. Low-intensity utilities would have very minor (mostly temporary) impacts on the area. There are several mitigation/restoration sites in the area. These activities (plus vegetative stabilization) would enhance productivity and water quality, subject to DSL/ODFW review.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resource capabilities of the area and the purposes of the management unit.

Authorized Channels

These segments are proposed for continued maintenance dredging and possible future deepening. Permitted activities include: minor navigational improvements piling/dolphins and navigation aids.

All uses and activities allowed in the segment (other than those for which resource capability consistency findings have been deferred in accordance with Policy #4a) are therefore consistent with the resou e capabilities of the area and the purposes of the management unit.

2.7 Coastal Shorelands Goal (#17) "Linkage" Findings

2.7.1 Introduction

Goal #17 requires certain findings for most categories of uses in rural coastal shoreland areas. Specifically, water-dependent commercial and industrial uses and all water-related uses are only permitted upon a finding that these uses:

> "satisfy a need which cannot be accommodated on shorelands in urban and urbanizable areas".

Furthermore, land divisions and "other uses" (i.e. non-dependent/related) are only permitted upon a finding that they:

> "satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas, and are compatible with the objectives of this Goal to protect riparian vegetation and wildlife habitat".

These findings, which establish that no alternative sites are available, may be made in two ways:

(i) Here, in the Plan "Linkage" findings, or
(ii) During implementation, prior to County permit issuance.

The Plan will make findings for these uses only where they are specifically provided for in the Management Objective as a part of the overall purpose of each shoreland segment. Other uses/activities which are listed in the Uses/Activities matrix are only permitted subject to the appropriate findings, during Plan implementation [see General Conditions attached to specific uses/activities].

For instance, if the Management Objective intends an area for water-dependent industrial/commercial uses, the Plan will make the appropriate findings for these uses, and these are therfore allowed outright. Water-related or non-dependent/related industrial/commercial uses are also permitted in the Uses/Activities Matrix but only when appropriate findings are made during implementation.

Other findings required by Goal #17, for example, compatibility with riparian vegetation and wildlife habitats, cannot be made in a general way in the Plan. These findings must also be made during implementation, as required by "General Conditions" attached to uses in each segment.

Findings are therefore made on a segment-by-segment basis as follows.

2.7.2 Site Specific Findings

Segments 3E WD, 5WD and 6WD.

These segments are considered together because they are part of the

North Spit water-dependent industrial complex. Management Objectives state that these segments are intended for the following uses:

3E WD - Water-dependent/related commercial or industrial development
5WD - Water-dependent industrial complex
6WD - Water-dependent development associated with adjacent non-water-dependent uses outside the shoreland boundary.

These uses are proposed on the North Spit because of:

(i) The closeness to the deep-draft channel.
(ii) The advantage of location in the lower bay below the railroad bridge which may in future limit the size of ships entering the upper bay.
(iii) The advantages of location in the lower bay due to lower channel maintenance.
(iv) The lack of large, vacant, relatively level sites in urban/urbanizable areas in the lower bay with access to the channel.
(v) The relatively limited waterfront available to the deep-draft channel for the one large vacant site that does exist in an urban area (Port's Eastside property), together with the advantages stated above of location in the upper bay.
(vi) Existing uses; e.g. Roseburg Lumber Dock.

For these reasons, there are no adequate alternative sites for future water-dependent/related commercial/industrial uses in urban or urbanizable areas. In addition, Segment 3E WD permits sand mining as a non-water-dependent/related use. There is no upland or urban/urbanising area alternative because the sand resource here is especially plentiful, of high quality for glassmaking, and needs to be removed to prepare parts of the site for future development.

Segment 7D

This segment is proposed for non-water-dependent/related industrial uses as an expansion of the existing pulp plant, on the condition of no adverse impact to the adjoining aquatic area. This segment is an integral part of an existing industrial use (pulp plant) outside the Coastal Shorelands Boundary. Provided future use is, as specified, for expansion of the existing use, there is no practical alternative site in an upland or urban/urbanizing area.

Segment 12 RS

This segment is proposed in part for continuation and expansion of an existing boat-works and marine ways, a water-dependent industrial use. This small site is appropriate for limited expansion of the existing use. There is no practical alternative site in an urban/urbanizing area because this is the expansion of an existing use.

Segment 14 WD

This segment is proposed for barge loading of jetty rock. This use must be provided for here because:

(i) The source of jetty rock is nearby.
(ii) The rock must be transported by water to reach the jetty because of lack of suitable road access.
(iii) It would be economically prohibitive to truck the rock to a site in an urban/urbanizable area and then barge it to the jetty, because of the relatively much lower costs per mile, and much more direct route, associated with water transport.

Therefore, no practical alternative urban/urbanizing shoreland site exists for this particular use.

Segment 16 WD

This segment is proposed as a future water-dependent industrial site for log storage and transport.

This site is selected because of its unique locational characteristics. It is:

(i) Close to the owner's (Weyco) timber lands, reducing the distance necessary to haul the logs by road before transfer to the water.
(ii) Located close to a natural channel which has sufficient depth to enable transport of log rafts with minimal maintenance dredging or minor navigational improvements.
(iii) Located close to Weyco Mill in North Bend via the Cooston Channel.

An upland site is needed for this use because of the limited amount of subtidal area available for in-water log storage and restrictions on intertidal log storage. Future expanded log storage therefore will need increasingly to go on land. The only other site on the Cooston Channel which would have suitable characteristics is Christianson Ranch, but this has great suitability for a larger space user. It is also in a rural area. There is no site in an urban/urbanizable area with the same favorable characteristics as this site.

Segment 19D

This segment is proposed primarily for water-dependent/related industrial uses. Specifically, it is proposed for an integrated water-dependent/related wood products manufacturing and processing complex. Raw materials (logs) would be brought in (in part) by water, and the finished products or processed materials (like chips) would be barged out from the site.

This site is well-suited for this type of use because of its location

on the shallow-draft channel with direct water access to a log dump on Coos River, a major source of raw materials. The only vacant site with water access on the Upper Bay within an urban/urbanizing area the Port property north of Eastside.
This site would not be suitable for the use proposed because it would be more efficiently utilized for activities which require deep-draft access to the shore. Log transport only requires shallow-draft shore access and a shallow-draft channel. Use of this site for the uses proposed at Christianson Ranch would unnecessarily tie up valuable deep-draft channel frontage and back-up land. Christianson Ranch also is the only site with adequate size (152 acres) to fulfill the needs of a large wood-products manufacturing/processing complex. The Port's Eastside property is smaller (117 acres) and would be less suitable for this use.

Therefore, there is no suitable location for this use within urban/urbanizing shorelands.

See Exception #19 for Exception to Goal #3 to permit industrial development on agricultural lands.

Segments 20A, 20B, 20C and 20D: (all WD) [Coos/Millicoma Rivers]

These segments are considered together because they are all proposed for expansion of existing, or other, water-dependent/related uses:

20A	-	Tug and barge facility or water-dependent/relat uses generally
20B	-	Rock products trans-shipment
20C and 20D	-	Sorting and transfer of logs

As all of these are existing uses, other sites in urban/urbanizing areas are not considered feasible, and expansion of operations is appropriate within the limits of these small segments.

However, see Exception [#19] to Goal #3 to permit industrial development on agricultural lands for Segment 20B, which is not fully committed to industrial use.

Segment 28D [outside Eastside city limits]

This segment is proposed for a continuation of existing uses and expansion of commercial/industrial uses. This part of the segment is dominated by the existing Coos Head Mill. Redevelopment or expansion of this use is considered appropriate, together with any associated uses. This segment is, in effect, urbanized, even though it has not been placed in Eastsides' Urban Growth Boundary. It lies adjacent to the shallow-draft Isthmus Slough Channel, an appropriate location for a water-dependent mill or other water-dependent/related use.

Additional findings would have to be made for non-water-dependent/related uses [see Policy #14].

Segment 32D - Isthmus Slough

This segment is proposed for expansion of industrial/commercial use, including non-water-dependent/related uses if they do not preclude water access. This segment is currently a mixture of uses, including a disused mill site, log storage, truck shops and diked pasture. The pasture is a designated DMD site. After disposal, it can be converted to non-agricultural uses [see Exception #19 to Goal #3]. The segment is already semi-urbanized, but has not been placed in a UGB, partly because urban-level services are not needed for the anticipated uses. This site is well-suited to access to the shallow-draft (natural) channel for log storage and transportation. As with Christianson Ranch, there is a site at the Port's Eastside property which is vacant and could be put to this use, but this would needlessly tie up valuable deep-draft water frontage. Shallow-draft frontage available at the Eastside property is needed for marina development.

Therefore, there is no suitable alternative site in urban/urbanizing areas for water-dependent/related uses on a shallow-draft channel. Non-water-dependent/related uses are appropriate on this site because of its location next to Highway 101, the principal road through the County. Truck shops associated with the logging and wood products industry have located in this segment and elsewhere in the area along Highway 101 because of its locational advantages. This is one of the most central locations in the County with optimum road access to logging operations in every direction. Alternative upland locations on the other side of Highway 101 are steep and difficult to develop. Alternative urban locations like the industrial property north of Eastside would forego the ease of highway access which is unique to this site. Similarly, upland locations in Coos Bay/North Bend could be used, but again the locational advantages of the site would be lost, and in any case, upland industrial sites in these cities have a higher value for other types of industrial uses, and are not well-suited to logging-related uses. It is very unlikely that uses of this type would locate in urban areas away from this highway corridor.

Therefore, there are no reasonable alternative upland urban/urbanizing locations that would reasonably accommodate this type of use.

Segment 63A CS

This segment proposes a municipal reservoir in the area of diked pasture above the head of tide (tidegate and dike on Joe Ney Slough). Although non water-dependent in the normal sense of the term (requiring access to the estuarine water body for transportation, recreation, energy or souce of water), it is considered water-dependent because the dam and associated works have to be located at the site of the existing dike to separate fresh from estuarine water.

There is no alternative site within an urban/urbanizing area, because Joe Ney reservoir is proposed as a back-up to the Pony Creek System, and this is the most suitable site. Other possible sites in the area, like the existing Tarheel and Fourth Creek reservoirs, have potential

for industrial water supply and are in private ownership. They may not be of sufficient quality for domestic use in any case. A domest reservoir is more appropriately located in a rural area in any case.

Segment 64 CS

This segment proposes only one specific development -- expansion of an existing oyster processing facility. This use is water-dependent aand needs to be located here because of the existing water access and closeness to South Slough oyster leases. It is, in any case, immediately adjacent to, and in character with, the Charleston urbanizing area. This use has no urban/urbanizing alternative site because it is existing and this location is uniquely well-suited to it.

Segments 9CS, 11RS, 13BRS, 15RS, 17RS, 21RS, 30BRS, 31RS, 32D, 69NS

These segments contain restoration sites which are also inventoried as "significant wildlife habitats" or "archaeological sites" under Goal 17. The following findings establish that mitigation or active restoration will be consistent with the preservation of natural values.

Site M-9(a): This is partly freshwater marsh, partly abandoned cranberry bog. Wildlife habitat values are typical for freshwater marshes, e.g., for heron, egret, rail, red-winged blackbirds and li species. Resident duck species may use the area for nesting. Restoration to tidal influence will probably cause a gradual change in vegetation to brackish-water species like Lyngbye's sedge and bulrush, some of which are already in parts of the site. A change in vegetation of this type and tidal fluctuations will not have any significant impact on existing wildlife use, because the desirable characteristics which attract these species, (prey species, cover, food plants), will remain. Therefore, mitigation or active restoration is consistent with the preservation of natural values.

Site M-22: This is partly marginal pasture, with upland grasses and shrub and partly freshwater cattail marsh. Active restoration will probably cause a gradual change to brackish water vegetation, such as Lyngbye's sedge and pickleweed. Wildlife habitat values are as for Site M-9(a) above. There are no other special wildlife values. The same general conclusions may be drawn about the effects of active restoration or mitigation as for Site M-9(a).

Site U-1: This site is thought to contain an Indian cultural site, as a burial has been found nearby. Active restoration action would require removal of a sand berm which is blocking tidal action in the site. There may be an archaeological site in this area. Should mitigation/restoration be proposed at this site, Policy No. 18 would be applied, which would only allow the action to occur upon notification of the local tribal council and upon demonstration tha the site would not be impacted. Therefore, it may be concluded that such action will not occur unless it is consistent with the preservation of natural values.

Site U-9(a): This site is presently freshwater marsh with typical species like cattails and bulrush and also Lyngbye's sedge which is more typical of brackish marsh. Wildlife use is primarily by heron, egret, rail, red-wing blackbirds and other typical species. There may be some nesting by resident duck species. Active restoration will cause tidal fluctuation and probably a gradual change in vegetation to brackish species such a Lyngbye's edge. Therefore, the same general conclusions may be drawn about the effets of mitigation/active restoration as for Site M-9(a).

Site U-11: This site currently has a mixture of fresh and brackish marsh vegetation, due to leakage through a tidegate. Wildlife use is typical for freshwater marshes (heron, egret). There are no other special habitat characteristics. Active restoration would cause tidal fluctuation and probably a change to brackish marsh species such a Lyngbye's sedge. Therefore, the same general conclusions may be drawn about the effects of mitigation/active restoration as for Site M-9(a).

Site U-29(b): This site is currently freshwater marsh and swamp with typical species such as cattails, bulrush, alder and slough sedge. Wildlife use probably includes red wing blackbirds, rails and other typical fresh marsh/swamp species. There are no other special habitat characteristics. Active restoration would cause tidal fluctuation and probably some vegetation changes to brackish marsh species like Lyngbye's sedge, though some other species like bulrush would probably remain. There might be some loss of alder, as they are not very brackish water tolerant. The same general coclusions may be drawn about the effects of mitigation/active restoration as for Site M-9(a).

Site U-51(b): This site is currently fresh marsh, although there appears to be some saline intrusion. Vegetation is typical of fresh marsh (cattails, bulrush, slough sedge, possibly Lyngbye's sedge). Wildlife use of this extensive (16 ac.) marsh is primarily herons, rails, red wing blackbirds and typical prey species such as rodents and frogs. As the surface is covered by emergent vegetation, the marsh is not generally used for waterfowl resting and feeding, though resident duck species may use it for nesting. Active restoration would cause some tidal fluctuations, although as the site is at the high marsh level, they would normally be small. Vegetation composition would probably change toward a greater proportion of brackish water species like Lyngbye's sedge, although some species like bulrush would probably remain. Removal of the dike would cause water levels during the winter and spring runoff season to be lower. Although the aquatic regime would change, vegetational changes would probably not be drastic and the marsh would continue to function as habitat for existing species due to the continuation of prey species, food plants and cover. Therefore, it may be concluded that mitigation/active restoration would be consistent with the preservation of natural values.

Site U-45(b): This site is very similar in vegetation and habitat values to Site U-29(b). Mitigation/restoration would cause similar changes, although losses of alder could be more extensive. Therefore,

the same conclusions may be drawn about the effects of mitigation/active restoration as for Site U-29(b) and M-9(a).

Site U-44: This site is partly pasture grass, partly bulrush and cattail freshwater marsh. Only the latter area is considered a Goal 17 marsh. Wildlife use is typical for freshwater marshes (red wing blackbirds, rails, herons, egrets). As for Site 51(b), resident duck species may use the area for nesting. Mitigation/restoration actions would cause minor tidal fluctuations, and probably lower water levels during winter/spring run-off due to removal of the dike. Vegetational changes would probably occur in the fresh marsh with an increase in brackish water species like Lyngbye's sedge, although some existing species like bulrush would remain. The same conclusions may be drawn about the effects of mitigation/active restoration as for Site 51(b).

Site SS1(b): This site is within the South Slough Estuarine Sanctuary, and contains a mixture of salt marsh and fresh marsh species, principally, bulrushes and cattails with some sedges. Removal of the dike would cause increased tidal action and probably a gradual increase, at least in the lower end of the marsh, in brackish water vegetation (e.g., Lyngbye's sedge). Wildlife use is typical for fresh marshes (herons, red wing blackbirds, rails) and their prey species. Resident duck species use the area for nesting. The same conclusions maybe drawn about the effects of mitigation/active restoration as for Site 51(b).

3.0 EXCEPTIONS

3.1. Introduction

This section contains exceptions to the Estuarine Resources (#16) and Coastal Shorelands (#17) Goals which are necessary to justify certain decisions made by the Inter-Agency Task Force, as modified by the Local Officials Advisory Group. The Agricultural Lands (#3) and Forest Lands (#4) Goals also apply in shorelands areas, and exceptions are also taken to these goals in a few cases.

Goal #2 (Land Use Planning) states that when, during the formulation of the Plan, and the application of the goals to those decisions, it appears that:

> "it is not possible to apply the appropriate goal to specific properties or situations"

then an Exception must be taken. The goal goes on to say that "compelling reasons and facts" must be set forth showing why the goals cannot be applied in this specific case. Findings must address the four considerations below:

"(a) Why these other uses should be provided for;
(b) What alternative locations within the area could be used for the proposed uses;
(c) What are the long-term environmental, economic, social and energy consequences to the locality, the region or the state from not applying the goal or permitting the alternative use;
(d) A finding that the proposed uses will be compatible with other adjacent uses" (LCDC Goal #2).

Exceptions in this Plan are of three basic types:

(i) Aquatic Management Segment Designations: Exception to Goal #16 language specifying the type of management unit an area should be in.

(ii) Aquatic Management Segments, Uses/Activities: Exception to Goal #16 language specifying the types of uses and activities allowed in a particular management unit, or requiring that certain uses only be allowed in conservation or natural management units where "consistent with the resource capabilities of the area or the purposes of the management unit".

(iii) Shoreland Management Segments: Exception to Goal #17 language specifying uses or resources to be protected. Also, exceptions to Goals #3 and #4 requirements for protecting agricultural and forest lands.

Some exceptions are specific to a single site; others may cover several sites, but propose the same type of use or activity. Some

exceptions contain two parts: that is, they take exception to two specific provisions in the goals - or even to two different goals. [See, for instance, North Bend Airport Exception, which has two parts: (i) to allow an area of major tidal flats to be placed in a development management unit, and (ii) to allow fill to be used for a non-water-dependent/related use (airport).]

3.2. Site-Specific Exceptions

EXCEPTION #1 Segments #3DA, #5DA and #6DA - North Spit Waterfront

A) The Proposal: To place these segments in development management units.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to these particular segments. Therefore, an exception is required. The exception is to language requiring part of these segments to be placed in a conservation management unit, because it contains clam beds, tidal flats (less than "major" extent) and subtidal areas shoreward of -15 feet MLLW which are of importance as fish habitat, including juvenile salmonid feeding/rearing. Note: These segments below -15 feet MLLW are considered areas of "minimal biological importance needed for uses requiring alterations of the estuary" and "deep water areas adjacent to the shoreline". These areas may be placed in a development management unit according to LCDC Goal #16.

C) The Findings

(i) Why these uses should be provided for

A development management unit is needed in these three segments to allow for dredge, fill and other necessary actions to develop deep-draft access to prime water-dependent development shorelands.

Segment 3DA provides access to the Port of Coos Bay North Spit Marine Industrial Park development, which is likely to include a trawler basin, fish processing and bulk loading facilities for coal, wood chips, oil and other related activities. Segment 5DA provides access to Henderson Marsh, which is proposed for a water-dependent wood products manufacturing complex in the long term, and for marine construction as a short-term use. Segment 6DA provides for access to the shore in addition to the existing wood chip loading dock on Roseburg Lumber Company property. The North Spit has been identified (see Economic Activities, Section 5.8, Site Selection) as the only site available with size and water-dependent characteristics suitable for future land needs for coal, polymetallic sulfides/manganese nodules, water-borne transportation and a large-scale pulp mill. Large vacant acreages with deep-draft channel frontage are in short supply.

Certain areas of the shoreline in these three segments are proposed to be altered by the placing of bulkheads, behind which backfill would occur, when necessary and appropriate to new development projects on the sites. An August 10, 1983 letter from the Oregon International Port of Coos Bay explains the importance of bulkheading and backfill:

> The Oregon International Port of Coos Bay strongly supports the bulkhead and backfill alternative as the preferred alternative for harborline development on the North Spit. Bulkhead and backfill provides the maximum usage of the property and will best serve the needs of people of the Bay Area.
>
> Bulkhead and backfill offers the following advantages:
>
> 1. Provides the greatest versatility in cargo handling capacity.
>
> 2. Creates the safest working environment through the elimination of access ramps.
>
> 3. Lower maintenance costs as a result of some simplicity of design and minimal number of components.
>
> 4. Lower operation costs by creating the most efficient movement of cargo from shoreside to dockside.
>
> These are but the obvious advantages from the use of bulkhead and backfill construction. The Oregon International Port of Coos Bay supports bulkhead and backfill primarily because it produces the most cost efficient combination of construction and operation, and it will tend to minimize the proliferation of single purpose or limited purpose facilities. This will reduce the number of facilities necessary along the economically and environmentally valuable shorelines.
>
> The Oregon International Port of Coos Bay recognizes that mitigation for inter-tidal filling will be necessary, but we feel that this is a necessary cost to provide the most viable alternative for dock development.

Without a development management unit which allows dredge, fill and other necessary alterations, these sites could not be used for water-dependent activities.

As additional support for the findings above, the Oregon Economic Development Department has submitted the following information (copies of the referenced letters are included within the CBEMP Inventory, Section 5.8.3):

The planned pierhead line along the Port property is consistent with the preferred wharfline alternative recommended in the North Bay Marine Industrial Park EIS (U.S. Army CORPS, 1981, p. V-11).

The reasons for selecting that alternative (distance to channe reduced existing and maintenance dredging, consistency of wharfline along the Port's property, etc.) remain valid.

The Port plans a 2000 foot multi-purpose dock and terminal at the north end of their North Spit property. This facility will be designed for deep draft ships, heavy load cranes, on site rail and storage, and efficient marshalling and storage from immediately adjacent back up area. Load criteria for the dock structure and backup area should be 800 - 1200 psf (pounds per square foot) live load, which could be provided by the planned bulkhead and fill design. (Klampe, CH_2M Hill, letter of November 10, 1983.)

Bulkhead and fill design for this facility will also allow for a considerable reduction in construction costs. Although it is technically feasible to build a dock strong enough by pile and deck construction, such alternative construction would cost over $40 million more that the $20-25 million bulkhead and fill planned, and would make the project financially unfeasible. (CH_2M Hill, letter of November 10, 1983.)

The bulkhead and fill construction planned is not only the most cost effective to construct, it also allows the most cost effective servicing of vessels, and the greatest versatility in cargo handling capacity. Reliance on use of a service ramp fr shoreside to vessel is cost ineffective and will limit the typ of industry and shippers who will develop at the North Spit facility, thereby limiting the Port's economic development efforts.

For example: Use of access ramps for the loading of lumber on a vessel (as opposed to the bulkhead-type dock design) would increase labor requirements by a minimum of 10 percent. In addition, the ramp design would limit production capacities to less than 60,000 bfm (board foot measurement) of lumber per gang-hour, while current vessel-loading equipment can attain production levels of 85,000 bfm. Combined effects of the increased labor costs and limited production capacities would have a definite effect on the loading of lumber. For example, a 4 million bfm loading of lumber with limited production rates would increase costs a minimum of 25 percent greater than necessary. (This does not take into account additional ship time costs due to delayed sailing time.) (John Brands, Central Dock, letters of 11-10-83 and 11-15-83; Gene Bailey, International Longshoremen's and Warehousemen's Union, North Bend, letter of 11-10-83.)

Bulkhead and fill docks, which provide full width access and ampl adjacent backup lands, also create the safest working environment by eliminating the need for access ramps and constraints on cargo movement. (Gene Bailey, ILWU, letter of 11-10-83.)

Conclusion - These management units must be placed in a development category to provide access to the uplands for water-dependent activities.

(ii) Alternative Locations

As mentioned above, the location of these Development units is governed by designations on adjacent uplands. Therefore, alternative upland locations together with adjacent water areas should also be addressed.

Alternative aquatic development units which do not require an exception include:

(a) Coos-Bay/North Bend Waterfront
(b) Lower Isthmus Slough
(c) Charleston Boat Basin

None of these areas have significant vacant acreages on the adjacent shorelands, except the Eastside Port property. As stated above, this site has limited shore frontage and also limited back-up acreage.

Alternative aquatic Development units which would require limited Exceptions include:

(a) Empire Waterfront, and;
(b) Sitka Dock.

Empire waterfront contains very limited vacant land. Sitka Dock has 65 acres available, but has been identified as a possible site for oil and gas processing and is too small for the uses expected on North Spit.

Other alternative sites would not have deep-draft access, either because no channel exists or because deep-draft moorage is not feasible [e.g., the North Point site, which is not suited to moorage because of its location between the road and railroad bridges]. Other sites on the deep-draft channel could be developed, but only at the expense of major tracts of tidal flat, marsh, etc. that must be in Natural management units.

The only other substantial site on the deep-draft channel is the Port's Eastside Property (117 acres, plus 65 acres east of White Point), which is needed for marine construction and related activities. This site has several disadvantages:

(a) relatively short frontage on the deep-draft channel;
(b) great distance from the channel entrance;
(c) height and width constraints for ship passage through the Southern Pacific railroad bridge;
(d) unsuitable overland access to the site for bulk transportation or other heavy vehicles.

Conclusions - There are no suitable alternative sites for the types of uses proposed for the North Spit uplands. There is a compelling need for the adjacent uplands to be designated for water-dependent industrial uses.

(iii) Consequences

a) Environmental - Environmental consequences are likely to be as follows: extensive dredging of subtidal and intertidal habitats; filling of certain intertidal/subtidal areas. The consequences of this, prior to mitigation, would be a net loss of surface area. This will lead to a net loss in habitats for fish, including feeding/rearing areas for juvenile salmonids, herring and anchovy, smelt, English sole and other flat fish. However, this is not to say that, after development, these species will not continue to use the area, although it is reasonable to assume that fish use will be less. Nevertheless, with mitigation this will not result in a net loss of habitat. Benthic resources like amphipods and other crustaceans and gaper clam beds, with some Macoma and Tellina clams, will also be removed by dredging and filling. It should be pointed out that this stretch of shoreline is devoid of attached vegetation because of erosion and scouring due to swift currents. [see Biological Resources Inventory, Section 4.2, p.42].

Only the area shoreward of -15 feet MLLW is considered to be of biological importance. Deeper subtidal areas have reduced light penetration and therefore minimal benthic resources exist.

Mitigation for intertidal dredge/fill activities will be requir[illegible], and will off-set the environmental impacts, though not necessarily in the same habitat type or part of the bay.

The two proposed 800-foot long T-piers, whose location within zoning district 3 DA will not be precisely established until time of permit application, will be constructed on "fat cell" steel sheet piles that allow for greater load bearing capacity than timber piling while still permitting flushing of the aquatic area. Since the sand-filled cells supporting the piers will be located at the yet-to-be-established pier head, the major impact of this small fill will be in the subtidal areas below -15 MLLW, which are not considered to be of biological significance.

The proposed maximum length 2000-foot bulkhead out to the pier line would require a backfill of approximately 18 acres, depending on the size of the final structure, its location within zoning district 3 DA, and the distance from shore to be established for the pier head. Much of the fill will take place in subtidal areas, since the portion of the North Spit aquatic area proposed for development contains the least extent of intertidal habitat of any undeveloped waterfront of similar size in the entire bay. In addition to the fill, dredging of the remaining subtidal area between the bulkhead and the channel, which is already below -[illegible] MLLW, will be necessary to provide for ship berthing and dock access.

Intertidal area (tidal flat with sand substrate) expected to be lost to fill and dredging is approximately 6 acres. Expected lost

subtidal area identified as "Other Significant..." habitat in ti Plan Inventory is approximately 6 acres. According to CH_2M Hil no intertidal dreding is necessary. Remaining alteration inclu 450,000 to 500,000 cy of dredging of subtidal area to reach the navigation channel, and 100,000 cy of subtidal fill for the sheetpile cells. The 500,000 cy of dredge spoils will be used fill the backup area. No additional DMD site would be needed. (Klampe, CH_2M Hill, 11-10-83.)

Available mitigation sites that are expected to prove suitable because of size, proximity and restoration potential include si M-1(a) and M-1(b), which are spoils islands along the Barview/Empire waterfront of roughly 5 acres each. At a 1:1 correspondence, restoration of these sites would more than mitigate the loss of the 6 acre intertidal area. Alternatively the proposed 32 acre fill for the North Be airport runway extension include intertidal fill of appr mately 15 acres. Mitigation contemplated for that project is the scalping down t tidal influence of thespoils islands identified as mitigation s M-5. If full restoration of site #M-5 results in mitigation greater than eventually required by Division of State Lands, th excess mitigation acreage can be banked to serve as partial mitigation for the subject fill actions in 3 DA.

Flow velocities in the immediate vicinity of the project would likely increase slightly because of the channeling effect of th bulkehad. The effect, if measurable, will likely be of short distance and is expected to have a small beneficial effect on maintaining proper depth for the deep draft channel, which is immediately proximate and already subject to scour from swift currents.

The impacts of dredge and fill must be minimized as a condition permit issuance [see Policy #5, "Estuarine Fill and Removal".]

b) Social and Economic

The social and economic benefits of developing these units and adjacent uplands are likely to be very great, both for Coos Cou and the South Coast as a whole. Ultimately, benefits will also accrue to the State. Benefits are numerous and can be summari as follows:

(a) Increased employment;
(b) Decreased drain on public funds for unemployment benefits, etc.;
(c) Increased tax revenues to County (property tax) and to State (corporate tax, income taxes);
(d) Extensive secondary economic effects through local multiplier: more money in circulation leading to increased business in service and retail sector;
(e) Decrease in secondary social stresses related to poo economic conditions.

The alternative (no development) would leave Coos County little opportunity to diversify its economic base, leading to a worsened local economy as the lumber and wood products industry is affected by decreased lumber supplies in the next two decades. Social and economic costs of developing these aquatic units are almost negligible.

c) Energy Consequences

The principal benefit of dredging in this area is that the water depth increases rapidly to the deep-draft channel, which is relatively close to shore. There is also scouring by currents, preventing the deposition of sediments. This would therefore be one of the least expensive places in terms of energy to dredge, and more importantly, to maintain. The energy benefit of closeness to the channel entrance is also tangible. Should there be a need to deepen the deep-draft channel in future to accommodate larger than 35-foot draft ships, a lower bay location will save substantial dredging/maintenance costs in the order of millions of dollars.

Conclusions - The environmental, social, economic and energy consequences are generally beneficial. Environmental impacts are at an acceptable level.

(iv) Compatibility with Adjacent Uses

A development designation is, of course, highly compatible with the adjacent upland designation (Water-Dependent Development). It is similarly compatible with the deep-draft channel. There are natural management units at the south and east ends of these segments. However, existing developments at Ore-Aqua (aquaculture) and Roseburg Lumber lie adjacent to the contact between the segments, making further extensive development very unlikely. Future alteration will be minor (more pilings for tie-ups at Roseburg Lumber) and therefore the existing uses act as a buffer between the natural areas at Jordan Cove and Hungryman Cove.

Future dredge/fill actions must minimize impacts (see Policy #5) which will help ensure compatibility.

Conclusion - The proposed uses are compatible with adjacent uses/areas.

EXCEPTION #2 Segments 20(A) DA and 20(B) DA (Coos River):

A) The Proposal: To place these segments in development management units.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to these particular segments.

Therefore, an exception is required. The exception is to language requiring these areas to be placed in a conservation management unit, because it is an intertidal/subtidal area which does not fit either the development or natural classifications. The remaining Coos River/Millicoma River, apart from the shallow-draft channel and two log-handling areas, is in a conservation unit (20 CA). These two areas have existing development on shore, but have not been altered sufficiently to qualify as "partially altered areas" which might thereby be placed in a development unit.

C) The Findings

(i) Why these uses should be provided for

A Development management unit is needed in these segments to permit dredge, fill and associated activities to allow:

(a) Continuation and expansion of barge/tug moorage at Segment 20 A;
(b) Future expansion of existing rock-loading facility at Segment 20 B.

The barge/tug facility has located near the mouth of Coos River because this is a prime location (good road access also) to operate log transportation activities on Coos/Millicoma Rivers. Log rafting is particularly intense in the lower Coos River area. Future expansion of this site is anticipated, with resulting dredging and bulkheading needs.

The rock-loading facility is needed because:

(a) it is already existing in a low-intensity form;
(b) barging is the most energy- and cost-efficient method o transporting rock;
(c) it is the only rock-loading facility available for rock quarried in the immediately adjacent uplands;
(d) much of the rock is used around the estuary for jetty repair, rip-rap, etc., and therefore needs to go by barge.

Conclusion - These uses should be provided for.

(ii) Alternative Locations

a) Barge/tug facility: This use needs a location on the shallow-draft channel used for log transportation, preferably in the lower Coos River. Other possible locations are Christianson Ranch or anywhere along the shoreline on the north or south side of the river up to the river forks. However, these locations would involve moving an existing facility. Also, Christianson Ranch is planned for other uses (lumber and wood products manufacturing). Other locations would probably cause more estuarine alteration than expansion at the present site.

b) Rock-loading facility: This use needs to be located near the rock quarries which are in nearby uplands. Other alternative locations could be found anywhere on the north bank of the lower Coos River or lower Millicoma River. However, this site already exists and moving to another site would probably involve more extensive alteration of the shoreline and aquatic areas.

Conclusion - There are no practicable or preferable alternative locations for these uses.

(iii) Consequences

a) Environmental

The physical/biological characteristics of these two sites are essentially similar. Both have steeply sloping riverbeds which drop off rapidly to the subtidal area. The bed is unconsolidated mud. Local hydraulic conditions are such that there is no attached vegetation. Fishery use is transient. Because of the steep banks, deep water immediately offshore, and the shallow draft of barges/tugs, little dredging will be required, so alteration will be minor in nature. Bulkheading of the banks is anticipated. This will change the character of the shores, but fill will not be allowed to create extra land area at the rock products site. Therefore, environmental impacts should be minor and are acceptable.

b) Social and Economic

Failure to create development units at these sites would not preclude their continued use because maintenance dredging is permitted for existing facilities in conservation units. However, new dredging for expansion would not be permitted. It is essential to the local economy that small existing uses like these, which together provide the necessary infrastructure of the Coos Bay economy (log towing, rock transportation, barging) be able to expand their operations as necessary. Social consequences are secondary to the economic consequences, but are intricately linked to the health of the local economy. [see Exception #1, Social/Economic Consequences].

c) Energy

These uses have occurred because water is the most energy-efficient mode of bulk transportation [for logs, rock, etc.] Fo instance, trucking of logs and rock the long distances to the point of use would consume more energy and would have secondary energy impacts in the more frequent repair of road surface damag caused by heavier trucking use.

Conclusion - The long-term consequences of these proposals are appropriately considered.

(iv) Compatibility

These two sites are adjacent to the shallow-draft channel, and t log storage areas. Barging and tug facilit s are appropriate next to the channel and close to log storag .

Conclusion - These proposed uses are compatible with adjacent uses.

EXCEPTION #3 Segment 48 A DA - North Point

A) The Proposal: To place this 19.6 acre tidal flat in a Developme Management Unit to allow, first, filling of the lagoon with exce dredged material deposited on adjacent property, and second, water-depeendent industrial development on the resulting site.

B) The Exception: During the application of the Estuarine Resource Goal (#16) to the Plan through the 'linkage' process, it was fou that it was not possible to apply the Goal to this particular property. Therefore, an exception is required. An exception is proposed to designate the area as a Development management unit where it would otherwise be required by Goal #16 to be designate a Conservation unit because of the status of the area as one of "less than major" biological importance.

C) The Findings

(i) Why these uses should be provided for.

Intertidal fill is required in this area to provide for an adequate supply of available and serviced industrial land. The is a corresponding public need for the economic benefits which will accrue to the various taxing districts by virtue of preservation and enhancement of the area's tax base. There is also the public need and benefits which are associated with the increased employment and industrial diversification projcted to occur with full site development.

The total industrial site, including not only the 19.6 acre intertidal lagoon but also two former dredged material disposal

(DMD) sites on the east (34.4 ares) and the west (36.8 acres, sides of the lagoon, is located within an incorporated city, rt Bend, between the McCullough Bridge U.S. Highway 101) on the east and the Southern Pacific Railroad Bridge on the south and west.

Excepting the lagoon, the character of the site is gently rolling sand. It is essentially flat and rectangular. It can accommodat a wide variety of uses and development types with relative ease for planning and siting because of its regular shape. There are no physical impediments to uniform industrial development of the site except for the lagoon, which renders the western portion of the entire property inaccessible.

Parcels I and II (see map at conclusion of exception) are at an average mean sea level elevation of approximately twenty-five feet, based on preliminary engineering data. Both of these parcels were used for disposal of dredged material from the channel deepening project. The material is fine sand mixed with various shell types. The proposed 100-Year Floodplain elevation for the site are an elevation of 8.7 msl (mean sea level datum).

Parcel III is inaccessible in any manner other than rail because the configuration of the lagoon isolates it from roads and other urban services. Parcel I is served by urban services including, but not limited to: sewer, water, fire, and police. It als a highway and rail access. However, neither parcel can be ser d rail spur, according to the owner, until the elevatioms are lowered to reduce the maximum railroad grade to 2%.

The lagoon itself and the tidal flats along the northern border the property have very little slope. The surrounding shorelands have abrupt slopes (lagoon and bayside) resulting from depositio of dredged spoils.

The site has been identified as an essential site which is available to meet current and future land needs for industrial growth around the Coos Bay estuary. Where possible, the impact industrial development can best be controlled by proper planning and developmental administration of self-contained industrial parks. There are developmental, resource and energy economies o scale associated with the development of industrial parks versus development of individual industrial sites. These energy, resource and developmental savings are usually notable and demonstrable in industrial parks serving two or more tenants wit an initial gross acreage in excess of 50 acres. The site's usefulness would be greatly impaired by retention of the 19.6 ac intertidal lagoon. It is needed to help meet the identified nee for vacant industrial land.

The site is not "especially suited for water-dependent use" according to the criteria of Goal #17. The entire shoreline f the property abuts an area of extremely low slope tidal flats which extend to the very edge of the deep water channel. All of this area is shallow at high tide and exposed at low tide. This

means that to utilize the site for water-dependent uses would require either significant dredging or construction of large extended in-water structures, (or both), or the gaining of water access through easement across adjacent industrial property to the east. The shoreline portion of the site extends approximately one river mile, from the U.S. Highway 101 right-of-way (ROW) on the east to the Southern Pacific ROW on the west. This means that construction of in-water structures would require adequate separation from the existing bridges, which is not possible without significant dredging or encroachment into the navigation channel. Because of the bridges and the existing clearance problems, it would be ill-advised to consider construction of an in-water turning basin between the bridges. This creates further impediments to use of the site for water-dependent or related industry. Even assuming that the several physical limitations already discussed were subject to resolution, the prevailing strong Northwest winds would create great difficulty with operation of any docks or moorage at this site.

Despite these considerations, the property, if filled, has potential as a site for water-dependent uses through an access on the east under the U.S. 101 bridge to the waterfront of management unit #47 UW. That is a multiple use site at which the primary use is storage and transfer of rock products using the existing barge loading facility. The access under the bridge does not require at-grade crossing of U.S. 101, thus permitting the free flow of heavy, slow-moving equipment between the waterfront access and the subject site (48 UW/48 A DA).

The owner has identified two likely water-dependent uses for the entire site. Additionally, the site is also identified in the Economic Needs portion of the plan inventory as suitable and needed for water-dependent uses on at least a portion of the site.

Maintenance of the site in its present configuration and designation without the fill will limit the usable portion of a 90-acre site to approximately 30 acres. The fill is needed to preserve and provide for an adequate supply of vacant, developable, serviced and available industrial land. The fill is needed to create a parcel of adequate size and configuration to allow for the development of an industrial park with the attendant economy of scale which would occur. The fill is needed to meet present and future industrial land needs projections for the Coos Bay estuary area. The site and the fill are needed to preserve and enhance the tax base of the local community and the County. The site and the fill are needed to provide a basis for economic diversification in Coos County, which was classified as an economic emergency county. The combined on-site and off-site availability of transportation, rail and highway access, urban services, proximity to the North Bend Airport and the location of this large, unimproved, level parcel on a deep water development estuary represent a unique site specific resource compared to most other sites in the area.

Conclusion - The management unit must be placed in a develo ner category so that the intertidal lagoon can be filled with e excess sand from the surrounding uplands. This, in turn, will allow achievement of proper railroad grades on the spur lines full-scale water-dependent industrial use of the parcel.

(ii) Alternative Locations

a) Uses: The most successful foreign trade zones are th where the sites provide the largest combination of transportat mode and access to financial services and markets. Until the proposed new North Spit access corridor (see Exception #25) an attendant public service connections are completed, the North Point property provides the only site suitably large, with rai and highway access, and with public sewer and water necessary satisfy the needs of the proposed uses. The North Spit area, which has been identified as suitable for a variety of industr uses, could provide an alternative location when the rail line completed if the proposed industrial area is expanded.

b) Activity (Fill): The excess sand from dredged materi disposal (DMD) on the adjacent uplands can be removed and haul away by truck at great expense, not only for the fuel, labor a truck costs involved but also because a temporary bridge would have to be built across the lagoon to provide access to th western spoils area. Additionally, the already severe sho ag DMD sites (See Inventory Section 7) would be greatly worsened the fill occurred on a selected DMD site rather than in the lagoon.

Conclusion - There are no practicable or preferable alternati locations for the use or the activity.

(iii) Consequences

(a) Environmental - Parcel I, the subject site, is a 19. acre intertidal lagoon. According to the inventory documentat contained in the Plan, this site represents 3/10 of 1% of the intertial area of the estuary, not including the Coos and Millicoma River systems. The biological value of this site i based on its partial, natural restoration site abandonment of log rafting effort in 1973.

Due to the placement of dredged spoils on the upland portions of the site during the channel deepening project there was and is some degradation of the partially restored areas. This degradation resulted from spoils drainage incursion into the intertidal area and also from aerial transfer of sand (still occuring) into the intertidal area due to the prevailing winds. It is thought to be an area of low productivity.

This area contains primarily mud flats with some small salt marshes. Some clam species (Macoma & Tellina) are present, although not in high density. It is not recognized as a recreational clamming area. Fish habitat is primarily limited to feeding grounds for English Sole and some other flat fish. Crustaceans are mainly mud shrimp. Unlike the neighboring Pony Slough, the waterfowl use has not been found to be significant, although the rail line berm and the artificially high spoils areas currently provide greater protection from the wind to portions of the lagoon than does Pony Slough. The lagoon is not considered to be a major tract of tidal flats. The only other areas of the total site with any apparent biological significance exist along the northern fringe of the property where there are extended, low slope, tidal flats and a few small areas of salt marsh. None of the areas on the northern fringe of the property, inlcuding the small salt marsh at the northeast corner of Parcel III, are proposed for fill or alteration. These areas would continue their natural restoration process.

This lagoon was discussed during the planning process as a possible site for deposition of future dredged materials. The current fill proposal for this area would use dry fill material in a fully contained manner. The environmental impact of dry fill will be limited to the loss of the filled acreage. There will be no related or resulting effect on water quality, navigation, commercial or sport fisheries and/or areas of significant recreational value beyond the loss of 19.6 acres of limited productivity and a minute effect on the tidal prism. Dredged material disposal will not only have the same biological effect upon the tidal lagoon (loss of the lagoon) but there may also be some related (temporary) degradation of surrounding land and water due to placement procedure and runoff.

Because there has been discussion in the planning process about designation of the lagoon for Dredge Material Disposal (DMD), the Chief of Dredging Operations, Louis Smith and Nancy Case, Assistant, Portland District Office, U.S. Army Corps of Engineers were interviewed. The findings derived from these interviews are as follows:

1. There are no dredging projects currently proposed by the Corps of Engineers (Fiscal years 82, 83, 84) nor foreseen, which would occasion the use of this site for DMD.

2. A review of the past 10 years of dredging operations on the Coos River show that only special development projects

have produced dredged spoils which were usable for the subject site in terms of type, volume and cost of placement (disposal). Special development projects are non-maintenance projects such as channel deepening, the Port's "T" Dock and the Boat Basin expansion. The property owner has been advised that the spoils from the one currently proposed special development project (Workman) have already been dedicated elsewhere.

3. The channel, at the river mile locations of the subject site, is inan area of strong, natural scouring action which obviates the need for significant dredging near the property. The areas of historic maintenance (upper and lowe bay) are often dredged by techniques and equipment which preclude disposal on the subject site. Only certain types o dredged material are suitable for the site. The site is quite distant (river miles) from the sites requiring frequen dredging.

Conclusion: The site is not an area of major biological significance. The adverse biological impact of the proposed fill would be limited to the loss of 19.6 acres, or 3/10 of 1%, of the intertidal area of the estuary, which has been subject to multipl alterations and various forms of degradation, historically and in the recent past. The site is currently experiencing some in-filling due to aerial transfer of sand. The use of dry fill material will have less adverse impact than the use of dredged spoils. The area is a site of "less than major" biological significance. The fill would have no impact on navigation or navigability, water quality, stream or tidal flow. There will be a very small effect upon the tidal prism. The site is not a suitable site for use as a dredged material disposal area in the foreseeable future. These conclusions also recognize that a fill action for this property will require adequate mitigation measure which can be developed in the permitting process.

(b) Social and Economic - Failure to allow the lowering of the spoiled uplands through fill of the intervening intertidal lagoon will mean the loss of most of this potential industrial site. If fill is allowed, this will be a particulary valuable industrial site to the local economy when developed, because the site will have a rare combination (for vacant sites) of being serviced with public sewer and water lines, direct rail access, U.S. Highway 101 access, and waterfront access. Moreover, it would be of a size large enough to permit a variety of uses and configurations. Inability to fill the lagoon would mean the los of rail spur access because of the significant height differential, and the loss of the western 36 acres for industria use because of the great expense that would otherwise be required to provide road access to it.

(c) Energy - The energy consequences of this fill are related to developmental benefits. There will be an energy savings realized in the development of the site because of the

proximity of services, highways and rail access. The essentially flat and regular character of the site will produce energy savings in the site preparation process. Further, the use of fill to produce a developable site will be much less energy intensive than would any dredging associated with an effort to use the shoreline on the subject site, rather than the adjacent site, for water-dependent use.

Conclusions - The socio-economic and energy consequences of filling and developing this site for water-dependent use are positive and, subject to mitigation, the environmental consequences are acceptable.

(iv) Compatibility

Until 1914 the site was part of the extended Pony Slough system. During the period 1914 to 1916 the rail line and bridge were constructed. A combination of natural deposition and dreded spoils placement resulted in filling of the area east of the railroad ROW. The bulk of the site was acquired by the current owner in 1946. The site has had a variety of short term uses ove the intervening years. The uses were uniformly industrial and the principal use has been raw log storage. It was leased to another firm in the early 1970's. That firm tried to develop a log rafting pond on site, resulting in the current "lagoon" configuration. The log rafting pond was abandoned because of severe siltation, sedimentation and infilling problems. The leas was abandoned and the owner regained beneficial possession of the site. The owner has indicated a continuous desire to fill the lagoon area since the early 1970's. The upland portions of the site were used in the late 1970's for dredged spoils placement during the channel deepening project. The site is in an area which has been frequently altered by a combination of human and natural influences, and has a history of industrial utilization extending for more than forty years.

The upland portions of the site have been industrial in character since 1962. The adjoining lands to the east are in industrial us (bulk natural gas handling and storage facility and a combined sand/rock/gravel/asphalt operation). The land to the west of the rail spur on the southeastern portion of the property is Simpson Park. It is well buffered from the site by vegetation and vertical separation. The Pony Slough area is buffered by the Southern Pacific Railroad ROW berm.

Conclusion - The proposed use is compatible with adjacent uses. The site is adequately buffered from residential areas of the are and also from the Pony Slough area. The northern border area of the site will be undisturbed, and the proposed fill will be berme off to prevent incursion into the tidal areas north of the lagoon

AL PEIRCE COMPANY SITE SURVEY

LOCATED IN SECTION 10, TOWNSHIP 25 SOUTH, RANGE 13

SCALE: 1" = 400'

DATE: MAY 2

NARRATIVE THE PURPOSE OF THIS SURVEY IS TO ES... ACREAGES OF THE PARCELS SHOWN (PARCEL II BELOW ORDINARY HIGHWATER; PARCE... ABOVE OHW). THE METHOD OF DETERMINATION WAS BASED ON MEASUREMENTS OF THE HIGHWATER BOUNDRY (HIGHWATER ELEVATION = ?. TIDAL D... TIES TO THE EXISTING SOUTHERN PACIFIC RAILROAD RIGHT OF WAY AND SE... LINE AS SHOWN CONTROLLED ADDITIONAL PARCEL BOUNDARIES.

EQUIPMENT USED: WILD T-16 THEODOLITE WITH WILD DI4 E.D.M. - TRAV... AND ACREAGE COMPUTATIONS WERE PERFORMED ON A HONEYWELL 1800 MINI-COMPUTER

LEGEND

- - - - - - ORDINARY HIGHWATER BOUNDARY (O.H.W.) ELEVATION 6' TIDAL DATUM

ESTABLISHED AREA OF TIDELAND BOUNDARY

SCALE 1" = 400'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
RONALD E. STUNTZNER
1982

PARCEL III
36.8 AC ±

TIDELANDS
PARCEL II
19.6 AC ±

PARCEL I
24 AC ±

DESIRED BOUNDARY - NOT SURVEYED

OREGON COAST HIGHWAY
RIGHT OF WAY

COX BAY SUCCLE RIGHT OF WAY

Exceptions: 3.0 - 17a

EXCEPTION #4: Segments 54 DA [Empire Docks] and 56 DA [Sitka Dock

A) The Proposal: To designate these two segments as development management units to permit dredge, fill and other activities associated with moorage and access to water-dependent shoreland uses.

B) The Exception: During the application of the Estuarine Resources goa (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to these particular segments. Therefore, an exception is required. An exception is needed to justify putting parts of these segments in the development category, as they contain resources which would otherwise require they be placed in a conservation unit.

C) The Findings:

(i) Why these uses should be provided for

The Empire waterfront will continue to be used for barge and fishing boat access for unloading, and recreational access via the boat ramp near Holland Street. The narrow tidal flat adjacent to the shore may need to be altered at some time by dredging, fill or other activities necessary to develop shallow-draft access to the shore for expansion of existing uses in this area. The Sitka Dock area is currently vacant, and the land area has been set aside for general water-dependent uses, using the existing shallow-draft access. The bottom off the existing dock is naturally scoured to -20 feet MLLW, and no maintenance dredging is required. However, shoreward of this, dredging and blasting of a hard rock substrate will be needed to develop moorage or direct access to the upland. Similarly, fill or other activities may be needed to develop water access.Sitka Dock has been identified both as a site that is potentially suitable (after dredging and the construction of a breakwater) as a 14-acre in-water marina, and as a potential site (65 acres) for an oil and natural gas processing facility. This vacant acreage has been factored into the total needs for future economic development identified in Inventory, Section 5.8, Economic Activity.

Conclusion - These uses should be provided for because:

(a) Existing shoreland uses will need to expand, requiring dredge or fill to develop water access.

(b) Vacant sites are needed for future water-dependent development as part of the regional growth needs, requiring dredge and fill actions.

(ii) Alternative Locations

The Empire Docks is a historically long-established area for water-dependent development. There is no reasonable alternative to further expansion of these uses along the Empire waterfront. It might be possible to avoid dredge and fill activities in the narrow tidal flat fronting the shore by using pilings. However,

it will be necessary to bulkhead and fill to provide any type of storage and loading area of the type already in existence at Cape Arago Lumber Mill.

Sitka Dock was also historically used for a water-dependent mill. The fact that the dock still exists, and that there is ready access to the deep-draft channel, suggests that the alternative to developing this dock for moorage and access is to develop new facilities in an unaltered area elsewhere. Other planned moorage and docking facilities are not a viable alternative, because they are already part of the development proposal. It may be possible to avoid affecting the area inside, and north of, the dock, which contains the significant biological resources, by using only the side of the dock nearest the channel. However, this would expose the moorage area to strong tidal currents which occur in this area. Such a facility would b unacceptable to the community. A secure moorage could be developed by removing the existing pier, replacing it with a breakwater (fill) that would likely also be extended shoreward from the end of the present dock, and dredg g behind it to provide a sheltered area with sufficient de n for moorage.

Conclusion - There are no reasonable alternative locations to the proposed uses because:

(a) The sites have existing uses or facilities that should be expanded and improved.
b) Alternatives that do not involve fill or dredging would unnecessarily limit the options for use of the site ar greatly reduce their usefulness.

(iii) Consequences

a) Environmental

Dredge and fill at the Empire Docks site will lead to destructio or degradation of the habitats associated with the narrow tidal flat; crustaceans present include Corophium species and mud shrimp; fish habitats include English sole and other flat fish a juvenile salmonid feeding and rearing areas. In addition, deepe subtidal areas beyond about -16 feet MLLW contain gaper clam beds. These will not be affected by dredging because the depth great enough and is also well-scoured by tidal currents. Dredgi is only likely to occur in shallower subtidal and intertidal areas. Dredge and fill would eliminate benthic communities, and thereby severely limit the usefulness of the area for fish habitats. However, this area represents an insignificant proportion of these habitat types in the Lower Bay. As shown in the Goal #16 Linkage Matrix and inventory map "Estuarine Areas Qualifying as Development Management Units", the remainder of Segment 54 DA is considered an area of "minimal biological significance".

Dredge and fill at the Sitka Dock site will affect a more significant area. Much of the subtidal/intertidal area north of the pier is considered significant habitat, normally qualifying as a conservation unit. Habitats include: crustaceans (Corophium, ghost shrimp and mud shrimp), subtidal gaper clam beds and feeding and rearing areas for juvenile salmonids and flat fish. Dredging or fill will eliminate benthic habitats and will also severely limit fish use in the area, due to the reduction in food species. Again, the area involved is quite limited, and represents an insignificant portion of these habitat types in the Lower Bay.

Available mitigation sites that are expected to prove suitable include sites M-1(a) and M-1(b), spoils islands along the Empire/Barview waterfront. Although these sites are identified also as possible primary mitigation sites for dredge/fill actions proposed in management unit #3 DA, their restoration is expected to exceed by roughly 4 acres the mitigation required for 3 DA (at a 1:1 correspondence). In addition, scalping of site M-5 for the airport extension fill may also result in "excess" mitigation for that project which can be banked until needed for the subject sites.

b) Social and Economic

Generally, the social and economic consequences of developing these areas will be improved economic growth. The specific consequences will be the same as those listed for the North Spit development; see Exception #1.

c) Energy

The amount of energy needed for dredging to further develop shoreland access in these areas is minimized because of the relatively deep water and the narrow intertidal zone. In addition, strong currents keep the bottom well scoured, minimizing maintenance dredging. This will represent an energy saving, versus sites which require more intertidal dredging to develop access to the shorelands.

Conclusion - The consequences are mainly positive, and environmental impacts are acceptable.

(iv) Compatibility

These Development segments are highly compatible with adjacent uplands, because they permit more intensive water-dependent development. They are similarly compatible with the deeper subtidal sections of the same segments and with the deep-draft channel. Dredging and fill of the narrow intertidal area at Empire Dock would have negligible effect on the broad productive tidal flats to the south (Segment 55B NA) or the mainly subtidal area to the north (Segment 53 CA). Similarly, dredging and fill actions north of the pier at Sitka Dock would have negligible

effect on the valuable tidal flats in Segments 55B NA to the nort and 57 NA to the south. Subtidal areas would probably be temporarily affected by turbidity during actual operations. The Segment's Special Condition which requires impacts to be minimize during dredge and fill will help insure compatibility with neighboring resources.

Conclusion - The proposed Development management units are compatible with adjacent uses.

EXCEPTION #5 - Segment 60 CA - Barview Wayside

A) The Proposal: To construct a major public boat ramp and dock for transient moorage, involving new dredging and minor fill.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular property. Therefore, an exception is required. This Exception has two parts:

(i) To justify placing this aquatic area in a conservation management unit instead of a natural unit to allow the boat ramp.
(ii) To allow new dredging in a conservation unit to develop the ramp.

C) The Findings

(i) Why these uses should be provided for

A need has been identified in the Special Moorage Element for public access to the bay for small boats. The element identifie 14 sites for new or improved boat ramps, of which Barview Waysid is one. There is a need to maintain good public access to the water in all parts of the bay. There is an existing public boat ramp at the Charleston Boat Basin, but vehicle and boat congesti in the area and a lack of parking space limit its usefulness. This development is needed to take pressure off the Charleston boat ramp and relieve some of the congestion.

Dredging is needed to provide access from the boat ramp to the channel across the narrow intertidal area, and also to put in th ramp itself. As the tidal flat is at its narrowest point here, dredging will be minor only.

Conclusion - A site is needed in the Charleston area for a

public boat ramp to reduce congestion at the existing facility.

(ii) Alternative Locations

Alternative locations for the proposed use do exist in the Charleston area. Alternatives outside this immediate area of the bay would fail to provide for the need to reduce congestion in the Charleston Boat Basin.

Some of the possible alternative locations in the area are already planned for moorage or shore access for water-dependent commercial/industrial development. These sites include:

(a) Charleston Boat Basin itself;
(b) Hanson's Landing;
(c) The Coastal Acres property (Segment 66B) and adjacent area.

Other locations are possible, but the environmental impacts of dredge and fill would be greater, as would direct costs, because of broader expanses of intertidal area between the shore and a channel. These locations include:

(a) South side of Charleston bridge on west side of South Slough;
(b) Other locations on Barview Wayside;
(c) Near Pigeon Point off Cape Arago Highway.

In addition, residential development conflicts leave only a few realistic locations for shore access, of which Barview Wayside is the most suitable. The point of the upland nearest the channel has the best characteristics for a boat ramp/small dock because the intertidal zone next to the channel is at its narrowest here.

Conclusion - There are no better alternative locations for this use because of commitment to other types of development, lack of public shore access and greater environmental impacts.

(iii) Consequences

a) Environmental

This segment has been reduced to the minimum size necessary to support the boat ramp/small dock and has been located at the point nearest the channel with the least intertidal area, as explained above, to minimize environmental impacts. Natural resources include: part of a major tideflat and intertidal/subtidal eelgrass bed and subtidal clam beds (high concentrations, mostly of gaper clams). Fish habitats include rearing and feeding areas for juvenile salmonids and flat fish. There are no significant crustacean populations, however. Dredging and fill would eliminate benthic organisms and attached vegetation in the area; however, fish populations would probably continue to use the area though in lesser numbers locally. Benthic organisms and perhaps vegetation might be expected to recolonize the access channel between maintenance. Due to the small area which would be involved in this development, impacts on the resources of lower South Slough as a whole would not be considered significant.

b) Social and Economic

Socio-economic consequences mostly relate to improved opportunities for recreational use of the bay, and indirect consequences include less traffic and boat congestion around the Charleston Boat Basin. A related consequence is that there will be increased traffic turning movements, noise and other impacts related to increased public use in the immediate vicinity of Barview Wayside.

c) Energy

The energy consequences of this development are of minor importance. The only tangible effect would be that less energy would be expended in dredging this site than any other in the area because of the small amount of dredging required.

Conclusion - The social, economic and energy consequences of this proposal are positive. The environmental impacts will be relatively minor and acceptable.

(iv) Compatibility

This unit is highly compatible with the adjacent upland, which is uniquely well-suited to a public boat ramp, with flat land available for parking. It is also compatible with adjacent aquatic segments, the shallow-draft maintained channel and the adjacent Natural segment to the north and south (60A NA). Minor dredging will only have temporary impacts from settling of sediment on the adjacent tidal flats and their resources. The requirement that impacts of all dredge or fill actions be minimized [see Special Condition] will help ensure compatibility with adjacent aquatic areas.

Conclusion - The proposed segment and its uses are compatible with adjacent uses and resources.

EXCEPTION #6: Segment 61 DA - (Hanson's Landing/TAP Fisheries)

A) The Proposal: To place this segment in a development management unit to permit dredging, fill and related activities to maintain and expand existing moorage and access to the adjacent uplands for ship-building and repair.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular property. Therefore, an exception is required. This exception is needed to permit a development management unit in an area that would normally be in part a natural unit, and in part a conservation unit.

C) The Findings:

(i) Why these uses should be provided for

This area is the only large privately-owned moorage in Coos Bay, and is already substantially committed to this use. An additional five acres of water area is available to the north of Charleston Bridge near TAP Fisheries and to the south of the bridge at Hanson's Landing without dredging. Further space could be made available in future by reconfiguration of the pier and docks and by intertidal dredging. The Special Moorage Element (see Section 6.1) estimates that a further 76.5 acres of water area are needed to fulfill future recreational/commercial moorage needs. This area is currently used for both recreational and commercial boats. This segment could provide at least 5 acres of this needed water surface. Dredged marinas can be permitted in a conservation unit, and if this were the only purpose of the Hanson's Landing area, a development unit would not be necessary. However, access to the shore for boat-building, repair and similar industrial activities will be needed, together with dredge, fill, bulkheading, etc., and this will require a development unit designation.

Conclusion - There is a need for a Development unit to allow expansion of moorage and ship-building/repair.

(ii) Alternative Locations

Alternative locations up-bay would involve much longer distances to the channel entrance, and are not really comparable in convenience for commercial fishing vessels. It is also much more convenient to develop boat-building/repair facilities in the Charleston area because this is the major concentration of the commercial fishing fleet. Therefore, only alternative locations in the Charleston area should be seriously considered. The existing small boat basin is already fully developed to capacity. The "Coastal Acres" site is also planned for moorage to its full capacity. The docks immediately south of Coastal Acres have little opportunity for providing extra moorage space. The area around Barview Wayside is needed for public water access (see Exception #5 above), and the area immediately north of TAP Fisheries is a largely unaltered intertidal area. Environmental impacts would be similarly unacceptable on the opposite side of the channel from Hanson's Landing. This is a valuable natural area and recreational clamming site.

Conclusion - Hanson's Landing/TAP Fisheries area is the only logical site for a development unit for moorage and shore access, given the fact that other sites in the Charleston area are either reserved for similar uses to satisfy part of future needs, or would involve unacceptable impacts.

(iii) Consequences

a) Environmental

This segment contains a variety of estuarine resources whi[illegible] wo[illegible] be variously affected by dredge, fill, moorage or other mar[illegible]e activity. Part of the portion of the segment north of Charlest[illegible] Bridge contains part of the major tract of tidal flats and eelgrass beds that extends to the north. There are lesser trac[illegible] of eelgrass beds off the end of Hanson's Landing. The remainde[illegible] of the segment is considered either a "partially altered area" which is "adjacent to development of moderate intensity" and "needed for development", or an area of "minimal biological importance". These two areas correspond to the intertidal and shallow subtidal zones, respectively. However, in spite of th[illegible] alteration that has occurred here, they are part of a general [illegible] which contains several resources. Clam beds occur both intertidally and subtidally. Species include gapers, cockles [illegible] butter clams. Fish habitats include feeding/rearing areas for juvenile salmonids in the intertidal and shallow subtidal areas with flat fish north of Charleston Bridge. Waterfowl and wadi[illegible] birds use the flats south of the bridge. There are, however, [illegible] crustaceans present. Subtidal eelgrass beds occur generally throughout the segment, even in the "area of minimal biologica[illegible] importance".

Dredging would disturb benthic resources (clams and eelgrass), although some limited re-colonization might occur. Filling wo[illegible] eliminate estuarine resources, although this would occur i[illegible]h intertidal areas close to shore, and would therefore probab[illegible]y affect eelgrass beds which are mostly found in subtidal ar[illegible]s. Special Condition (see Segment 61 DA) prohibits fills that exp[illegible] the upland area, which reduces the potential impacts on estuar[illegible] resources. Fish use would not be eliminated by dredging, but would probably be reduced. Moorage development would probably also reduce shorebird and waterfowl use. Water quality would slightly reduced by oil leakage, etc., from additional boats moored in the area, or outfalls, subject, however, to the appropriate statutory controls. Mitigation for intertidal dre[illegible] or fill will be required to offset any impacts in this area.

b) Social and Economic

Development in this segment will help to ease the pressures on commercial fishing industry, which is the primary basis of the Charleston area economy and community. Providing better facilities for fishing moorage, boat-building/repair and fish processing will better prepare the area to meet the needs when improved fish stocks or a move into under-utilized species cau[illegible] an upswing in the fishing industry. This in turn will have beneficial socio-economic consequences for the Charleston/Barv[illegible] area.

c) Energy

Concentrating development here, close to the channel rather than further up the bay, will save on energy costs to the fishing fleet.

Conclusion - The socio-economic and energy consequences are positive. Environmental impacts will be relatively minor and acceptable.

(iv) Compatibility

This segment and its uses are highly compatible with the adjacent shallow-draft channel and development uplands. Where the segment adjoins Natural Segment 63C NA, there will be very little impact, because the natural channel requires occasional maintenance dredging only. Similarly, Natural Aquatic Segments 60A NA and 63A NA will only be affected temporarily by turbidity due to dredge or fill activities nearby. The requirement for dredge/fill activities to minimize impacts will help ensure compatibility.

Conclusion - This segment and its uses/activities are compatible with adjacent uses.

EXCEPTION #7 - Segment 63B CA - Indian Point Marina Site

A) The Proposal: To place this segment in a conservation unit to permit the development of a recreational marina, subject to Special Conditions in the Plan Provisions.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular property. Therefore, an exception is required. An exception is needed to create a conservation unit in an area of "major tracts" of tidal flats and eelgrass beds, which would normally be in a natural unit, and also to the language in Goal #16 requiring that "high-intensity water-dependent recreation" (i.e., a marina) is permitted in conservation units only where it is "consistent with the resource capabilities of the area". This finding cannot be made because of the impact that dredging would have on benthic resources.

C) The Findings

(i) Why this use should be provided for

The Special Moorage Element selects the Indian Point site as a "smaller potentially suitable site" for a recreational marina, with 6 acres of water surface available [p. Inventory 6.4-49]. There is a finding that future growth in commercial fishing and recreational boating will create a need to set aside an additional 76.5 acres of water surface for moorage [see p. 6.1-1]. Existing recreational moorage is at, or over, capacity. Indian Point has

been identified as specially suited for a marina, as part of an integrated recreational development, including housing and commercial uses, on the adjacent uplands. The special suitabilit of the area is due to its sheltered location from winds and tidal currents, its closeness to a natural channel which is deep en gh for recreational craft and the natural bay that exists.

Conclusion - There is a need for a recreational marina, and this site is especially well-suited to this use.

(ii) Alternative Locations

This site is the only one identified in the Special Moorage Element as suited specifically for recreational moorage. Four other sites were also selected for marinas:

- Pony Slough
- Coalbank Slough
- "Coastal Acres"
- Eastside Port property

These sites are suited for either recreational or commercial marinas. None of these sites have extensive associated uplands with attractive qualities which make it suitable for an integrate recreational development.

This type of use could locate anywhere in the Upper or Lower Bay but needs adequate access to the open water.

General areas which are unsuitable are the North Spit and Charleston, Empire, North Bend and Coos Bay waterfronts, beca e they are proposed for industrial/commercial use. Two other possible sites have been discussed by the Special Moorage Elemen but rejected. They are as follows:

- Sitka Dock - This site could be used for recreational moorage, but dredging would be costly due to the hard bedrock substrate. Also, high winds and currents woul require a solid breakwater, which would add considerab to costs. Also, the associated upland lacks the pleasant aesthetic qualities of Indian Point, which ma it suited to an integrated recreational project.

- East Pony Slough (North Point) Aquatic Segment 48A DA This site is considered unsuitable for a marina becaus of direct exposure to strong prevailing winds. It wou also require a great deal of dredging to form a channe and moorage area, and the adjacent uplands again lack any special suitability for recreational development. Large vessels have difficulty in negotiating the secti of deep-draft channel between the two bridges because the small margin of error in passing through the railroad bridge. For this reason, it would be inadvisable to develop a marina here, with the pos bl conflict with passing ship movements this would ca e.

In addition, during initial IATF review, a site in Segment 2 NA (Hungryman Cove) was rejected because of the substantial natural resource losses involved. Sites at Jordan Point (8 CA), North Bend (40 DA) and Coalbank Slough (38 CA) are proposed for moorage, but are very limited in the area available.

Conclusion - There are no other alternative sites which are better suited for a recreational marina, due to the relationship of the segment to the adjacent uplands.

(iii) Consequences

(a) Environmental

This is an area which would normally be placed in a natural management unit. It is part of a "major tract" of intertidal flats and subtidal eelgrass beds, with a fringe of salt marsh. Its importance is due to the presence of benthic organisms (crustaceans like Corophium sp. and ghost shrimp which are important food species for juvenile salmonids in the area). There are also clam beds (Macoma and Tellina spp.) and the area is part of an extensive feeding and rearing habitat for waterfowl and wading birds.

The extensive dredging required to construct a marina would remove benthic organisms and eelgrass, although there might be some limited re-colonization later. Due to removal of these resources, fish and bird use would be reduced in this locality. For these reasons, a dredged marina would not be "consistent with the resource capability of the area". However, Special Conditions [see Management Segment 63B CA) limiting the amount of dredging to the minimum necessary, and specifying that the marina be designed in such a way that the largest boats are moored nearest the channel, would minimize impacts on the resources. Further, jetties, breakwaters and other fill are not permitted. Adequate flushing to protect water quality in Joe Ney Slough and the South Slough Sanctuary is also required in the Special Conditions. This will also minimize the impacts of the development. Required mitigation actions will help compensate for the impact of dredging.

b) Social and Economic

Development of an integrated recreational complex at Indian Point will help to diversify the Coos Bay area economy and provide a number of new jobs to the community. Tourism and recreation is recognized as a source of new income to the area from additional tax revenues, from personal income and from the local economic multiplier effect for every dollar spent in the area.

c) Energy

The energy consequences of this development relate mostly to the costs of dreding and maintenance, versus other sites. As mentioned above under "Alternative Locations", dredging at Sitka Dock and East Pony Slough would be considerably more costly in terms of energy to provide a suitable marina site.

Conclusion - The social, economic and energy consequences are positive. Environmental impacts would affect an important resource locally, but Special Conditions limiting dredging, prohibitions on fill and mitigation requirements ensure that these impacts are acceptable.

(iv) Compatibility

This segment and its uses/activities are highly compatible with the adjacent uplands and have complementary qualities making them well suited to an integrated recreational complex, as discussed above. Adjacent natural units 63C NA and 63A NA may experience some temporary turbidity or minor sedimentation due to dredging. However, the requirement limiting dredging to a minimum will reduce such impacts. The shallower part of the segment, which requires more dredging, is within the bay and not contiguous with the adjacent natural units, which reduces potential impacts.

Conclusion - The segment and its uses/activities are compatible with adjacent uses and resources.

EXCEPTION #10 - Segments 11 NA, 18A CA, 20 CA, 21 CA, 30 CA, 31 NA and 38 CA

A) The Proposal: To permit minor dredging necesary to repair existing dikes and maintain tidegates in various locations around the bay with adjacent diked agricultural land.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to portions of these segments. Therefore, a two-part Exception is needed:

(i) to allow "new dredging" in conservation and natural segments, and

(ii) to allow dredging for a non-water-dependent use.

C) The Findings

(i) Why this use should be provided for

Diked farmlands are found adjacent to the estuary in a number of locations, primarily in Haynes Inlet, on lower Coos River and in Catching, Isthmus and Coalbank Sloughs. Tidegates have been historically used to enable upland runoff to drain from the field during the rainy season.

C) The Findings

(i) Why this use should be provided for

Diked farmlands are found adjacent to the estuary in a number of locations, primarily in Haynes Inlet, on lower Coos River and in Catching, Isthmus and Coalbank Sloughs. Tidegates have been historically used to enable upland runoff to drain from the fields during the rainy season.

It is necessary to do routine maintenance on existing dikes where erosion has undermined them causing subsidence into the water. It is sometimes also necessary to do emergency repair of a dike where erosion has caused a breach, or is about to do so. In many parts of the above locations, erosion is not a particular problem because roads run along the dikes, which are protected by rip-rap. In addition, on Coos River dredged material from maintenance dredging of the authorized channel has in the past been side-cast onto the adjacent pastures. After drying, this material could be available for dike miantenance. On Isthmus Slough also, material from maintenance dredging of log storage areas has been used to maintain adjacent dikes, protecting agricultural land. Similarly, in segment 18ACA, maintenance dredging in the Coos ton Channel can provide material for dike maintenance.

However, a particular problem remains in parts of Catching Slough and in Coalbank Slough where a dike was recently breached by erosion, causing flooding by brackish water which killed non-salt-tolerant forage. In these locations, dredged materials are not available. While the east bank of Catching Slough is riprapped for part of its length to protect the East Catching Slough county road, parts of the east bank and most of the west bank lack erosion protection. In addition, in most locations, there is no farm road access to or along the dikes to enable upland material to be trucked in to maintain or repair the dikes. This is a particular problem during the wet season when emergency repair is likely to be needed, when the ground is too soft to support heavy equipment.

It is very difficult to estimate the amount or frequency of dredging that may be necessary to properly maintain dikes and tidegates in the future. However, Coos County Extension Agent Lynn Cannon addressed this question:

> "It is essential that farmers carry out periodic maintenance operations of dikes and tidegates if (these) are to remain operable and keep the agricultural land they protect productive. The frequency of these maintenance operations can be dependent upon weather conditions and varies between sites, but usually are required at ten to twenty year intervals (Cannon, personal correspondence May 24, 1983)."

Conclusion

There is a need to dredge to maintain tidegates in the above natural and conservation units and for dredging for routine repa and maintenance of dikes on Coalbank Slough and parts of Catchin Slough. There is also a need to permit dredging to provide material for emergency repair of dikes that have breached or are about to breach due to erosion.

(ii) Alternative Actions

There is no realistic alternative to dredging to keep tidegates maintained and in good repair. Eventually, the area around the tidegate tends to silt in, and needs to be periodically dredged out.

Alternative sources of clean fill material for routine dike maintenance may exist in the adjacent upland areas. This materi may be more suitable than estuarine sediments for dike construction because it is drier and has more engineering stren and stability. However, fine estuarine sediments, when compare will normally resist erosion better. The use of upland materia will involve trucking to the dike, which is considerably more expensive than using a backhoe or dragline to dredge materials from beside the dike. Cost will vary, depending on such fa or as whether a source of upland fill is available nearby or on the landowner's property. Even if upland material is available at cost, the dike may not be accessible in all cases:

> "To reach the tidegate and dike areas involves travel acro the low-lying agricultural land which, for a good portion the year, is impossible due to soft soil conditions and ev during the dryer season would result in soil compaction" (Lynn Cannon, personal correspondence, May 24, 1983).

In such cases, it may be necessary to dredge with a barge-mount dragline or backhoe. However, some landowners have provided fa roads out to and along the dike which are usable by heavy equipment, except when failure of the dike has caused flooding.

One other alternative to dredging for dike maintenance is the u of rip rap, which is conditionally permitted in conservation management units. This may be necessary in the case of severe erosion, and is a more effective long-term solution. However, is considerably more expensive than the use of upland fill material, and is only a reasonable alternative for small areas repeated severe erosion or where more valuable improvements suc as a road or buildings need to be protected.

In the case of emergency repair of dikes due to breaching o imminent breaching, this will occur during periods of high rainfall, when access to the dike is impracticable due to soft ground or flooding. In such extreme cases, dredging is the

quickest and most-effective method of repairing the dike. In all instances, confining dredging to subtidal areas will minimize impacts (see "consequences" below) and remove the need for mitigation actions.

Conclusion

The use of upland fill material is a higher cost alternative which may be reasonable if a source exists elsewhere on the landowner's property. However, the dike may not always be accessible to heavy equipment due to saturated soils and lack of a rocked roadway. Maintenance may be undertaken during the dry season to minimize such problems. However, sometimes emergency repair may be necessary during the winter when the dike is inacessible. Therefore, in some situations, there is no reasonable alternative to dredging to maintain and repair tidegates. Subtidal dredging is preferred to intertidal because it minimizes impacts on the estuarine system and avoids the need for mitigation.

(iii) Consequences

(a) Environmental

Aquatic areas immediately adjacent to existing dikes are not generally among the most productive environments in the estuary. Frequently, the dike has sloughed off due to erosion and frequent sediment deposition has disturbed benthic communities. In other places, erosion is severe enough to transport the sediment downstream, leaving an eroded hole in the bank. In many places, where the bank is stable, fringing salt marsh communities have developed. This is most prevalent along Catching Slough where marsh vegetation in a natural management unit and dredging is not permitted. However, since this vegetation acts to stabilize the dike, there is no reason to undertake dike repair. Consequently, dike repair is likely to affect mostly disturbed environments. Similarly, dredging to maintain tidegates will remove recently accreted material which is of minimal biological value. A gradual cycle of erosion, deposition and dike repair is likely to continue, causing periodic water quality impacts (turbidity and possibly lowered dissolved oxygen) and minor disturbance of benthic communities as dredging occurs. The least expensive and most effective way to break this cycle is to establish a type of riparian vegetation with roots capable of stabilizing the dikes and resisting future erosion.

Environmental impacts will be minimized by limiting dredging for dike repair/maintenance to locations and situations where there is no reasonable alternative, such as using upland fill material or spoils from maintenance dredging of a channel or by storage area, and to subtidal areas.

(b) Social and Economic

As mentioned above, disrepair of dikes may result if they cannot be maintained. This could lead eventually to reduced production due to more frequent flooding, or even to total abandonment of some pastures, due to salt water intrusion. The social and economic consequences might ultimately be a substantial erosion of the land base for agriculture, which is one of the leading sectors of the local economy.

(c) Energy

Energy consequences relate primarily to the additional energy costs that would be incurred by trucking materials to the site versus using dredged materials from the immediate vicinity.

Conclusion - Social/economic and energy consequences are positive. Environmental impacts are minor and acceptable.

(iv) Compatibility

These actions would, of course, be highly compatible with adjacent agricultural uses. Temporary high levels of turbidity and possibly locally lowered dissolved oxygen levels would result from dredging. However, compatibililty with adjacent aquatic areas could be ensured through the requirement that adverse impacts of dredging be minimized (see Special Conditions) and through any necessary mitigation (which could include subsequent vegetative stabilization).

Conclusion - The proposed actions are compatible with adjacent uses.

D) Implementation Considerations

Activities permitted under this exception are as follows: dredging to maintain and repair tidegates in segments 11NA, 18ACA, 20CA, 21CA, 30CA, 31NA and 38CA. Dredging is limited in the ordinance to the minimum necessaryto maintain functional operation.

In segments 21CA (Catching Slough), 30CA (Central Isthmus Slough), and 38CA (Coalbank Slough), subtidal dredging to maintain and repair dikes is permitted by the ordinance provided that alternatives such as the use of upland fill material or rip rap are not available. A special condition also notes that high-priority mitigation sites U-30(b) and U-32(b) on Catching Slough must still be protected from dike rehabilitation, which would tend to preempt their future use for mitigation. Dredging is also limited in the ordinance to the minimum necessary to maintain functional operation.

Subtidal dredging for emergency repair or dikes that have breached or are in imminent danger of breaching is also permitted in segments 11NA, 18ACA, 20CA, 21CA, 30CA, 31NA and 38CA.

EXCEPTION #11 - Segments 21A NA, 31 NA, 34 NA, 8 CA and 51 CA - Catching Slough, Upper Isthmus Slough, Shinglehouse Slough, Jordan Point and Pony Slough.

A) The Proposal: To establish new public boat ramps at Catching Slough and Upper Isthmus Slough and to expand an existing ramp at Shinglehouse Slough [all in natural segments]; and to establish a new public boat ramp with a dock for transient moorage at Jordan Point and to expand an existing ramp at Pony Slough to include transient moorage.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to portions of these particular areas. Therefore, a three-part Exception is required:

(i) To permit new/expanded boat ramps in a natural management unit;
(ii) To permit minor new or maintenance dredging and fill as necessary for the boat ramps in a natural management unit;
(iii) To permit new dredging in a conservation management unit. [Fill is permitted, with necessary findings; see Policy #6: "Fill in Conservation Management Units"].

C) The Findings

(i) Why these uses should be provided for

The Special Moorage Element, Section 6.4.3, identifies 14 sites for potential boat ramps. The sites at Catching, Isthmus (Coos City) and Shinglehouse are among them. Section 6.5.3 also identifies other sites which are not suitable for full-scale marinas, but have some limited potential for moorage; they include the Pony Slough and Jordan Point sites. The Coos County Parks Advisory Board has selected these sites as necessary to improve public recreational access to all parts of the bay for fishing and pleasure boating.

There is currently only a crude boat ramp in the Catching Slough area of lower Coos River which needs improvement. The existing Shiniglehouse Slough ramp is small and needs to be improved. There is no ramp in Upper Isthmus Slough; access will be improved to this popular fishing area by a proposed ramp at the junction with Davis Slough. The site at Jordan Pointis easily accessible and would provide needed access to the Mid-Bay and North Slough. The Pony Slough ramp already exists, but could be improved and transient moorage added to increase its usefulness.

Minor dredging and fill will normally be needed to construct boat ramps. Intertidal areas between the shore and channel will need

to be dredged to give access and the bed beneath the ramp will have to be filled in places to provide a foundation.

Conclusion - There is a need for additional public access to t Bay for fishing and boating, and for minor dredging and fill f construction and maintenance.

(ii) Alternative Locations

Basically, only two sites, Upper Isthmus/Davis Slough and Jord Point, are new sites. The other sites are all existing ramps which need expansion. The only realistic alternative location these sites is to develop new facilities somewhere else in the locality, assuming that there is a need to continue public acc in these areas. Since the existing ramps have caused alterati to the aquatic area, expansion would appear to have less impac than new development in alternative locations.

The Upper Isthmus/Davis Slough ramp could be located elsewhere the segment, but this is the best location for a number of reasons:

- It is in the most productive area for striped bass angling.
- Road access is easy.
- There is sufficient land area for parking and other recreational facilities.
- The intertidal zone is very narrow, minimizing the amount of dredging needed.

The only other site in the general area of Jordan Point is on western side of Jordan Cove itself. Other parts of the cove land access and would also require extensive dredging across broad tidal flats. The western side does not suffer these disadvantages, but there would be conflict with industrial us the area (Roseburg Lumber) and possibly with deep-draft moora nearby.

Conclusion - The need for public access can best be met by th sites, in addition to others for which no exceptions are requ

(iii) Consequences

a) Environmental

Boat ramp construction will have only fairly minor environmer consequences due to dredge and fill actions, depending, howev on the scale of the ramp (one or more lanes). Transient moor will basically be at floating docks attached to pilings and therefore environmental impacts are minimal. Dredge and fill impacts can be offset by mitigation actions. Environment resources and probable impacts are as follows:

- Jordan Point - Sandy intertidal flats without aquatic beds. Benthic organisms: amphipods and ghost shrimp. Clam beds: softshell, Macoma/Tellina spp. Fish: transient use by juvenile salmonids, striped bass and flat fish. Dredge and fill actions will affect only a minor portion of the tidal flat, removing benthic organisims, which may re-colonize to some extent between maintenance.

- Pony Slough - Intertidal flats without aquatic beds. Benthic organisms: amphipods and ghost shrimp, close to shore only. Clam beds: Macoma/Tellina spp. Fish feeding/rearing: juvenile salmonids and flat fish. Waterfowl and shorebird use. Again, dredging to improve the current ramp will only affect a small area, removing benthic organisms, which may re-colonize to some extent between maintenance.

- Catching Slough - Muddy intertidal flat without aquatic beds. Benthic organisms: amphipods. Clam beds: Macoma and Tellina spp. Fish feeding/rearing: juvenile salmonids and starry flounder. Dredge and fill to improved the existing boat access will affect only a small area, removing benthic organisms, which may re-colonize to some extent between maintenance.

- Isthmus/Davis Slough - Narrow intertidal flat without aquatic beds. Benthic organisms: amphipods. Fish feeding/rearing: striped bass and starry flounder. Resting/feeding area for waterfowl. Dredge and fill would affect only a narrow section of tidal flat which falls off steeply into the channel, removing benthic organisms which may re-colonize to some extent.

- Shinglehouse Slough - Subtidal area only. Benthic organisms: amphipods. Clam beds: Macoma/Tellina spp. Fish feeding/rearing: juvenile salmonids and starry flounder. Dredge and fill to expand boat ramp would affect only a small subtidal area, removing benthic organisms, which may re-colonized to some extent.

b) Social and Economic

Economic consequences relate mainly to the improvement in public boat access which will help make the area more attractive to tourists. This will contribute to the diversification of the local economy, with indirect social benefits.

c) Energy

Energy consequences relate mainly to the energy savings represented by minimizing dredging by expanding existing boat ramps rather than developing new ones. There are also energy savings due to decreasing driving distance to a boat ramp, or boat distance to and from fishing spots.

Conclusion - Social/economic and energy consequences are positive. Environmental impacts are minor and acceptable.

(iv) Compatibility.

Compatibility is high where boat ramps already exist. As mentioned above, the Isthmus/Davis Slough site is compatible with the nearby highway and adjacent undeveloped uplands. The Jordan Point site is adjacent to the Anadromous aquaculture facility and the Southern Pacific railroad tracks. The boat ramp will face to the east, away from the fish ladder, and thus will not interfere with fish return. There is adequate upland for support facilitie east of the railroad tracks. Thus, the boat ramp is compatible with the railroad. Compatibility with the adjacent aquatic areas can be ensured in all cases by minimizing impacts of dredge and fill [see Special Condition] and by mitigation, if it occurs at the site.

Conclusion - The proposed uses are compatible with adjacent uses.

EXCEPTION #12 - Segments 11 NA and 13A NA - Haynes Inlet and Upper Bay

A) The Proposal: To permit minor dredging (as "minor navigation improvements") in Haynes Inlet to remove shoals to return the channel to its natural depth to permit shallow-draft navigation.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to Haynes Inlet. Therefore, an exception is needed to permit dredging (as "minor navigational improvements") in a natural management unit.

C) The Findings

(i) Why these uses should be provided for

Shallow-draft boats have traditionally used Haynes Inlet both for recreational boating and to gain access to the Humbert Boat Works. Existing depths on Haynes Inlet (from the boat works to Jordan Point) are 5 to 18 feet below MLLW, with considerable reaches at 6 to 7 feet below MLLW [NOS chart 5984, 1972]. Periodically, silts washed down from the watersheds of Palouse ar Larson Creeks are deposited in various parts of the natural channels, causing shoaling to occur, which may restrict use by shallow-draft boats. Because of gradual changes in depth throughout the system, without a series of depth soundings over a long time period, it is not possible to fix definitive natur depths. However, examination of the NOS chart shows shallow ea which may indicate areas of deposition immediately above the Highway 101 bridge (-5 feet MLLW) and below the Humbert Boat Work (-6 feet MLLW), where there may be locally shallower depths. It

is suggested that natural depths in this channel are 6 feet below MLLW or greater, and that shoals may be removed when depths are less than -6 feet MLLW [See "Special Condition", Segments 11 NA and 13A NA].

Conclusion - It is necessary to do minor dredging in shoaled areas down to natural depths to allow passage by shallow-draft boats.

(ii) Alternative Locations

There are no alternative locations for this action because they will be necessary where shoaling occurs and are for an existing use (Humbert Boat Works).

Conclusion - Alternative locations are not available.

(iii) Consequences

a) Environmental

The subtidal natural channel functions primarily as a migration route and holding area for fish species using the general area. For the most part, the benthic resources they rely on for habitat (eelgrass, various crustaceans, etc.) are absent from the channel. Fish species using the area are striped bass, juvenile salmonids and herring (spawning on pilings in Haynes Channel). Minor dredging to remove shoals is likely to disturb only small sections of the channel. It is likely that with the minor deepening involved ,that the area would eventually be re-colonized from nearby benthic communities. Fish populations would only experience temporary minor impacts from increased turbidity during dredging.

b) Social and Economic

The consequence of not maintaining the channel would be the possibility that the Humbert Boat Works would be unable to operate because controlling depths in the natural channel had become inadequate. It is possible, but unlikely, that recreational boats could also be excluded from Haynes Inlet by shoaling.

c) Energy

The energy consequences relate only to the energy expended in the dredging.

Conclusion - The social/economic and energy consequences of this action are positive. The environmental impacts are minor and acceptable.

(iv) Compatibility

Minor dredging is generally compatible with surrounding tidal flat environments. The only impact will be temporary increases in

turbidity. There is no compatibility problem with adjacent upland uses. The Segment's Special Condition which requires that impacts of dredging be minimized will help ensure compatibility.

Conclusion - The proposed actions are compatible with adjacent areas and uses.

EXCEPTION #13 - Segments 1 CA and 67 CA

A) The Proposal: To permit extension of the existing North and South Jetties and Charleston Breakwater, as necessary to increase strength or prevent wave damage, erosion or sediment accretion.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to portions of these particular segments. Therefore, an exception is required. An exception is needed to allow fill (as "Navigational Structures") in conservation management units, beyond the actions permitted in Policy #6 ["Fills in Conservation and Natural Estuarine Management Units"].

C) The Findings

(i) Why these uses should be provided for

As mentioned in Section 4.1.7.3 of the "Physical Characteristics" inventory, the main jetties periodically need maintenance and repair. Because this may require actual extension of the area of fill to give added strength to the structure, which is not covered under part (a) of Policy #6, this exception is written to cover jetty repair. In addition, there are two areas of concern in this segment which will require fills for structural protection:

(i) The bay behind the North Jetty at the tip of the North Spit.
(ii) The shallow-draft Charleston Channel and Boat Basin.

Currently, a curved rubble breakwater extends to the northeast from the North Jetty, which is, for the most part, submerged. Wave action has caused extensive erosion behind this breakwater which was constructed to check it. In order to eliminate this erosion completely, it may become necessary in the future to add to the height and width of this breakwater.

It has been known for some time that heavy wave action and surge has been causing damage to boats in the Charleston Boat Basin during storm conditions. Sand accretion has also been a problem in the channel causing maintenance and alignment problems. It is proposed to construct an 800-foot extension to the existing breakwater to protect the channel and the boat basin [See "Charleston Breakwater Extension and Groin Structure EIS Supplement #1", Corps of Engineers, 1978]. The first 600 feet of this breakwater has recently been constructed. Shortage of funds

has left the project uncompleted.

Conclusion - There is a need for additional protective structures as well as possible strengthening and expansion of existing jetties.

(ii) Alternative Locations

There are no alternative locations for actions to strengthen the existing jetties or expand the breakwater associated with the North Jetty because they are existing structures. Alternatives have been considered in the EIS (ibid.) to the proposed breakwater. Note that the proposal includes the groin in Segments 59 CA and 58 NA (see Exception #14, below) and that the alternatives include variations of the groin design. Alternatives are as follows: Alternative (iii) is the selected design:

> "(i) an L-shaped detached breakwater to the north of the present breakwater, plus 3 groins on the east side of the Charleston Channel; (ii) a 1,000-foot northward extension of the existing breakwater; (iii) an 800-foot northward extension of the existing breakwater and one groin on the east side of Charleston Channel; (iv) a single groin on the east side of the Charleston Channel (v) and an 800-foot northward extension of the existing breakwater, plus 2 groins on the east side of the Charleston Channel. Other alternatives include no action and dredging Charleston Channel to a new alignment". [Ibid, p.ii]

The proposed design was selected by the EIS based on various technical, environmental and economic criteria, following modelling to evaluate effectiveness and cost/benefit considerations. Alternative (i) above was rejected on cost grounds, though it was effective. Alternative (ii) was no more effective than the chosen alternative, but more expensive. Alternative (iv) was rejected because it was inadequate to prevent sediment from entering the channel, or wave diffraction around the end of the existing breakwater. In Alternative (v) the additional groin was considered unnecessary to produce the desired effect. The final alternatives, either no action or dredging the channel to a new alignment, were rejected because shoaling would recur and maintenance costs would continue to be high.

Conclusion - The selected alternative was the minimum alteration which would adequately protect the channel and boat basin.

(iii) Consequences

a) Environmental

Additional rock placed on the jetties would have negligible environmental impacts on a high-energy subtidal area where

biological communities are already adapted to the rocky substrate. Additional rock placed on the existing North Jetty breakwater would affect adjacent intertidal and subtidal areas. There are no inventoried benthic organisms except a gaper clam bed within the bay which would be affected only marginally. Otherwise, additional fill would have no impact on use by juvenile salmonids for feeding and rearing as the area is used mainly in migration.

Environmental impacts of the proposed breakwater extension are detiled in the EIS [ibid.], as follows:

> "During construction of the proposed project, trucking and dumping of stone will produce a temporary increase in turbidity, noise, dust, and traffic congestion of the construction site. Some turbidity and disturbance to fish in the area will occur as the stone is placed. The breakwater extension and build-up will cover about three acres of sandy habitat and create 0.4 acres of intertidal rocky habitat. Benthic organisms (including razor clams, cockle clams, bull kelp, snails, and various worms and larvae) would be covered and their habitat permanently altered..
>
> The newly-created rocky habitat would encourage establishment of species similar to those inhabiting the jetty area, such as rockfish, sculpins, anemones, mussels, barnacles, and attached algae. The sand spit which would form west of the extension would contain about 11 acres of sand above MHHW and cause 12 acres of intertidal sandy habitat to accrete. Present razor clam populations would survive the gradual sand build-up and new larval clams should settle on the beach to maintain the present population". [ibid., pp.i-ii]

b) Social and Economic

The EIS summarizes the socio-economic benefits of the breakwater project as follows:

> "Socio-economic effects of the project center around benefits which would occur to the fish industry. Monetary losses and time delays currently experience by local fishermen should decrease substantially. The expected reduction in surge problems may encourage local authorities to push for expansion of the boat basin. It is likely that tourist-oriented development will occur as a secondary effect of the growth of the fishing industry, especially if sport fishing increases as expected. Life-style changes in Charleston would occur as the area becomes more tourist-oriented".

[ibid., p.ii]

c) Energy

The energy consequences relate to the energy saved in the long run by building a breakwater to prevent rapid sedimentation of the channel and the need for frequent maintenance, or by strengthening/expanding existing structures to prevent erosion and wave damage to them.

Conclusion - The social, economic and energy consequences of these actions are positive. The environmental impacts are fairly minor and acceptable.

(iv) Compatibility

These structures are highly compatible with adjacent uses (i.e., boat basin, tip of North Spit), as they offer needed protection. Due to their relatively minor impacts, they are compatible with adjacent aquatic areas. Compatibility can be ensured through the requirement (see Special Conditions) that adverse impacts be minimized.

EXCEPTION #14 - Segment 58 NA - off Barview

A) The Proposal: To construct a 400-foot by 80-foot rock groin east of the Charleston Channel, as an adjunct to the proposed breakwater extension, if it is found to be necessary in the future to control channel sedimentation, in addition to the breakwater. [See Corps of Engineers EIS, 1978].

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular area. Therefore, an exception is required. An Exception is needed to permit a rock groin fill (as "Navigational Structures") in a natural management unit.

C) The Findings

(i) Why this use should be provided for

This groin is the second phase of the project to prevent channel sedimentation and wave damage in the Charleston Boat Basin [see Exception #13]. The Corps EIS [1978, Section 4] discusses in detail the expected environmental impacts of the proposed action, including sediment transport. It is stated (p. 4-5) that construction of the breakwater extension will lead to re-establishment of the sand berm that previously existed north of the breakwater. In addition, sediment may accrete east of the extension adjacent to the channel, pushing it out of alignment. It will take 5 to 10 years after construction of the first phase to know whether this will also occur. If it does, it will become

necessary to construct this groin. The effects will be to increase current velocity near the tip of the groin, improving flushing characteristics in the channel, reducing sedimentation and helping it to keep its alignment. This exception is being written in anticipation that this groin will be needed. However, findings will have to be made at the time construction is proposed [see Plan Provisions] that the conditions have developed which make it necessary.

Conclusion - The proposed structure will help solve channel sedimentation and alignment problems, should they continue after construction of Phase 1.

(ii) Alternative Locations

The Corps EIS lists several alternative proposals for this project [see Exception #13]. One alternative involves three groins, a second involves a longer breakwater but no groins; a third alternative involves a single groin only, and a fourth alternative, two groins. A final alternative was no action except channel dredging. Hydraulic studies showed that a simple 400-foot groin, unattached to the shore but encroaching on the rocky intertidal area, was the most cost-effective alternative.

Conclusion - There is no more effective alternative to the proposed action, unless events show that no action is required.

(iii) Consequences

a) Environmental

The Corps EIS finds that environmental impacts would be as follows: The groin would cover 1.2 acres of rocky and sandy subtidal benthic habitat. Some shoaling would occur both north and south of the groin. Other impacts would be similar to those of the breakwater extension. During construction, trucking and dumping of stone will produce a temporary increase in turbidity, noise, dust and traffic congestion. Some turbidity and disturbance to fish in the area will occur as the stone is placed. Benthic organisms would be covered and their habitat permanently altered. Clam beds (gapers) are nearby in the channel, but would only be peripherally, if at all, affected by this groin. The groin would encourage establishment of species similar to those inhabiting the jetty (e.g., rock fish, sculpins, anemones, mussels, barnacles and attached algae).

b) Social and Economic

The primary social/economic consequences of this structure would be the reduced dredging costs in the channel, reduced storm damage in the boat basin, and, indirectly, pressure to locate additional moorage in the area with improved channel conditions.

c) Energy

Energy consequences, as for the breakwater extension, relate to the long-term savings in energy to maintain the channel versus the short-term energy expenditure to transport and place the rock.

Conclusion - Social/economic and energy consequences are positive. Environmental impacts are minor and acceptable.

(iv) Compatibility

This structure is highly compatible with adjacent upland uses (residential). It is also compatible with adjacent aquatic areas due to the minor impacts involved; compatibility can be ensured by minimizing adverse impacts of the fill, as required by Special Condition.

Conclusion - The proposed structure is compatible with adjacent uses and aquatic areas.

EXCEPTION #15 - Segment 55B NA - "Crab Flats" off Barview

A) The Proposal: To construct a piling-supported recreational fishing pier to improve recreational access to the bay along Barview waterfront.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular property. Therefore, an exception is required. An Exception is needed to permit a recreational fishing pier (as "Low-Intensity Recreation Facility") in a Natural management unit.

C) The Findings

(i) Why this use should be provided for

This pier would provide access to the water for recreational fishing in the area of the Empire waterfront where no access currently exists. There is a planned boat ramp at Barview Wayside some distance to the south, and an existing boat ramp at Empire docks. However, there is no direct fishing access to the water between these two points. There is a need to provide better access for recreational anglers without boats. The lower bay is particularly rich in fish species [see Table 4.2.6, Biological Resources inventory]; thus access needs are greater here than elsewhere in the bay.

Conclusion - There is a need for additional access to the lower bay for anglers without boats.

(ii) Alternative Locations

Assuming that a lower bay location is needed, access would best be provided from off Cape Arago Highway. Alternative sites are unavailable between Pigeon Point and Barview Wayside, because residential development permits no access to the water. An alternative site could be located between Pigeon Point and Sitka Dock. However, the waterfront is steep and provides little space for car parking and associated facilities. Also, the intertidal area is very broad and would make access difficult. The proposed site is at the Julius Swanson property, south of Empire Docks. The tidal flats are narrower here than further south, making it easier to construct a pier out into the subtidal area. The adjacent upland is relatively level and there is vacant land available, making it suitable for support facilities. An alternative site with similar characteristics exists to the south of the sewage treatment plant in the "Crab Flats" area. All of these sites would affect natural management segments.

Conclusion - There are no other better locations in the lower bay for an angler access pier.

(iii) Consequences

a) Social and Economic

Direct economic consequences will be negligible. However, a use of this type might have the long-term effect of stimulating growth of tourist/recreational uses in the Barview area. Social consequences will be better access for anglers without boats and in the long run, possibly, the social benefits from growth in the tourism/recreational sector of the economy.

b) Environmental

The pier would be constructed in a biologically important intertidal area with productive benthic communities (crustaceans, clams) and fish habitats (salmonid fishing/rearing and English sole). However, impacts would be minor and mostly temporary in nature (increased turbidity) because the pier will be supported on pilings, which will themselves provide habitat for barnacles and attached vegetation.

c) Energy

The energy consequences of this proposal will be negligible.

Conclusion - Social and economic consequences are positive. There are no significant energy consequences. Environmental impacts are minimal and acceptable.

(iv) Compatibility

Adjacent uses are the Cape Arago Highway and Empire Docks. A fishing pier together with associated upland facilities is compatible with these uses. Due to the minor impacts of pilings, the proposal is also consistent with the adjacent aquatic area.

Conclusion - The proposed use is highly compatible with adjacent uses and aquatic areas.

EXCEPTION #16 - Segment 63A NA - Joe Ney Slough

A) The Proposal: To permit removal of shoals in the natural channel (as "minor navigational improvements"), maintenance dredging of existing facilities, construction of docks and installation of pilings/dolphins in conjunction with an existing aquaculture use (oyster culture) in Joe Ney Slough; and to permit "bridge crossing support structures" as part of a replacement for the existing Joe Ney Slough Road bridge.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular area. Therefore, an exception is required. An exception is required to permit these uses in a natural management unit.

C) The Findings

(i) Why these uses should be provided for

Joe Ney Slough has an established oyster culture operation, with an existing dock above the road bridge. Future expansion of oyster culture is likely to occur in the slough, leading to a need to expand the existing dock or construct a new receiving dock. Oysters are also brought in to the dock by shallow-draft boat from other parts of South Slough. Because of sedimentation from the inflowing streams, it is expected that shoaling may occur in the shallow natural channel in future, which would prevent access to the dock. In addition, maintenance dredging might be required at this dock. No soundings are currently available to show "natural depths" on the Joe Ney Slough channel. The "natural depth" of the channel will have to be determined at the time of permit application. Pilings/dolphins will be necessary for mooring of barges.

The Joe Ney Slough bridge is a very narrow (single lane) wooden structure which has been known to be inadequate and in need of replacement for some years. With recreational and residential projected growth at the Indian Point site and elsewhere in the area, this bridge will be in urgent need of replacement in the future. Because of the length of the bridge (over 400 feet) and the extra costs involved in a single span structure, the most practical solution is to use an in-water support structure.

Conclusion - Expansion of existing oyster culture in Joe Ney Slough will lead to a need for various minor alterations to continue shallow-draft navigation and moorage. Additional growth in the area will lead to a need to replace the existing bridge.

(ii) Alternative Locations

These uses all relate to the existing oyster industry; to the extent that this is going to continue, there is no realistic alternative location for these activities, short of totally relocating the entire receiving and handling facility. Similarly, there is no practical alternative to replacing the bridge in virtually the same location, as this is the narrowest point in the slough in the immediate area.

Conclusion - There are no practical alternative locations for the proposed uses/activities.

(iii) Consequences

a) Social and Economic

These uses/activities will benefit the local economy as a whole by enabling the existing aquaculture industry to continue and expand. Aquaculture holds great promise for future diversification of the local economy, with attendant social benefits.

Similary, replacement of the Joe Ney Slough bridge is essential to the development of a "destination resort" at Indian Point, which has great potential to diversify the local economy. The social consequences of this development would be a greater orientation toward tourism and recreation in the Charleston/Barview area.

b) Environmental

The proposed actions involve basically (i) dredging in the natural channel and (ii) installation of pilings of one type or another. The slough contains important clam bed, oyster, and other benthic resources, including extensive eelgrass beds which are found within the natural channel. Removal of shoaling from the channel would basically only affect the eelgrass beds, as there are no inventoried clam beds or crustacean habitats in the channel [see Plan Inventory Maps]. Because this action would involve the removal of accreted sediment, it is probable that these sedimented areas would contain less eelgrass beds because of environmental disturbance. Eelgrass would likely become re-established in dredged areas from adjacent beds. It is therefore possible that eelgrass beds might be restored if they had become choked out by sediment. At least, in the long run, there should be no long-term loss of habitat following re-establishment. The same observations apply to maintenance dredging of the existing dock.

Installation of pilings and bridge crossing support structures will have only minor and temporary impacts, and may themselves provide habitat for attached vegetation, barnacles and similar organisms.

c) Energy

The energy consequences relate mainly to the short-term costs of maintaining the natural channel versus the long-term energy savings due to the use of barges to transport oysters. Trucking of oysters, if it were feasible, would likely incur greater energy costs than barging.

Conclusion – Social, economic and energy consequences are positive. Environmental impacts are minor and acceptable.

(iv) Compatibility

Adjacent upland uses are residential, forest lands and the oyster processing dock. The proposes uses/activities will be highly compatible with the dock and will have no adverse effect on other adjacent uses. Because of the relatively minor environmental impacts, these uses/activities will be compatible with adjacent aquatic areas, particularly because of the Segment's Special Condition requiring the impacts of dredging to be minimized.

Conclusion – The proposed uses/activities are compatible with adjacent uses and aquatic areas.

EXCEPTION #17 – Shoreland Segments 27 UW, 44 UW, 54 UW, 61 UW, and 66 UW– Eastside, Coos Bay, North Bend, Empire and Charleston Waterfronts

A) The Proposal: To permit water-related uses in these segments as well as water-dependent uses, as existing, except in the case of 27 UW [Eastside Port property] where marine construction and support development [including water-related] is proposed on a vacant site.

B) The Exception: During the application of the Coastal Shorelands goal (17) to the plan through the 'Linkage' process, it was not possible to apply the goal to these particular areas. Therefore, an exception must be taken. An exception is required to permit water-related uses in an area which is "especially suited to water-dependent development" ("ESWD").

C) The Findings

(I) Why these uses should be provided for

Segments 44 UW (Coos Bay/North Bend Waterfront), 54 UW (Empire docks), 61 UW (Hanson's Landing) and 66 UW (Charleston) currently contain a mixture

of water-dependent and water-related uses. For example, the Coos Bay waterfront contains machine shops, and the North Bend waterfront has a marine supply business, which are "water-related" rather than "water-dependent" [see Definitions]. The Charleston and Empire areas contain a similar mixture of uses. These water-related uses rarely occupy the immediate shoreline, but are located within a block or so within an area which is generally "especially suited to water-dependent uses". These support facilities need to be in close proximity to the water-dependent uses which they served in order to perform their essential function. It is therefore rational to permit continuation and expansion of these uses within the ESWD area; land values on the immediate waterfront tend to be high enough to exclude new water-related uses in favor of water-dependent uses. Market forces are adequate in this case to bring about the most efficient distribution of land uses within the ESWD area.

Conclusion - It is necessary to locate certain water-related uses in ESWD areas either because they have historically existed alongside water-dependent uses or because they are needed as essential support to marine construction and repair.

(ii) Alternative Locations

There are essentially no alternative locations for expansion of existing water-related uses in Segments 44 UW, 54 UW, 61 UW and 66 UW, except to relocate altogether outside the Coastal Shorelands Boundary. Considering that such businesses are established, this is an unreasonable expectation, unless insufficient land is available for expansion.

Conclusion - There are no practical alternative locations for existing water-related uses, unless there is no space for expansion. The sole alternative site for water-related marine repair and storage uses is more suitable for other uses, and will only be used as a secondary location if insufficient land is available at the Eastside site.

(iii) Consequences

a) Social and Economic

The effect of permitting water-related uses in these ESWD areas is to perpetuate the traditionally close ties, both functionally and spatially, between them and water-dependent uses. The effect of not permitting such uses would be to gradually displace them, as they find that there is no opportunity to expand, to locations outside the Coasal Shorelands Boundary. In many cases, no doubt, they would try to locate as close as possible, but might have difficulty in finding availabe sites. This could eventually have the effect of reducing the quality of service that these uses would provide to water-dependent uses. The consequence at the Eastside site would be to reduce the amount of flexibility in site plan design and reducing efficiency by forcing water-related uses to locate an undue distance from the waterfront in the non-ESWD part of the site.

b) Environmental

There are no significant environmental consequences of allowing the proposed uses.

c) Energy

The energy consequences relate chiefly to the energy savings associated with locating service industries in close proximity to the water-dependent uses. However, these savings are not significant.

Conclusion – The social/economic consequences of permitting these uses are positive. There are no significant environmental or energy consequences.

(iv) Compatibility

As shown by the above discussion, water-related uses are highly compatible with adjacent water-dependent uses in these management segments, because of the historical interdependence between them.

Conclusion – These water-related uses are compatible with adjacent uses.

EXCEPTION # 18 – Shoreland Segment 3E WD – North Bay Marine Industrial Park

A) The Proposal: To permit filling of a fresh-water deflation-plain wetland area ("major marsh" and "significant wildlife habitat" under Goal #17), to develop a major marine industrial park.

B) The Exception: During the application of the Coastal Shorelands goal (#17) to the plan through the 'Linkage' process, it was not possible to apply the goal to this particular area. Therefore, an exception must be taken. An Exception is needed to Goal #17 language which requires that "major marshes" and "significant wildlife habitat" be protected by permitting only uses which are "consistent with the protection of natural values."

(Continued next page)

C) The Findings

(i) Why these uses should be provided for

This area is identified in Section 5.8-17 and 5.8-19 of the Economic Activity Inventory as a prime site for expansion of water-dependent and water related industry on Coos Bay. As described and documented in the Kuhn Report and the Oregon Economic Development Department Report, the 515 acre industrial site on the North Spit is uniquely suited to a group of industrial activities listed below which are important to the economy of the nation as well as Coos County. By designating the site industrial now, making clear up front the standards and conditions that apply to development, the Plan makes this unique economic resource available for a multiple of options, any of which would diversify and strengthen the Coos County economy.

Just over 200 acres west of the existing road will be available in large parcels for a variety of land intensive options, supporting and compatible with the water dependent and water related activity closer to the docks. It is not clear at this time which of the mineral or other resources will be marketable first, or in what form or quantity. Those individual choices will be made based on a variety of economic factors over the next twenty years. However, if the full site is clearly available from the staff, industries seeking a port as a land base for exploration, storage, equipment repair, etc. during the early stages of each industry, will be willing to invest in a Coos County location, with the knowledge that should their efforts succeed, they will be able to expand on-site as soon as production phases begin. The location of existing port docks and infrastructure serving this unique site should give the Port a comparative advantage as the location for these incipient and potentially prosperous industries.

Should it prove a cost competetive place to carry out any or a combination of the activities now contemplated, it will be important to the economy of the nation as well as Coos County. That is why this Exception to Goal 17 is taken, to make available for development (in stages over the next 20 years) a site otherwise used as a resting and nesting area for migratory birds.

Unique locational aspects of this site not otherwise available in Coos Bay and in some cases, the State, include:

- direct access from large sites to 35 foot channel, close to the harbor entrance. Should the channel need to be deepened at some future date, location would assure a cost effective project;

- no width or height constraints between the dock and the open seas;

- deep channel close to shore minimizing cost of maintenance dredging;

- no need to fill estuarine area to provide deep sites with acccess to the channel;

- large parcels of flat land at sea level with soils capable of bearing industrial structures;

- port-owned facilities, taxing district, water supply, electric power, sewer treatment, railroad and airport existing and/or capable of improvement;

- established deep sea going barge facilities;

- convenient location for transshipment or processing of bulk minerals from Alaska, bound for California or Pacific Rim ports;

- close proximity to mineral resources of the Gorda Ridge, which is within the U.S. 200 Mile Economic Zone and therefore probably the first lease site for polymetallic sulfides;

- relative close proximity to potential oil and gas lease sites, off Oregon as well as California to Alaska;

- minimum air shed limits (compared to other competetive locations, i.e. California) allowing any new industry a good chance to meet federal and state air quality stamdards.

Unique features of the site indicate that it may prove a cost effective location for such activity as:

- transshipment of coal, perhaps providing a market for local coal

- land base for exploration, equipment construction and maintenance, transsshipment and/or procesing of manganese nodules and/or polymetalic sulfides

- cargo handling, including rail to barge transfer of cargo bound to west coast and international ports

- marine construction and support

- marine fuels bunker facility

- seafood processing and trawler basin

- oil rig or OCS mining platform fabrication

- manufacture of glass

The acreage requirements for each of these potential industries varies from several acres to 1,000 acres; as outlined in the CCD-BDC and EDD reports. The likelihood of any one or a combination

of several industries needing a Coos Bay site is not known. Coos Bay may never become competitive as a transshipment point for coal bound for the Far East, but changing world demands could one day provide that opportunity. Coos County coal may become the energy source that gives the county the advantage over other locations as a processing site for OCS minerals. The sulfides of the Gorda Ridge may be most efficiently processed at Coos Bay, or industry may find it more feasible to use the North Spit as a land-base and transshipment point only. Platforms and equipment for oil and OCS minerals may be constructed or maintained at the North Spit. A variety of economic factors will guide these choices over the next 20 years.

At this time, it is important to make it known that the entire site (excluding the 73-acre fill of the waste lagoon which is not expected until after 1991) will be available for development, so that the Port can assure industries looking for initial exploration bases that there will be adjacent land available should production stages become possible. Development conditions will protect the site for such activity, and make clear the type of activity allowed outright, so that industry will be encouraged to invest in the improvement of the Coos Bay and the national economy.

More specifically, this area of the North Spit is selected as a primary site to satisfy the following needs:

Polymetallic Sulfides - As described in the inventory, at 70 miles distant, the Port of Coos Bay is by far the closest port to the resources of the Gorda Ridge, which is the most likely site for outer continental shelf mining of the sulfides. This proximity, combined with the deep-draft channel and other locational assets, could well attract this new industry to the North Spit.

Manganese Nodules - Exploration and research of ocean deposits of manganese nodules may require a land base from which to operate. The North Spit's proximity to promising resources, and port facilities could meet this need. Once international legal disputes are resolved, it may prove feasible to expand operations to include a transshipment or processing facility. The North Spit offers several advantages over alternative locations for these activities.

Platform Fabrication - Oil and gas exploration off Oregon is highly probable over the next 20 years, as are leases for outer continental shelf mining. With these activities added to demands for oil rig platforms from Alaska to California, industries may need a Coos Bay fabrication yard for mining platforms. The North Spit would be well suited to meet such needs.

Coal Export Facility - Within the 20 year planning horizon, it can be expected that the world economy will improve and oil supplies decline. At such time as coal again becomes a competitive fuel, the North Spit will again be considered as a transshipment point,

especially if the railroad has by then been improved for one of the other activities described here, or if changing technology provides a market for a mix of County coal resources.

Sand - Under past economic conditions it has apparently not been profitable to process the County's sand resources in the County. Industry has shipped the sand to Portland for use in the manufacture of glass, steel and other products. Nevertheless, glass manufacture is a potential industry for the North Spit should on- or near-shore sand resources and natural gas or methane become available.

No attempt has been made to compare the uses proposed with the amount and type of employment opportunities such uses would provide. First, need has been carefully estimated based on probable new uses and their acreage requirement. Second, virtually any new employment occurring outside of the forest industry will be a form of diversification, Coos County's top economic target. When the County becomes an economically vibrant community, it can then afford to pick and choose the most appropriate types of employment.

Conclusion - There is a need for a substantial acreage of vacant developable land (up to 560 acres) for future water-dependent uses to strengthen and diversity the local economy, with access to the deep-draft channel.

(ii) Alternative Locations

(a) Upper Bay - North Point and the Port's Eastside property;
(b) Other North Spit locations; i.e., Henderson Marsh, Roseburg Lumber;
(c) Sitka Dock.

In addition, other configurations on the site itself can be considered, to minimize encroachment into the wetlands.

The Upper Bay sites have several problems associated with them. First, between the two sites there are only 272 acres available (90 at North Point, 182 at Eastside) assuming that "East Pony Slough" is filled to complete the North Point site. Secondly, the Eastside property is especially suited for marine construction and repair and is intended for these uses. The North Point site, while having some potential for gas/oil processing, is not in a good location for delivery by ocean pipeline. In addition, it is in a poor location for some types of water-dependent use requiring access to the deep-draft channel because of the great difficulty involved in deep-draft vessels negotiating the narrow railroad bridge and then docking. There is also potential conflict between vessels docking here and other ships using the channel, which is the reason for using the water access of the site adjacent to the east so that North Point can serve water-dependent uses. Thirdly the maintenance of the Upper Bay channel at current draft (35

...t) may become a problem in the future. In addition, there is a possibility that a need may develop to deepen the channel in the future for deeper-draft bulk carriers (for coal, especially). Due to the costs involved, a lower bay location is essential.

Other North Spit sites have no problems with access to the channel. However, they are set aside for other uses: Henderson Marsh for an integrated lumber and wood products operation and Roseburg Lumber for 60 acres of waterborne cargo shipping and receiving. In any event, development of Henderson Marsh also requires an Exception to fill a "major freshwater marsh" and "significant wildlife habitat".

Sitka Dock has only 65 acres available; it may serve as a site for oil and gas processing, but has two disadvantages; first, like North Point, it does not have direct access for an ocean pipeline, and second, it would pose compatibility problems with the nearby residential area.

Other sites owned by lumber & wood products (LWP) firms are presumed to be reserved for the very-long-term needs of LWP companies. In addition, those remaining sites are scattered throughout the bay and are individually too small to provide the single-site land area needed for these uses.

Alternative configurations for this segment are discussed in Section 5.9, pages 18 and 19. There are three basic alternatives:

> Alternative A - which involves developing all the remaining Port property not originally proposed for development, minimizing the need for Federal land;
>
> Alternative B - which involves taking no more Port property and obtaining the additional area from Federal land;
>
> Alternative C - which involves developing only part of the Port property, and taking in Federal land.

Alternative C was selected, for the reasons discussed on page 5.8-19, Economic Development Inventory. To develop the entire Port property would put pressure for development on the valuable tidal flats and clam beds of northern Hungryman Cove, also affecting the rare Cordylanthus maritimus ("Salt-Marsh Bird's Beak"). Consequently , the southern end of the Port's property adjacent to Hungryman Cove remains protected in Segment 2 CS. Another consideration was avoidance (except for gradual mining of the sand) of excessive intrusion into the large open sand dunes to the southwest of the Port property, due to their recreational value and the hazards of unstable moving sand. Avoidance of two "conifer islands" or remnants of forest vegetation which are thought to serve as raptor habitat was another consideration. Lastly, maximum use of Federal land would involve maximum encroachment into the deflation plain wetlands, including an area at the southern end of the waste lagoon which is proposed as part

of the Henderson Marsh Mitigation package.

Sufficient federal lands in the configuration proposed on North Spit are expected to be available for local economic development projects as explained in the following quotation from an August 10, 1983 letter from the Oregon International Port of Coos Bay:

> The Oregon International Port of Coos Bay intends to pursue acquisition of all federal lands adjacent to Port properties that are within the Coos County Comprehensive Land Use Plan and designated as industrial property. In addition, we intend to acquire any lands that would be appropriate as a buffer zone between industrial lands and lands of other designation.
>
> These properties are necessary in order to meet the needs of Coos County as described in the Industrial Needs Survey. Expansion of a marine related industrial park to provide adequate upland facilities allows for maximum use of the waterfront property and ultimately reduces the need for additional dock sites.
>
> With these considerations in mind, the Port will aggressively explore every avenue, including political and legislative opportunities, to acquire these lands. Further, we will request that the federal agencies holding these lands justify to the Department of the Interior the need for their continued control.

Final agreement among the Local Officials' Advisory Group on the configuration of this segment took these factors into account, preferring to encroach into a portion of the wetlands rather than designate uplands adjacent to Hungryman Cove for development. About 100 acres of mostly open sand dunes were also added to the original development area east of the access road, rather than take in the entire deflation plain and wet hummocks area as far west as the foredune [Alternative B]. Segment 3E WD also includes long-term (15 years) plans for a 73-acre fill of the waste lagoon, initially with dredge spoils, but not until the lessee no loner requires the site for effluent settling or until the lease expires in 1991.

Thus the selected configuration strikes a balance between elimination of freshwater wetlands, development of Hungryman Cove, and development of open sand dunes, preferring to avoid the Cove entirely, at the cost of additional freshwater wetlands.

Land needs for processing of polymetallic sulfides have been identified as approximately 500 acres. However, the large percentage of high-value minerals within the raw ore means that transportation costs are a relatively less significant factor in determining the best location for processing (smelting). Thus, a smelter could theoretically be located at a great distance inland, perhaps in another state where existing smelters have been

recently abandoned. The remaining need to be satisfied on the Coos Bay estuary is thus 200 acres, which accounts for storage of the ore in-transit, together with ancillary handling facilities and associated businesses such as marine storage and repair (or off-shore mining equipment). Other than North Spit, no site in the Coos Bay area is large enough to provide a suitable location for a smelter.

Conclusion - There are no suitable alternative sites for the proposed uses. In fact, environmental considerations leave the final 20-year site configuration (including the partial fill of the lagoon) 45 acres short of the identified need. Alternative configurations are possible, but would involve greater intrusion into areas of moving sand hazard or pressure to develop part of Hungryman Cove.

(iii) Consequences

a) Social and Economic

The importance to the local economy of development of this site can hardly be overestimated. The North Bay Marine Industrial Park as a whole will provide space for a wide range of water-dependent activities, some of which (coal exporting, oil/gas processing and ocean bed mineral processing) will contribute greatly to much-needed economic diversification. This site being the largest single vacant site for water-dependent industrial development around the Bay, its great importance is obvious. The economic consequences of development may be summarized as follows:

- Increased employment and payrolls;
- Increased property tax revenues to Coos County;
- Increased revenues to the Port of Coos Bay, which in turn may be invested in "infrastructure";
- Increased business due to effect of increased payrolls.

In addition, costs of infrastructure development and site preparation may fall in part to public bodies, like the Port of Coos Bay or Coos County, depending on the amount of participation by developers and the amount of Federal or State funding available.

The social consequences which will follow from economic development will relate mainly to the stability and reduction in stress that results from greater job security and improved incomes. Net in-migration and lower housing vacancy rates will probably occur. Social costs relate mainly to the encroachment of development upon the valuable recreational lands of the North Spit, although the most valuable areas are the shore along Hungryman Cove (clamming) which will not be affected. Open sand dunes are popular with recreational vehicle enthusiasts, but loss of about 100 acres of open sand will not significantly reduce opportunities, as most use occurs in the Oregon Dunes National Recreation Area to the north.

.he Coos Bay-North Bend Water Board (CBNBWB) estimates a 32.5 million gallons per day (MGD) need for water throughout its service area by the year 2001. This projection includes the activities planned for this site and other North Spit industrial areas, including up to 10 MGD for a new pulp mill, 3 MGD for the existing pulp mill, 2 MGD for coal washing and dust control (which is ample to serve also transshipment activities for outercontinental shelf minerals estimated at 250,000 each), 2 MGD for fish release and processing, and 6 MGD for mineral processing, oil refinery and yet undefined development. A review of specific industrial activity now planned for on the North Spit revealed there was a potential need for up to 31.57 MGD at full development, suggesting the CBNBWB estimate was probably somewhat high. (See CBNBWB letters of 5-17-83, 10-28-83, and 11-3-83; Water Supply and Water Demand: Industrial Activities on the North Spit, EDD 11-12-83.)

As described in the above references, the CBNBWB is responsible to meet current and future water needs of the Coos Bay-North Bend area. At this time plans rely on three sources: Dunes 22.0 MGD, Pony Creek 5.3 MGD and Joe Ney 5.0 MGD, for a total of 32.3 MGD. Studies and planning are ongoing, to determine the most effective and efficient way to harvest water now and in the future. For example, studies now planned will reveal whether CBNBWB can harvest the full 30 MGD available in the dunes aquifer by a modification of well field design. If additional water sources are needed, the CBNBWB will concentrate on development of new sources. (CBNBWB letter, 10-28-83)

b) Environmental

About 90 acres of deflation plain wetland, together with adjacent dune hummocks, would be eliminated by filling due to the proposed development. The area consists mainly of a low-lying sedge/rush habitat type with other vegetation including willow and wax myrtle. The dune hummocks are covered with beach grass and/or shorepine. During the winter, the water table rises to flood the entire low-lying area, leaving substantial areas of open water. During the summer, much of this area dries out on the surface, leaving only a few small areas of open water. The deflation plain is partially traversed from north to south by a substantial ridge of dune hummocks with dense growth of shorepine in places.

Wildlife habitat lost would include specifically winter/spring open water feeding and resting areas for migratory wildfowl (ducks and geese) and spring nesting habitat. There would be a less specific loss of habitat for the many other bird species found generally all over the Spit, including raptor hunting areas, for instance. The effect would be not only the loss of 90 acres of habitat, but also to make an additional break (with the waste treatment lagoon) in the continuity of the large area of deflation plain wetlands which runs from north to south behind the foredune from the Spit up into the Oregon Dunes N.R.A. The bay acts as a

flyway magnet, attracting migratory wildfowl to the area. In the course of resting and feeding, they may utilize the freshwater deflation plain wetlands as well as the tidal flats and marshes of the bay. The areas of deflation plain nearest to the bay therefore probably receive more wildfowl usage than more distant wetlands to the north. However, there is no conclusive evidence to this effect.

The loss of 90 acres of wetlands in this location should nevertheless be seen in the perspective of the total area of freshwater wetlands in the deflation plain to the south, and especially to the north. The area to the south is protected by inclusion in Segment 2 CS. The area to the north is included in the Siuslaw National Forest and Oregon Dunes N.R.A. and is thereby protected habitat. Since stabilization of the foredune in the early part of the century, a broad deflation plain with similar vegetation and hydrologic characteristics has opened up throughout the Coos Bay dune sheet. Many hundreds of acres of this type of deflation plain marsh exist between the North Spit and the Florence area. Because of changing hydrologic conditions and blowing sand, rapid plant community succession is occurring in some areas, creating shrub and shorepine communities which are much less valuable to wildfowl. However, there are also lakes surrounded by seasonal wetlands inland of the primary deflation plain, between Coos Bay and Tenmile Creek, which also provide wildfowl habitat. Elimination of 90 acres of deflation plain marsh should be seen in the context of the extent of the remaining resource.

Mitigation may be stipulated as a condition of permit issuance for filling of freshwater wetlands. This action is within the authority of the U.S. Environmental Protection Agency and although not a requirement, can be used as a tool of negotiation to reach agreement in a case where development and conservation interests meet head-on. The Henderson Marsh mitigation package is the best example in Coos Bay. The same type of approach could be used to reach agreement over this proposal. Although the Henderson Marsh package has reduced opportunities for mitigation of this proposal in the immediate area (by specifying actions in the deflation plain north of the waste lagoon, for example), similar actions could occur elsewhere. There are smaller areas of deflation plain marsh to the south (in Segment 2 CS) which could be enhanced by pond creation or other enhancement techniques. Similar actions could be taken in the broader deflation plain marshes in the Siuslaw National Forest in Sections 31 and 32, Township 24, Range 13, which are reasonably close to the proposed action, and are not within the Oregon Dunes N.R.A. Creation of additional wetland by sand excavation to the seasonal water level and enhancement by enlarging ponds could substantially mitigate the adverse effects of the proposed action.

Precipitation is the major source of ground water in the dunes aquifer, which is a major source of municipal water for the Coos Bay-North Bend Water Board (CBNBWB). Recharge of the aquifer

equals 37 MGD over the entire area. The CBNBWB holds a Permit to extract up to 30 MGD from the dunes aquifer. A USDOI study in 1973 showed that 30 MGD could safely be withdrawn from the dunes aquifer without danger of salt water intrusion. (Hydrology of the Dunes Area North of Coos Bay. J.H. Robison, USDOI, 1973)

The industrial site subject of this Exception is considerably south across a major industrial lagoon from the wells which are identified in the CBNBWB's water permit. They are not adjacent uses. However, should development demand the full amount of water now projected, the drawdown of the water table in the dunes aquifer could affect the environment in the upland lakes to the north (Horsefall, Spirit, Bluebell, etc.) These lakes are interrelated, visible indicators of the water table, overflowing from one to the next toward the south during the rainy season. Therefore, during the dry season, lack of rain as well as drawdown from nearby wells affects water level in the lakes. (Robison, 1973; Water Supply and Water Demand: Industrial Activities on the North Spit, EDD 11-12-83)

Since there is concern for the recreational, aesthetic and wildlife uses of these lakes, CBNBWB has adopted a policy to minimize adverse effects and is relying on the dune aquifer for only 22 MGD until such time as studies reveal ways to harvest the full 30 MGD allowed under its water permit without major threat to the upland lakes. (CBNBWB letter, 5-17-83; 10-28-83; and 11-3-83.)

Studies are ongoing, sponsored by the CBNBWB, USGS and others, to assure that the environment in the lakes area will be protected. For example, as part of new well field design, a 1978 study of excessive dissolved iron concentrations in the upper part of the dunes aquifer revealed that high levels of iron could be avoided by well field design, thereby allowing capture of excess water from the seaward edge of the aquifer, and minimizing drawdown of interior lakes. (J.E. Luzier, USGS, Portland, OR, 1978)

This and other considerations are the subject of current studies, which will allow the CBNBWB to optimize water withdrawals thereby minimizing the costs of water service, while minimizing effects on the water table in the lakes area and on the environment of the dunes. Planned industrial development on the North Spit will therefore remain compatible with the environment of the dunes lakes.

Total air quality impacts from the combined proposed uses are unknown in part because the exact character and intensity of the uses is not firmly set and because unforeseen technological improvements in industrial emission controls could render current concerns moot. Ultimately, the air quality impacts of the proposed uses will be acceptable because state and federal permits and permitting agencies will require them to be so.

c) Energy

A very substantial energy expenditure would be required to fill and level this site in preparation for development. The open dunes in some places are 75 feet high, and contain several million cubic yards of sand. Fortunately, much of the sand would be removed to the deflation plain and used for fill material. However, it should also be considered on the other hand that selection of this site involves less energy expenditure for aquatic dredge and fill operations to provide dock space, because of the closeness of the deep-draft channel. Similarly, a Lower Bay location will be an energy advantage in the long term, if additional channel deepening is required to accommodate deeper-draft ships.

Conclusion - Social and economic consequences of this proposal are positive. Environmental impacts are substantial, due to loss of 90 acres of wetland habitat, but it is possible to mitigate such impacts, if necessary. Energy consequences will involve substantial expenditure for site preparation in the short term, but long-term savings may result from the Lower Bay location and good channel access.

(iv) Compatibility

The proposed development will be compatible with adjacent uses to the north, the effluent treatment lagoon and development at the Henderson Marsh site. Compatibility with immediately adjacent wildlife habitats and recreational land can be ensured by stabilized berms or vegetative buffers at the edge of the site. The undeveloped portion of the open sand dunes will provide a substantial natural buffer between industrial development and recreational uses or wildlife habitat on the southern part of the Spit.

The proposed development is compatible with other uses of the dune resource because, as noted in the Water Board's letter quoted in the preceding discussion:

> In spite of the terms of the permit, the Board has considered the wishes of people and landowners of the area as well as the possible needs of the dunes resources and has adopted as its dunes water development goals "to optimize water withdrawals." In reviewing the Robison study, the Board has chosen the target figure of 22 million gallons per day as the apparent quantity that can be extracted while remaining within these goals.

Conclusion - The proposed development is compatible with industrial uses to the north and northeast. It is compatible with competing but legally inferior dune aquifer uses to the north. It is partially compatible with recreational land and habitats to the south, and may be made fully compatible by screening and berms.

EXCEPTION #19 - Segments 19D, 20B WD, and 32D - Christianson Ranch, Coos River Forks and Isthmus Slough

A) The Proposal: To permit industrial development on three sites in rural areas.

B) The Exception: During the application of the Coastal Shorelands goal (#17) to the Plan through the 'Linkage' process, it was not possible to apply the goal to these particular areas. Therefore, an exception must be taken to permit industrial development on areas of predominantly agricultural soils outside of urban/urbanizing areas.

C) The Findings

(i) Why these uses should be provided for

The industrial site selection process [Section 5.9 of the Economic Activity element] selects these sites for the following types of activities:

- Segment 19D - Christianson Ranch

100 acres are designated for a small sawmill or similar type of use. The remaining 64 acres will be needed for dryland log storage or some similar use. As explained on p. 5.9-56, Economic Development Inventory, dryland log storage needs are likely to rise either because of more stringent DEQ requirements controlling in-water log storage, or because of the difficulty of rafting small logs, which are becoming an increasingly large proportion of total timber harvest. Similarly, a new saw mill will be needed specifically designed to handle the smaller logs. Aspects of the development will be water-dependent, as explained in the Shorelands Linkage narrative [Section 5.9, p.56], because raw materials and finished products will be transported by water. The 64 acres left over for log storage or similar use are part of the 495 acres which are separately justified in the industrial land needs projections as part of the very-long-term land-banking needs of the lumber and wood products industry. It should be noted that Christianson Ranch has recently been filled as a dredged material disposal site. Agricultural soils have been buried, but it was agreed in the permit (cite ref.) that an Exception would be needed if the land were not restored to agricultural use.

- Segment 20B WD - Coos River Forks

This small site is identified as a suitable site for rock products shipping by barge. Rock quarried in the Millicoma/Lower Coos River uplands has been shipped from this site in the past. Expanded activity would involve using the portion of the site which is in agricultural soils and not

yet committed to existing use. Because barging is the most energy-efficient means of transportation and because much of this rock is to be used in jetty repair, construction, rip-rap and the like, sites like this and that on Kentuck Inlet are needed.

- Segment 32D - Isthmus Slough

This site (about 100 acres) is also proposed as part of the 495 acres of very-long-term land-banking needs for the lumber and wood products industry [Section 5.9, page 56]. Some of the property may be used for dryland log storage for the same reason as cited above for Christianson Ranch. Other parts of the property may satisfy needs for the trucking industry (yards and shops). Because this land is viewed as part of a land bank, some flexibility must be retained as to future uses. Large parts of the segment are currently diked pasture land. The remainder is already committed to the industrial uses envisaged (truck shops, log storage).

Conclusion - These sites are an essential part of the total economic development land needs package for the Coos Bay Estuary.

(ii) Alternative Locations

Alternative locations for the small mill and log storage on Christianson Ranch are as follows:

(a) North Spit generally;
(b) The privately-owned spoils disposal area in Eastside [Shoreland Segments 26A UD and 23B UD];
(c) Pierce Point;
(d) Coos River site opposite Christianson Ranch (Shoreland Segment 20 RS)

The North Spit is allocated totally to other uses which require sites of the size available there, and require deep-draft access. To locate this use there would be inefficient use of land and water frontage, because it only requires shallow-draft access for barging. The privetely-owned land on the north side of the Eastside peninsula lacks water access. While indirect access could be gained either from adjacent segments to the east and west, planned developments (marine construction and repair) to the west and the existing Sause Brothers site to the east would make this type of arrangement impractical.

Pierce Point is too small a site (35 acres), and although it is in the same ownership as Christianson Ranch, could not fullfill this same need.

The site on Lower Coos River opposite Christianson Ranch has sufficient acreage, and is proposed as a dredged material disposal site; however, it is agricultural land currently in active use for grazing, and an Exception would similarly be required.

Furthermore, it would be several years before dredged material disposal would have proceeded to a point where the site could be developed. Lastly, there are serious doubts about whether this site will actually be available for DMD [see Special Dredged Material Disposal Element, Section 7.4.4].

The Christianson Ranch site is in an ideal location because it is on the shallow-draft channel directly adjacent to the main log transport artery, Coos River.

Alternative locations for the Coos River Forks rock-loading site are very limited. Other sites downstream along the north bank of Lower Coos River lack space for temporary storage. Other sites in the immediate vicinity could be used, but would also involve the use of agricultural land. Since the site is already in eixstence and is in the most convenient place in relation to the upland quarry, there is no practicable alternative location.

Alternative locations for the Isthmus Slough site are examined in the Shoreland Linkage Narrative, Section 2.7.2. It is concluded that because upland log storage needs access to water for transport, and because this site is ideally located for trucking industry use, there are no locations better suited to the probable uses.

Conclusion - There are no other sites better suited to the proposed uses.

(iii) Consequences

a) Social and Economic

Social and economic consequences are the same as for other proposals for industrial development around the Bay, namely:

- Increased jobs and payrolls;
- Increased property tax revenues to Coos County;
- Increased local business activity due to increased consumer spending;
- Greater social stability and reduced stress due to improved employment;
- Possible net in-migration and reduced housing vacancy rates.

To the extent that a small sawmill will produce a number of new jobs, this proposal is likely to have the most positive social/economic consequences.

b) Environmental

Environmental consequences will be very minor. Dredged material disposal on the diked pasture at Isthmus Slough will eliminate some minor areas of "wet meadow" and a few drainage ditches, which have some use by birds like heron and egret. Christianson Ranch

dredged material disposal is not yet complete, and some small seasonal pools remain which are used by wildfowl. Completion of site preparation would eliminate these pools.

c) Energy

The Christianson Ranch site represents a very energy-efficient location for wood products manufacture because of the ease and convenience of waterborne transport of raw materials and finished products. Similarly, the Coos River Forks site is the most efficient location for rock shipping, as it is very close to the quarry. Barging is the most energy-efficient mode of transportation for jetty rock to its point of use which is normally in or beside the water.

Conclusion - The social/economic and energy consequences of the proposed uses are positive. The environmental impacts are minor and acceptable.

(iv) Compatibility

The Christianson Ranch site has water on two sides, agricultural and on the third side, and a rural-residential area on the fourth side. The proposed development would be compatible with the shallow-draft channel, as indicated above. No adverse impacts will occur on the agricultural land to the north, which is also a designated DMD site or a restoration site. The residential area is well-buffered by the topography and a forested area from the development site.

The Isthmus Slough site has the slough on two sides and Highway 101 and scattered residential development on the other. Log storage and truck shops exist within the site. Due to the presence of similar uses, and the close proximity to primary access routes, the proposed uses will be compatible with adjacent uses.

The Coos River Forks site has the river on two sides and agricultural land on the other sides. Rock storage and loading is compatible with the adjacent grazing uses.
Conclusion - The proposed uses are fully compatible with adjacent uses.

EXCEPTION #20 - Aquatic Segment 26B CA - Eastside Port Property Marina Site

A) The Proposal: To develop a dredged marina at this site.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular area. Therefore, an Exception is necessary to language in Goal #16 which requires that "high-intensity water-dependent recreation" developments be

"consistent with the resource capabilities of the area". It is concluded that, based on information in the Biological Resources inventory and maps, dredging would not be consistent with the conservation of resources found in this area.

C) The Findings

(i) Why these uses should be provided for

The Special Moorage Element identifies a need for 56.5 acres of water surface area for future commercial/recreational marina development. [See page 6.3-33, Special Moorage Element]. This site is identified as well-suited to meeting these needs. Acreage is 27 acres.

Current moorage space is in short supply; crowding and conflict between recreational and commercial users at Charleston Boat Basin is one result.

The rationale for development at the "Eastside Port Properties" is that the segment is also proposed for ship building and repair facilities. As explained on pages 6.4-39 and 40, Special Moorage Element, provision of these support services will result in an integrated development with better chances of obtaining Federal grant funding. The site is well-suited to mid-water trawlers, for which the greater distance from the channel entrance is not a great disadvantage, becaue they do not enter and leave the port with great frequency.

Conclusion - There is a need for commercial moorage space at this location.

(ii) Alternative Locations

The Special Moorage Element identifies five other potential sites for marina development. Descriptions of each site are given below together with assessments of their suitability as alternative locations.

- Eastside Port Properties, West - Segment 27 DA

  As discussed in the Economic Activity inventory, Section 5.9, this site is identified as needed for marine construction and repair, together with the adjacent upland (Segment 27 UW). While it possesses suitable characteristics for a marina, the presence of the deep-draft channel makes it more suitable for the proposed uses.

- East Pony Slough' (North Point) - Segment 48A DA

  This site is considered marginally suited, at best, for moorage development because of strong prevailing winds, current surge and swell and sloughing from the adjacent spoil sites. The most serious problem is that of potential

conflicts between large vessels using the main channel and small boats entering or leaving the marina. This could cause large vessels to ram either the railroad or highway bridge when maneuvering to avoid the small boat. The segment is therefore not considered suitable for water-dependent uses.

o Sitka Dock - Segment 56 DA

[This site has also been selected for fulfilling moorage needs.] Construction of a marina in this segment would require drilling or blasting of the rock substrate that lies close to the surface. Costs of such a project would be very high.

o Empire Waterfront - Segment 54 DA

Most of the water area at Empire is used for access to three existing docks (oil/gas, fish receiving and lumber). Barge use of the site requires sufficient space to allow maneuvering. Most of the land area is already occupied. The site also suffers from high winds. Therefore, this is not considered a suitable site for marina development.

o Old Town Site - Segment 46 DA

As stated on page 49, Section 6.4, the narrowness of the aquatic and adjacent upland segment as well as the close proximity of the channel partially limit the usefulness of this area. Space is lacking for back-up facilities on land, even with the 6 acres of available water area.

Conclusion - Each alternative site is planned for other types of development which better suit its capabilities, and are not considered suitable alternative sites for marina development to replace the proposed site, or in the case of Sitka Dock, have already been selected as marina sites.

(iii) Consequences

a) Social and Economic

This marina site will provide a basis for regeneration of the local fishing industry, which will bring more boats to Coos Bay to off-load their catches and boost the boat building/repair and fish processing subsectors. As with other proposals with direct benefits to the economy, consequences may be summarized as follows:

- Increased employment and payrolls;
- Increased property taxes to Coos County and the City of Eastside;
- Increased receipts for local business through local economic multiplier;
- Decreased social stress due to improved economy;

- Possible net in-migration and lower housing vacancy rates, especially in rental sector.

b) Environmental

This area is a mud flat which qualifies as a Conservation management unit. Its importance lies in the fact that it is part of a feeding and rearing area for juvenile salmonids. Dredging a marina would remove the benthic resources (amphipods) that salmonids feed on, and greatly reduce or eliminate their use of the area. It would also eliminate part of a bed of Macoma and Tellina clams. Subsequent re-colonization is not likely to occur because these organisms are primarily found in intertidal areas. Fill is only permitted as necessary for a boat ramp, and therefore limits the potential for complete elimination of aquatic habitat. Again, the Special Condition will help to minimize the impacts of dredging.

c) Energy

Energy consequences relate mainly to the energy expended in dredging out marinas, and by boats running in and out of the bay. The site would require substantial dredging because it is entirely intertidal. Because it lies on the Marshfield Channel, it may be prone to sedimentation from the Coos River system. Therefore, maintenance dredging may be costly in terms of energy, unless structural measures are used to prevent this. Distance to the bar is greater than for most other marina sites. However, because it is intended for mid-water trawlers, runs to and from the fishing grounds will be less frequent.

Conclusion - Social and economic consequences are positive. Energy consequences are mixed, but generally positive. Environmental impacts are but acceptable upon mitigation.

(iv) Compatibility

Adjacent uses to the Eastside Port Properties site are the vacant dredged material disposal site and log storage in the Marshfield Channel. Log storage will not be feasible directly in front of the marina once it is developed. The dredged material disposal area is to be developed with marina support facilities and other water-dependent/related uses [see Exception #17]. These uses will be fully compatible with the proposed marina.

Again, the Segment's Special Condition minimizing impacts of dredging will help ensure compatibility with the resources of the adjacent tidal flats and the Marshfield Channel.

Conclusion - The proposed marina will be fully compatible with adjacent uses and aquatic areas.

EXCEPTION #21 - Aquatic Segment 52A DA - North Bend Airport Runway Extension

A) The Proposal:

i) To place Segment 52A DA in a Development management unit to allow for fill and related activities to extend the North Bend Municipal Airport Runway 4-22, primarily so that corporate jets can land at a full load capacity during inclement weather and to accommodate possible future commercial air freight operations.

ii) To dredge a small channel in 52 NA on the north side of the fill to maintain circulation for the purposes of mitigation.

B) The Exception: During the application of the Estuarine Resources goal (#16) to the Plan through the 'Linkage' process, it was not possible to apply the goal to this particular area. Therefore, a two-part Exception is needed:

(i) to designate the area as a Development management unit when it would normally be a Natural unit, based on the existing biological resources, fish and waterfowl habitat in the area,
(ii) to allow for fill and related activities for a non-water-dependent, non-water-related uses, and

(iii) to allow dredging for mitigation purposes in a natural management unit.

C) Findings
(i) Why These Uses Should be Provided For:

1. Transportation is one of four key considerations in attracting outside enterprise to an area.[5]
2. The Coos Bay-North Bend vicinity is a semi-isolated community with inadequate or poor land transportation access.
3. The Coos Bay-North Bend vicinity has a demonstrated need for economic development and diversification.
4. Economic development for semi-isolated communities with inadequate or poor land transportation access is often dependent on adequate aviation facilities and services.[1]
5. The City of North Bend owns and operates a municipal airport serving the region.
6. All other transportation access to the area is provided by State and Federal agencies or interests.

Conclusion
For the area to be competitive in attracting outside enterprise to achieve economic development and diversification, adequate aviation facilities and services must be provided.

Findings

1. The area has identified economic development and diversification opportunities for itself in the areas of lumber and wood products (e.g., sawmills, secondary wood product manufacturing, pulp and paper processing, wood panel fabricating); marine industries (e.g., marine construction and support, seafood processing, salmon aquaculture); mining, minerals, and energy (e.g., oil and gas, coal and other, manganese nodules, polymetallic suphides, quarry rock); transportation (e.g., aviation, waterborne cargo); and other (e.g., tourism, foreign trade zone, and other manufacturing). Additionally, on-shore support and manufacturing facilities for off-shore mineral exploration including but not limited to polymetallic sulphides and off-shore oil and mineral exploration have been identified.

2. Air freight and cargo transport is the most costly mode for the movement of goods but is very important in the movement of high-value, low-bulk, perishable, dated, technologically advanced, or specialized goods, materials, and equipment which have or need a premium for quick access or are part of small inventories, limited warehousing, reduction in packaging costs, reduction in transit damage, or specialized uses for short periods of time.[5]

3. These current economic activities and identified economic opportunities rely on air freight and cargo transport: lumber and wood products (e.g., to maintain the repair equipment which is costly when down); marine industries (eg., marketing of fresh seafood products or access to specialized materials and equipment for marine construction which are used at a variety of geographic locations); mining, minerals, and energy (e.g., movement of advanced technology with reduction of damage risk); transportation (e.g. maintenance and repair parts for aviation which are most practical to be carried in small inventory lots); other (e.g., highly specialized materials and services for technologically advanced off-shore support manufacturing and facilities); and other (e.g., movement of goods related to the operation of a foreign trade zone).

4. Business and executive air travel play an increasingly important role in advanced technology, off-shore, national corporations, international business and industry, and national and global marketing due to the deregulation of airlines, corporate activities on a national and global level, and the geographically dispersed character of many expanding businesses and industries.[6,7,8,9]

Conclusion

Current economic activities as well as identified opportunities for economic development, diversification, and expansion rely on the movement of personnel, goods, services, materials, and equipment through expensive but convenient and cost-beneficial air transport. Especially, in the area of airfreight, likely business expansion and

new enterprises are more typically reliant on the quick, safe movement of goods and materials which air transport provides. Ranging from perishable fisheries products for distant or special markets to advanced technological materials which do not lend themselves to on-site inventories but are essential when specifically needed, expanding and new enterprises rely on air freight.

Findings

1. The types of aircraft typically used for business travel, air cargo, and specialized needs are often of a size greater than the current runway was designed to accommodate safely and efficiently. [11]

2. Aircraft rely on particular combinations of fuel load, pay load (passengers and cargo), and distances to operate efficiently. [11]

3. Special craft designed for operational efficiency in limited take-off and landing situation are not typically used by business, corporate, and air cargo interests because of lack of overall necessity for most points of access and economic activity. [11]

4. Airport runway length requirements are based on the distances to markets being served and the characteristics of typically used aircraft. [11]

5. Existing North Bend airport facilities can accommodate only a portion of the typical business, corporate, and air cargo craft fleet and only when these typical craft are at a portion of maximum useful load (a combination of fuel load and payload). [13]

6. Runway 4-22 is the only instrument runway. It is currently only 4600 feet. This is at the lower end of the fleet requirements for business, corporate, and air cargo craft. The FAA requirements for such typical craft range from 4,450 feet to 6,800 feet. [12, 19, 20]

7. FAA has found that there is immediate justification for an extension of Runway 4-22 to meet safety standards based on current and forecasted uses. (FAA communications: June 1, 1983, and October 6, 1983.)

Conclusion

The current instrument landing runway at the North Bend municipal airport is currently inadequate to provide safe, efficient operations for the typical aircraft fleet likely to use the facilities as a part of current and new economic enterprises to assist the area with economic develpment and diversification. Runway 4-22 must be extended to afford the area opportunities for economic activities reliant on aircraft of which a significant portion cannot operate safely and efficient on the existing facilities.

To support current and anticipated air transportation activities related to maintaining economic activities and to attract identified economic opoprtunities, the Runway 4-22 must be extended to provide for safe, useful business and cargo aviation facilities.

Findings

1. Noise impact reductions on developed areas of North Bend and off-airport safety considerations are improved with greater utilization of Runway 4-22.[14,15,16,17,18]

2. Runway 4-22 is the only runway at the North Bend airport which can be an ILS (full precision instrument landing system) runway and weather data supports the emphasis on use of this runway.[19,20,21,22]

Conclusion

The extension of Runway 4-22 will allow an even higher utilization of that runway which in turn improves the health, safety, and general welfare of the aviation users and the populace of the surrounding area.

REFERENCE: Except as cited above, the above findings are supported in the economic inventory of the Coos County Comprehensive Plan and in the Coos Bay Estuary Management Plan's Inventories and Factual Base.

A 5,713 foot runway would require an extension of 1,100 feet of paved surface with appropriate safety overrun. The optimum runway safety area length designated for the North Bend Airport is 1,000 feet beyond the end of each runway. Current safety areas extend 200 feet beyond each runway end. The above configuration would require tideland fill ranging from 20 to 32 acres dependent upon the safety overrun length utilized.

(1) Extension of Runway 4-22 to an overall length of 5,713 feet with a 200 foot safety overrun would satisfy only present identified needs related to the airport's capability of accommodating business jets. A fill length of 1,100 feet projected for the above alternative would not allow for the installation of additional runway length to meet the needs of business, airfreight and possible air carrier jets.

(2) Extension of Runway 4-22 to a length of 5,713 feet with an interim 900 foot safety overrun would allow the airports' runway to satisfy the present demonstrated needs and provide a filled area on which the runway would be extended to a length of 6,613 feet upon future demand. The North Bend Airport Committee feels that this alternative will best meet the areas existing needs and allow for future expansion when required.

Findings

1. The City of North Bend realizes that for any runway extension alternative, the amount of funds utilized for installation of the facility will require the city to obtain financial assistance. The most likely source of financial assistance that will be available to the city for such a project will be from the FAAs' Airport Improvement Program (AIP). Project funding guidelines that the FAA follows for their AIP Grants include the funding of projects that demonstrate an existing need. The FAA is aware of North Bends' current needs to extend Runway 4-22 to accommodate existing business jet traffic and classifies that need as "the highest priority development at North Bend". The FAA also recognizes "the ned for the eventual development of Runway 4-22 to a length of 6,613 feet is foreseeable and should be accommodated in the long range plans of the community".

2. Construction of the runway extension will involve the deposit of dredged material for the fill that the runway will be extended upon. Dredging of Coos Bay's tidelands and channel is expensive and the availability of dredged material for the fill is not accurately predicted. When dredged material becomes available for the runway extension project, the availability of that material will only be for a short period of time.

3. Extending Runway 4-22 will require that permits be obtained from the Oregon State Division of State Lands and the U.S. Army Corps of Engineers for filling the area. Past experience for obtaiing the required permits have shown that the length of time for final approval can take between 3 and 12 months or longer, dependent upon the complexity of the project. The runway extension project will require mitigation for the fill and therefore prove to be a relatively complex project in regards to permit review.

4. The method which the runway extension process must follow will be:

   a) complete runway extension design

   b) acquire proper fill permits

   c) acquire funding from the FAA & AIP

   d) fill the area of the runway extension with dredged material as it becomes available

   e) construct runway extension(s)

Conclusion

Due to the complexity involved with obtaining State and Federal fill permits, in acquiring adequate financial assistance and the unpredictable nature of the availability of dredged materials, it is only feasible to fill that portion of the Coos Bay Estuary that will accommodate present and future runway extension needs in one complete process.

"Why These Uses Should Be Provided For"
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(ii) Alternatives

Introduction

In this section the following alternatives to the proposed action are examined:

No Action - Runway 4-22 is not extended as proposed and none of the other alternatives are pursued.

Alternative On-Site Configurations - Options (other than the proposed 4-22 extension) that provide increased runway length are assessed.

Airport Relocation - Site criteria and viability of this option are discussed; alternative sites are examined for suitability and potential impacts of development.

Alternate Air Service - A scenario of airlines or aircraft types that could provide some degree of continued air service to the region if Runway 4-22 is not extended.

No Action

The lack of ability to accommodate DC-9 aircraft led to the loss of certificated air carrier service. Hughes Airwest announced its intention to seek withdrawal of service as it deleted F-27's from its fleet if the airport was not developed to accommodate DC-9 aircraft.[1] As a result of the airport's inability to extend Runway 4-22, Hughes Airwest discontinued service in July of 1979. Previous Civil Aeronautics Board regulations permitted service to be discontinued under certain conditions even if, as in this case, the certificated carrier was receiving an FAA subsidy to make provision of service economically possible for the carrier. In any event, a certificated carrier could withdraw from a given route at any time by applying to CAB for replacement service, which was provided by a light commuter airline. That other airline did not have to be a certificated air carrier. Without the ability to accommodate aircraft in common use by interstate carriers, it was impossible to interest another certificated carrier in the route. Subsequent deregulation of the airline industry has made this process much simpler for major carriers.

Under the Airline Deregulation Act of 1978, North Bend/Coos Bay was designated as an essential air service area.[2] The designation guaranteed 80 seats inbound and 80 seats outbound daily. Portland was designated as the northbound hub and either Eugene, Medford or San Francisco as the southbound hub.

As a result of decreasing demand, Air Oregon filed a 30-day notice to terminate service to North Bend/Coos Bay with the CAB in October of 1981.[3] This resulted in the CAB requesting justification from North Bend/Coos Bay for the dual hub designation and number of guaranteed seats before considering proposals for replacement service. The decrease in demand for service has been attributed to a number of

factors:[4]

1. A severe recession locally due to a major decline in the major economic base of the area - wood products industry.

2. Skepticism on the part of the consumers as a result of the Air Traffic Controllers strike.

3. Inadequate service to the southbound hubs.

Another factor is the inability of many people to get seats on flights to San Francisco and then insure a confirmed way to return. This has resulted in many people driving to Eugene to be guaranteed a way to return to North Bend/Coos Bay.

With a longer runway, some of the above factors might have been offset. Larger planes could have been accommodated, allowing for more dependable service and larger cargo capacity. Additionally, it would have allowed the area to be more competitive in attracting other industry into the area to diversify the local economy. This relates to the larger cargo capacity and the trend of corporations to develop their own private fleets to meet their needs.

The impacts of neither extending a runway at the current site nor relocating the airport are discussed below in terms of advantages and disadvantages. The list is not complete and reference should be made to the section on the economic importance of the commercial air facility.

Advantages

1. No change in the relative abundance of species in the total estuarine system that could be attributed to the Airport Extension.

2. No loss of eelgrass beds. These provide a diverse and highly productive habitat.

3. None of the temporary water quality problems, such as increased turbidity, associated with filling tidelands.

4. No alteration of hydraulic characteristics of the bay and therefore no temporary change in erosion and deposition patterns.

Disadvantages

1. Loss of the ability to meet the needs of new corporate aircraft, particularly the corporate jet. Present runway length only allows planes to utilize 60% of their useful load.

2. Loss of the ability to eliminate a majority of the airport stress factors related to safety, noise and potential land use conflicts by moving major aircraft operations over water areas as opposed to

urbanized areas.

3. Loss of potential fish markets in the mid-west.

4. Loss of a more economic way to transport fish to markets. Much of current production is trucked to San Francisco, Seattle, and Portland and flown to other U.S. markets from there.

5. Loss of jobs that could be created by additional air freight capacity given the fact that 35 million pounds of fish were landed in Coos Bay, with a majority being shipped out for secondary processing.

6. Loss of air carrier service would make the area less attractive to new businesses. The ability to revitalize the current economy depends upon attracting new and diversified enterprises because of the decline in the timber resource and related jobs.

7. Loss of potential to accommodate a more economic type of aircraft. According to the Oregon Department of Transportation the average cost per passenger mile for commuter airlines in 1974-76 was 21.6¢. This compares to an average of 9.6¢ for DC-9 and 737 aircraft. (These were computed using average load factors of 50% for commuter and the 57.3% national load factor for DC-9/737 aircraft.)[5]

8. Loss of the potential for better, more convenient and dependable scheduling of flights.

9. Loss of several airport-related jobs.

10. Loss of airport revenue. The loss would not be severe, however, since most operating revenues are derived from fixed-base operations and leasing of industrial space.

Alternative On-Site Airport Configuration

On-site configurations were given extensive consideration in the Environmental Impact Assessment, North Bend Municiapl Airport Modifications, North Bend, Oregon, Environmental Impact Statement, Parametrix, Inc., October, 1975. The following examination of on-site configurations updates those found in the EIS and proposes other alternatives not considered in the EIS.

1. Runway 4-22 (All configurations would require an Exception to Goals #16 and #17).

   a. Lengthen East End

   Extending Runway 4-22 to the east rather than the west would be more environmentally damaging than the current proposed sites. The primary reason for this is that a fill to the east of the runway would close Pony Slough to tidal influence. Such a fill would eliminate 305 acres of

estuarine wetland which is presently used by waterfowl as a resting and feeding area, as well as removing a similar acreage which is recognized to be a more highly productive marine environment than the proposed western extension which comprises some 32 acres. An extension to the east would also more severely impact residences in the Simpson Heights area of North Bend as well as the community in Glasgow. Also the Southern Pacific Railroad bridge, which crosses Coos Bay at Mile 9 would become an obstruction to the FAA required glide slope for Runway 4-22, presenting a safety problem that would require moving the bridge eastward as a solution.

b. Runway 4-22, 7,100 Feet

The 1974 North Bend Airport Master Plan[6] called for a 2,487 foot extension of Runway 4-22, plus a 1,000 foot overrun and relocation and enlargement of the existing stormwater retention pond. As proposed, the project would require 130 acres of tideland for fill. Such a configuration is no longer considered a viable alternative as the current proposed extension would be placed on a 725 foot by 2000 foot fill which would allow for a completed runway length of 6,613 feet with a 200 foot overrun (the minimum possible under FAA standards). The area required for this current proposal would occupy 32 acres.

c. 6,000 Foot Runway 4-22

A 6,000 foot runway would require an extension of 1,387 feet including the required 200 foot overrun, for an area totalling roughly 32 acres; this is the same area as is required for the proposed 6,613 foot runway which is based on different configuration of the fill. From a standpoint of tideland filling this alternative is the most acceptable alternative (except no action) and is the equal of the 6,613 foot extension but it would fall short of meeting the anticipated needs identified in the Airport Master Plan.[7] Business jets and commercial airfreight jets would not be able to utilize the runway as fully as a 6,613 foot runway, thus leaving the area with a less limited ability to diversify the local economy.

d. 6,613 Foot Runway 4-22

Extending the current length of Runway 4-22 from 4600 feet to 6613 feet provides both additional runway length of 1100 feet and approximately the FAA specified optimum safety area length of 1100 feet. This extension, which would require a maximum fill of 32 acres, is not the maximum desirable lenth for Runway 4-22 but the best practicable alternative. Justification for additional length is not foreseen.

This extension places the North Bend airport facilities within the range of the FAA standards for the craft typically expected to use the airport but does not meet or exceed the full FAA requirements of 6,800 feet.

e. 6,600 Foot Runway 4-22

(1) Supported on Pile - This alternative would require an extensive array of piling beneath the runway and taxiway. The piles would need to be so close together to support landing aircraft that restriction on circulation and flushing would be nearly as great with the fill and certainly more great than the current extension proposal which includes a reliever channel which surrounds the northern perimeter of the fill. The safety zones surrounding the runway and taxiway would also require high concentrations of pile to provide appropriate safety precaustions.

(2) Culvert Through The Site - A culvert under the proposed fill would provide currents across the tideflats east and west of the proposed action and would aid in minimizing effects on adjacent biota. In addition, the water moving through the culvert would provide additional flushing. However, there would be a tendency for the culvert to become obstructed with debris and sediment.

(3) Channelization At The Fill Site - This alternative would provide a channel which extends to a depth of 1 foot minus mean lower low water that would be built parallel and adjacent to the northern flank of the proposed fill. The channel would be extended through the point where the fill incorporates the existing spoil island. This alternative, a requirement associated with the Division of State Lands permit (now revoked), would be 16' in width at its lowest point and would follow a 2:1 riprapped slope on the fill side and a natural sand slope on the spoil island side. Such an alternative would provide additional flushing for the area and would minimize the negative effects on adjacent biota.

2. Runway 13-31 (Each configuration would require an Exception to Goals 16 and 17).

a. Lengthen Runway 13-31 Northward into Coos Bay

Extension of Runway 13-31 northward would require tideland fill, which would have an immediate impact on the tideflats to either side of the runway extension. The runway protruding into the bay will slow the current of the incoming and outgoing tides, increasing siltation in that locale. Whereas the impact of extending Runway 4-22 will mainly be limited to the actual fill of tidelands, a northward

extension of Runway 13-31 would continue to impact adjacent tidelands through siltation for years to come, in excess of that anticipated for the Runway 4-22 fill. Another reason for rejecting this alternative is that the glide slope required by the FAA for an extension of Runway 13-31 is obstructed by industrial developments on the north bank of the bay, which eliminates the possibility of converting 13-31 to an ILS runway.

b. Move the Stormwater Retention Pond East of Runway 13-31

This alternative would relocate the stormwater holding pond in Pony Slough, rather than on what is presently a freshwater wetland identified by the ODFW as a "significant wildlife habitat". The drawback of this alternative is that it would probably require an Exception to justify reduction of the area of Pony Slough. The same problem is still present with the minimum glide slope requirements. This eliminates Runway 13-31 from consideration as an ILS runway.

3. Runway 16-34

a. Lengthen Runway 16-34 Southward

A southward extension of Runway 16-34 would require condemnation of a significant portion of existing North Bend residences and removal of a grade school in the path of the runway, as well as relocation of residents and re-routing of streets. Increased noise to remaining residences would also produce an adverse impact on the human environment. This alternative has been rejected on the basis of cost and community disruption.

Airport Relocation

A set of alternatives to runway extension at the present site involves relocating the airport. Advantages could include longer runways with no alteration of the estuary, depending on the site chosen. A source of noise in the North Bend area would be eliminated in most cases.

One of the arguments for relocation is that it would allow for further runway extension without further need for filling the bay. It is not likely, however, that the need for further extension will ever arise. Larger aircraft (requiring longer runways than DC-9's) are rarely used for feeder systems and the Coos Bay/North Bend area will not develop the capacity to support a hub airport in the foreseeable future. As for design trends for future aircraft, the concentration seems to be on increasing passenger and freight carrying capacities while emphasizing short take-off and landing (STOL) capacity, so as to ensure continued access to feeder system markets. According to the State Division of Aeronautics, "While the trend in aircraft gross weight, wing span, length and landing gear size is still upward, the trend of runway strength and runway length requirements appears to have leveled off."[8]

This statement is supported by Boeing Aircraft, the largest maker of civil airliners in the free world, who state that a medium runway length of 6,600 feet could not only provide the length required for the current immediate types such as the B-727 and B--737 but future designs as well, such as the B-757, 767, and 777. These new-technology aircraft, which will be operational in the 1980's, will provide nearly twice the passenger and cargo capacity of current types. All of these aircraft, both current and planned, would be unable to operate from the present runways.[9]

Minimum criteria for an alternate site include sufficient land with low topographic relief (about 800-1,000 acres) with flat approach zones adjacent to it (less than 50:1 slope according to FAA regulations).

Because of economic reasons, passenger convenience and energy considerations, the proposed site should be close to the major market for air service. Because of time constraints, a thorough analysis of population distribution and business and industry concentration is not included here. However, U.S. Census data is available. For census purposes Coos County is broken into several districts which are shown on the accompanying map. According to 1970 U.S. Census figures, over 51% of the population of Coos County is located in the districts shaded on the accompanying map. Note that the shaded area does not include Glasgow and East Bay communities. In addition, the area supports a high concentration of existing and potential air freight users. Transporting goods over distance increases cost;

these costs are eventually borne by the consumer. Transporting fish from Charleston to Bandon before loading an aircraft, for instance, would increase the cost to the consumer because of vehicle maintenance or rental and driver's salary; higher consumer cost would tend to make the local product less competitive with the same product from other locations such as Eureka which currently supports a fishing industry and has the same air freight capability as would the North Bend Municipal Airport with increased runway length. Also, as the distance from the major market for air service increases so does the fuel cost. Locating the airport close to the major market would be more energy-efficient.

In determining airport configuration, wind patterns are a deciding factor. Available land must not only be of sufficient acreage but must also be suitably situated. The location of approach zones with respect to prevailing winds is important.

Land ownership and development patterns also are important siting criteria because they effect social cost and determine the difficulties and expense of land acquisition. If the land is developed residentially or if the ownership pattern is small lots, th acquisition costs are greater than if the land is vacant. Site development costs also rise if buildings must be removed. Socially, construction of an airport in a developed area would disrupt people's lives, homes and legacies. Families would have to be relocated and

more homes constructed. Undeveloped sites, particularly if the ownership pattern is large lots, are preferable.

The topography of the area is such that few suitable undeveloped sites exist. Proposed sites are assessed below in terms of the above and other applicable criteria such as prevailing wind conditions, ease of access and land ownership patterns. They are also assessed in terms of environmental trade-offs (loss of agricultural land, change in patterns of development and so on). However, there is a prior consideration that affects the viability of relocation as an alternative.

The cost of constructing an airport similar to the North Bend Municipal Airport was estimated in 1978 at $24,000,000 to $26,000,000.[10] Cost could, however, be considerably greater since the following assumptions were made to generate this estimate:

1. that no major grading at the site would be required other than land clearing;

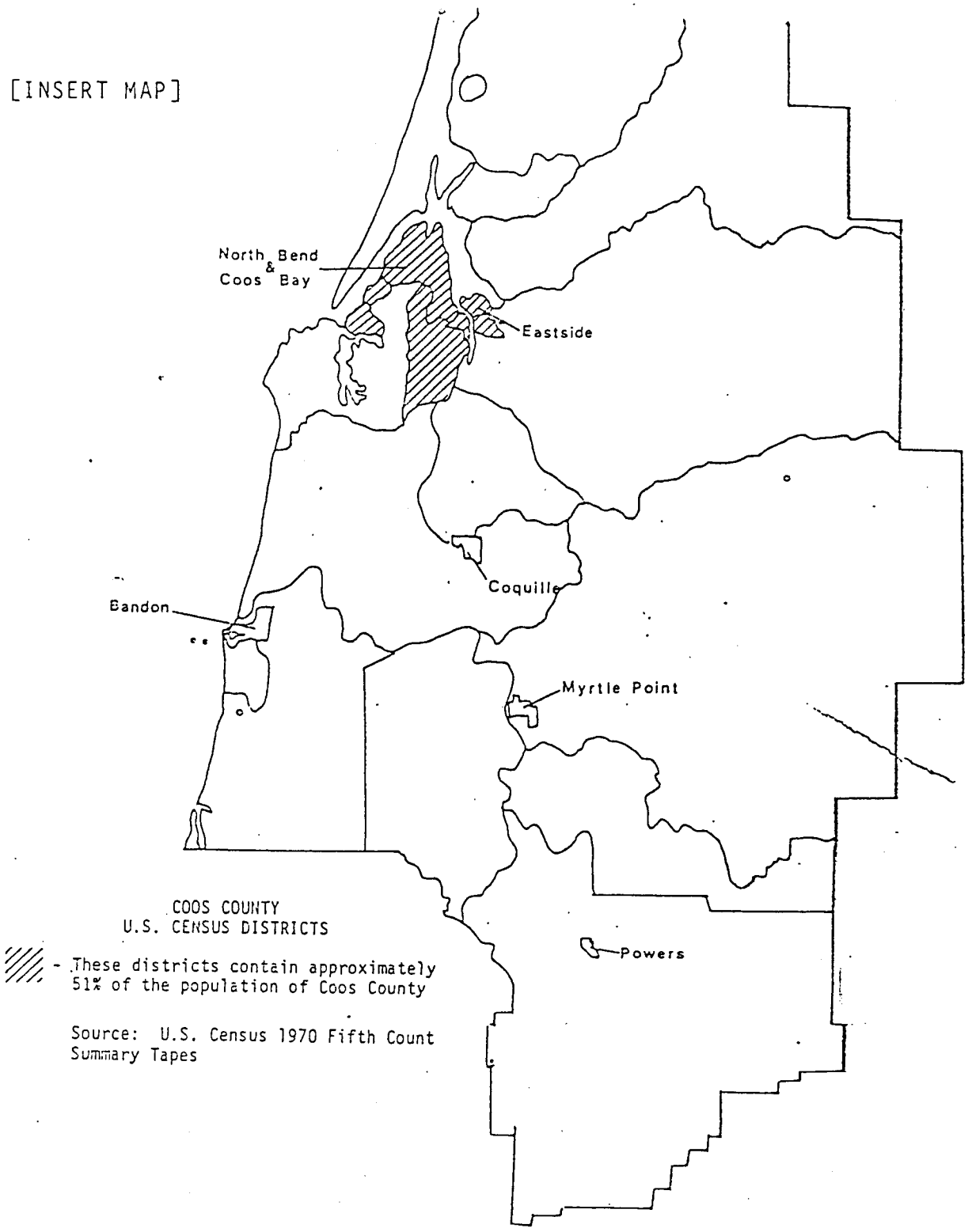
2. that all other topographic considerations are satisfactory;

3. that developing access to a major highway would be inexpensive;

4. inflationary increases in labor and materials.

COOS COUNTY
U.S. CENSUS DISTRICTS

[INSERT MAP]



COOS COUNTY
U.S. CENSUS DISTRICTS

- These districts contain approximately 51% of the population of Coos County

Source: U.S. Census 1970 Fifth Count Summary Tapes

Exceptions
3.0.85 A

Because there are no alternative sites within North Bend, reloction would involve a jurisdictional change. Jurisdiction would most likely evolve to the County or to an airport district. Financing alternatives open to these units are issuring general obligation bonds or revenue bonds and seeking State and Federal funds.

There are, of course, statutory limits to bonded indebtedness set by the State Legislature. Each bonding method presents unique concerns. For example, general obligation bonds would require voter approval with resultant higher taxation, a difficult task at best. In order to provide a comparative perspective, assistance was requested in 1978 from the Coos County Assessor's Office to identify the property tax rate which would result in voter approval of a $26 million general obligation bond for airport relocation. Assuming that the levy would be County-wide (County itself or special County-wide air transit district), assuming the current assessed valuation of property in the County remains constant, assuming the current applicable interest rate remains the same, assuming the current value of the dollar remains the same, and assuming that the bonds would all be sold at one time (frequently they are not which increases costs), then the resulting property tax obligation would be $2.30 per $1,000 of assessed valuation for 20 years.[11] It is interesting to note that general obligation bonding under the above assumptions would result in about $17 million of interest costs which means that the real cost of the project to the taxpayers would be about $43 million. This information must, however, be used judiciously. Several assumptions were made and many variables effect general obligation bonding. The information was developed to provide a comparison, not to be misconstrued as a definitive analysis. Given the present political climate, local acceptance of a general obligation bond is at best tenuous.

Revenue bonds would require 120 years for repayment if 100% of all revenues were applied toward retiring the revenue bonds. This assumption was based on the new airport having an annual income equal to that of the airport in 1978.

The possibilities of State funding are extremely limited. Financial aid to municipalities, a source of funds available to airports which is administered by the Oregon Department of Aeronautics, had been established at an annual maximum for any single project of $50,000 in 1978. Because this funding is based on user fees and fuel taxes, it has become even more restricted in amounts available presently.

The primary source of funding for airports is the Federal Avaiation Administration. This agency allots funds on the basis of annual emplanements and discretionary funds which are granted on the basis of priorities established by the FAA. According to information received from the FAA in 1978 regarding the current runway extension project, roughly a $2 million project, an increase of $1 million would have reduced the priority and possibility of funding to nil. It follows then, that a new airport could have expected no more than $3 million in FAA funds. Given the difference in cost between runway extension and relocation, given the steps taken to mitigate environmental impact

of runway extension and given the nature of other projects eligible for Federal funds, it is unlikely that relocating this airport would have been given a high priority for Federal funding.

Presently, there are no FAA airport development funds available. This is due to the fact that the legislation authorizing this funding expired September 30, 1980. Legislation to reauthorize this funding has been proposed, but at about two-thirds of the previous funding levels. Once again, this funding would be discretionary and there are a number of applications waiting for authorization at this time.[12] It would seem very unlikely that relocating the airport would receive any higher priority than previously due to the lower level of funding proposed and the existing preapplications.

Other factors in relocating should be considered. These factors relate to procedures for relocation which involve time and money above and beyond the cost of actual airport construction. Major procedures would include, at a minimum:

1. site selection process (at least one year)

2. formation of jurisdictional authority (at least two years if special purpose district were formed)

3. property acquistion (at least one year)

4. development of Airport Master Plan (at least one year)

5. preparation of draft and final Environmental Impact Statement (at least two years)

6. application for Federal and State permits (at least one year)

7. development of financing package (at least one year)

8. development of specifications for contract(s) bids (at least one year)

9. actual construction (estimate three years)[13]

While some procedures could be concurrent, many are sequential. Thus, it is estimated that from point zero to the first actual carrier landing, ten years would elapse. It must be noted that each step involves cost which is separate from actual construction cost. Further, it must be noted that these procedural steps are grossly simplified and intended to create a perspective on relocation, and not intended to be a definitive procedural analysis. However, this time estimte assumes no delays, no appeals, no court action or else the time would have to be significantly extended.

The following site specific information should be evaluated with th difficulties of obtaining financing in mind. Some of the alternate sites assessed here were chosen on the basis of availability of a sufficient amount of undeveloped land with low topographic relief;

others were assessed because they have been proposed as alternative sites during one or more of the public involvement processes associated with the proposed extension.

1. North Spit

Site Description: The area south of the southern boundary of the Dunes National Recreation Area and west of Haynes Inlet/North Slough and the lower bay.

Within 30 Minutes: Yes

Sufficient Land Area: Yes, at the northern portion of the area; filling would be required for most if not all sites on the spit itself because of its narrowness.

Flat Approach Zones: Yes

Current Use: Recreation; industrial on the northern portion.

Ownership: Primarily Federal - Siuslaw National Forest lands are administered by the U.S. Forest Service, the bulk of North Spit by the Army Corps of Engineers. Weyerhaeuser/Menasha is the largest holder of private property (about 80 acres).

Comments:

(1) There is not enough privately-owned land for airport development; leasing or special use arrangements would have to be made.

(2) All dunes sites are subject to hazards associated with wind-blown sand including scouring of surfaces and deposition around structures. However, dune stabilization and sand fences could reduce the problem to a large degree.

(3) The North Spit may be a breeding site for snowy plover, a threatened species in Oregon.

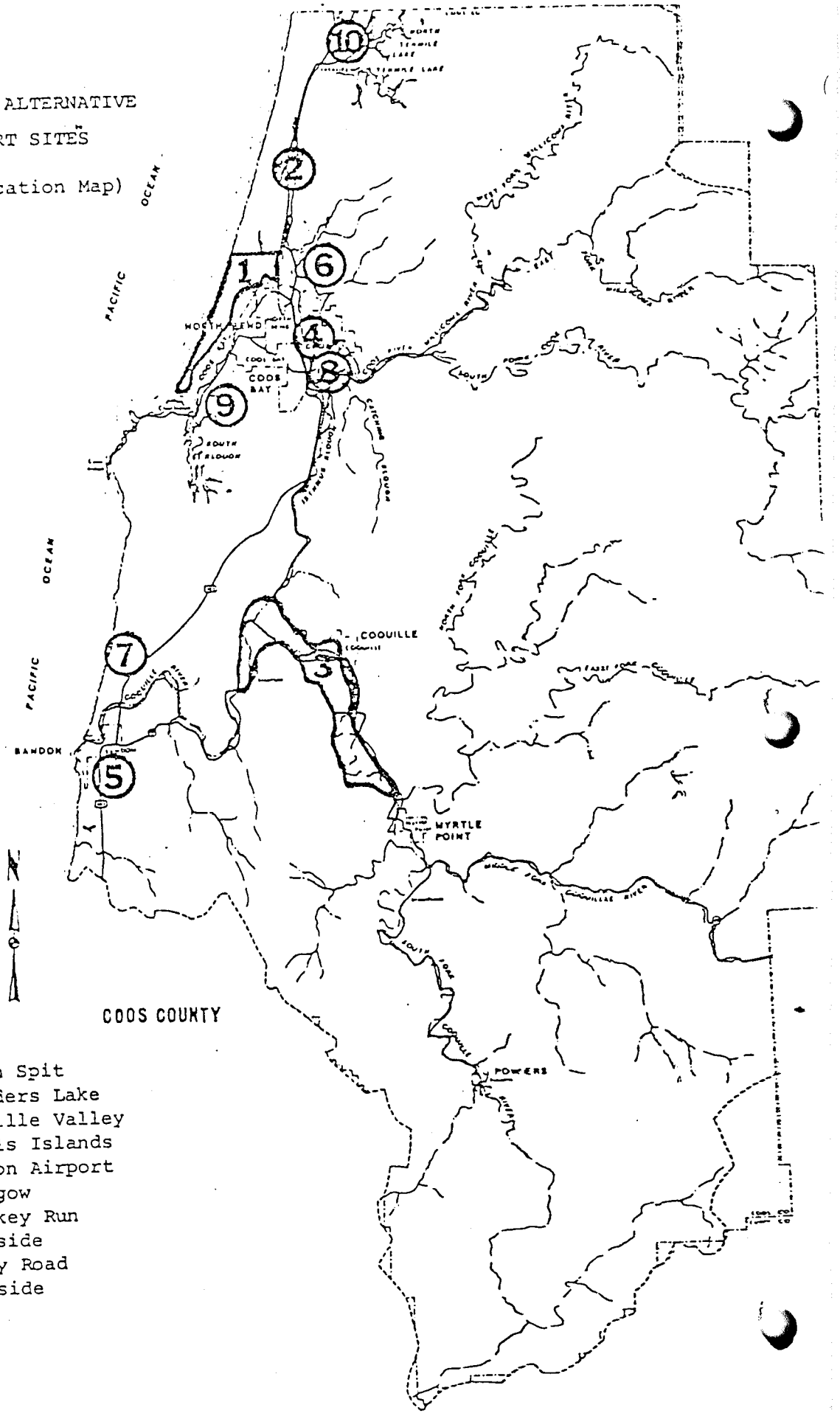
(4) Airport development increases runoff of precipitation and limits the amount of water reaching the aquifer. The Coos Bay/North Bend Water Board is planning to develop the groundwater resources of North Spit. Airport development on North Spit would greatly restrict recharge and would probably preclude development of the aquifer. Estimated potential yield of the North Spit aquifer is 2 million gallons per day.

(5) The existence of a well field in the northern part of North Spit must be taken into consideration. These wells currently produce approximately one-half of the municipal water supply of the Coos Bay/North Bend urban area.

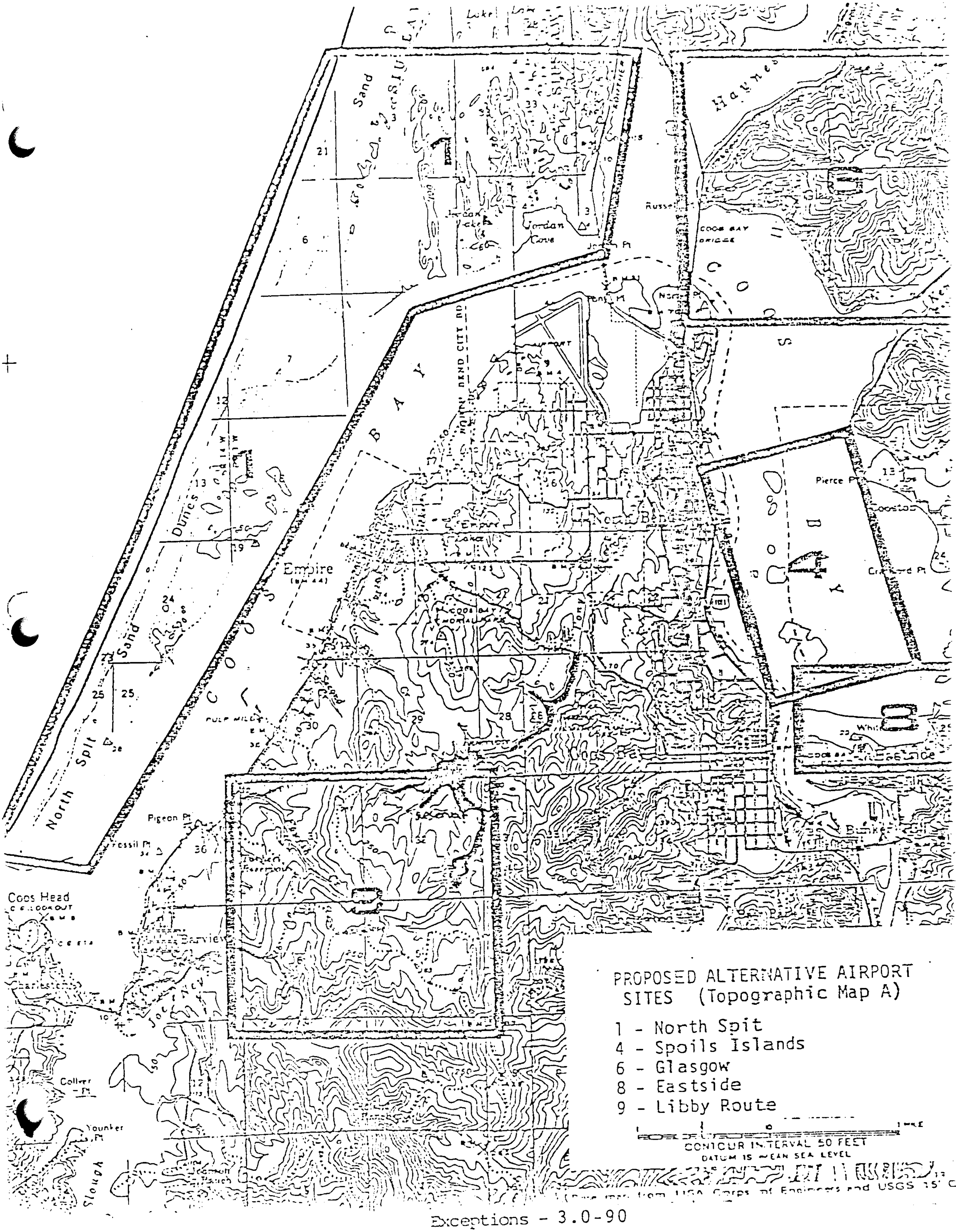
PROPOSED ALTERNATIVE

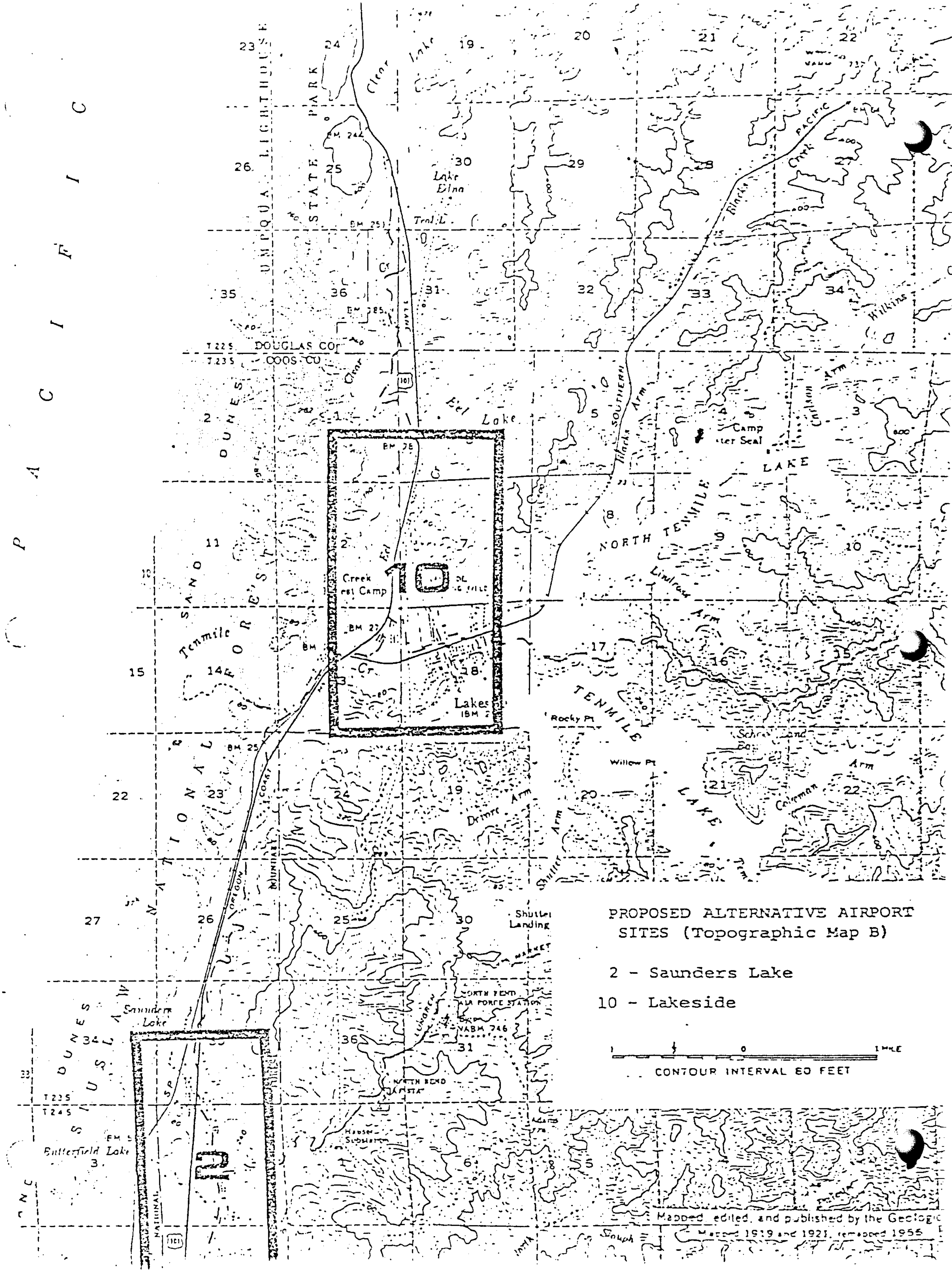
AIRPORT SITES

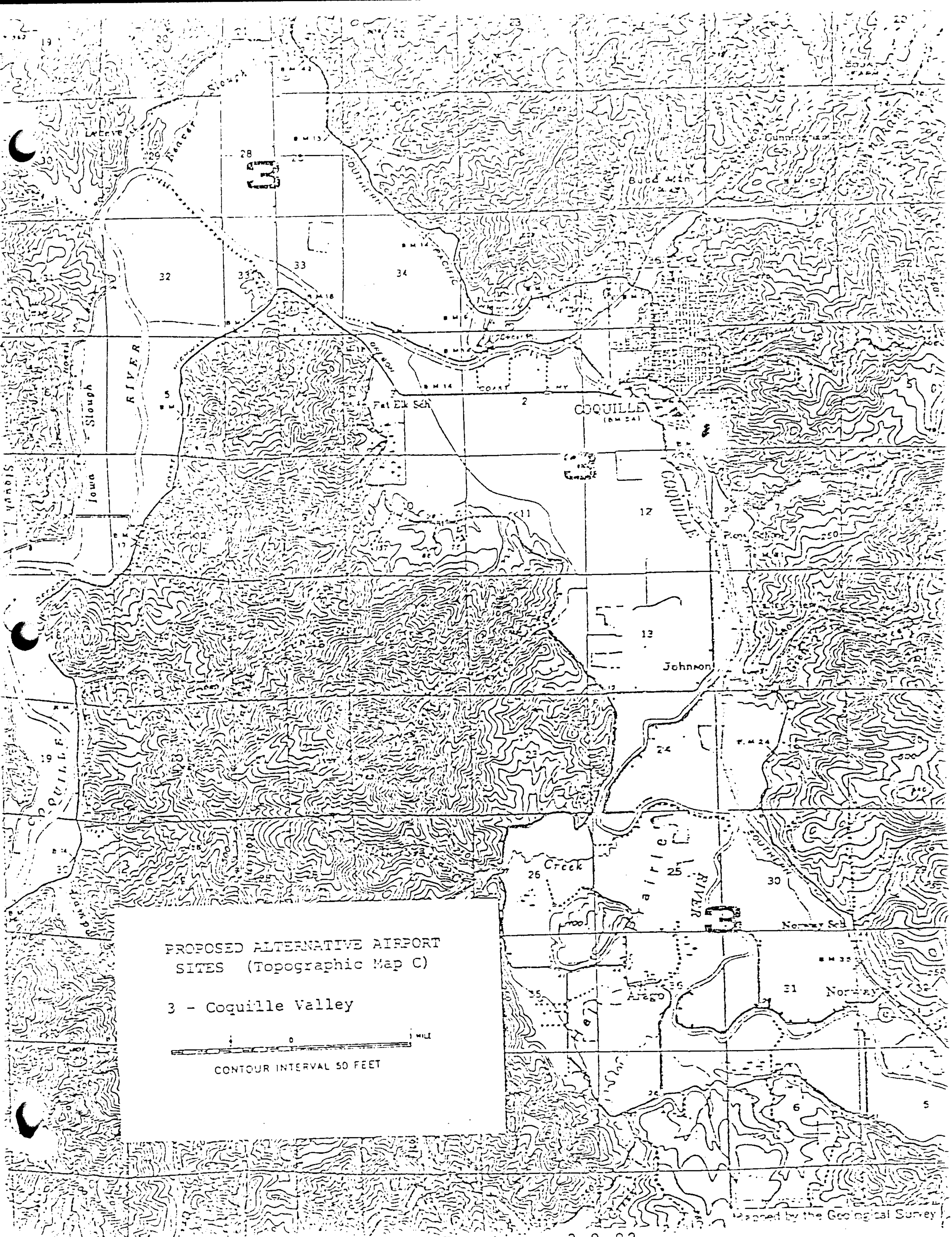
(Site Location Map)



1. North Spit
2. Saunders Lake
3. Coquille Valley
4. Spoils Islands
5. Bandon Airport
6. Glasgow
7. Whiskey Run
8. Eastside
9. Libby Road
10. Lakeside

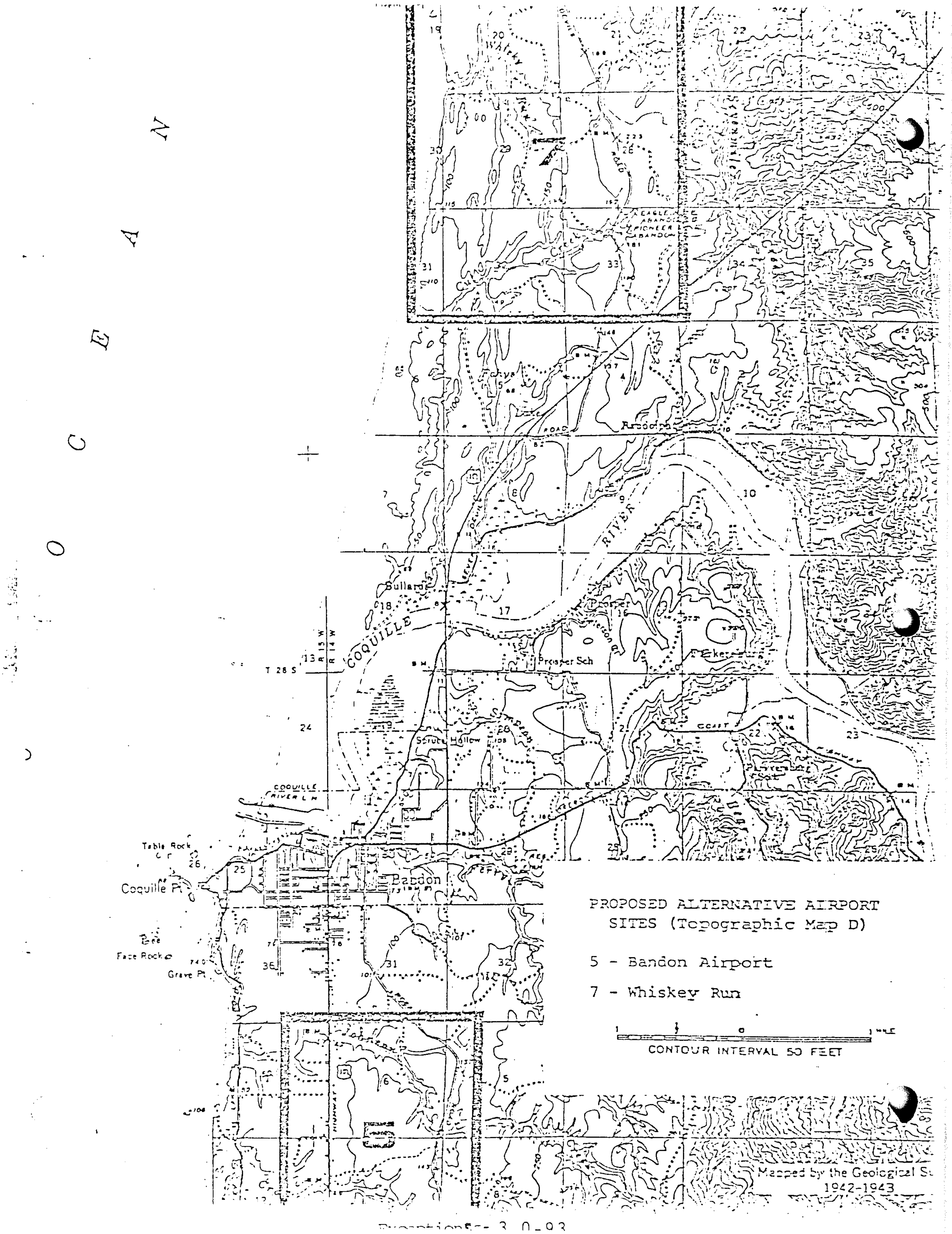

PROPOSED ALTERNATIVE AIRPORT SITES (Topographic Map A)
1 - North Spit
4 - Spoils Islands
6 - Glasgow
8 - Eastside
9 - Libby Route
CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL
North Spit
Sand Dunes
Jordan Cove
Haynes
Empire
Pigeon Pt
Coos Head
Barview
Charleston
Pierce Pt
Russell
COOS BAY BRIDGE


PROPOSED ALTERNATIVE AIRPORT SITES (Topographic Map B)
2 - Saunders Lake
10 - Lakeside
CONTOUR INTERVAL 80 FEET
Mapped, edited, and published by the Geologic
Mapped 1919 and 1921, remapped 1956
P A C I F I C
UMPQUA LIGHTHOUSE STATE PARK
DOUGLAS CO
COOS CO
Clear Lake
Lake Edna
Eel Lake
NORTH TENMILE LAKE
TENMILE LAKE
Tenmile Cr.
Saunders Lake
Butterfield Lake
Shutter Landing
Rocky Pt
Willow Pt
Coleman Arm
Templeton Arm
Blacks Arm
SOUTHERN PACIFIC
NORTH BEND AIR FORCE STATION
DUNES
NATIONAL



PROPOSED ALTERNATIVE AIRPORT SITES (Topographic Map C)

3 - Coquille Valley


O C E A N
Whiskey
Eagle Aband.
Pioneer Aband.
Arcadia
COQUILLE
RIVER
Bullards
Prosper
Prosper Sch
Parkersburg
T 28 S
R 15 W
R 14 W
Spruce Hollow
COQUILLE RIVER L.H.
Table Rock
Coquille Pt
Bandon
Bee
Face Rock
Grave Pt
Johnson
PROPOSED ALTERNATIVE AIRPORT SITES (Topographic Map D)
5 - Bandon Airport
7 - Whiskey Run
CONTOUR INTERVAL 50 FEET
Mapped by the Geological S
1942-1943

(6) Would probably require an Exception to Goal #18, at a minimum.

2. Saunders Lake

Site Description: The area between the Dunes NRA on the west, Highway 101 on the east, Saunders Lake on the north and North Slough on the south.

Within 30 Minutes: Yes

Sufficient Land Area: No

Flat Approach Zones: Possibly

Current Use: Residential, recreation, agriculture

Ownership: Private parcel size ranges from small tract to one approximately 80-acre parcel

Comments:

(1) Insufficient privately-owned land with low topographic relief is available even if re-routing Highway 101 is considered.

(2) Development in the Dunes NRA is restricted by law. Development of an airport within the borders of the Dunes NRA is not consistent with the purpose of the NRA.

(3) Airport development increases runoff and decreases the amount of water that reaches the aquifer. This would lead to a lower water table and lower lake levels. Since most wells in the area are shallow, this would tend to aggravate water quality problems in dry years.

(4) It is felt by the Forest Service that development of an airport adjacent to the NRA is not a use that is compatible with the intent of the NRA.

(5) Would probably require Exception to Goal #18.

3. Coquille Valley

Site Description: Flatland on the valley floor. The most promising potential sites are the areas from Beaver Slough south to the river and from 42S to the river.

Within 30 Minutes: Marginally

Sufficient Land Area: Yes

Flat Approach Zones: Not for most configurations

Current Use: Agriculture (primarily dairy farming)

Ownership: Private, 5-100+-acre parcels, with a majority in the 40 to 100+-acre size

Comments:

(1) Because of seasonal flooding problems, site and access route would have to be elevated above floodplain; i.e., extensive fill is required which would further increase the cost of the project.

(2) Soils are Class II, III and IV (agricultural soils). Development would remove approximately 1,000 acres from production.

(3) Coquille Valley, which floods annually, is a winter feeding and resting site for migratory wildfowl. Development would remove approximately 1,000 acres of seasonal wetlands. Airport activity could further disturb habitat stuitability for migratory birds. Wetlands are biologically productive habitats which are rapidly disappearing.

(4) The steep uplands surrounding the valley cause air turbulence. This could pose a problem to airport operations.

(5) Development involving extensive fill in the floodplain could increase flood damage and could jeopardize County eligibility under the National Flood Insurance Program.

(6) Would probably require Exception to Goal #14 and, depending upon exact location, Goal #17.

4. Spoils Islands in Coos Bay to East of Weyerhaeuser Facilities

Within 30 Minutes: Yes

Sufficient Land Area: No; extensive filling would be required

Flat Approach Zones: Yes

Current Uses: Tidelands and spoils disposal; wildlife habitat on some spoils disposal islands.

Ownership: State

Comments:

(1) Much fill is required. Impacts would include loss of over 600 acres of tidelands with accompanying loss of biological productivity and significant alteration of

hydraulic characteristics of the bay. Mitigating such extensive impacts would be extremely difficult and costly. Access would pose problems. For these reasons, no further consideration is given to this site.

(2) Goal #16 and #17 Exceptions would probably be required.

5. Bandon Airport Expansion

Within 30 Minutes: No

Sufficient Land Area: Yes

Flat Approach Zones: Yes

Current Use: Basic utility airport of 65 acres with one asphalt runway (2,595 x 50 feet).

Adjacent Lands: Agriculture, open space

Ownership: Airport - State. Adjacent land - private ownership; parcel size ranges from a few acres to about 15 acres.

Comments:

(1) Goal #14 Exception could be required.

(2) Distance from the Coos Bay/North Bend urban area would result in unnecessary fuel consumption and increased cost and inconvenience for the traveler and shipper.

(3) Surrounding soils are Class III and IV (agricultural soils) and Class VII soils which are not usually considered agricultural but which are currently often used for cranberry production. Cranberry bogs are located at both ends of the runway. Airport extension would remove approximately 100 acres from production and occupy a total of about 800 acres of agricultural soils.

(4) Fog frequently occurs in this area and is of a type and duration which would tend to seriously disrupt scheduled airline operations. As there is no aviation weather observer in the Bandon area, Mr. George Milligan, President, Mercy Flights, Inc., a non-profit air ambulance service which serves the greater southern Oregon region, was asked to provide comparison of the Bandon Airport with the North Bend Airport. His comment was that Bandon tends to have half the visibility and ceiling that North Bend does on a given day and Bandon experiences a great deal more debilitating low or ground fog than is experienced at North Bend.[16]

6. Glasgow

Within 30 Minutes: Yes

Sufficient Land Area: Possibly, following extensive topographic alterations.

Flat Approach Zones: Yes

Current Use: Forestry

Ownership: Largely Weyerhaeuser; parcel size ranges from 10-600 acres.

Comments:

(1) Extensive physical alterations of site would be required which would greatly increase costs. Ewen if the area were leveled to the 240-foot elevation (see accompanying map), developing a suitable runway configuration given prevailing winds would be difficult.

(2) Potentail impacts include increased erosion, deterioration of stream quality, loss of watershed on which development skirting the area depends and increased siltation in the bay.

(3) Parts of developed areas and relocation of families would be required. The number of homes displaced depends on the airport configuration that could be developed on this peculiarly shaped area and could be fairly high.

(4) Non-commercial forest use that would probably require Goal #4 Exception.

7. Seven Devils Road near Whiskey Run

Within 30 Minutes: Marginally

Sufficient Land: Yes

Current Use: Forestry, open space

Ownership: Multiple; owners include Pacific Power and Light and Georgia Pacific. Lot size varies from several acres to 40 acres.

Comments:

(1) Site does not require extreme modification of topography. There is sufficient area for proper orientation with respect to prevailing winds.

(2) Relocation of the airport at this site would encourage scattered or linear development of the largely

undeveloped area between the site and Coos Bay/North Bend.

(3) Because of distance from urban areas, provision of public services such as water, sewer, fire and police protection would be costly and difficult.

(4) This site is part of the same landform unit as the Bandon site. For this reason and because of its proximity to the ocean, ground fog occurrence and frequency are assumed to be about the same as for the Bandon site. The type, duration and frequency of fog would tend to seriously disrupt scheduled airline operations.

(5) Relocation here would preclude use of approximately 1,000 acres for timber production.

(6) Soils in the area are primarily Class III and VII with some Class IV. Class III and IV soils are agricultural soils; boggy Class VII soils are often suitable for cranberry production. Development of an airport on this site would preclude its use for agriculture.

(7) Exceptions would probably be required for Goals #3 and #4.

8. Eastside

Within 30 Minutes: Yes

Sufficient Land: No; extensive filling required.

Flat Approach Zones: Possibly

Ownership: Large lots averaging about 30 acres. Private ownership and Port of Coos Bay.

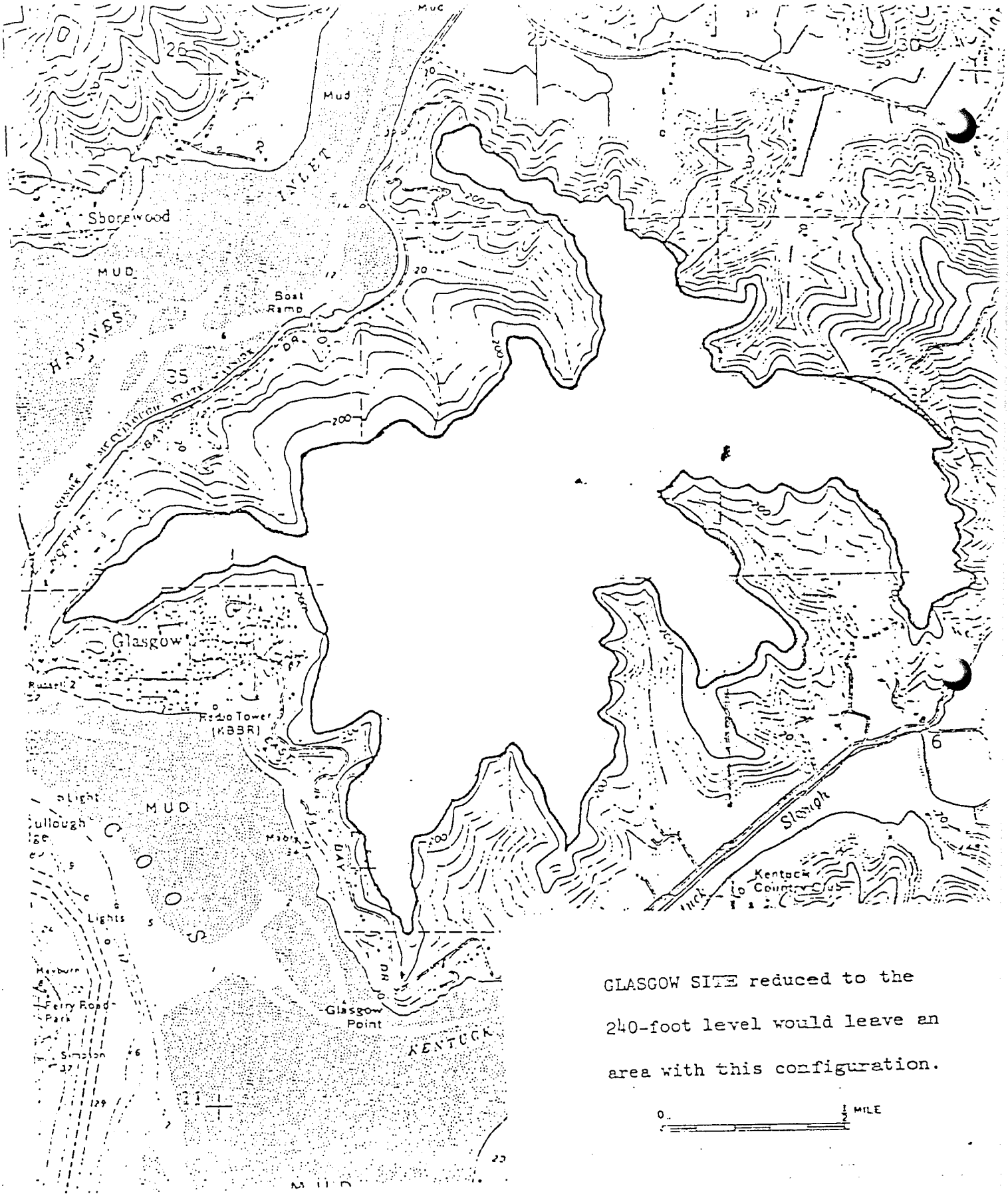
Current Use: Spoils disposal site; home sites.

Comments:

(1) Port of Coos Bay property at this location has been zoned and is being developed as an industrial site.

(2) Extensive filling of tidelands would be required (approximately 680 acres) with accompanying loss of biologic productivity and significant alteration of hydraulics of the bay.

(3) Goal #16 and #17 Exceptions would be required.



GLASGOW SITE reduced to the 240-foot level would leave an area with this configuration.

0 ½ MILE

9. Libby Route (Between Charleston and Libby)

Within 30 Minutes: Yes

Sufficient Land: Yes, with extensive topographic alteration

Flat Approach Zone: A suitable configuration could probably be found.

Ownership: Large acreages of 100-640 acres. Private ownership by Menasha, Coos Head Timber Company, Flanagan-Mullen Corporation and others. Public ownership by City of Coos Bay and Coos Bay/North Bend Water Board.

Current Use: Timber production, a few homes, watershed for municipal water supply.

Comments:

(1) As can be seen on the accompanying topographic map A, extensive physical alteration of the site would be necessary, although the area is not as steep as the Glasgow site. This would make the cost more prohibitive.

(2) The proposed site has much to recommend it, including proximity to the urban area and lack of development.

(3) All possible configurations at this site involve major portions of municipal watershed for the urban area. Presently half of the municipal water supply for Coos Bay and North Bend is derived from the Pony Creek watershed. The Coos Bay/North Bend Water Board also has rights on, and pumps water from, Joe Ney Creek. The Joe Ney watershed can potentially yield as much as the Pony Creek watershed and the Water Board currently has plans to extensively develop it. Fourth Creek and Tarheel Reservoirs are also used to supplement municipal water supplies. Any development in a watershed decreases the amount of land exposed to precipitation and therefore decreases the amount of water reaching the aquifer which reduces summer flow of streams. As a corollary, runoff is increased which increases erosion and siltation which in turn lowers the lifetime of lakes and reservoirs and reduces water quality. Airport development would eliminate about 1,000 ares of municipal watershed and would not be compatible with adjacent land use.

(4) Goal #4 Exception would probably be required.

10. Lakeside

Site Description: Lakeside Airport Site.

Within 30 Minutes: Yes

Sufficient Land: No

Flat Approach Zone: Probably

Ownership: Private, small lots; Airport is State-owned

Current Use: Residential development and basic utility airport.

Comments:

(1) There is insufficient land with low topographic relief, apart from that contained in the Dunes NRA. Development in the NRA is strictly controlled.

(2) In addition, surrounding development would mean social disruption, removal of houses and relocation of families. Clusters of homes are located at both ends of the existing runway.

(3) Construction of an airport in this area would increase runoff and reduce recharge of underground water supplies which could adversely effect household water supplies where homes are dependent on wells.

(4) If extended outside the City Limits, would probably require a Goal #18 Exception.

Alternative Air Service

Alternative Aircraft

Hughes Air West phased out the F-27 turbo-prop aircraft and in turn terminated air service to North Bend/Coos Bay. At the time of termination of service, Air West had 3 F-27's and 33 DC-9's in their fleet. The DC-9 could land on a runway of 6,600 feet in length, but not the present 4,613 foot runway. Because the F-27 was becoming obsolete and the inability of the airport to meet the runway length requirements for a DC-9 landing, commercial air service to the area went through a major change.

When Hughes Air West left the area, Air Oregon was providing service to the area with the Piper Navajo, twin engine, 9-passenger aircraft. This plane was very fuel efficient and able to fly in most conditions prevalent to Oregon. Air Oregon added the Swearingen Metro II to its fleet later. This plane is a 17-19 passenger craft, which increased the number of passengers that could be carried on one flight and in theory had a larger cargo bay. Unfortunately, there is a direct trade-off with regard to the number of passengers versus the weight of the cargo. This trade-off has lead to a dilemna for Air Oregon when there is a large demand for passenger seats and a large amount of cargo. The problem of passenger weight versus cargo weight has generated a number of passenger complaints and in turn, distrust

by passengers regarding their ability to meet their connecting flights. The same dilemma exists for persons/companies depending upon Air Oregon for freight delivery.

Aircraft Trends

Airline deregulation has affected the types of aircraft being bought and manufactured. Private corporations have developed their own fleets as a result of the need to transport personnel and products in and out of areas that the major carriers have deleted from their routes. A new breed of commuter airline has developed to fill some of these gaps too and in turn have created a demand for different types of aircraft.

Corporate fleets have been in existence for many years, but since the airline Deregulation Act, fleets have been growing in size. The business jet has become the mainstay in many fleets. Some of these aircraft can land on runways as short as 4,450 feet, but have to limit their useful load to 60% of their potential. A 6,800 foot runway can accommodate all types of business jets at 90% of their useful load.[17]

To fill in the gap left by the major airlines as they pulled out of marginal markets, the regional/commuter airlines have come into existence. Some of these airlines have been very successful and have, as a result, created a demand for smaller, fuel efficient, short-takeoff and landing aircraft with seating capacities ranging from 14 to 60 passengers.[18] Generally, these aircraft have long back orders and high price tags. Both of these factors make it difficult for all regional/commuter operations to be competitive in a short cost-effective manner. Most of these airlines are serving areas with a minimum service population of 150,000 people.

Alternatives - Statements of Compelling Reason and Findings of Fact

No Action

Findings

1. "The competitive business world today depends on getting executives to their destinations when they need to be there. The purpose of these aircraft is to enhance the ability of our management team to be closely and personally involved in world-wide activities of the company; that is, to enable more people to go more places and do more things in less time."[19]

2. ". . . the "market mix" is moving away from primarily private use aircraft, "the guys in baseball caps who fly on Sunday afternoons", to multiple engine jets and turbine-powered prop jets. . . Heffner and others agree that a principal reason for the turnover and conversion by corporations to long-haul jets has been deregulation of the airline industry, one of whose effects is that carriers were allowed to discontinue service to various cities, virtually at will. Consequently, corporations still needing to

reach those points must use their own fleets . . . aircraft broker Smith says one reason for the turnover in the used plane market is that corporations are learning that "a smaller, slower" airplane doesn't have the same utility values as a modern, long-range jet."[20]

3. "Deregulation of the commercial airlines industry has forced companies to use private planes to get to business locations. . . "flying a company plane saves time, and that's the name of the game". . . A corporate plane also can give a company a business mobility - and a competitive edge - it might not have otherwise. . . deregulation helped change things around."[21]

4. "There are several "foot-loose" industries which need not be located near raw materials or their ultimate markets, but rather seek areas where a labor force and transportation services are available. A plant producing high-value chemicals or an electronic parts assembly plant would be examples. The combination of air and water ports in the Coos Bay/North Bend area could be very attractive to some firms. However, without air freight and convenient access to the financial and business centers in Seattle, Portland, and San Francisco, the likelihood of attracting this kind of industry is remote."[22]

5. Diversification through development of existing local enterprise depends on adequate air services.

   "A survey conducted in the North Bend area indicated that major firms rely on air service for a number of trips by their employees and clients. Air freight is especially important for transporting emergency parts and supplies which would require considerably more time if shipped by surface modes."[23] The survey referred to is the Dugan Study listed in the footnotes and quoted herein.

6. "Runway length requirements are based on the distance to markets being served, present and future critical aircarft characteristics, and payload capabilities. The present business jet aircraft will remain the critical ones for planning purposes, unless there is an introduction of Boeing 727's, 737's, or DC-9 aircraft."[24]

7. "The runway length requirement table indicates that business jet requirements are as little as 4,450 feet or as much as 6,800 feet, depending on size of aircraft and the percent of useful load being carried. The airport has frequent visits by BAC-11 aircraft, Lear jets, Jet Commanders, and other typical business jets."[25]

8. Existing North Bend Airport facilities can only accommodate 60% of the business jet fleet and only when they are at 60% of the maximum useful load.[26]

Conclusion

Based upon the previous findings, the City of North Bend concludes that the existing airport facilities are inadequate to meet the future demands of existing and potential commercial and industrial businesses. Findings 1 through 4 and 7 illustrate how important adequate air facilities are with regard to the local economy and the ability to diversify that economy. Findings 5 and 6 note the recent trends in the need for and development of corporate aircraft fleets as a result of deregulation of the airlines industry. Findings 9 through 12 demonstrate the fact that the City has recognized the need to accommodate these aircraft as a part of their airport facilities planning, but at the present time only have a limited ability to accommodate these aircraft without extending Runway 4-22.

Findings

1. "North Bend/Coos Bay Post Offices started trucking their mail out of the area when Hughes Air West pulled out of the area."[27]

2. If current airline restrictions are lifted, enplaned cargo and mail forecast could be satisfied with the 600 pound capacity available in the Swearingen Metro II aircraft. The 19-passenger seating configuration can be reduced to increase cargo capacity as required. There is a direct tradeoff between passenger capacity and cargo/luggage load in this plane.[28]

3. "Regarding the possibility of Boeing 737's requesting permission to land at North Bend Airport. . . Currently there are discussions underway between a Coos Bay seafood processor and Bristol Bay (Alaska) fishermen's cooperative. . . In order to accommodate this cargo opportunity, the North Bend Municipal Airport would require the services of a fork-lift in addition to the 6,000 foot runway."[29]

Conclusion

Based on the above findings, the City of North Bend concludes that as a result of not extending Runway 4-22 and the loss of certified air carrier service, the area has lost the ability to accommodate past air cargo needs and attract new air cargo related industry to the area.

Findings

1. "The major potential conflict between continued airport use and off-airport development centers on noise impact."[30]

2. One of the noise modeling assumptions is: "3. All air carrier operations and 92% of the business jet operations will occur on Runway 4-22."[31]

3. "As can be seen from the maps, the predominant aircraft noise is associated with operations on Runway 4-22 rather than on Runway 13-31. This means that aircraft noise is shifted from the

developed areas of North Bend to the Coos Bay Estuary."[32]

4. Off-airport safety considerations will be improved as a result of a higher utilization of Runway 4-22 rather than Runway 13-31.

   "A second area influenced by aviation activity is the commercially developed area beginning about 1,000 feet off the end of Runway 13-31 . . .This includes the existing Pony Village Shopping Center. . . Several schools also lie in this area, including North Bend High School, North Bend Junior High School, Hillcrest School, and Bangor School. Because Runway 13-31 is currently the longest of the runways, is is the one used most often by our carriers and, therefore, it is this area that is subject to some audible over-flight by commercial aircraft."[33]

5. "Residents' fear of aircraft accidents is a problem related to aircraft operations near a community. This is particularly true in the case of aircraft approaching and departing over inhabited areas."[34]

6. Runway 4-22 is the only runway that has a full precision instrument landing system (ILS), while Runways 13-31 and 16-34 are for visual approach use only.[35]

7. "Runway 4-22 is the only runway that can be an ILS runway, due to the fact that Runway 13-31 will not allow for instrument landing based on FAA glide slope reuirements."[36]

8. "Analysis of 43,770 wind observations taken by the United States Weather Bureau from January, 1958, through December, 1962, indicates that the following percent wind coverage by runway is available: Runway 4-22 = 86%; Runway 13-31 = 95%; Runway 16-34 = 97%. The analysis also indicated that during instrument weather conditions, the wind favors Runway 4 for 96% of the time."[37]

9. "Due to the fact that Runway 4-22 is the only ILS runway, commercial aircraft and business/corporate aircrafts can only use this runway during night and inclement weather due to corporate policies and insurance requirements."[38]

10. "The probability of accidents is most likely on takeoff while the engines and crew are under stress, with the second most probable accident hazard being landings, primarily during instrument operations."[39]

11. "Proper operations at the airport and control of surrounding land uses will enhance the safety of both aviation users and residents in the airport environs."[40]

Conclusion

Based upon the above findings, the City of North Bend concludes that no action limits the City's ability to improve the general health, safety and welfare of the aviation users and affected adjacent land

uses.

Findings

1. "Hughes Air West has terminated service to North Bend due primarily to a lack of a runway extension capable of handling their DC-9 aircraft."[41]

2. "Although exact figures cannot be obtained, North Bend/Coos Bay has received information from many air travelers that they do not use the San Francisco flights because of the unavailability of seats on such flights and the inability to insure a confirmed way to return. Many of these travelers are driving to Eugene to make southbound connections to avoid transfers, additional costs and to insure a confirmed way to return to Coos Bay/North Bend."[42]

3. "Hughes Air West averaged 1,522 monthly boardings during 1978. During its last six months of service Hughes Air West averaged 1,242 monthly boardings, and Air Oregon averaged 353 monthly boardings during the same period. Commuter air service at North Bend/Coos Bay had monthly average boardings of 1,048 during 1980. When Air Oregon became the sole commuter airline serving North Bend/Coos Bay after November 1, 1980, average monthly boardings dropped to 851, which is a 44% reduction from boardings during the year 1978. These declines in average number of boardings have been caused by temporary conditions noted above as well as a decline in service provided to this airport."[43]

Conclusion

Based on the above findings, the City of North Bend concludes that as a result of losing certified air carrier service, the level of service provided by the existing airlines has led to passenger boardings decreasing as a result of less dependability and higher costs.

Alternative On-Site Airport Configurations

Findings

1. Extending Runway 4-22 to the east would eliminate about 305 acres of estuarine wetland. Such a configuration would more severely impact residential areas than the proposal and would require removal or relocation of a nearby railroad bridge and require an Exception.

2. Extending Runway 4-22 2,487 feet to the west as suggested in the 1974 North Bend Master Plan would remove 130 acres of tideland as opposed to approximately 32 acres for the proposed extension.

3. Extending Runway 4-22 1,387 feet as suggested in the Environmental Impact Assessment, North Bend Municipal Airport Modifications, would remove an equal amount of tidelands as the 2,000 foot extension and the completed length of 6,000 feet would not be

great enough to serve long-range aircraft.

4. Extending Runway 4-22 1,100 feet as suggested by Wadell Engineering, but retaining the same fill configuration is an acceptable alternative to the City, since it provides a better chance for funding by the FAA, it meets an immediate need for business jets, and yet allows the further extension of the runway without further tideland filling.

5. Runway 4-22 extended 2,000 feet to the west on a support of piling would restrict tidal circulation to nearly as great a degree as would a fill and greater than the proposal which incorporates a reliever channel to the fill.

6. A culvert placed under the proposed fill would tend to become obstructed with debris and sediment and would provide less flow than would the proposed reliever channel.

7. A northward exstension of 13-31 would cause greater siltation than would an extension of 4-22 and still require an Exception. Industrial development to the north is an obstuction according to FAA glide slope criterion.

8. A southward extension would reduce the area of Pony Slough. Such an extension would create a greater impact to the human environment than would an extension to 4-22 and would require an Exception.

9. A southward extension of 16-34 would require condemnation of a substantial number of existing North Bend residences as well as removal of a grade school, as well as relocating residences and re-routing of streets. Increased noise would result in adverse impacts on the human environment.

Conclusion

Based upon the above findings, the City of North Bend concludes that on-site alternative 1 through 3 and 5 through 9 would not be of lesser impact, and each would require an Exception. Finding 4 would meet the projected aircraft needs at present, but still has the same environmental impact.

Airport Relocation

Findings

1. Aircraft design trends are such that the need for further expansion of the airport is not anticipated.

2. According to the Division of Aeronautics the aircraft industry seems to be concentrating on increasing passenger and freight-carrying capacities while emphasizing STOL capacity.

3. Boeing confirms that its new-technology aircraft will increase

cargo and passenger capacity while maintaining the ability to operate from a medium-length runway of 6,600 feet.

4. The current facility can support the projected master plan projection with additional navigational aids and the extension of Runway 4-22.

5. As the North Bend/Coos Bay urban area grows, so will the major cities; it is unlikely that North Bend Municipal Airport's relative position in the air transportation system as a feeder for major population centers will change.

6. The cost of airport relocation has been estimated at $24,000,000 to $26,000,000 in 1978.

7. General obligation bonds would require voter approval which could be difficult to achieve given trends in voter attitude towards increased property taxes in this area.

8. Airport revenues would be insufficient to retire revenue bonds.

9. State funding for airports is very limited.

10. The Federal Aviation Administration is the major source of funds for airport development. Funds are granted on the basis of annual enplanement and on the basis of priorities established by the FAA. Given the cost/benefit ratio, the existence of the present airport, the difference in cost between expansion and relocation and the steps taken to mitigate the effects of the proposed extension and given the nature of other projects eligible for FAA funds, it is not likely that relocating this airport would be given a high priority for Federal funding.

11. Few undeveloped or sparsely developed areas of sufficient acreage and low relief exist in the area.

12. Of those that do exist, several other factors negatively affect suitability including orientation to prevailing winds, distance from the Coos Bay/North Bend urban area (which contains over 50% of the population of the County and has a high concentration of existing and potential air freight uses), lack of compatibility with adjacent uses, access problems, ground fog problems, various resource conflicts such as loss of agricultural land, seasonal wetlands, forest land, watershed or tidelands in sizable portions if airport development proceeds, and other environmental problems such as seasonal flooding, loss of wildlife habitat, obstruction of floodwaters and increased runoff.

13. There are no alternative sites that would not require an Exception to the Statewide Goals.

Conclusion

Based on the previous findings, the City of North Bend concludes that

extending Runway 4-22 is more logical and less costly than relocating the airport facilities.

Alternative Levels of Service

Findings

1. Oregon commuter airlines utilize light aircraft which are limited in their ability to transport cargo.

2. Passenger acceptance of light aircraft has been limited.

3. New commuter aircraft types being used in the eastern United States and western Europe are characterized by short-range, limited cargo capacity, and high costs of operation, which would restrict their utility in the State.

4. Weyerhaeuser, Pacific Power and Light, and GTE all fly corporate jets into the area when conditions allow.

5. Without the ability to accommodate the full range of business jets in service today, the area limits its ability to attract new industry.

Conclusion

Based on the above findings, and previous findings in the No Action section, the City of North Bend concludes that alternate levels of service have not met the needs of the area. As a result of additional needs, industrial users have created a demand for facilities that include the extension of Runway 4-22 to the west 2,000 feet.

ALTERNATIVES - FOOTNOTES

1. Ashton, Terry R., Vice-President, Planning, Hughes Air West, correspondence to Governor Straub, April 8, 1976.

2. Civil Aeronautics Board Order, 81-1-141.

3. Civil Aeronautics Board, Docket 40165.

4. Essential Air Service Survey, response by City of North Bend, November, 1981.

5. Oregon Department of Transportation, Transportation in Transition: Planning Overview, January, 1977, page I-25.

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(iii) Consequences

(a) Environmental

Findings - Estuarine Species and Habitat

1. The site is part of a wide intertidal and shallow subtidal region at approximately RM 8 in Coos Bay. Tidal heights range from -8 to +8 feet (MLLW). Based on 1976 and 1978 surveys, the 32 acre fill would remove the following sediment types from the estuarine system:

Tidal Exposure	Sediment Type	Acre (ac)
Subtidal	Unconsolidated	16.9
Intertidal	Clean Sand	5.0
	Muddy Sand	6.7
	Silty Mud	1.8
	Mud	1.6

(Source: Gonor, et.al., 1978, pp. 34-35; Parametrix, 1975)

The above sediment types are not individually associated with exclusive tidal levels; rather, the site displays a "mosaic" of different sediments at various tidal levels. In 1978, eelgrass beds were found to occupy approximately 4 acres (12.5%) of the site with other macrophytic algal beds occupying approximately 1 acre (2.5%) (Gonor, et.al., 1978, pp. 47).

2. The sediments described in 1 above are suitable habitat for various species of clams and other benthic infauna.

Distributions of at least three clam species have been generally characterized by Gonor et. al., (1978) as "abundant", including Macoma nasuta (bentnose), Callianassa californensis, and Upogebia pugettensis. Others generally characterized as "present" include those above and Mya arenaria (soft-shall clam) (Gonor, et. al., 1978). Crytomya californica, and M. nasuta were found to be the numerically dominant clams at the site.

3. Dungeness crab (Cancer magister) use the site in the very early stages of the species' life (Gonor, et. al., 1978, pg. 100). The transient estuarine Dungeness population in Coos Bay supports a sports fishery. An intertidal habitat in general may be a necessary requirement for the continued presence of this population. Bay-wide data are not available to evaluate the importance of the runway extension site to estuarine Dungeness production. Estuarine populations of Dungeness crab are a small fraction of the total inshore population.

4. Data collected on fish at the site show use by juvenile Coho and Chinook salmon, shiner perch, striped seaperch, topsmelt, pacific herring and other species (ODFW, "Coos Bay Estuary Seining Data", unpublished, 1977-79). Substrate types, vegetation, and infauna

further indicate the site is suitable as a feeding/rearing area for various fish species, including juvenile salmonids.

Herring have been observed to spawn on the eelgrass beds at the site (personal communication, Jerry Butler, ODFW, January 15, 1982). Herring use various substances for spawning; eelgras in general appears to be the preferred substrate in Coos Bay.

5. No threatened, rare, or endangered species have been identified at the site. Waterfowl and shorebirds use the site for resting and feeding during low tide.

6. The relative importance to the Coos Bay ecosystem of the loss of different species and habitat types at any development site will depend on the proportion they represent both of the total present in the system and of the total to be lost through development in the long term. (Gonor, et. al., 1978, p. 106).

7. Mitigation for the 32 acre fill will include the return of shorelands (portions of the large disposal island) to intertidal influence and thus the estuarine system. Exact size and extent of the mitigation will be determined via the permit process for fills.

8. Subsequent to mitigation work, the newly "returned" area will be composed of sandy substrate. This substrate is expected to change rapidly, with sandy material spreading generally downstream and muds and silts encroaching from upstream.

9. Tne new estuarine area will provide habitat for many of the species presently found at the airport extension site.

Conclusion

Based upon the above findings, the City of North Bend concludes that the City, County and State will suffer no significant adverse biological consequences from not applying the resource protection requirements of Goal #16 to the site. Findings 1 through 5 show that the filling of the site will cause the loss of estuarine resources which would likely reduce biological productivity in Coos Bay. Findings 6 through 9, however, lead to the conclusion that the significance of the loss of resources and productivity will be mitigated through creation of an area of similar biological potential.

Findings - Hydraulics and Circulation

The following findings are taken from Environmental Impact Assessment (Final), North Bend Airport Modifications, North Bend, Oregon (Parametrix, 1975, pp. 132-140).

1. The proposed 32 acre fill and return of the large spoils island to the 0.0 ft. (MLLW) level would result in: (a) an increase in the "main channel" cross-section of 2% at mean lower low water and 5%

at mean higher high water.

2. Flow would be eliminated through the existing channel west of Runway 4-22 and shifted to north of and parallel to the proposed runway expansion. Flows adjacent to the runway would be of a magnitude one-half to one-third lower than those in the main channel. The impacts of the fill on circulation may need to be mitigated by dredging a small channel parallel to the north side of the fill.

3. Flow velocities and magnitudes in the main channel would be virtually unchanged due to the shifting of the existing flows from the small channel (west of 4-22) to the new intertidal area at the mitigation site.

4. Accretion in the area south of the fill would be accelerated, potentially resulting in new intertidal areas (with associated biological potential) as the existing small subtidal channels are filled.

   Water depths south of the proposed fill indicate that existing erosion and accretion patterns are influenced primarily from flood tide flows rather than ebb tide flows entering the area through the channel to be filled (NOAA, 1978; Gonor, et. al., 1978, p. 2). These data suggest that current "flushing" of the Empire area (approximately 7,200 feet south of site) is not dependent upon flows from the channel at the project site.

5. The increase in cross-sectional area of the "main channel" will similarly increase the floodplain, but the minor flow increases in the main channel will not significantly effect the area of the floodway.

   Maintenance of the proposed alignment of the expanded runway will require the use of shoreline protection material on the west and north side of the proposed extension.

6. The dynamics of the main channel preclude any detectable change in the existing hydraulic conditions on the north side of the channel. Thus, it is expected that accretion or erosion of the North Spit shoreline would not be altered by the runway extension.

Conclusion

Based upon the above findings, the City of North Bend concludes that no significant adverse hydraulic consequences will result from the proposed runway extension. Findings 1 through 3 and 5 and 6 indicate that the impact on main channel flow and erosion/accretion of the north and west shoreline of the bay will be minimal. Increased sedimentation in the area south of the proposed fill (finding 4) may create new intertidal area, with resultant benefits to biological resources and productivity. Changes in erosion/accretion patterns in the Empire area are not expected to occur as a result of the proposed runway extension (based on finding 4).

Findings - Water Quality

1. Fill material for the proposed runway extension will come from maintenance dredging of the navigation channel and/or excavation of the spoils islands. The material from both sources may be characterized as fine to medium sand, with extremely low (less than 2.5%) content of mud, clay, or siltaceous organics (Parametrix, 1975, p. 167; Coos-Curry Council of Governments, 1981, p. III-13).

2. Areas adjacent to the actual runway extension will experience disturbance during construction. These areas are composed of sediments which are higher in silt, mud, and/or organic matter than the clean sand noted in finding 1 above. Temporary increases in turbidity with potential reduction in "local" dissolved oxygen levels may be expected. Minor mortalities or displacement of local infauna may also be expected.

3. Construction is expected to be of short duration. Adverse effects of suspended sediments to water quality, estuarine biota, and estuarine habitat will be minimized through careful timing of construction. This is in accordance with normal restrictions placed on fill permits in estuaries.

Conclusion

The primary impact during construction will be temporary increases in suspended sediment in estuarine waters due to excavation of the spoils island and the placement of fill material at the site. The City of North Bend concludes that adverse impacts to water quality will not be significant due to the nature of the fill material (finding 1) and the small area of adjacent sediments to be disturbed.

Findings - Noise

An analysis of expected changes in noise exposure intensity for the North Bend Airport was conducted in 1979 and is published in Master Plan, North Bend Municipal Airport, 1980/2000, (Wadell Engineering Corp., 1979). The findings of this study are summarized below.

1. With the extension of Runway 4-22, it will become the primary runway at North Bend Municipal Airport. Thus the predominant aircraft noise will be associated with operations on Runway 4-22 (extended) rather than on Runway 13-31.

2. "Substantial" aircraft-generated noise levels (less than 65 Ldn) will occur entirely on airport property or over the Coos Bay Estuary. Changes in the "substantial" noise area are predicted to be greatest to the southwest of Runway 4-22 and the least (virtually no change) to the southeast of Runway 13-31.

3. "Moderate" aircraft-generated noise levels (55-65 Ldn) will occur primarily on airport property, over Coos Bay, and at the northern-most portion of "Airport Heights". Changes in the "moderate" noise area are predicted to be greatest to the southeast of Runway 4-22 and least (virtually no change) to the southeast of Runway 13-31.

Conclusion

The City of North Bend concludes that increases in aircraft-generated noise levels (associated with runway expansion) will be acceptable in view of their occurrence away from developed areas southeast of Runway 13-31.

(b) Economic Consequences

Findings

1. Extension of Runway 4-22 will increase the opportunity for air freight in and out of the Coos Bay area. This would significantly improve the access of the local seafood processing industry to national seafood markets. Such an improvement would provide the area with considerable locational advantage in comparison to other seafood processing areas.

2. Increased use of the North Bend Airport by corporate jets would enhance the mobility of existing (and potential) corporate personnel traveling in and out of the area, particulary during inclement weather.

3. Extension of Runway 4-22 would provide a safer runway for larger commercial aircraft during inclement weather.

4. The development of the airport will enhance the attractiveness of the North Bend Industrial Park to new firms.

5. Well-developed transportation systems are a basic requirement in industrial location. From a regional perspective, the Coos Bay area may be characterized as having poor road and rail transportation systems, largely due to its geographic isolation. Improvements in air service would improve the overall transportation network of the Coos Bay area.

6. According to surveys in 1976, air service is functionally important or perceived as important to a majority of businesses in Coos Bay (Dugan, 1976).

   The surveys found:

   a. Over 90% of the business community of the area use or derive business from air service;

   b. Two-thirds perceive air service as at least important, and almost one out of ten saw air service as critical for their business;

   c. Over one-half the businesses surveyed stated they would use air service. One-third felt that improved service would increase their business.

7. Air cargo services are important in the shipment of machinery parts for emergency repairs. Delays in the delivery of such parts can and have resulted in extensive shutdowns of mills and delays of ship movements.

8. Construction of the runway extensin will cost approximately $1.8 million and generate 50 to 100 temporary jobs. Improvements in air service will directly and indirectly increase local employment.

9. Improvements in air service would directly and indirectly increase local employment. In 1979, direct aviation related employment were forecast (in 1979 annual payroll dollars) to potentially range from $2.9 million in 1980 to $5.2 million in 2000 (Wadell, 1979, p. 89). At that time the income multiplier for indirect employment resulting from services and businesses supporting the airport but not employed there was estimated to be 5.15. Thus, a 4.15 multiplier used with a 1980 payroll of $2.9 million would have the effect of funneling $12.1 million into the North Bend area annually, which would grow to $21.7 million by the year 2000. (Wadell, 1979, p. 90).

Conclusions

Based upon findings 1 through 5, the City of North Bend concludes

that the extension of Runway 4-22 and associated improvements in air service will strengthen the potential of the Coos Bay area to expand its industrial base and diversify its economy. Conversely, the City finds there will be "opportunity costs" associated with not extending the runway and improving air service to the Coos Bay area.

Based upon findings 6 and 7, the City concludes that current commercial air service provides significant econommic benefits to the business community, and that that community would further benefit from the runway extension.

Based upon findings 1 through 3 and 5, the City concludes that the extension will increase the area's relative economic comparative advantage over other coastal ports and enhance its position as a growth center in southwestern Oregon.

(c) · Social Consequences

Findings

1. The extended runway will extend into the corporate limits of the City of Coos Bay in a portion of the tidelands to be filled.

2. With greater air traffic occurring on Runway 4-22 (landings and take-offs over water), public safety in general will be enhanced. The flight line path to and from Runway 13-31 is close to North Bend High School and Hillcrest School. With Runway 4-22 as the primary runway, noise will be reduced and public safety enhanced in the area of the schools.

3. With a greater percentage of the airport traffic using Runway 4-22, noise over the urban areas south of Runway 13-31 will be reduced. Noise in the residential areas south of Runway 4-22 will be slighly increased (see Environmental Consequences - Noise).

4. Potential increases in local employment would increase the demand for public facilities and services, as well as increase the tax base of the area.

Conclusion

Based upon the above findings, the City of North Bend concludes that the social consequences of the proposed runway extension will be beneficial to the community in general, and particularly the community living, working and attending schools southeast of Runway 13-31.

(d) Energy Consequences

Findings

1. The nearest airport currently receiving scheduled air service (other than North Bend Municipal) which directly serves the North Bend/Coos Bay area is 120 miles away at the Mahlon Sweet Airport in Eugene.

2. Although exact figures cannot be obtained, the City of North Bend has received information from many air travelers that they do not use the San Francisco flights from North Bend because of the unavailability of seats on such flighs and the inability to insure a confirmed way to return.

3. Many of the travelers cited in Finding 2 above drive to Eugene to make southbound connections and avoid transfers, additional costs, and to insure a confirmed way to return to North Bend/Coos Bay.

4. The trips to Eugene cited in Finding 3 above use energy (primarily gasoline) that would not be necessary if adequate air service were available at North Bend Municipal Airport.

Conclusion

Based on the above findings, the City of North Bend concludes that energy will be conserved through a reduction in the distance travelers must go to engage air carriers.

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(iv) Compatibility

Findings

1. To the south of proposed extension is the developing neighborhood known as Airport Heights. The nearest residence to Runway 4-22 in this neighborhood is near the corner of Colorado Avenue and Auther Street, a distance of approximately 1,300 feet from the runway. Residential densities in Airport Heights are four units per acre and greater.

2. Analysis of future noise levels near Airport Heights indicate that levels labled as "moderate" (55 Ldn to 65 Ldn) may be expected in the extreme northern portion of the neighborhood (see Environment Consequences - Noise).

3. An area of multi-family housing is located near the terminal to the west of Runway 13-31. In the noise analysis cited in Finding 2 above, this development is outside the existing and projected future area of "moderate" noise levels.

4. Light industrial uses (warehousing) currently exist near Maple Street to the west of Runway 13-31. Much of the currently vacant airport property is planned to be an industrial park.

5. "In Oregon the Division of Aeronautics defines the 65 Ldn as the division between moderate and substantial impact. Within non-urban areas, State airport compatibility planning guidelines recommend that new residential uses should be avoided and low residential densities maintained in areas of 55 to 65 Ldn ("moderate" noise impact). However, the guidelines recognize that within urban areas such as North Bend, other community noise masks airport noise, community sensitivity is generally lower, and special control of the moderate impact area is generally less important. For comparison, it is useful to know that in most urban areas, and certainly in areas adjacent to well-traveled streets, the background noise level - exclusive of aircraft noise - is frequently above 55 Ldn.

   Within 65+ Ldn areas, the impact of aircraft-generated noise is felt to be substantial, and noise insulation is necessary for any residential, retail, office or service use developed in the affected area. While motels or other transient lodging with appropriate insulation can be included in this zone, single and multi-family housing and mobile home parks should be excluded. Schools, libraries, churches, hospitals, nursing homes and other noise-sensitive uses should also be excluded.

   Though many recreational uses are compatible, noise sensitivity should be examined and appropriate measures

taken. Non-noise sensitive industry, manufacturing, wholesaling and warehousing, retailing, agriculture, forestry, fishing, mining and open space are compatible."

(Quote taken from Master Plan, North Bend Municipal Airport, 1980-2000, July, 1979, Wadell Engineering Corporation).

6. There are commercial and residential areas to the southeast of the airport. The commercial uses in Pony Village and Virginia Avenue accommodate high volumes of traffic and daily use. Current gross residential densities are approximately two to four units per acre.

7. To the west, north, and northeast in Coos Bay and Pony Slough are areas used for navigation, recreation, habitat, and other open space uses. There is a public boat landing immediately east of the east end of Runway 4-22.

Conclusion

Based upon the above findings, the City of North Bend concludes that the proposed extension and associated changes in air service at North Bend Airport will be compatible with other adjacent land uses. Existing and future uses closest to the noisiest areas will be industrial uses on airport property and recreation/navigation in the bay. Such uses are considered compatible with even "substantial" noise levels (65+ Ldn). "Moderate" noise levels (55-65 Ldn) may be expected in the extreme northern portion of Airport Heights; however, very little of the neighborhood should experience change over existing conditions and community noise will mask some of the airport noise.

EXCEPTION #22 - Segment 5 WD

A) The Proposal: To designate this segment WD (Water Dependent Development Shorelands) allowing water dependent industrial use, and to allow appropriate mitigation associated with that development in this and adjacent segments.

B) The Exception: The exception is to Goal 3 requirements for preservation and maintenance of agricultural land and to Goal 17 requirements for protection of "significant wildlife habitat" and "major marshes" within coastal shorelands. It is noted that Goal 17 also provides for water dependent and economic uses. Compelling reasons and facts are set forth below showing why it is not possible to apply goals 3 and 17 to this particular property.

C) The Findings:

(i) Why these uses should be provided for.

A Water Dependent Development Shorelands designation is needed in this segment to provide for filling, grading and other actions required for long-term siting of a water dependent integrated manufacturing and shipping facility with interim use as an assembly and shipping area for heavy industrial components.

The unique characteristics of the site, including proximity to the shipping channel, its size and ownership, together with long-term economic projections of growing emphasis on export and marine shipment of forest products, the region's primary economic base, combine to make the most logical land use that of water dependent manufacturing and shipping.

The requirement for exception of Goal 3 is a matter of form. The area in question was used for summer grazing in the first half of this century, but the land never was intensively managed as pasture land. For the past three decades or so, there has been no agricultural activity there at all. Soils on the site are of such low quality that it is unlikely the property ever would be economically viable as agricultural land. In fact, an agreement between the owner and U.S. Fish and Wildlife to manage a portion of the area for wildlife values has been in effect since 1961, but that option has not been exercised by U.S. Fish & Wildlife.

Segment 5 WD combined with adjacent land under the same ownership amounts to more than 700 acres. This large, vacant parcel is regarded as one of the best potential water dependent industrial sites on the American west coast. It is recognized by the owner, and provided for in the Coos Bay Estuary Management Plan that a significant portion of the property will be dedicated to mitigating wildlife habitat values lost to industrial development of the remainder. The

combination of industrial development potential with clear, well defined mitigation actions makes the site especially attractive to interests which can be expected to diversify the Coos Bay area economy, while recognizing and providing for continued wildlife habitat values.

Long term, the Henderson Marsh site development fits closely with plans by the owner to address predicted changes in markets for its products toward greater distribution world wide. The site lends itself well to both present and future marine transportation and manufacturing systems because of its size, soil compaction characteristics and because of the short pilotage from the jetty to the manufacturing point and the ease of approach of very large vessels from the channel to the site.

Short term, the owner plans as an interim use the construction and shipment of heavy industrial components on the site. Minimum tie-up facilities would be required for loading and unloading of ocean-going barges (see Exception #1, Segment 5 DA, North Spit Waterfront). Under this interim use, steel plate, tube and other materials will be hauled to the site mostly by barge, the components will be assembled, then shipped by barge to erection sites where the major facilities are to be located, mostly on the American west coast.

The communities surrounding Coos Bay for generations have depended on the forest products industry for their economic base, with its wild swings from occasional community wealth to frequent, deep, community poverty. As local mills age and the market pressures on raw materials and finished products grow, the industry in this area becomes less competitive and is affected more and more severely with each succeeding economic cycle. While unemployment nationwide currently ranges from 6 to 10 percent, in Oregon the figures go from 8 to 13 percent and in the Coos Bay area unemployment approaches 17 percent, but the forest products industry is at times reported to hold as much as 46 percent of its work force on unemployment. In both the short term and the long term, the area requires diversification and redirection of its economy and the consequent creation of a substantial number of new jobs.

The proposed land use for this parcel is aimed at new industry and new jobs in both the long and short terms. In the long term, 15 to 20 years, the land owner expects to need the site for an integrated manufacturing and shipping facility for its products on the world market. Such a facility will be designed for the products and markets which are called for by analysis at the time. Such a development can be expected to employ several hundred skilled and semi-skilled persons for several decades.
During the interim period, the time between the early 1980's

and 1995 to 2000, the parcel provides an immediate opportunity for economic diversity and very substantial employment levels which are on an economic cycle different from forest products. A water dependent assembly area for large industrial components combines the economic cycles of metal fabrication and other industries. Such a facility at Coos Bay will employ 300 to 500 people initially, as many as 1,000 ultimately, with peaks reaching as high as 1,500 during certain assembly phases. In addition to those employed directly by component assembly, service industries directly related to the activity will develop approximately 500 jobs. A conservative turn-over rate of one primary production job to 2.5 retail and service jobs brings a much brighter employment picture to the Coos Bay area.

Additionally, the site is the only one in the Coos Bay estuary identified as being large enough with few or no navigation constraints to provide a suitable location for a large new pulp and paper mill facility. The Plan Economic Inventory notes that there is a high (90%) probability of the occurrence of this use, based on assumptions about future resource availability, future interest rates, improved technology regarding waste discharge and expected strong marketing position of U.S. industry.

Conclusion - Segment 5 WD, which is proposed for water dependent industrial use must be placed in a development category to provide for filling, grading and other activities required for an industrial site. The adjacent segment proposed for mitigation activities must be placed in a Conservation Shorelands (CS) category to allow appropriate alteration of the land surface to provide for wildlife habitat mitigation. After completion of mitigation actions those areas would be placed in a Natural Shorelands (NS) category.

(ii) What alternate locations within the area could be used for the proposed uses?

Christensen Ranch, in the upper bay and under the same ownership as Segment 5 WD, at more than 100 acres, is of adequate size for the interim use, but smaller than the 300 to 500 acres required for the ultimate use. The property is further unsuitable because of the restricted marine access from Coos River, which is too narrow to accommodate the 600-foot barges used for the interim use and the large barges and ships required for the ultimate use. The marine transportation requirement is further restricted by the vessel draft requirement: 25 feet for the barges and 40 feet for the ships.

The interim use will result in a need to transport finished components ranging from 200 to 300 feet in both height and width, and 1,200 feet long, a size that cannot be safely towed beneath the North Bend bridge or between piers of the

Southern Pacific Railway bridge.

Pierce Point, also in the upper bay and also owned by the same company, is composed of two 30 to 40 acres parcels divided by a public road. It is too small for either the interim or ultimate use, has no deep draft channel and is constrained from transport of large water-borne components by the North Bend bridge and the Southern Pacific Railroad bridge.
North Point, a site between the North Bend bridge and the Southern Pacific Railroad bridge, consists of two parcels of sufficient elevation for a useable site totaling 30 to 40 acres, but they are divided by a shallow waterway. North Point, if additional fill were allowed to provide a site of about 90 acres, would still be too shallow and too narrow for either the interim or ultimate use. Its position between the bridges would make turning of the barges and ships impossible and its distance from the shipping channel would require very extensive dredging. The property also is in line with the instrument landing system of the North Bend airport and close to the decision height point for that system with the attendant height restrictions of that system.

The North Spit property owned by the Port of Coos Bay is located directly on line with the airport runway which is an integral part of the aircraft instrument landing system. The height limitations required by that system make construction of 200 to 300 foot components or later maufacturing facilities impossible. Also, existing lease arrangements commit the land such that sufficient property is not available for the intended use.

The parcel known as Sitka Dock, in the lower bay, at 65 acres is of insufficient size, and would require large scale underwater blasting, drilling and dredging to permit docking of barges of the draft and length required. An economically unacceptable alternative would call for filling of aquatic areas out to the channel, an idea which is also environmentally unacceptable.

The southern portion of the North Spit is of ample size but resource constraints and recreational importance considerations prohibit use of that property for industrial purposes, either for the interim or ultimate use.

Both the interim and ultimate uses of Segment 5 WD are strongly tied to the water dependent features of the site and the interim use requires placement in the lower bay area, with its freedom from height and width restrictions of the required vessels.

Conclusion - There are no suitable alternative sites for the proposed interim or ultimate uses of Segment 5 WD and there is a compelling need for that land to be designated for water

dependent industrial uses.

(iii) Consequences

(a) Environmental

Environmental consequences of water dependent industrial development and wildlife habitat mitigation are well detailed and accounted for in the Coos Bay Estuary Management Plan sections dealing with Shoreland Segment 5. Findings of compelling evidence to support the industrial development and consequent mitigation activities are justified by full participation in the planning by the U.S. Fish & Wildlife Service, and the Oregon Department of Fish & Wildlife, and the landowner, with review and consent by a full committee of local elected officials, and City, County, State and Federal planning and resource agencies.

The result of that work is generally referred to as the Henderson Marsh Mitigation Plan. It is a clear identification of wetlands within the proposed industrial development with wildlife habitat values assigned according to the U.S. Fish & Wildlife Habitat Unit Value system. Corresponding mitigation actions are proposed nearby, but outside the development area, to re-establish habitat unit values. Reference to the Coos Bay Estuary Management Plan, Part I, page 5-25c and following pages indicates that after the site development and mitigation activities are complete, total acreage of marshy areas will be slightly reduced, but habitat unit values will be slightly increased.

Leaving the site in its existing condition would retain its current environmental value for awhile. Much of the wetland area within the development area is covered with willows and brush growth and is of only marginal value to migrating waterfowl, although it is more significant to populations of perching birds. There is strong evidence of small marine fish spawning in the major salt marsh system which will be preserved and enhanced as a part of the proposed mitigation. The present level of disturbance to the area is of importance, including adjacent industrial activity, a dredge spoils placement on the east side of the marsh, an industrial wastewater holding pond near the southeast corner, and a rather heavily used dirt road between the shoreline and Henderson Marsh proper. For the past several years, campers, hunters, hikers and off road vehicle drivers freely trespassed on the land, all without the consent of the owner or the government gencies responsible for protection of the wildlife habitat resource. It is likely, unless some very significant change occurs, some of the wildlife habitat value of Henderson Marsh would be lost to future recreation pressures. The proposed mitigation plan may very well be that needed change. While the habitat area certainly will be in a somewhat different loction, its structure and

requirements provide drainages which will act as vehicle barriers, greatly reducing recreation pressures.

Conclusion - Environmental consequences of the proposed interim and ultimate land uses are substantial but are mitigated in such a way as to provide a small net gain in wildlife habitat unit values.

(b) Social and Economic

Numbers of jobs and a conservative economic multiplier which are expected from the industrial development of this parcel are discussed to some extent in section (i) of the findings. It is important to understand that the employment opportunities offered by the development are also a logical fit with the skills and work experience of many of those currently unemployed or underemployed. Metal fabrication of heavy industrial components will utilize crafts such as iron workers, boiler makers, pipe fitters, welders, and electricians. Site development will employ dredge operators, pile driver operators, heavy equipment operators, surveyors, concrete workers and others. These other skills and required are available in the community among those whose careers in local mills, forests and boat yards have been interrupted.

The payroll implications are surprising. When fully employed, these skilled workers often earn $30,000 to $40,000 annually, plus fringe benefits amounting to as much as 40% to 50% of their wage. It is reasonable to predict that a payroll of 1,000 skilled workers would total more than $30 million annually, most of which would be spent in the local communities. Using the economic multiplier of 2.5 for support and service businesses, the total conservative annual economic effect on the community ranges above $75 million in current dollars. This represents a contribution about equal to the largest employer now in operation in Southwest Oregon and is estimated to provide an economic lift to the area approaching 20%.

There will be costs, however. Very early engineering estimates to develop the rough site, including the habitat mitigation, the transportation system, earth moving and other activities set the cost at $30 million to $40 million. These costs would be borne by the developer, either the landowner or a lessee, so there would be little public cost immediately. Utilities development costs are to be borne by agreement between the developer and the utility organization, the capital to be amortized either by a rate structure for that customer, or by revenue bonds for the project which serves that customer.

Road and rail transportation services are under design by the

landowner and the Port of Coos Bay. The Port recently received a federal grant for detailed engineering of the North Spit access road which will serve this project, the North Bay Marine Industrial Park, and the recreation areas on the North Spit. Future public costs and public facilities burden are expected to be minimal.

The landowner has not examined property tax benefits which would be gained by developing the land. It is appropriate to assume that difference in tax values between the land in its current state and as a developed industrial site would be very significant.

Housing values are expected to be somewhat stabilized by the more viable economy created in the Coos Bay area by the industrial use of Henderson Marsh. Real estate service firms report 800 to 1,000 homes for sale in the immediate area, one of the highest numbers in 30 years. Prices, of course, are dropping, but with little apparent effect, since unemployed workers are leaving the area, and those homes are unlikely to sell at any price, under current economic conditions.

Schools in the area find fewer children attending and there have been moves by school boards to close some outlying school buildings for lack of adequate student population and in consideration of funding requirements. Those school facilities are available to serve a growing student population that would result from a return of many workers' families who have left, but wish to come back when employment can be assured.

It is curious that many skilled workers have kept their homes in the Coos Bay area, but left to work in other areas of the United States, apparently regarding the present economic depression as a temporary situation, and they retain the hope and intent to return. It is those skilled workers who will make up a portion of the required work force at Henderson Marsh.

Increased employment opportunities in other areas have shown reductions in social stresses indicated by incidence of alcoholism, child and spouse abuse, traffic violations, petty and major crime, drug abuse and school drop-out rates. While these measures have been seen in the press to the extent that many consider them trite, they are very real and immediate in small, economically depressed communities, and such social stresses can be relieved with intelligent planning and use of land resources with strong economic benefits to those communities.

Conclusion -There are very significant gains in social and economic benefits in the proposal to mitigate and facilitate water dependent industrial development in the segment.

(c) Energy Consequences

Because of the relative distance in miles and time of the Coos Bay area from major land transportation corridors, such transport service is relatively slow and expensive. While truck and rail service is relatively slow and expensive. While truck and rail service is available, and is heavily used to reach domestic regional and national markets, the cost of such transportation is one reason why the area is slow to recover as the rest of the country or region heads toward economic strength.

But the marine transportation opportunity, with its relatively less expensive access to coastal and world markets, is the bright spot in that picture. Huge volumes of product can be shipped great distances at competitive costs and can effectively compete in both American and foreign markets because of the area's close location to the ocean. Very large parcels and components can be loaded and hauled that are too big to be transported any other way.

It is the emphasis on economy, flexibility, sheer bulk and weight, and domestic and world markets that makes the industrial water dependent development of Segment 5 WD so very logical and attractive. Energy consumption, translated to transportation cost, make both the interim and ultimate uses sound decisions.

Energy usage at the site during the interim use will be minimal. Most will be in the form of electricity to run welding equipment and small machinery. Offices and shops will be minimal and only semi-permanent, serving utility functions associated with component assembly.

The proposed long-term use will be very nearly energy self sufficient. Keeping in mind that energy is a significant factor in production costs, technology improvements expected by the time manufacturing and shipping facilities are to be built will show energy utilization improvements. Similar facilities in other areas use process waste as fuel for steam and electrical generation and when hooked into local utility electrical lines are sellers of electricity.

Conclusion - Energy consequences of the interim and ultimate land use are positive because of the efficiency of the marine transportation opportunity, the relatively low maintenance requirements of the shipping channel, the low energy requirement for the interim use and the predicted degree of energy self sufficiency of the ultimate use.

(iv) Compatibility

This unit is highly compatible with adjacent uses, both

current and proposed. It is situated at the north end of the proposed North Bay Marine Industrial Park, part of which is developed and part is currently being developed. The segment is bordered on the east by an active log handling yard and an export wood chip facility, on the west by an industrial waste water lagoon and proposed mitigation area, on the north by a mitigation area and on the south by the deep draft shipping channel and a Development Aquatic Area.
It should be noted that the mitigation areas were placed as close as possible to the development area in an effort to minimize dislocation of migratory waterfowl habitat. Drainage ditches along the transportation corridor on the north and west sides of the development area, together with connecting waterways between open water will create effective barriers to vehicles. The mitigation is designed to be accessible only to animals and people on foot from the proposed North Spit road.

The landowner is advised by its staff biologists, those of the U.S. Fish & Wildlife Service and the Oregon Department of Fish and Wildlife that the targeted wildlife species in the mitigation plan are not deterred from feeding, resting, and nesting by the close proximity of the proposed development.

Conclusion - The proposed development uses of the land are highly compatible with adjacent uses, both those which are developed, or planned for development, and those which are intended for wildlife habitat. The habitat mitigation activity is an integral part of the planned development approach.

Exception #23: Segment 14 DA (Kentuck Inlet)

(A) The Proposal: To place a small bermed area of tidal flat in a Development Management Unit to allow fill to provide additional staging area for barging of rock products.

(B) The Exception: During the application of the Estuarine Resources Goal (#16) to the Plan through the 'linkage' process, it was found that it was not possible to apply the Goal to this particular property. Therefore, an exception is required. The exception is to language in Goal #16 requiring this area to be placed in a Natural Management Unit because it is part of a much larger area which is considered a "major tract" of tidal flat.

(C) The Findings

(i) Why these uses should be provided for.

Intertidal fill is required in this area to prepare an adequate site for storage and loading of rock materials on barges for transportation to various parts of the bay.

The existing upland fill area, which is adjacent to this small bermed aquatic area is inadequate for this purpose because of its size (about 0.7 ac.) and long narrow configuration (average width about 80 feet). The current site is sufficient only to stockpile a minimal amount of rock for shipping by barge, and provides inadequate space to maneuver heavy equipment used in loading and bringing rock to the site without creating a traffic hazard on the abutting county road. Filling of the bermed area will provide an additional upland area of about 0.8 acres for a total site area of about 1.5 acres, and a maximum width of 200 ft. from the county road to the waterward edge of the site. These dimensions will provide adequate space to turn a loaded rock transporter, for stockpiling of rock, and for loading by crane or front-loader into barges.

Aside from the need for additional space, other reasons why this site should be designated a development unit include:

(a) Large erosion-resistant rock is required in many locations around the bay for rip-rap, jetty construction or repair. Because the location of most of these projects cannot readily be reached by road, barges are usually the most logical form of transportation.

(b) Barging is a more energy efficient and cost-effective mode of transportation than trucking.

(c) This facility is already partially developed, and agreement has been reached with state and federal resource agencies that a barge-docking area may be dredged in the natural channel adjacent to the existing fill. (See Aquatic Segment 14DA). Further, it is the only facility available for rock quarried in the adjacent uplands in the Kentuck Slough area.

(d) Road access to this area would involve using East Bay Drive, a county road with numerous severe curves which passes through a quiet residential area. Use of this site would avoid the inevitable traffic hazards and noise connected with transporting the rock by truck to the point of use.

Conclusion - Fill should be provided for in the small bermed tidal flat area because the existing site has inadequate size and shape for barge loading of rock materials. Barging is the most logical mode of transportation for rock used in jetty repair and rip-rap projects, and this site is the most convenient location for rock quarried in the adjacent uplands.

(ii) Alternative Locations

As explained in Section (i) above, the rock loading facility needs to be in the general vicinity because:

(a) barging is often the most logical mode of transportation for rock used in rip-rap or jetty repair or construction;

(b) rock is quarried in nearby uplands; and,

(c) truck traffic would involve hazards to safety and noise in nearby residential areas.

There is only one site with suitable characteristics for water-dependent uses in the area, namely Pierce Point (Shoreland Segment 16WD). This site, if it were to be available for rock storage and loading, would also involve truck traffic passing through a residential area. In addition, impacts on the estuary would be at least equal to those at the proposed site. Extensive dredging, and possibly fill, would be required to provide barge access to the uplands for rock loading which would in itself require an exception. A tidal flat lies between a small natural channel and the shore. This site is proposed for log storage and transportation, and is being held by the owners, a large lumber and wood products firm, for this purpose. Thus, this site is unlikely to become available for another use, and impacts would likely be equal to or greater than, those at the proposed site. These factors are sufficient to rule out

Pierce Point as a realistic alternative site.

The existing site is insufficient in itself to accommodate the proposed use, as explained in Section (i) above. Therefore, the "no action" alternative is not appropriate. The only other alternative would be to fill part of the Kentuck Inlet natural channel to widen the existing filled area. This would involve similar environmental impacts to the proposed action, since natural resources in this area are much the same (see Environmental Consequences Section, below) with the only difference being that this area is subtidal. There is no other site adjacent to the existing fill which would increase the available upland sufficiently, and which would result in less environmental impacts.

Conclusion - There are no practicable or preferable alternative locations for this use.

(iii) Consequences

(a) Environmental - Filling of the bermed area would involve permanent elimination of about 0.8 acres of tidal flat, part of a much larger "major tract" of tidal flat extending across the Kentuck Inlet. This action would have to be mitigated, as required by ORS 541.626, (see Special Condition on "Fill" activities in Aquatic Segment 14 DA). Terms of mitigation would be established by the Director of the Division of State Lands. The bermed area is apart of a much larger area which provides habitat for Corophium sp., ghost shrimp, and for populations of juvenile salmonids, striped bass and starry flounder, which rely on these organisms for food. There are also dense beds of clams (softshell, Macoma spp. and Tellina spp.) in the general area. Waterfowl, shorebird and wading bird populations also use the general area for feeding and resting. The adjacent channel is considered "partially altered" due to the presence of the fill. However, the bermed aquatic area is not considered to be much altered and experiences full tidal exchange through the porous rock berm. Rock loading activities will produce a certain amount of noise from operation of heavy machinery but this should be at acceptable levels.

(b) Social and Economic - It is essential to the local area that small uses like this be able to develop to provide the necessary infrastructure to the economy which is dependent on Coos Bay. Erosion-resistant rock is essential for jetty construction and repair, which are in turn essential to the continuation of safe navigation in Coos Bay. Jetty rock has in the past been trucked from inland sites at greater cost. Kentuck Inlet provides a lower-cost alternative source for this essential material. The social consequences

are secondary to the economic consequences, but are closely linked to the health of the local economy.

(c) Energy - This use is planned for this location because barging is the most energy-efficient mode of bulk transportation for rock products. Trucking to the point of use would normally involve greater distances and consume more fuel per unit of distance. Secondary energy impacts would result from the more frequent repair of road surfaces damaged by heavier truck use. At the same time occasional maintanence dredging of the loading site and to maintain the Kentuck Inlet channel at its natural depths (see Plan Provisions, Aquatic Segment 13B-NA) will also incur some energy costs.

Conclusion - The long term consequences have been considered and are either positive on balance or, in the case of environmental impacts, are acceptable, with appropriate mitigation.

(iv) Compatibility

Adjacent uses are small woodlots, rural residential parcels, a golf course, shops connected with the rock quarrying and hauling business, and agriculture. The low levels of noise expected from operation of heavy equipment and trucks should not adversely affect local residents. There are scattered rural homes in the general area. With the addition of a fill in the bermed aquatic area, there will be sufficient turn-around space for trucks to eliminate any incompatibility with traffic movements on the abutting county road. The use of appropriate clean fill material (as a condition of the issuance of a fill permit) will ensure compatibility with adjacent aquatic resources.

Conclusion - The proposed use can be made compatible with adjacent uses.

Exception #24: Segment #38CA - Coalbank Slough

(A) The Proposal: To develop a small scale shallow draft marina and boat ramp with back up facilities, including boat building, repair and sales, involving fill of approximately half an acre of salt marsh.

(B) The Exception: During the application of the Estuarine Resources Goal #16 to the Plan through the 'Linkage' process, it was found that it was not possible to apply the goal to this particular area. Therefore, an exception must be taken. The exceptionis necessary to permit fill in a conservation management unit.

(C) The Findings

(i) Why these uses should be provic[illegible] for.

Fill is needed to provide back-up space necessary for the development of a small-scale shallow-draft marina at a site immediately upstream of the Highway 101 bridge over Coalbank Slough, on the eastern bank. The site is approximately 3 acres in extent, only about one acre of which is upland. The remainder consists of just over half an acre of salt marsh and about 1.5 acres of tidal flats. The boat slips will occupy the latter area. It is proposed to fill the salt marsh area to provide space for back-up facilities to the marina, including boat storage, a boat ramp and parking space for users. Fill is required in this area because the existing upland is narrow (maximum width about 60 feet) and provides insufficient space for these back-up facilities. The marsh area is a about 100 feet deep by 250 feet long and provides a site of adequate size and configuration for back-up facilities.

The special Moorage Element (Section 6.3.3.2) identified a shortage of moorage space and boat ramps for recreational boats. It is particularly significant that this shortage is a "cultural and economic disamenity for the Coos Bay Estuary." (p. 6.3-17). The inventory identified a need for about 23.9 acres of additional water space for recreational moorage, (p. 6.3-36).

Coalbank Slough is identified (see Section 6.4-3) as a suitable site for a new boat ramp by the Coos County Parks Advisory Board. While the site selection section (p.6.4-50) describes Coalbank Slough as physically unsuited for large marina, because of the lack of in-water space and the height limits of the road and railroad bridges, it is nevertheless well suited at this particular location to a small-scale shallow draft marina. It will have particular value as an access point to the upper bay, Isthmus Slough and Coos River which are popular fishing and boating areas. Following the schedule replacement of the Hwy. 101 bridge, headroom will b

increased to 20 feet. The shoreline is approximately 700 feet long and could theoretically accommodate up to an acre of water space for recreational moorage.

Because of its small size, this site is not figured as part of the total acreage needs for recreational marinas in Coos Bay. However, the Inter-Agency Task Force clearly intended that a marina be developed in Coalbank Slough. The Management Objective for this segment (see Plan Provision, p. 5-255) recognizes, the need for a "small-scale shallow draft marina", together with necessary fill and new dredging.

Fill of the half-acre of salt marsh is necessary because of the narrow configuration of the existing upland, which would otherwise not provide enough back-up space for boat building, repair and sales. The filled area would comprise the widest part of the site, which would be the most logical location for these uses. A piling-supported wharf has been suggested as an alternative means of providing the necessary back-up area, and thus complying with Goal #16. Piling would be a high-cost alternative which would not be economically feasible for a small development of the kind proposed. A piling supported wharf in any case would block the penetration of light, which would greatly reduce or eventually even eliminate the growth of marsh vegetation. Therefore, the adverse effects on estuarine primary production would be much the same for piling as for fill, (see discussion of Environmental Consequences, below).

Conclusion: Fill is needed for back-up facilities for a small-scale recreational marina because:

(i) there is a need for a site for this type of use,

(ii) provided fill is permitted, this is a suitable site for this type of use,

(iii) without filling this area the site lacks sufficient upland area with suitable configuration for the proposed back-up uses,

(iv) a piling supported area would not be economically feasible for this type of use.

(ii) Alternative Locations. The Special Moorage Element discusses a number of sites which have been suggested for commercial or recreational moorage. A number of them were found to be suitable for commercial moorage only, and some are suitable for large developments. Only smaller sites suitable for recreational moorage are discussed below.

This site (as finally approved with 10 acres of water surface) will satisfy a need for recreational access to the lower bay, and will also be suitable for commercial moorage. Due to its distance from the upper bay, it is not suitable alternative to the Coalbank Slough Site.

- Indian Point (Segment 63B.CA)

This site will be used in conjunction with a recreational resort. Due to its specialized function, and also its distance from the upper bay, it is not a suitable alternati to the Coalbank Slough Site.

- Weyerhaeuser 'Old Town' Site (Segment 46 DA)

This site has adequate upland and aquatic area for a small marina, according to the Moorage Work Group (see p. 6.4-40). It is more suitable for a recreational development. However, the narrowness of the aquatic and shoreland areas will limit the use of this area. It could provide access t the upper bay, but is further from the popular areas of Isthmus Slough and the Coos River system than the Coalbank Slough Site.

- Hanson's Landing (Segment 61 DA)

This site is an existing private marina with some space lef for further development. It is used both by recreational a commercial boats. Due to its distance from the upper bay, is not a suitable alternative site to the Coalbank Slough site.

- Jordan Point (Segment 8 CA)

This site is limited by the narrow area and shallow depths available. Consequently, it is designated in the Plan for temporary moorage rather than a marina. It is therefore nc a suitable alternative site to Coalbank Slough.

Other sites which were discussed in the Moorage Element are the downtown North Bend-Coos Bay waterfront and the Evans Wood Products site. The latter site is on Coalbank Slough adjacent the proposed site. Both sites were rejected because there is insufficient water and upland area available or because the sit is essentially committed to navigation and industrial/commerci uses.

Conclusion: With the exception of the "Old Town" site the are therefore no suitable alternative sites for a small recreational marina with access to the upper bay and Is mu Slough and Coos BRiver system.

(iii) Consequences

a) Social/Economic

The proposed development will provide the following benefits to the community:

- Increased opportunities for access to recreational areas of the upper bay, sloughs and Coos River System.
- Improved business conditions for the sector of the local economy directly or indirectly dependent on recreational boating and fishing, e.g. boat sales, repair, supplies.
- A small increment in employment resulting from employees taken on by the new development, including construction.
- Increased property tax revenues accruing to local taxing district.
- Public costs will be minimal. Paved road access exists to the edge of the site. Other public services and facilities (water, sewage treatment) are also available on site.

b) Environmental.

The proposed development will result in the elimination of about half an acre of medium-high salt marsh, dominated by Deschampsia caespitosa, with several other typical salt marsh species represented. This will result in the loss of nutrients to the food web approximately in proportion to the area of this marsh compared to total salt marsh acreage in this area. There are two other much larger salt marshes of a similar habitat type on Coalbank Slough, totalling 55 acres, which are both protected within Natural Management Units. Much of the historical extent of marsh in the Coalbank Slough area has been lost to urban development; much of downtown Coos Bay was developed on Salt marshes adjacent to Coalbank and Isthmus Sloughs. Coalbank Slough itself has been somewhat altered by pilings, bridge crossings, and debris and dredging to alter the bankline (immediately down stream between the road and railroad bridges). There will also be a minimal reduction in the "tidal prism" of Coalbank Slough. Impacts of the fill will be subject to the mitigation requirements of ORS 541.626.

c) Energy

Energy costs during construction may be lower for fill than for pilings, because the latter involves much greater use of heavy equipment to drive the pilings. There may be some energy savings related to having recreational moorge closer

to the points of recreational interest, or due to leaving boats at moorage rather than retrieving them and towing the behind vehicles.

Conclusions - The social and economic consequences are beneficial. The environmental consequences are negative, but are of relatively minor significance and will be mitigated. The energy consequences may be beneficial, but are in any case of relatively minor significance.

(iv) Compatibility

Adjacent uses are primarily light commercial businesses and residences. The character of the area is essentially mixed residential and commercial on the east side of the slough and commercial or light industrial on the west side.

Conslusion - Development of a small-scale recreational marina will be compatible with the adjacent uses.

Exception #25: North Spit Access Corridor

A. The Proposal:

The proposed action is to develop an access corridor to the North Spit area of Coos Bay. The corridor will provide road and rail acccess to the North Spit industrial and recreation lands. The corridor will be 100 feet in width and 3.1 miles in length. The corridor alignment is shown on Figure 1.

B. The Exception

Construction of the access corridor will require partial filling of a freshwater wetland designated as a "significant wildlife habitat" within the Coos Bay Estuary Management Plan. This freshwater wetland is identified as area A on Figure 1.

Goal 17, Item (1), Coastal Shoreland Uses, requires that "major marshes, significant wildlife habitat, coastal headlands, exceptional aesthetic resources, and historic and archaeological sites shall be protected. Uses in these areas shall be consistent with protection of natural values." Compelling reasons and facts are set forth below to explain why it is not possible to apply the above portion of Goal 17 to parts of the transportation corridor.

The North Spit access corridor is anticipated in the Coos Bay Estuary Management Plan. This access corridor is necessary to accommodate the industrial development planned for portions of the North Spit. (Refer to Coos Bay Estuary Management Plan for further discussion of planned development on North Spit.)

The North Spit access corridor is also an element of the North Bay Marine Industrial Park Final Environmental Impact Statement (FEIS). Four alternative alignments for the access corridor are discussed in the FEIS. The proposed alternative is a variation of Alternative 1 in the FEIS. Rather than repeat large sections of the FEIS, this exceptions statement summarizes those features and impacts that were found to be significant in terms of the four exceptions factors: (1) need for the project, (2) alternative locations, (3) consequences of the action, and (4) compatibility with adjacent uses. Resources that received little or no impact are not described in this exceptions statement. The reader is referred to the FEIS for more detailed information.

C. The Findings

Why these uses should be provided for (need for the project)

As summarized in the discussion on Purpose and Need (FEIS, I-1 to I-3) and Goal 9: Economy of the State (FEIS Appendix L),

economic factors explaining the need for the total industrial park complex on North Spit and supporting facilities such as access corridor are:

- The long-term structural shifts in the lumber and wood products industry have, and will continue to, adversely affect the local economy if local industrial development does not take action to provide new "development-ready" land. Coos County has had high unemployment; this indicates underutilized human resources.

- Opportunities for increasing chip exports from Coos Bay are substantiated by a growing market, the established deep draft channel, and Coos Bay's proximity to the basic resource. Current trends toward longer ships, however, create a need for another transshipment terminal downbay of the railroad bridge.

- Plans for growth and diversification of the local economy should include consideration of other industries than those currently dominating the basic sector. The North Spit Marine Industrial Park and other North Spit lands designated for industrial use are locations suitable for storage and loading of products within the mining, minerals, and energy industries. A deep-draft petroleum products bunkering facility could reduce the time and energy costs of vessels currently bunkering at Astoria and San Francisco.

- The project proponents have a public responsibility to efficiently utilize their waterfront and shorelands for water-dependent and water-related uses. A planned and integrated marine industrial park is one way to meet that responsibility and contribute to the identified lands needed in the Coos Bay estuary area by 2000. Good access to those uses must be provided if efficient use of the land is to occur.

The access corridor will offer immediate and long-term opportunities for additional planned industrial development. (See Coos County Exception #22 -- Segment 5WD). In addition, the corridor will provide improved recreational access to portions of North Spit.

Conclusion

The access corridor is integral to the future development of planned industrial uses on North Spit.

ALTERNATIVE LOCATIONS

Four alternative access corridors to serve the North Bay Marine Industrial Park were identified in the FEIS (FEIS, V-19 to V-21). Alternative 1 was selected because it follows existing easements and has fewer adverse economic impacts than the other three alternatives. Alternative 2 would go through the existing log yards leased by Pacific Chip, Inc., and across lower Henderson marsh. Alternative 2 would have similar environmental impacts to Alternative 1 and greater adverse economic impacts. Alternative 3 differed from Alternative 2 by returning to the existing road alony the ba so as to avoid Henderson Marsh. However, Alternative 3 woul take even more existing log storage area and create a substantial physical obstacle to future water-dependent industrial activitie.s Alternative 4 wo d follow the existing road which would have the econ c drawbacks of Alternative 3, plus adverse consequences for Roseburg Lumber's chip loading facility.

As summarized on pages II-22 and II-23 of the FEIS:

> Alternative 1 would avoid several economic impacts, avoid potentially severe easement acquisition problems associated with alternatives 2, 3, and 4, enhance increased efficiency in the use of waterfront dock areas, promote use of th road access corridor for rail access, and allow for management of incidental traffic impact on sensitive habitat areas through design relationships between road and rail acces . In so doing, Alternative 1 would affect relati y larger areas of presently undisturbed land fror and habitat than Alternatives 2, 3, and 4.

Considerations included on the selection of the final alternative include the following:

- Rail Design Criteria

  The access corridor is intended to provide both vehicle and rail access. Southern Pacific will provide rail service. Design criteria provided b Southern Pacific for this facility are listed bel

Maximum gradient:	1.5 percent
Maximum curvature:	12.5° curve
Minimum right-of-way width	30 feet
Clearance to poles (i.e., power poles)	10 feet from center line o track.

- Maximize Use of Industrial Land

  Efficient design of industrial facilities encourages the location of major road and rail facilities along the perimeter of the facility. This provides access while limiting parcelization of interior lands. This is particularly critical when rail access is provided since at-grade rail crossings limit efficient use of adjacent parcels and can create a travel hazard in certain industrial settings. At this time, the specific industrial users are unknown; therefore, the most efficient design solution is to place the access corridor at the perimeter of the property. The northern perimeter is the best choice in this instance, since it separates industrial land to the south from th resource lands to the north. Location of the access corridor along the bay front perimeter would create a barrier between dock facilities and industrial back-up space. This type of internal barrier should be avoided whenever possible.

- Minimize Conflict Between Recreation and Industrial Users

  The access corridor will serve both industrial and recreation uses on the North Spit. Recreational traffic through the industrial area would add unneeded congestion, adversely affect efficient industrial activity, and could be potentially hazardous in some cases. The proposed corridor allows for both recreation and industrial access, while separating the two uses.

- Avoid Conflict with Proposed Mitigation Sites

  Weyerhaeuser Company and the Federal and state resources agencies have developed a mitigation plan for the Henderson Marsh area. Adjustments to the original Alternative 1 alignment were made to avoid areas designated for future mitigation. This is particularly evident as the road curves through Henderson Marsh. The specific alignment in this area was selected to avoid additional filling of wetlands and areas designated for mitigation actions.

- Minimize Conflict with Log Storage Yard

  Roseburg Lumber Company has expressed concern over loss of log storage area due to access corridor construction. The proposed alignment avoids the

log storage area, and thus, does not result in a potential conflict with their activities.

- o Minimize the Amount of Cut and Fill

  A significant factor in the selection of the alignment was the need to minimize and equalize the amount of cut and fill required for the corridor bed. This was necessary to minimize the impact on existing habitats (particularly in dune areas) and to minimize project costs.

The proposed access corridor alignment reflects the above considerations. The corridor is somewhat longer (3.1 mile of new alignment) and straighter than the Alternative 1 described in the FEIS. The eastern portion of the corridor has also been moved.

Conclusion

The selected access corridor maximizes the use of a scarce shoreland resource by minimizing interference with existing and future water-dependent operations along the shore. The corridor, as designed, limits cut and fill while providing for future rail access.

ENVIRONMENTAL CONSEQUENCES

Most types of environmental impact associated with the access road identified in the FEIS were found to be insignificant. The major environmental impacts resulted from the presence of dunes and significant wildlife habitat in the access road corridor. These impacts are to be mitigated.

The potential for continued wind erosion and deposition of sand in the project area is high. The active oblique dune and open sand areas created by road cuts will require a significant slope stabilization, dune stabilization, and vegetation maintenance program. After construction cuts and fill, slopes will be stabilized to prevent sand migration and erosion of the road bed. The Port of Coos Bay will be responsible for implementing this program in cooperation with the U.S. Forest Service.

Overall, the volume of material to be removed for road cuts balances the volumes required as fill in the ponds and wetlands that would be crossed by the access road corridor. Filling of wetland habitat is the major biological impact of thee access road construction. In addition, after construction there would be a significant increase in ambient noise along the road corridor. Disturbances such as these are covered in the point system used to evaluate habitat loss.

Mitigation for most of the access corridor is included in the Henderson Marsh Mitigation Agreement. (See Coos County Exception #22 -- Segment 5WD; and the June 7, 1983, memo of Chuck Holbert, Weyerhaeuser Co., on this subject.) Mitigation for the freshwater wetland that is the subject of this exception will be provided pursuant to the required Corps of Engineers permit.

In reviewing the adjustments necessary to accommodate the proposed access corridor in the Henderson Marsh Mitigation Agreement, the agencies concerned met on April 11, 1983. The major ground rules in evaluating habitat loss and required mitigation were:

1. Wetlands that are south and east of the corridor are to be treated as if they will eventually become industrial.

2. That the mitigation plan was designed to preserve continuity of wetlands.

3. That the total habitat evaluation points for wetlands lost would be counted (the exception to this was the wetlands east of Henderson Marsh on Roseburg Company and Menasha Corporation lands that were included in the original plan document as protected).

4. That the company (Weyerhaeuser Co.) will mitigate for fresh water wetlands losses as well as estuarine losses.

5. That the mitigation would occur prior to or concurrently with any fill activities.

6. That the U.S. Fish and Wildlife habitat evaluation system would be used to determine relative values to be replaced.

The memo documents habitat losses and potential gains in terms of habitat evaluation points. There are several options for the design and location of mitigation actions. The details of these would be worked out in the course of obtaining a special use permit from the U.S. Forest Service, since USFS lands would be logical locations for some of the mitigation actions.

Conclusion

Environmental consequences of the proposed access road will be minimized through design, sand stabilization, and wildlife habitat mitigation.

SOCIAL CONSEQUENCES

The social consequences of the access road construction and development overlap considerably with economic

consequences. In the short-term, the beneficial effects are related to increased local unemployment problems rather than induce in-migration. Social service agencies might see slight decreases in the demands upon them as a result of increased construction employment.

There would be no need for additional housing, fire, or health services, police protection, or schools (FEIS IV-43).

After construction was completed, recreational access to the sand dune areas along the corridor and the beaches south of the industrial park would be improved.

Businesses expected to locate in the North Bay Marine Industrial Park would be approximately one-third marine industrial and two-thirds bulk commodities transshipment. The range of job opportunities would include managerial, skilled, and unskilled positions. Skilled workers displaced from the timber industry would be qualified for many positions. Many jobs are expected to be filled by women, an underutilized human resource in Coos County (FEIS I-2).

Conclusion

Social consequences of access corridor construction and use are beneficial.

ECONOMIC CONSEQUENCES

The short-term economic consequences of the access corridor would be the effects of construction expenditures on the local economy. Construction employment would help offset somewhat the adverse effects of declines in forest products employment.

The long-term economic consequences of the access corridor stem from its role in serving the North Bay Marine Industrial Park. The corridor will contribute to the efficiency projected to create from 675 to 875 direct jobs and from 1,620 to 1,980 secondary jobs for a total change in employment of 2,295 to 2,805 jobs that would not exist without this type of development (FEIS IV-42). Additional employment would come from development of shorelands segment 5WD (see Coos County Exception #22).

Conclusion

Economic consequences of access corridor construction are beneficial. The most significant economic benefits would occur as water-dependent industrial uses served by the access corridor are developed and begin to generate direct and secondary employment.

ENERGY CONSEQUENCES

Location of the route several miles from the major population center (the cities of North Bend and Coos Bay) will increase energy consumption of workers commuting from these cities. However, this could be offset by the energy savings to vessels off-loading in Coos Bay rather than other ports. The lower bay location of industrial sites to be served by the access corridor will be more energy-efficient for water transport than upper bay locations. When rail transportation is available, intermodal choice and transfer opportunities will be enhanced, allowing the selection of the more energy-efficient mode for a particular purpose.

Conclusion

The location of the road and rail corridor and the lower bay access to deep water will enhance opportunities for energy efficiency.

LAND USE COMPATIBILITY

The location of the access corridor will be compatible with other adjacent uses for the following reasons:

- Access to industrial properties south and east of the corridor would be improved and conflicts between industrial and recreational traffic reduced by the new road alignment. The road and rail corridor will also consolidate the area designated for industrial development along the North Spit.
- Dunes crossed by the access road and open sand areas created by road cuts would be stabilized.
- Wildlife habitat and dunes north and west of the road would be buffered by the road from existing and future industrial uses.
- Wildlife habitat impacts of the access road will be mitigated as described in the Environmental Consequences section.

Conclusion

The proposed access corridor is highly compatible with the industrial uses it will serve. The role of the road and rail access corridor as a buffer and the wildlife mitigation will contribute to land use compatibility.

FIGURE 1 NORTH SPIT ACCESS ROAD

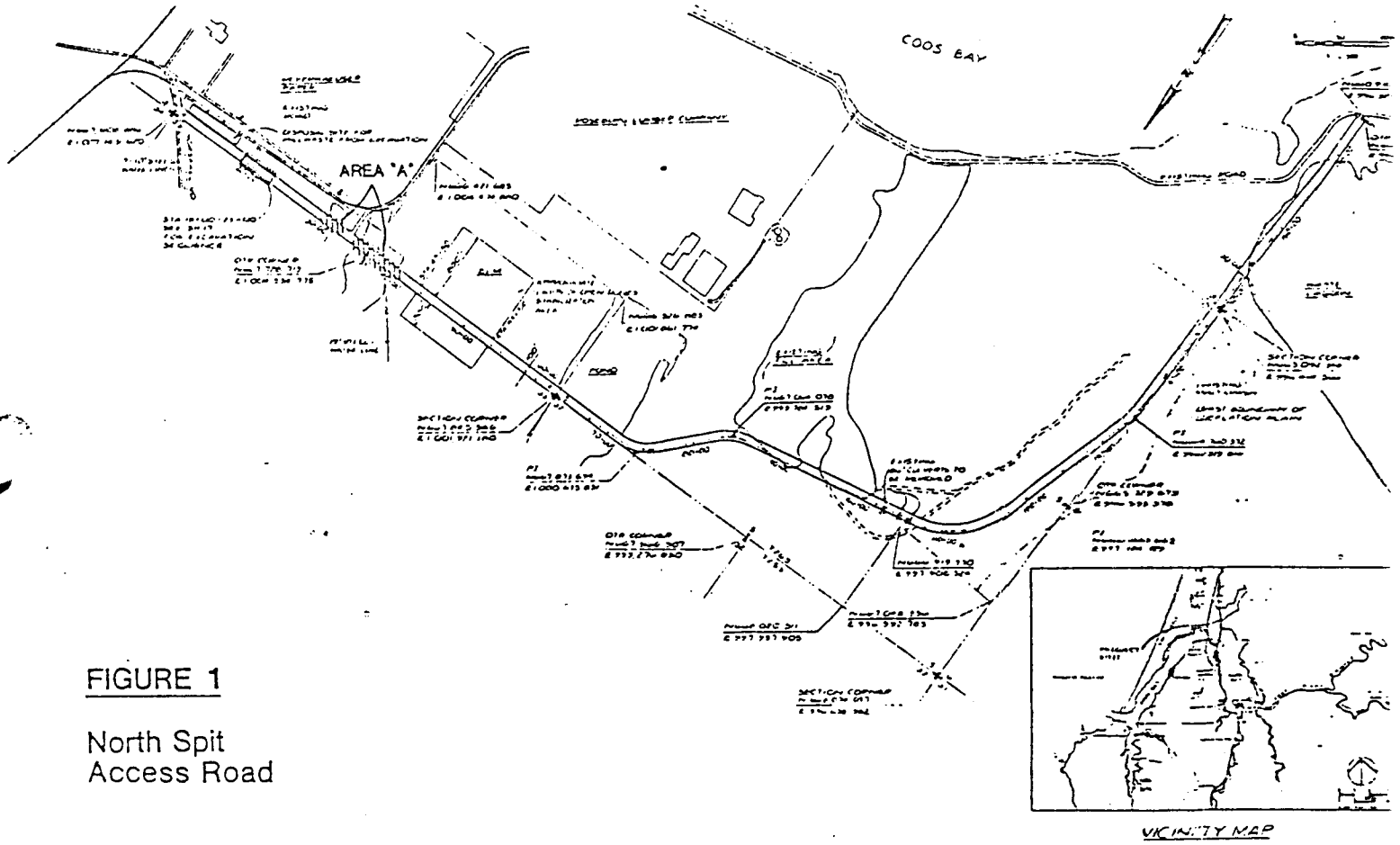

FIGURE 1

North Spit
Access Road

EXCEPTION #26: Aquatic Segment 63C-NA (Hayward Creek Fill)

A) The Proposal: To allow minimal fill in a natural aquatic management unit as necessary to allow a logging road/bridge crossing involving approximately 30 cubic yards of fill, as described in application numbers AM-86-01 and ACU-86-54.

B) The Exception: An exception is to Goal 16, and all of its pertinent component requirements, as necessary to allow fill in a natural management unit.

C) The Findings: Findings supporting the exception are set forth in Coos County Ordinance 86-10-013L.

D) Conclusion: An exception is approved, as supported and detailed in Coos County Ordinance 86-10-013L.

EXCEPTION #27: Shoreland Segment 11RS (Larson Slough Fill)

A) The Proposal: To allow fill in an identified "wet meadow Wetland" as necessary for the Larson Slough Bridge replacement.

B) The Exception: An exception to Goal 3 and all of its pertinent component requirements, as necessary to allow fill in a "wet meadow wetland".

C) The Findings: Findings supporting the exception are set forth in Coos County Ordinance 01-03-007PL.

D) Conclusion: An exception is approved, as supported and detailed in Coos County Ordinance 01-03-007PL.

4.0 CUMULATIVE EFFECTS STATEMENT

4.1 Introduction

Goal #16, under "Development Management Units", requires that:

> "The cumulative effect of all such uses, activities and alterations shall be considered and described during plan development and adoption".

The requirement refers to the uses listed as permitted in Development units, and the activities and alterations which they involve. The Goal goes on to require:

> "In designating areas for these uses, local governments shall consider the potential for using upland sites to reduce or limit the commitment of the estuarine surface area for surface uses".

This goal language requires a general overview of the combined effect that the permitted uses (particulary those for which individual segments are especially suited as stated in the "Management Objective") will have on meeting the overall objective of the goal and the purposes of development management units. The statement must cover not only physical and biological effects, but also social and economic effects. Development units must be designated to provide for:

> "navigation and other identified needs for public, commercial and industrial water-dependent uses, consistent with the level of development or alteration allowed by the overall Oregon Estuary Classification".

In addition, Implementation Requirement #1 requires that:

> "Unless fully addressed during the development and adoption of comprehensive plans, actions which would potentially alter the integrity of the estuarine ecosystem shall be preceded by a clear presentation of the impacts of the proposed alteration, and a demonstration of the public's need and gain which warrant such modification or loss".

As stated in Plan Policies #4 and #4a, all such impacts are either (1) fully addressed in the Plan in the discussion of needs in the Economic Development, Moorage and Dredged Material Disposal elements, and in the "Cumulative Effects Statement", or (2) are deferred as shown in Policy #4a (and in the individual matrices) until time of permit application.

Reduction of the water surface is likely to occur due to fill or bulkheading; use of pilings to occupy the surface will also reduce biological productivity by limiting light access, while substantially retaining physical and hydrological characteristics. The goal requires a consideration of how fill can be limited by using uplands

as much as possible. Two of the four findings required for dredge and fill actions go a long way toward establishing that fill has been minimized. Dredging is only permitted:

"if no alternative upland locations exist", and
"if adverse impacts are minimized as much as possible".

Findings are made in the Plan [see Linkage Narrative, Dredge and Fill Findings, Section 2.5, on alternative upland locations which would minimize or avoid fill. Rationale for permitting fill is presented on a segment-by-segment basis. To the extent that the impacts of a specific proposal cannot be predicted accurately, findings are not made in the Plan on minimizing of impacts. These findings are to be made at the time of permit submittal and review. So the potential for using upland sites to reduce fill can only be assessed in general terms at the Plan formulation stage. The same observation applies to occupation of the water surface by pilings or similar structures.

Cumulative effects are discussed below by sub-system as follows: Lower Bay, Upper Bay/Isthmus Slough, Coos River/Millicoma River, South Slough.

4.2 Lower Bay

Development units in the Lower Bay are located on the North Spit, at Sitka Dock, Empire Docks, and the North Bend Airport runway extension. There are also two in-water dredged material disposal sites which are within development units. In addition, the deep-draft navigation channel runs the full length of the Lower Bay with the shallow-draft Charleston Channel branching off toward the South Slough.

These units provide for substantial growth in docking space for deep-draft vessels, for growth in moorage and off-loading for trawlers, for access to a prime vacant water-dependent site (Sitka Dock), for growth in recreational/commercial moorage, and for a fill for a non-water-dependent use which is vital to the region [North Bend Airport runway extension - see Exception]. These uses will cumulatively have a very substantial effect on the growth of the local and regional economy and contribute to the growing importance of Coos Bay as a deep-draft port. Physical and biological effects resulting from dredging and filling will include the elimination and/or radical alteration of benthic and other aquatic habitats and alteration of current, circulation patterns and water depths in the vicinity of the dredge/fill actions.

One substantial area will be filled (32 acres at North Bend Airport; see Exception for detailed description of environmental effects), eliminating habitats and changing circulation. Elsewhere fill is likely to be limited to that necessary to bulkhead out to water depth sufficient for deep-draft vessels, depending on the relative cost of additional dredging versus additional fill. Since the bottom falls off rapidly from the shore to the channel in the North Spit Development units, this is an area naturally suited for development.

Dredge and fill are consequently minimized by the favorable natural subsurface contours.

Mitigation will occur for intertidal dredge and fill actions, which will lessen the cumulative effects of these actions. However, these actions may not necessarily occur in the same area.

4.3 Upper Bay/Isthmus Slough

Development units in the Upper Bay and on Isthmus Slough are located along the Coos Bay-North Bend waterfront, at Bunker Hill, on the Eastside Peninsula, and on Kentuck Inlet. The deep-draft channel runs the length of the Upper Bay, and a shallow-draft channel runs up Isthmus Slough to Millington, though it is not maintained to the authorized depth. A shallow-draft channel begins at the upper end of the Marshfield Channel and continues into the Coos River system.

These units provide for the continuation and limited expansion of deep-draft docking for lumber and wood products export and other miscellaneous docking along the Coos Bay/North Bend/Bunker Hill waterfront, for growth in marine construction and repair and moorage for ocean-going fishing vessels at Eastside, and for barging of quarry rock at Kentuck Inlet. The deep-draft channel unit provides for continuing annual maintenance dredging to the authorized depth, and deep-draft navigation. The shallow-draft channels provide for maintenance dredging and shallow-draft navigation, chiefly barging and log transport. These uses will ensure the continuation of the importance of the Upper Bay as a location for wood products export and will provide for an increase in marine construction/repair and fishing moorage in conjunction with the expected growth in the fishing industry.

Biological effects are likely to be less signficant than in the Lower Bay because most of the area that would be altered is of minimal biological importance. Loss of benthic habitat along the Coos Bay-North Bend-Bunker Hill waterfront, for instance, will not significantly affect species of importance to biological productivity. However, the physical characteristics of the Bay are likely to be altered locally by extensive dredge and fill, particularly where new development is planned, such as the Eastside peninsula. Fill is likely to be used in some places along the Coos Bay-North Bend waterfront to increase the upland area available, because of the narrowness and cramped condition of the existing shoreland area. However, the area which could be filled is limited by the close proximity of the deep-draft channel. Physical changes of this kind are likely to have the cumulative effect of decreasing the cross-sectional area of the channel and thereby increasing current velocity slightly. This, in turn, may slightly reduce sedimentation locally.

Fill actions in various places along the Coos Bay-North Bend waterfront will increase the usefulness of this prime development area.

Again, mitigation actions will lessen the cumulative environmental effects of intertidal dredge/fill actions, though not necessarily in the same area.

4.4 Coos River/Millicoma River

Development units in the Coos/Millicoma River system are located at Christianson Ranch, at the Harbor Tug and Barge facility near Chandler Bridge, at the Coos/Millicoma Forks, and at log sorting yards at Allegany and Dellwood. A shallow-draft channel runs from the Marshfield Channel to the two log sorting yards.

These units provide for the continuation of historic log transport, rock barging and related activities on the Coos/Millicoma River system. They also provide for the development of a water-dependent wood products manufacturing and shipping operation at Christianson Ranch. The cumulative effect of these units will be to continue the traditional emphasis in this area on log handling and transport related to the forested uplands within the drainage, and to expand into manufacturing. Environmental effects will be minimal, due to the fact that the units involved are either partially altered or of minimal biological signficance, with the exception of the Harbor Tug and Barge and River Forks sites, where resources are limited in any case [see Exception #2 for more detailed description of environmental impacts]. Physical effects will be limited also. Segment 19B DA do not permit fill and Segment 20B DA allows only very limited fill as necessary to create a dock. Similarly, fills in Segments 20C DA and 20D DA are limited to the minimum necessary to improve access to the water area.

The limited dredging required in these units is unlikely to have signficant effects on the physical characteristics of the river system.

Again, mitigation will reduce the environmental effects of intertidal dredge/fill actions if any occur in this area.

4.5 South Slough (Charleston Area)

Development units in the South Slough are located at Charleston Small Boat Basin and the Hanson's Landing area. There is also a small Development unit south of Charleston at an oyster processing facility. A shallow-draft channel runs from Charleston Bridge to the deep-draft channel.

These units provide for the continuation of traditional moorage for commercial and recreational boats, small boat building/repair, oyster culture, and fish off-loading. They will also allow for some limited expansion of these uses in anticipation of the expected growth in recreational moorage and in the fishing industry, together with related moorage needs and other services. Environmental effects will be insignificant in the existing boat basin which is so extensively

altered that it is considered to be of minimal biological importance. However, dredge and fill and moorage development in the Hanson's Landing area (Segment 61 DA) will displace or alter some valuable resources as well as affecting more extensively altered areas [See Exception #6 for more detailed description of resources that will be affected]. However, fill is limited to that necessary for access structures, and does not allow expansion of the upland area. This will greatly reduce potential impacts. Expansion of moorage increases the potential for water pollution by oil or other contaminants, although effective regulation will greatly reduce this risk. Physical alterations will be relatively minor, because of the restriction on fills in Segment 61 DA.

The cumulative effect of physical changes is unlikely to be major, beyond the effect of regular channel maintenance, as it affects current velocity and sediment deposition.

Again, mitigation will reduce the cumulative effects of intertidal dredge/fill actions, although not necessarily in the same area.

4.6 Bay-Wide Cumulative Effects on Biological Resources

The following analysis presents figures on the acreages of various estuarine habitat types affected by Development management units, based on the categories used in Goal #16. These acreage figures are estimated from the inventory maps showing areas qualifying as Natural, Conservation and Development management units, using a "dot grid" technique.

The total surface area of the estuary below mean high water is estimated at 12,380 acres by the Division of State Lands (see Inventory, Physical Characteristics, Section 4.1.2). It is estimated, further, that at least 1,000 acres of high marshes lie above mean high water (Hoffnagle and Olson, 1974). These figures apparently do not include the Coos/Millicoma River system above Chandler Bridge. According to DSL, about 6,180 acres are subtidal and about 6,200 acres are intertidal. With the addition of 1,000 acres of high marsh, this means that of the total of 13,380 acres, 46.2% is subtidal and 53.8% is intertidal.

It is estimated that about 1,451 acres are included within Development management units, or about 10.8% of the total estuarine surface area, plus another 141 acres in the Coos/Millicoma System. Most of this acreage is in subtidal areas. A total of 1,243 acres of subtidal habitat (or 20.1% of the total baywide), is in Development units, compared with only 208 acres of intertidal habitat (or 3.4% of the total baywide).

A large proportion of the subtidal acreage is accounted for by navigation channels (629 acres or 51% of the total).

A detailed accounting of acreages in each habitat type or other Statewide Goal category, by Development Segment, appears below in Table 1. A tabulation by total acreage in each habitat type or Goal

category appears in Table 2. This table shows that Exceptions are required for 47 acres which would qualify as "Natural" units, and 112 acres which would qualify as "Conservation" units, or 10.9% of the total. The remaining 1,292 acres are in one of the four goal categories which should be placed in Development units or are "partially altered areas" which are "needed for development" and therefore placed in Development management units. The four categories are as follows:

1) "deep water areas adjacent to....the shoreline",
2) navigation channels,
3) subtidal areas for in-water disposal of dredged material, and
4) "areas of minimal biological signficance needed for uses requiring alteration of the estuary".

TABLE 1
Acreages Affected by Development Management Units
by Habitat Type or Other Goal Category,
by Segment

Management Segment	Intertidal Habitats or Goal Category	Total acreage	Subtidal Habitats or Goal Category	Total acreage	Total (ac)
3 DA	"other significant" intertidal flats	22 ac.	"other significant" -12 ac. "minimal biological significance" -56 ac.	68 ac.	90 ac.
5 DA	"other significant" intertidal flats	11 ac.	"other significant" -4 ac. "minimal biological significance" -31 ac.	35 ac.	46 ac.
6 DA	"other significant" intertidal flats	8 ac.	"other significant" -7 ac. "minimal biological significance" -37 ac.	44 ac.	52 ac.
14 DA	-----	-----	"partially altered"	1 ac.	1 ac.
19 B DA	"partially altered" intertidal flats	4 ac.	"partially altered"	13 ac.	17 ac.
20 A DA	-----	-----	"other significant"	4 ac.	4 ac.

TABLE 1 (Continued)

Management Segment	Intertidal Habitats or Goal Category	Total Acreage	Subtidal Habitats or Goal Category	Total Acreage	Total
20 B DA*	-----	-----	"other significant"	(4 ac.)	(4 ac.)
20 C DA*	-----	-----	"minimal biological significance"	(4 ac.)	(4 ac.)
20 D DA*	-----	-----	"minimal biological significance"	(6 ac.)	(6 ac.)
23 DA	-----	-----	"minimal biological significance"	6 ac.	6 ac.
27 DA	"partially altered" tideflat - 28 ac. "partially altered" saltmarsh - 4 ac.	32 ac.	"partially altered"	16 ac.	48 ac.
28 A DA	"partially altered" tideflat - 11 ac. "partially altered" saltmarsh - 20 ac.	31 ac.	"partially altered" -49 ac. "minimal biological significance" -20 ac.	69 ac.	100 ac.
28 B DA	"minimal biological significance"	2 ac.	"minimal biologic[illegible] significance"	21 ac.	23 ac.

* - Denotes segments that are partially or wholly in Coos/Millicoma River System, and are separately accounted for in the totals (in parentheses) so as to ensure direct comparability with DSL figures for total bay acreage.

TABLE 1, Continued

Management Segment	Intertidal Habitats or Goal Category	Total Acreage	Subtidal Habitats or Goal Category	Total Acreage	Total
43 DA	"minimal biological significance"	10 ac.	"minimal biological significance"	11 ac.	21 ac.
44 DA	"minimal biological significance"	10 ac.	"minimal biological significance"	90 ac.	10 ac.
46 DA	-----	-----	"minimal biological significance"	13 ac.	13 ac.
47 DA	"minimal biological significance"	2 ac.	"minimal biological significance"	13 ac.	15 ac.
48 A DA	"other significant" salt marsh - 6 ac. "other significant" tide flat - 13 ac.	19 ac.	-----	-----	19 ac.

TABLE 1, Continued

Management Segment	Intertidal Habitats or Goal Category	Total Acreage	Subtidal Habitats or Goal Category	Total Acreage	Total
51 A DA	-----	-----	Subtidal DMD	15 ac.	15 ac.
52 A DA	"major" tidal flats - 27 ac. "major" aquatic beds- 5 ac.	32 ac.	-----	-----	32 ac.
54 DA	"other significant" tidal flats	4 ac.	"minimal biological	36 ac.	40 ac.
56 DA	"major" salt marsh - 2 ac. "major" aquatic beds - 2 ac.	4 ac.	"other significant" - 18 ac. "minimal biological significance - 35 ac.	53 ac.	57 ac.
61 DA	"major" aquatic beds - 7 ac. "partially altered" tidal flats - 6 ac.	13 ac.	"other" aquatic beds - 3 ac. "minimal biological significance" - 12 ac. navigation channel - 21 ac.	36 ac.	49 ac.
63 C_2DA	-----	-----	"partially altered"	5 ac.	5 ac.
66 A DA	-----	-----	"minimal biological significance"	34 ac.	34 ac.
67 A DA	-----	-----	subtidal DMD	16 ac.	16 ac.

TABLE 1, Continued,

Management Segment	Intertidal Habitats or Goal Category	Total Acreage	Subtidal Habitats or Goal Category	Total Acreage	Total
Deep draft Channel	-----	-----	navigation channel	535 ac.	535 ac.
Charleston Channel	-----	-----	navigation channel	21 ac.	21 ac.
Isthmus Slough Channel	-----	-----	navigation channel	39 ac.	39 ac.
Coos/Millicoma* Channel	-----	-----	navigation channel	13 ac. (127 ac.)	13 ac. (127 ac.)
TOTALS		208 ac.		1,243 ac. (141 ac.)	1,451 ac. (141 ac.)

* - Denotes segments that are partially or wholly in Coos/Millicoma River system, and are separately accounted for in the totals (in parentheses) so as to ensure direct comparability with DSL figures for total bay acreage.

TABLE 2
Total Acreages in Areas Affected by Development Management Units, by Habitat Type and Other Goal Category

GOAL CATEGORY	HABITAT TYPE	ACREAGE		% OF TOTAL
"Major" tracts	salt marsh	2		
	tidal flat	31		
	aquatic beds	14		
	subtidal	0		
TOTAL "Natural" Areas			47 ac.	3.2
"Other" significant areas of "less than "major importance"	salt marsh	6		
	tidal flat	58		
	aquatic beds	3		
	subtidal	45		
TOTAL "Conservation" Areas			112 ac.	7.7
"Partially altered" area	salt marsh	25		
	tidal flat	49		
	subtidal	84		
"Minimal biological significance"	intertidal	24		
	subtidal	451		
Subtidal DMD Areas		30		
Navigation Channels		629		
TOTAL "Development" Areas			1,292 ac.	82.5
TOTAL			1,451 ac.	100%

Table 2 illustrates clearly that the greater part of the acreage in Development units is in areas where past alteration has occurred and can therefore be placed in Development units according to Goal #16. The total acreage for which Exceptions are required (159 acres) represents just 1.2% of the total estuarine surface area, and 1.3% of the total area which qualifies for "Natural" or "Conservation" management units (11,857 acres).

A total of 33 acres of salt marsh, 162 acres of tidal flat (includes 24 acres intertidal area of "minimal biological signficance") and 17 acres of aquatic beds (for a total of 212 acres) are included in Development units. Intertidal areas are usually considered to be more essential to estuarine biological productivity than subtidal areas, and will represent the most significant losses due to development. Of course, this depends on the productivity of individual areas. Nearly

half of this acreage (98 acres or 46.2%) is either "partially altered" or of "minimal biological signficance", and can therefore be assumed to have lower productivity in general than the other areas.

It should be noted that tidal flats are impacted more in absolute terms than salt marshes, although the amount of impact on salt marshes may be similar, in proportion to remaining acreages of these two habitat types. As noted in the Biological Resources inventory (Section 4.2.3.4[d]), historical alterations have impacted salt marshes to a much greater extent than tidal flats. Cumulative effects on estuarine productivity may be placed in this historical perspective.

It should also be noted that the Special Mitigation/Restoration Element (Section 8.4.4) discusses the fact that whereas a greater acreage of tidal flats will be impacted, mitigation opportunities to create, restore or enhance tidal flats are much less than for salt marshes. This imbalance is inevitable, given the physical and biological nature of suitable mitigation sites and the greater costs that would be involved in lowering the elevation of a site to the level of tidal flats versus salt marshes.

4.7 Bay-Wide Cumulative Effects on Water-Dependent Needs

Development units throughout the estuary provide for a broad range of water-dependent uses. Dredge and fill are conditionally allowed subject to findings that adverse impacts have been minimized and subject to mitigation requirements. Both deep-draft and shallow-draft navigation needs are provided for in major navigable areas. Water-dependent commercial enterprises and activities are allowed subject to a finding of water-dependency. New and maintenance dredging of water transport channels is conditionally allowed subject to findings of minimization of adverse impacts and standard mitigation requirements. The plan provides for approximately five-years' worth of dredged material disposal sites. Several areas are protected for use as water storage for industrial purposes. Roughly 56 acres of in-water moorage are designated for marinas, both commercial fishing moorage and recreational moorage. Aquaculture for both existing and planned facilities is generally an allowed use in several management segments. Extraction of aggregate resources is allowed subject to appropriate findings. Restoration is permitted within certain management units.

No conflicts between these uses are anticipated. However, as the uses are actually developed over time, future plan revisions which address the potential for such conflicts may be appropriate.

As a note of caution, however, recent events and trends indicate that this plan's development designations are likely to fall considerably short of realistic 20-year needs. This probable shortfall should be given priority consideration at the next periodic review of the plan.